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WORK PLAN REV02
Fairbanks International Airport Fire
Training Pit Corrective Action
FAIRBANKS, ALASKA



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Fairbanks International Airport
6450 Airport Way, Suite 1
Fairbanks, Alaska 99709

**RE: WORK PLAN REV02, FAIRBANKS INTERNATIONAL AIRPORT FIRE
TRAINING PIT CORRECTIVE ACTION, FAIRBANKS, ALASKA**

Shannon & Wilson has been retained to prepare a corrective action Work Plan to address the Fairbanks International Airport fire training pit (FTP) in Fairbanks, Alaska. The effort summarized herein was conducted on behalf of the Alaska Department of Transportation & Public Facilities (DOT&PF) under our Professional Services Agreement Number 25-19-1-013 *Per- and Polyfluoroalkyl Substance (PFAS) Related Environmental & Engineering Services* issued on December 19, 2018. Our proposal for this task was authorized on February 25, 2019 by Amendment 5, NTP 4-5.

This Work Plan has been revised following the receipt of Alaska Department of Environmental Conservation (DEC) comments received on July 15, August 1, August 23, and August 28, 2019. These comments and our responses are included in Appendix A. This document was prepared and reviewed by:



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1 Introduction1

1.1 Data Quality Objectives.....1

1.1.1 Project Objectives1

1.1.2 Information Inputs2

1.1.3 Study Boundaries2

1.1.4 Proposed Analytical Approach2

1.1.5 Acceptance Criteria2

1.1.6 Data Collection Methods and Procedures2

1.2 Project Schedule.....3

1.3 Project Team.....3

2 Background.....4

2.1 FTP and Liner Construction5

2.2 FTP Drainage System.....8

2.3 FTP Use.....9

2.4 Previous Work10

2.4.1 Groundwater Plume10

2.4.2 Landfarm Baseline Sampling.....10

2.4.3 FTP Site Characterization.....11

2.4.4 Deicing Basin Water.....12

3 Contaminants of Potential Concern12

4 Sampling and Analysis Plan.....13

4.1 Monitoring Well Installation14

4.1.1 Subsurface-Soil Sampling.....15

4.1.2 Well Development.....15

4.2 Groundwater Sampling.....16

4.2.1 Groundwater-level Monitoring.....16

4.2.2 Groundwater Parameters Stabilization Criteria16

4.2.3 Water Sample Collection Procedure.....17

4.3 Soil Excavation and Sampling.....17

4.3.1 Soil Excavation.....17

CONTENTS

4.3.2 Saturated Soil Sampling17

4.3.3 Soil-Sample Collection Procedure.....18

4.4 Special Considerations for PFOS and PFOA Sampling18

4.5 Corrective Action Plan19

4.5.1 Onsite Water Treatment19

4.5.2 Treatment Confirmation Sampling.....20

4.5.3 Remaining Water and Saturated Soil Sampling.....21

4.5.4 Aboveground Storage Tank and Other Infrastructure22

4.5.5 FTP Corrective Action22

4.5.6 FTP Cap Institutional Controls.....23

4.6 Equipment Decontamination24

4.6.1 Sampling Equipment24

4.6.2 Heavy Equipment24

4.7 Investigation-Derived Waste.....24

5 Analytical Laboratories and Methods.....25

5.1 Chain of Custody, Storage, and Transport.....27

5.2 Field Documentation28

5.3 Deviations and Modifications to Work Plan28

6 Quality-Control Samples29

6.1 Temperature Blanks.....29

6.2 Field Duplicates.....29

6.3 MS/MSD29

6.4 Equipment Blanks29

6.5 Field Blanks.....30

6.6 Trip Blanks30

6.7 Laboratory Quality-Control Samples.....30

7 Data reduction, Evaluation, and Reporting30

8 References32

Exhibits

Exhibit 1-1: Project Team.....4

Exhibit 2-1: Liner construction detail5

Exhibit 2-2: Membrane monitoring system detail5

Exhibit 2-3: Excavation and berm completion (July 8, 1992)6

Exhibit 2-4: Installation of 40-mil membrane (July 9, 1992)6

Exhibit 2-5: Hot wedge seaming (July 11, 1992)7

Exhibit 2-6: Leak detection test (July 11, 1992).....7

Exhibit 2-7: Backfilling lined FTP (July 15, 1992).....8

Exhibit 2-8: Completed FTP (May 18, 1993)8

Exhibit 2-9: Sump cross-section detail.....9

Exhibit 3-1: Applicable Regulatory and Action Levels.....13

Exhibit 4-1: Analytical Testing Summary14

Exhibit 5-1: Water Sample Containers, Preservation, and Holding Time Requirements26

Exhibit 5-2: Soil Sample Containers, Preservation, and Holding Time Requirements27

Figures

Figure 1: Fairbanks International Airport Vicinity

Figure 2: Fire Training Pit Vicinity

Figure 3: Historical Soil Sample Results

Figure 4: Historical Water Sample Results

Appendices

Appendix A: DEC Comment Letter and Matrices

Appendix B: Site Safety and Health Plan

Appendix C: Field Forms

Appendix D: Water Treatment System Design

Appendix E: FTP As-Built Plans and Cap Design Drawings

Appendix F: Stormwater Pollution Prevention Plan

Important Information

ACRONYMS

AAC	Alaska Administrative Code
APDES	Alaska Pollution Discharge Elimination System
AFFF	aqueous film-forming foam
ARFF	Aircraft Rescue and Fire Fighting
AST	aboveground storage tank
bgs	below the ground surface
°C	degrees Celsius
CESCL	Certified Erosion and Sediment Control Lead
CGP	Construction General Permit
COPC	contaminants of potential concern
cy	cubic yards
DEC	Alaska Department of Environmental Conservation
DO	dissolved oxygen
DOT&PF	Alaska Department of Transportation & Public Facilities
DPT	direct push technology
DQO	data quality objective
DRO	diesel range organics
EPA	Environmental Protection Agency
FAI	Fairbanks International Airport
FTP	fire training pit
GeoTek	GeoTek Alaska, Inc.
GRO	gasoline range organics
HDPE	high density polyethylene
L	liter
MeOH	methanol
ug/kg	micrograms per kilogram
μS	microsiemens
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mL	milliliter
MS/MSD	matrix spike/matrix spike duplicate
mV	millivolt
MW	monitoring well
ng/L	nanograms per liter
NRC	NRC Alaska, LLC
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PID	photoionization detector
ppm	parts per million
QA	quality assurance
QC	quality control

ACRONYMS

RPE	reinforced polyethylene
RRO	residual range organics
SGS	SGS Environmental Services, Inc.
SIM	selected ion monitoring
SSHP	Site Safety and Health Plan
SWPPP	Stormwater Pollution Prevention Plan
TAH	total aromatic hydrocarbons
TAqH	total aqueous hydrocarbons
TestAmerica	TestAmerica Laboratories, Inc.
TCLP	toxicity characteristic leaching procedure
Vista	Vista Analytical Laboratory
VOC	volatile organic compound
YSI	YSI Pro Plus

1 INTRODUCTION

This Work Plan describes our proposed approach for corrective action activities at the fire training pit (FTP) located at Fairbanks International Airport (FAI), Fairbanks, Alaska (Figure 1). The FAI is an active, Alaska Department of Environmental Conservation (DEC) listed contaminated site due to the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater and surface water (File Number 100.38.277, Hazard ID 26816). The FAI FTP is listed as a separate contaminated site (File Number 100.38.070, Hazard ID 1071).

We have prepared this Work Plan in general accordance with DEC's March 2017 *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites*. We will conduct these activities in general accordance with DEC's August 2017 *Field Sampling Guidance* document, and our Site Safety and Health Plan (SSHP) presented in Appendix B.

1.1 Data Quality Objectives

This section outlines our data quality objectives (DQOs) for this project based on the six-part DQO process presented in DEC's March 2017 *Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling* technical memorandum.

1.1.1 Project Objectives

The objective of this effort is to implement corrective actions addressing known PFAS and hydrocarbon contamination at and near the FAI's former FTP. Our intent is to reduce the volume of contaminated media at the FTP and minimize the impact to groundwater by reducing surface-water infiltration through PFAS-contaminated soil remaining onsite. We plan to:

- dewater the FTP;
- treat and discharge 500,000 to 900,000 gallons of the FTP liquid contents;
- collect saturated soil and/or sludge samples from solids remaining after dewatering of the FTP;
- remove the aboveground storage tank (AST) and associated piping used for fire training;
- excavate 20 to 30 cubic yards (cy) of soil from a previously-identified area adjacent to the FTP with elevated PFAS concentrations;
- extend the FTP sump;
- cap the dewatered FTP;
- backfill the FTP with clean gravel fill; and

- install and sample two clusters of four groundwater monitoring wells (MWs), one each upgradient and downgradient of the FTP.

1.1.2 Information Inputs

We plan to collect analytical groundwater and subsurface-soil samples from the FTP vicinity to complement previous characterization efforts, and saturated soil/sludge from the base of the dewatered FTP to characterize soil remaining in place (Section 2.4). We plan to install four downgradient and four upgradient groundwater MWs and collect subsurface-soil samples from the borings (Figure 2). Our sampling program is based on information provided by the FAI, including FTP As-Built plans, previous reports, aqueous film-forming foam (AFFF) release locations, and other supporting information (Appendix E). In addition, we plan to collect confirmation samples of post-treatment FTP water (Section 4.6.1).

1.1.3 Study Boundaries

Based on our current understanding of site conditions, we consider the boundary for corrective action to be within 250 to 300 feet of the former FTP structure. For the purposes of this study we define the FTP extent as the lined area surrounding the concrete basin used for fire training. This area is shown in Figure 2, FTP Vicinity. We understand there are other known and suspected AFFF release locations outside this area at FAI; this plan does not address those areas.

1.1.4 Proposed Analytical Approach

Contaminants of potential concern (COPCs) and cleanup levels are outlined in Section 3. Analytical methods are presented in Section 5.

1.1.5 Acceptance Criteria

For measurement data, the DQO is to verify environmental data are of known and acceptable quality. For analytical data, the DQO is to meet acceptable quality assurance (QA) standards of precision, accuracy, representativeness, comparability, and completeness.

Laboratory and field quality control (QC) measures are outlined in Sections 5 and 6. QA objectives for analytical data are presented in Section 7.

1.1.6 Data Collection Methods and Procedures

Sample collection and handling procedures are outlined in Section 4.

1.2 Project Schedule

We anticipate field activities will occur during the 2019 construction season. Once we receive DEC approval for our proposed scope of work, we will coordinate with the FAI and our subcontractors to determine the precise schedule.

Dewatering the FTP and treating its contents may take between one and four weeks. We plan to install the groundwater MWs prior to or during FTP water treatment. Backfilling and capping will begin when dewatering is complete.

We will prepare a summary report documenting this corrective action in winter 2019 to 2020. The report will summarize our field observations, MW installation, analytical results, water treatment and disposal methods, and backfilling and capping the FTP. The report will include field notes, photo documentation, laboratory test results, discussion, and recommendations.

1.3 Project Team

Chris Darrah will be Shannon & Wilson's Principal-in-Charge, and Marcy Nadel will serve as the Project Manager. Shannon & Wilson's project team includes other State of Alaska Qualified Environmental Professionals to support the various field and reporting tasks required to achieve project objectives. The project team and their associated responsibilities are summarized in Exhibit 1-1 as follows.

Exhibit 1-1: Project Team

Member	Responsibility	Representative	Contact Number
Fairbanks International Airport	Client and property owner, supply gravel fill, cap construction	Sam Cummings, DOT&PF PFAS Coordinator	(907) 888-5671
		Angie Spear, Airport Manager	(907) 474-2529
DEC Contaminated Sites	Regulator, Work Plan approval	Robert Burgess, Project Manager	(907) 451-2153
DEC Division of Water	Regulator, dewatering permit approval	James Rypkema, Wastewater Discharge Authorization Program	(907) 334-2288
Shannon & Wilson, Inc.	Environmental consultant, sampling, reporting	Chris Darrah, Principal-in-Charge	(907) 458-3143
		Marcy Nadel, Project Manager	(907) 458-3150
GeoTek Alaska, Inc.	Monitoring well installation	Drilling supervisor to be determined (TBD)	(907) 569-5900
TestAmerica Laboratories, Inc.	Analytical laboratory services	David Alltucker, Project Manager	(916) 374-4383
Vista Analytical Laboratory	Analytical laboratory services	Jennifer Miller, Sales Manager	(916) 673-1520
SGS Environmental Services, Inc.	Analytical laboratory services	Jennifer Dawkins, Fairbanks Receiving Office	(907) 474-8656
NRC Alaska, LLC	Water treatment, soil disposal (if required)	Shaun Tucker, Business Development Manager	(907) 646-5050
Design Alaska, Inc.	Cap design, surveying	John Rowe, Michael Schmetzer, and William Kinne	(907) 452-1241
Other subcontractors	Heavy equipment, cap construction, soil disposal	TBD	TBD

2 BACKGROUND

The FAI terminal is located at 6450 Airport Way in Fairbanks, Alaska (Figure 1). The geographic coordinates of the primary FAI runway, 2L-20R, are latitude 64.8160, longitude -147.8612. FAI's existing FTP and former fire training area are south of the primary FAI runway (Figure 2). The FTP was constructed in summer 1993 as a lined, 205-foot diameter basin. The basin contains well-drained fill material. The FTP is surrounded by soil berms designed to be 2 to 4 feet above existing grade; however, they have been flattened over time.

The FAI Aircraft Rescue and Firefighting (ARFF) program used AFFF for training, systems testing, and emergency response at the FAI for many years. The precise timeline and locations of AFFF use at the FAI are unknown. AFFF training and systems testing were likely conducted at several locations near what is now the southwest end of the small aircraft runway (2R-20L), near the Airport Response Center, and near the center of the

primary runway (Figures 1 and 2). AFFF contains PFAS, a category of persistent organic compounds considered as emerging contaminants. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are two PFAS compounds commonly found at sites where AFFF was used.

2.1 FTP and Liner Construction

FAI contractors began FTP construction in July 1992. Construction photographs are shown in Exhibits 2-3 through 2-8, as follows. The FTP liner has several components that were installed over a graded and sloped gravel base. The primary barrier is an 80-mil high density polyethylene (HDPE) liner. HDPE has excellent resistance to diesel fuel, jet fuel, and naphtha and moderate resistance to kerosene, gasoline, and crude oil. HDPE is a resilient material commonly used in geomembranes for landfill and mining operations. This type of liner is recommended for long-term storage of petroleum-contaminated soil stockpiles at a range of temperatures, including below freezing (Seaman Corporation; Barrett, et. al., 2011).

The primary barrier is positioned on top of a secondary 40-mil HDPE geomembrane. The two HDPE liners are separated by a plastic mesh, referred to as a drainage net, as shown in Exhibit 2-1. A hot wedge welder was used to seal the 80-mil seams at membrane junction points.

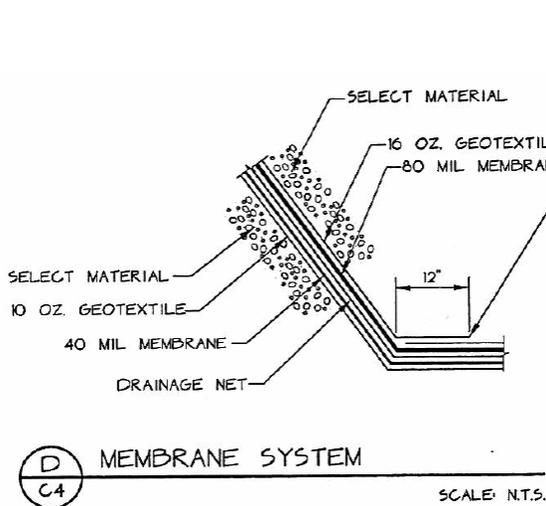


Exhibit 2-1: Liner construction detail

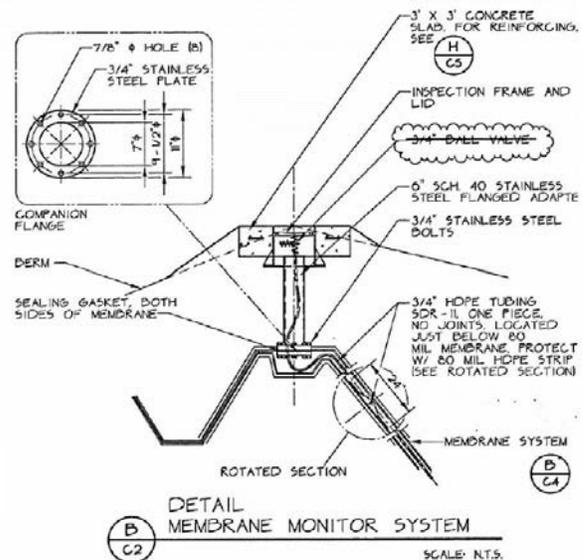


Exhibit 2-2: Membrane monitoring system detail

After workers sealed the membrane, they installed a liner monitoring system to check for leaks in the primary barrier. The liner monitoring system test port on the southwestern edge of the FTP berm consists of a gasket-sealed 6-inch stainless steel pipe, located at the top of

the berm. This pipe acts as a conduit for a ¾-inch HDPE tube, which runs between the primary and secondary barriers. This ¾-inch tubing allows for sampling of the void space between the liners for vapor and/or fluid infiltration. The initial leak detection test was successful.



JULY 8, 1992 Finish Roll-ins for
START OF MEMBRANE INSTALL.

**Exhibit 2-3: Excavation and berm completion
(July 8, 1992)**



JULY 9, 1992 40 MIL MEMBRANE INSTN
OVER 100% GEOTEXTILE LAYER IN BURN
PIT #64849

**Exhibit 2-4: Installation of 40-mil membrane
(July 9, 1992)**

Following membrane construction, between 2 and 4 feet of fill material were placed within the lined area. At the time of construction, the liner was covered with 2 feet of fill near the crest of the berm and 3.5 to 4 feet on the slopes and base. However, settling and compaction from vehicle traffic is likely to have affected these values over time.

Contractors also installed a 5,000-gallon aboveground, horizontal, double-walled steel tank north of the FTP. They poured a square, 60-foot by 60-foot concrete basin on top of fill material to serve as the diesel burn area. Buried piping leads to a flow meter and valve, with vertical stand pipes between the tank and fuel dispenser within the FTP concrete basin.



Exhibit 2-5: Hot wedge seaming (July 11, 1992)



Exhibit 2-6: Leak detection test (July 11, 1992)

The FTP As-Built designs can be found in Appendix E. We understand only one concrete basin was constructed inside the FTP, although the As-Built plans include five basins. Other than this change, the FTP appears to have been constructed to specifications per information obtained from the FAI and their consultants.

In June 2018, the FAI's consultant uncovered the edge of the upper liner and observed it to be in good condition. A peristaltic pump was used to sample the liner monitoring test port; however, only air could be pumped from the monitoring system. The air was screened for volatile organic compounds (VOCs) using a photoionization detector (PID). A PID reading of 3.4 parts per million (ppm) was recorded for the monitoring system; ambient air levels were similar.

Based on their field observations, the FAI's consultant concluded the FTP liner has not been compromised. The consultant noted the FTP retains rainwater, snowmelt, and water used during fire training exercises, at a static level above the natural water table. Additionally, liner material collected from berm crown in a soil boring revealed that the HDPE membranes and protective geotextile layers were intact and not visibly degraded.



7/15/92 End Dump and Delivery of
SELECT MATERIAL TO Junction DETAIL
SECTION for BEGIN Backfill BOTTOM Burn
PIT.

Exhibit 2-7: Backfilling lined FTP (July 15, 1992)



64849 Burn PIT with Loader &
Grader on Final shape of BUTSIDE
AREA 05/18/93

Exhibit 2-8: Completed FTP (May 18, 1993)

2.2 FTP Drainage System

The FTP drain is located at the approximate center of the lined area, housed within the concrete basin. The drain consists of a 6-inch diameter pipe extending through the concrete and into the fill material overlaying the liner. The drain pipe connects to horizontal 6-inch diameter slotted pipe with 3/8-inch holes, designed to drain the saturated fill.

The drain pipe routes liquid to a sump located inside the southwestern berm. The surface of the sump is a 2-foot diameter, slotted-metal grate imbedded in a flush-mounted concrete monument. Beneath the concrete monument is a 3-foot diameter corrugated metal pipe overlaying a lower concrete slab. The concrete slab rests less than 1 foot above the FTP liner and is separated by fill material.

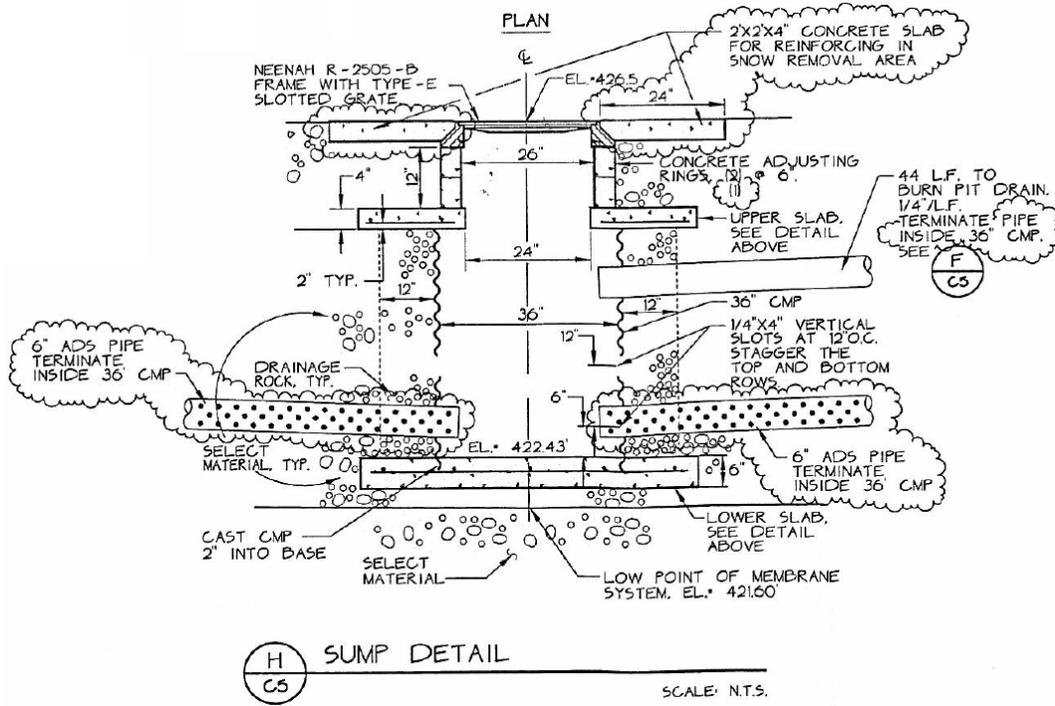


Exhibit 2-9: Sump cross-section detail

2.3 FTP Use

ARFF personnel conducted fire-fighting exercises using AFFF in the lined FTP from 1993 to 2017. These exercises consisted of dispensing diesel fuel from the AST into the FTP basin, igniting it, and extinguishing the fire using fire-fighting agents. The concrete basin at the center of the FTP was originally designed to contain the fuel, however, the fuel has impacted the surrounding fill surface from time periods when the FTP was filled with liquid. Accumulated rainwater and other liquid contents were generally drained from the pit to the local municipal utility wastewater treatment plant each fall, through 2016. Beginning in 2017 the utility declined to accept the FTP water given the concentrations of PFAS. The FTP currently contains water accumulated in the FTP from winter 2016 to present.

Prior to FTP construction, other locations near what is now the southwestern end of the small aircraft runway (2R-20L) were used for fire training. The precise locations AFFF release locations are unknown (Figure 2). Additionally, it is possible AFFF contaminated soil was transported locally during construction of the small aircraft runway.

2.4 Previous Work

PFAS were first identified on FAI property in August 2017. Since they were first encountered, multiple consultants have sampled groundwater, surface water and soil, and subsurface soil for PFAS both on and offsite.

2.4.1 Groundwater Plume

PFAS were first identified in groundwater in August 2017 near and within the Don Bennett shooting range, adjacent to the FTP and training areas. In October 2017, the FAI received the results of PFAS groundwater testing at six onsite groundwater MWs along Airport Industrial Road. PFOS or PFOA were encountered above their respective groundwater-cleanup levels in two MW samples, triggering PFAS testing in private wells on and off FAI property. During summer 2018 the FAI's consultant installed 40 temporary well points within the PFAS plume area, with the highest concentration of points between the primary runway and Chena River. They also sampled four permanent MWs near the South Terminal drainage pond and seventeen surface-water samples.

On behalf of the FAI, Shannon & Wilson, Inc. performed multiple private well searches for water-supply wells downgradient of the FAI beginning in November 2017. To date we have sampled 190 private wells, the majority of which are considered drinking-water wells. The PFAS-impacted area is shown in Figure 1 for reference. As of this writing, 105 private wells have been found to contain PFAS in concentrations exceeding the former DEC action level for drinking-water of 70 nanograms per liter (ng/L) for the sum of five similar PFAS compounds: PFOS, PFOA, perfluoroheptanoic acid, perflurohexanesulfonic acid, and perfluorononanoic acid. Following DEC guidance, we considered combined concentrations greater than or equal to 65 ppt to be exceedances of this action level.

2.4.2 Landfarm Baseline Sampling

In June of 2018, FAI's consultant conducted baseline soil and water sampling at an area newly designated for airport tenant landfarming, west and southwest of the shooting range and FTP (Figure 1). Four temporary well points were installed in conjunction with four of the soil borings located near the landfarm perimeter. Two surface-water samples were also collected from the slough bordering the landfarm to the south and west (Figure 1; labeled "Shooting Range Slough" in Figure 2).

PFAS compounds were detected in each soil and groundwater sample, except for one subsurface-soil sample, at concentrations below the DEC cleanup levels for PFOS and PFOA. Both surface-water samples collected from the slough were below DEC groundwater-cleanup levels for PFOS and PFOA. PFOS was detected at up to 120 ng/L and

PFOA at up to 7.4 ng/L in the samples from the slough. These samples were collected from the slough at locations south and southwest of the FTP.

2.4.3 FTP Site Characterization

In June of 2018, the FAI's consultant collected analytical soil and water samples at the FTP to identify the contaminants of concern and estimate the volume of impacted media. They advanced seven soil borings around the perimeter of the FTP just beyond the extent of the liner. A temporary well point was installed in conjunction with one of these borings on the northwestern side of the FTP. An additional four borings accompanied by temporary well points were advanced at the crest of the inner berm surrounding the ponded center of the FTP. Three surficial soil samples were collected from fill material inside the berm; two of these sample locations near the edge of the ponded water exhibited apparent hydrocarbon staining. They also collected a surface-water sample from the ponded water inside the FTP. These samples were then submitted to an analytical testing laboratory for analysis of six PFAS, gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), VOCs, polycyclic aromatic hydrocarbons, and eight Resource Conservation and Recovery Act metals via the toxicity characteristic leaching procedure (TCLP).

The consultant reported concentrations of PFOS and/or PFOA exceeding the DEC migration-to-groundwater soil cleanup levels in each soil sample, with one exception (Figure 3). The three grab samples of fill material contained the highest concentrations of PFOS, and one of these samples exhibited additional regulatory exceedances for DRO and naphthalene. PFOA was detected in the interstitial water at the FTP northwestern berm at a concentration exceeding the DEC's groundwater cleanup level. The sample collected from the ponded water at the center of the pit exhibited regulatory exceedances for PFOS, PFOA, DRO, RRO, naphthalene, and 1,2,4-trimethylbenzene.

The consultant concluded the discrepancies between the concentrations of contaminants detected in the ponded water, compared with the groundwater, indicate that the liner is likely intact. They estimated there are approximately 5,800 to 6,700 cy of impacted fill material inside the FTP structure, and 8,200 to 9,100 cy within the outer berms. Additionally, they estimated the ponded and interstitial water within the FTP to be roughly 360,000 gallons. This estimate assumed a 33 percent fill porosity, and that it will be possible to recover 80 percent of the interstitial water. However, the precise thickness of saturated material and its actual porosity are unknown.

In August 2018 the consultant collected surface-water samples from other locations at the FAI, including the slough near the FTP. They encountered PFOS at 130 ng/L and PFOA at 9.1 ng/L in the surface-soil sample northwest of the FTP. They encountered PFOS at 55 ng/L and PFOA at 7.2 ng/L southeast of the FTP.

Also in 2018, the FAI's consultant advanced a soil boring and temporary well point over 120 feet northwest of the FTP as part of plume-wide site characterization activities. They encountered PFOS and PFOA at decreasing concentrations with depth. At 116 feet below the surface of the groundwater at the time of sampling, PFOS was detected at 330 ng/L (Figure 4).

2.4.4 Deicing Basin Water

The north deicing basin water was analyzed for 11 PFAS, chemical oxygen demand, biochemical oxygen demand, total suspended solids, ethylene and propylene glycol, hexane extractable material, benzene, toluene, ethylbenzene, xylenes, and metals on May 29, 2018. An additional sample was collected for determination of 11 PFAS on August 8, 2018.

Analytical testing from May 2018 encountered ethylene glycol exceeding the DEC cleanup level at 75 milligrams per liter (mg/L); propylene glycol was encountered at 160 mg/L. In May PFOS was encountered at 54 ng/L, in August the PFOS concentration was 62 ng/L. PFOA was also encountered at a higher concentration in August, the analytical result increased from 3.7 ng/L to 37 ng/L.

Analytical results for the above-mentioned samples made the water unsuitable for discharge to the municipal utility wastewater treatment plant without pre-treatment. Additionally, due to the presence of ethylene glycol above DEC cleanup levels, the water was not allowed to be discharged on the airport. The FAI therefore added an estimated 212,000 gallons of water from the north deicing basin to the FTP in fall 2018.

3 CONTAMINANTS OF POTENTIAL CONCERN

The primary COPCs for inside the FTP are PFOS, PFOA, DRO, RRO, VOCs, and ethylene glycol. Outside of the FTP, previous sampling from other consultants did not report concentrations of DRO, RRO, VOCs above cleanup levels. Therefore, PFOS and PFOA are the only COPCs outside the FTP structure. Water-treatment system effluent water will also be monitored for total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH) analytes.

Applicable cleanup levels for PFOS, PFOA, DRO, RRO, VOCs, arsenic, ethylene glycol, TAH, and TAqH are summarized in Exhibit 3-1, below; these levels were promulgated in November 2016. There are no DEC or Environmental Protection Agency (EPA) cleanup levels for other PFAS compounds. Arsenic was present above DEC cleanup levels in a sample collected from FTP surface water in June 2018. However, arsenic concentrations are likely attributable to natural conditions typical of the area, and not considered a site contaminant.

Exhibit 3-1: Applicable Regulatory and Action Levels

Media	Compound	Level
Soil	PFOS	3.0 ug/kg ¹
Groundwater		400 ng/L ²
Soil	PFOA	1.7 ug/kg ¹
Groundwater		400 ng/L ²
Soil	VOCs	(analyte dependent)
Soil	DRO	250 mg/kg ³
Groundwater		1.5 mg/L ²
Soil	RRO	11,000 mg/kg ³
Groundwater		1.1 mg/L ²
Soil	Ethylene glycol	110 mg/kg ²
Groundwater		40 mg/L ¹
Surface water	Arsenic (inorganic)	10 ug/L ⁴
Surface water	TAH	10 ug/L ⁵
Surface water	TAqH	15 ug/L ⁶

nanograms per liter (ng/L) micrograms per kilogram (ug/kg)
 milligrams per kilogram (mg/kg) milligrams per liter (mg/L)

- 1 DEC migration-to-groundwater soil-cleanup levels are reported in 18 AAC 75, Table B1.
- 2 DEC groundwater-cleanup levels are reported in 18 AAC 75, Table C.
- 3 DEC under 40-inch zone migration-to-groundwater soil-cleanup levels are reported in 18 AAC 75, Table B2.
- 4 DEC water quality criteria for toxics and other deleterious substances, criteria for surface water used as drinking water.
- 5 DEC effluent limit under excavation dewatering general permit no. AKG002000, Table 4. Effluent limit is the sum of benzene, toluene, ethylbenzene, and total xylenes (sum of m, p, and o xylene) concentrations.
- 6 DEC effluent limit under excavation dewatering general permit no. AKG002000, Table 4. Effluent limit is the sum of TAH hydrocarbons and the polynuclear aromatic hydrocarbons listed in EPA 625M-SIM.

4 SAMPLING AND ANALYSIS PLAN

Our field activities will include groundwater, subsurface-soil, saturated soil, pre-treatment water, mid-treatment water, and treatment-system effluent water sampling, as discussed below.

A DEC-qualified sampler will collect and handle samples for this project in accordance with 18 Alaska Administrative Code (AAC) 75 and the DEC’s August 2017 *Field Sampling Guidance*. Field personnel will document field activities with notes and photographs, in accordance with Section 5.2. We will document our activities using the field forms included in Appendix C. An analytical sampling summary is presented in Exhibit 4-1 below.

Exhibit 4-1: Analytical Testing Summary

Number of Samples	Matrix	Total samples	PFOS, PFOA	DRO, RRO	VOCs	TAH, TAqH	Glycol	Arsenic	TCLP Metals
	Groundwater	10 + 5 QC	10 + 5 QC						
	Subsurface soil	14 + 2 QC	14 + 2 QC						
	Pre-treatment FTP water	1 + 1 QC	1 + 1 QC	1 + 1 QC		1 + 1 QC	1 + 1 QC	1 + 1 QC	
	Mid-treatment water	18 + 2 QC	18 + 2 QC			18 + 2 QC	9 + 1 QC	18 + 1 QC	
	Treatment-system effluent water	5	5	5 + 1 QC		5	5	5	
	In-situ saturated soil	4 + 1 QC	4 + 1 QC	4 + 1 QC	4 + 1 QC				
	Ex-situ saturated soil or sludge	4 + 1 QC	4 + 1 QC	4 + 1 QC	4 + 1 QC				4 + 1 QC

Notes:

Quality control (QC) samples listed in this table include field-duplicate, equipment-blank, and field-blank samples. Laboratory QC samples are not included in these totals. Table assumes all potential samples will be collected.

Subsurface soil includes both samples collected from soil borings during MW installation (Section 4.1.1) and those collected from the excavation limits (Section 4.3.1).

Should saturated soil excavation be needed, we will collect analytical samples at a rate of one per soil container, and field-duplicate samples at 10 percent.

4.1 Monitoring Well Installation

We will install two clusters of four groundwater MWs, one each upgradient and downgradient of the FTP. Our proposed MW locations are shown in Figure 2, Fire Training Pit Vicinity. Soil cuttings, development water, and purge water will be transferred to the FTP per Section 4.8. This task will require the services of a drilling contractor. GeoTek Alaska, Inc. (GeoTek) of Anchorage will install four MWs at each cluster:

- screened for 10 feet spanning the surface of the water table;
- screened from 35 to 40 feet below the ground surface (bgs);
- screened from 75 to 80 feet bgs; and
- screened from 145 to 150 feet bgs, or shallower depending on the presence of permafrost or other site-specific factors.

GeoTek will use a Geoprobe 8040DT with Direct Push Technology (DPT) and 4.5-inch-diameter soil-sample tooling to install the two shallowest MWs. We have completed a Federal Aviation Administration 7460 airspace permit for this effort. Beginning at 75 to 120

feet bgs the drilling contractor anticipates they will need to introduce water to control heave and will drive casing using a 340-pound auto hammer, subject to subsurface conditions. Should drill casing be required, GeoTek will flush the casing using a tricone rotary wash. Water used for heave control will remain in the formation. Should we encounter permafrost, we will set the bottom of the deepest MW approximately 5 feet above the permafrost. This information will be documented in our corrective action summary report.

We do not anticipate drilling additives will be required. If needed, the drillers may add National Sanitation Foundation-certified Baroid Industrial Drilling Products QUIK-GEL or QUIK-GROUT drilling mud products to minimize heave. Product specifications are included in Appendix B. If required, the drilling mud will be thickened and used as the annular seal to minimize investigation-derived waste. The product manufacturer states these products do not knowingly contain PFAS, and the absence of PFAS has been confirmed in periodic analytical screening.

MWs will be designed, constructed, and installed in accordance with the DEC 2013 *Monitoring Well Guidance*. We will record well construction measurements relative to the ground surface including the total well depth, screened interval depth, and interval of sand-pack and annular seal, on our standard Shannon & Wilson Monitoring Well Construction Details (Appendix C). The MWs will consist of schedule 40 polyvinyl chloride, 2 inches in diameter, with prepacked 0.010-inch slotted screens. GeoTek will complete the four MWs with stick-up monuments at the northern edge of the vehicle track north of the FTP (Figure 2).

4.1.1 Subsurface-Soil Sampling

GeoTek will advance 5-foot lengths of direct push soil core continuously for the uppermost 40 feet bgs, and every 20 feet thereafter, from the deepest boring. An experienced field professional will observe and log the soil borings, describe samples based on visual observations, and prepare a descriptive log of soil conditions encountered during drilling (Appendix C). We will collect eight analytical subsurface samples for determination of PFOS and PFOA, one from the middle of each MW screened interval. We will not field-screen the subsurface soil using a PID during drilling.

4.1.2 Well Development

We will develop the new MWs no sooner than 24 hours following installation, using a combination of alternating purging and surging. We will use a diaphragm or foot valve pump to purge water from the well and use a surge block attached to rigid tubing to agitate sediment. Development will continue until the discharged water is free of sediment and visually clear. Before and after well-development activities, we will use a water-level meter

to collect depth-to-water measurements; we will also collect the total well depth using a plumb-bob-equipped measuring tape. We will record the well measurements, purge-water volumes, and other pertinent data on our standard Shannon & Wilson Well-Development Log (Appendix C).

4.2 Groundwater Sampling

Following completion and development of the groundwater MWs, we will collect eight groundwater samples for determination of PFOS and PFOA. In addition, we will collect up to two groundwater samples from previously-installed MWs (Figure 2). We understand three MWs were installed in the FPT vicinity in 1997, FAI staff were unable to locate the southeastern MW and assume it has been buried or destroyed. We will also collect one field duplicate sample, up to two equipment blank samples (one per submersible pump type), and one field blank sample per day.

At each well sampled, we will record the following on a standard Shannon & Wilson Monitoring Well Sampling Log (Appendix C):

- fluid levels prior to sampling;
- groundwater parameters;
- measurements of the well casing and monument relative to the ground surface;
- total volume of water purged; and
- odor, color, sheen, or other apparent groundwater characteristics.

We will purge and sample each MW using a submersible pump and new, disposable tubing. We will place the pump tubing within the screened interval in each well for purging and sampling activities. We will measure groundwater parameters during purging using a YSI Pro Plus or equivalent (YSI) inserted into a flow-through cell attached to the pump discharge line. Shannon & Wilson field personnel are trained to calibrate and use the YSI.

4.2.1 Groundwater-level Monitoring

We will measure the static groundwater level in each well prior to sampling using an electronic water-level indicator. We do not anticipate product will be present. We will measure the depth to water from the top of the well casing and note the depth to the nearest 0.01 foot. Details and results of water-level measurement will be recorded on the Monitoring Well Sampling Log (Appendix C).

4.2.2 Groundwater Parameters Stabilization Criteria

We will measure temperature (degrees Celsius [$^{\circ}\text{C}$]), pH, conductivity (recorded in microsiemens [μS]), dissolved oxygen (DO; in mg/L), and redox potential (recorded in

millivolts [mV]) using a YSI water quality meter to determine the point at which sample collection can begin. We will purge each well until three consecutive readings (taken at least three minutes apart) of temperature, pH, conductivity, DO, and redox potential have stabilized, or after three well-casing volumes are purged.

We will begin sampling when the well reaches stabilization. The following values are used to indicate stability: ± 0.2 °C, ± 0.1 pH; ± 0.1 mg/L DO, ± 3 percent conductivity; and ± 10 mV redox. Water clarity (visual) will also be recorded during purging.

4.2.3 Water Sample Collection Procedure

Once water quality parameters are stable, we will collect groundwater samples into laboratory-provided containers. We will wear a fresh pair of disposable nitrile gloves during the collection and handling of each groundwater sample. We will fill sample containers directly from the discharge line. Samples will be labeled with a unique identifier, collection date and time, and requested analyses.

4.3 Soil Excavation and Sampling

In addition to subsurface soil samples collected during MW installation (see Section 4.1.1), we will collect 10 soil samples from the FTP vicinity.

4.3.1 Soil Excavation

We will excavate between 20 and 30 cy of soil from the immediate vicinity of soil boring *FAI18-TH102*, approximately 100 feet west of the lined FTP area (see Figure 2). We anticipate the excavation will be approximately 10 feet wide and 10 feet long, with a maximum depth of the groundwater surface.

We will collect six primary soil samples for determination of PFOS and PFOA from the limits of the excavation, two from the base and one from each sidewall. The excavation-limit samples will be collected from freshly-uncovered material within the excavator bucket; samplers will not enter the excavation. We will collect a field-duplicate sample from the base of the excavation.

4.3.2 Saturated Soil Sampling

Following dewatering, we will collect four in-situ saturated soil samples and one field-duplicate sample from the base of the FTP. We will submit these samples for determination of PFOS, PFOA, VOCs, DRO, and RRO.

Should saturated soil excavation be needed per Section 4.5.3, we will collect analytical samples to determine the most appropriate disposal method. We will collect one sample per

disposal container for determination of PFOS, PFOA, VOCs, DRO, RRO, and TCLP metals. We will collect field duplicate samples at a rate of 10 percent.

4.3.3 Soil-Sample Collection Procedure

We will collect each sample using a fresh, disposable plastic spoon from approximately 1-inch bgs for ex-situ samples, and 6-inches bgs for in-situ samples. We will collect grab samples from each location and will not composite or homogenize them. Field personnel will change nitrile gloves before collecting each PFOS and PFOA sample to control cross-contamination and exposure. Should petroleum samples be required, we will place soil into laboratory-provided containers in order of decreasing volatility (i.e. VOCs, DRO/RRO, then PFOS, PFOA, and TCLP metals).

We will collect VOC soil samples using with the following procedure.

1. Place approximately 50 grams of soil into the pre-weighed, 4-ounce, amber-glass jar.
2. Carefully add 25 milliliters (mL) of methanol to the jar.
3. Use a clean paper towel to remove soil from the threads of the sample containers and caps, as needed.
4. Use waterproof ink to complete the sample label attached to the jar by the laboratory (do not place a label, tape, or other material on the sample jar).

We will collect DRO/RRO soil samples by filling the 4-ounce, amber-glass sample jar approximately 80 percent full, excluding clasts larger than 1-inch across any axis. We will collect PFOS and PFOA soil samples by filling the 4-ounce jar approximately 50 percent full. The sample jars will then be sealed and placed into the sample cooler with frozen ice-substitute. We will record sample depth and location, and soil description on the field form (Appendix C).

4.4 Special Considerations for PFOS and PFOA Sampling

Because PFOS and PFOA are also found in numerous everyday items, the following special precautions will be taken during sampling activities.

- No use of Teflon®-containing materials (e.g., Teflon® tubing, bailers, tape, sample jar lid liners, plumbing paste or tape).
- No Tyvek®, GORE-TEX®, or fire-retardant clothing will be worn onsite. If required, sampling personnel will don polyurethane-coated rain gear or clothing of similar materials.
- Clothes treated with stain- or rain-resistant coatings will be avoided or go through several washings prior to use onsite.
- No Post-It® notes will be brought onsite.

- No fast food wrappers, coated disposable cups, microwave popcorn, or aluminum foil will be brought onsite.
- No write-in-the-rain field books or field forms will be used.
- No sunscreen, lotion, or other personal care products will be applied at the site.
- After handing any of the above items, field personnel will wash their hands thoroughly with soap and water prior to any sampling activities.
- Disposable nitrile gloves will be worn during collection of analytical samples; a fresh pair will be worn for the collection of each sample.
- We will use a minimum 2.0-mil thick plastic liner bag to separate the analytical samples from ice substitute inside the cooler.
- Reusable equipment that has been stored in vehicles or the equipment room without liner bags will be decontaminated before sampling, in addition to after.

4.5 Corrective Action Plan

4.5.1 Onsite Water Treatment

We estimate there are 500,000 to 900,000 gallons of PFAS-, petroleum-, and glycol-impacted water within the FTP. The actual volume of water that can be recovered will depend on the porosity of the fill material, presence of fine-grained ash or sludge, and depth of fill following decades of use, and percentage of interstitial water can be removed. NRC Alaska, LLC (NRC) will remove as much liquid as possible using the existing sump. We anticipate the FTP fill material may need to be drained over several days. It is possible between 6 inches to 1 foot of interstitial water may remain below the level of the sump at the cessation of dewatering. After the majority of the water has been removed, we will observe the base of the sump to determine if further action is necessary (see Section 4.5.2). NRC will treat the ponded and interstitial water to current DEC groundwater and surface water cleanup levels for COPCs (see Section 3).

The multi-stage onsite water treatment system is described below. The organoclay and carbon vessels will be constructed as two, parallel treatment trains. The FTP water will flow through the system following the steps outlined below:

1. 18,000-gallon weir tank for particulate settling;
2. 5-micron and 1-micron filtration banks consisting of five bags each to reduce suspended solids;
3. 5,000-pound organoclay vessel to remove mechanically-emulsified product and reduce hydrocarbons and arsenic concentrations;
4. two (lead and lag) 5,000-pound acid-washed granular activated carbon vessels to reduce PFOS and PFOA concentrations;

5. redundant 5,000-pound carbon vessel as final polish to further reduce PFOS and PFOA concentrations should breakthrough occur earlier than anticipated; and
6. 1-micron filtration bank of six bags to remove fine particulates.

We anticipate the water treatment system will treat approximately 60-65 gallons per minute, operating 24-hours per day over 6 to 10 days. Analytical water results for PFOS, PFOA, petroleum, glycols, and metals collected from the FTP have been used to design the appropriate media contact times required for treatment. A design schematic, additional detail regarding the intent of each treatment stage, and breakthrough modeling are included in Appendix D, Water Treatment System Design. In addition to the FTP water concentrations discussed in Sections 2.4.3 and 2.4.4, NRC collected water from the FTP for bench-scale treatment tests in April 2019. Ethylene glycol is expected to meet effluent standards in the current FTP water and is not discussed in the treatment design.

We have obtained authorization from the DEC Division of Water under excavation dewatering general permit (AKG002000) for point-source discharge of treated FTP water to a nearby surface water body. We will follow the stipulations of the authorization letter dated July 26, 2019, such as post-treatment TAH and TAqH analytical confirmation sampling.

4.5.2 Treatment Confirmation Sampling

Prior to beginning treatment, we will collect a single pre-treatment water sample for determination of PFOS, PFOA, DRO, RRO, TAH, TAqH, ethylene and propylene glycols, and arsenic. We will then treat 1,000 to 2,000 gallons of FTP water and collect initial post-treatment samples from each of the two parallel treatment trains. The post-treatment water samples following the first batches of treated water will be submitted for determination of the above-listed analytes. The confirmation batch of 1,000 to 2,000 gallons will be discharged back into the FTP. Following confirmation that the pre-treatment and/or post-treatment water meets the effluent limits and DEC cleanup levels in Section 3, we will begin discharging treated water to the slough northwest of the FTP via a hose into the culvert leading to the slough. The proposed treatment system effluent location is labeled "Shooting Range Slough" in Figure 2.

Following the confirmation treatment batch, we will collect mid-treatment confirmation samples every 50,000 gallons, alternating between the two parallel treatment trains. We will collect TAH, TAqH, and arsenic samples following the organoclay vessel. The effluent standards for TAH and TAqH are more stringent than those for DRO and RRO, therefore we do not anticipate collecting mid-treatment DRO and RRO samples. We will collect PFOS and PFOA samples following the lead carbon vessel. At the time of sampling, we will also measure pH, flow rate, turbidity, settleable solids, and note visual observations including

the absence of a sheen at the treatment system effluent per our excavation dewatering general permit authorization letter. Using the upper estimate of recoverable water within the FTP, we assume we will collect 18 mid-treatment water samples.

If ethylene glycol is detected in the treatment system effluent during our initial confirmation batch, we will collect post-treatment samples every 100,000 gallons. Using the upper estimate of recoverable water within the FTP, we assume we will collect 9 post-treatment glycol water samples.

The volume of treated water discharged while waiting for sample confirmation results will depend on the flow rate selected following the initial confirmation batch and laboratory capacity at submittal. Assuming no shipping delays, the three laboratories anticipate providing analytical results in two business days, resulting in the discharge of between 68,000 and 140,000 gallons of treated water between samples. Should the mid-treatment TAH, TAqH, or arsenic or the post-treatment ethylene glycol sample concentrations exceed effluent limits, we will halt water treatment. Should the mid-treatment PFOS or PFOA samples exceed effluent limits, we collect subsequent mid-treatment samples after the lag and polish vessels, but will not halt treatment.

We will collect post-treatment water samples from the system effluent every 300,000 gallons. The treatment-system effluent samples will be submitted for determination of PFOS, PFOA, DRO, RRO, TAH, TAqH, glycols, and arsenic.

4.5.3 Remaining Water and Saturated Soil Sampling

We do not anticipate it will be possible to remove all of the interstitial water through the FTP sump. Depending on our observations, we may:

- Use a rigid extension hose to suction additional water from below the level of the sump;
- Dig narrow holes within the FTP fill to access water at the bottom of the basin, taking care not to puncture the liner;
- Place sorbent material within the sump and remove it once saturated; or
- Remove some remaining saturated fill or sludge from the FTP.

Should saturated soil excavation be needed, it may be necessary to add additional sorbent material to saturated soil containers to prevent leakage. The disposal containers will be labeled and stored onsite. Upon receipt of the analytical results, NRC will transport and dispose of the soil containers to an appropriate treatment, storage, and disposal (TSD) facility in accordance with federal, state, and local regulations. If offsite disposal is required, we will seek written approval from DEC prior to transporting the soil from FAI property.

4.5.4 Aboveground Storage Tank and Other Infrastructure

A diesel AST is located to the northeast of the FTP. Underground fuel lines run from the AST to the FTP. Along the underground fuel line there are three riser pipes. An aboveground valve and flow meter on the northeast side of the FTP was used to dispense fuel into the FTP for training.

The fuel lines, controller, AST piping, and AST within the project area will be removed. The liner monitoring system will be plugged and abandoned in place. The sump will be extended to allow for future water removal from beneath the FTP cap, if required. It is our understanding the AST has been drained, decommissioned, and marked as out-of-service.

4.5.5 FTP Corrective Action

Corrective action at the FTP will include removing and treating petroleum- and PFAS-containing water from the FTP, consolidating excavated soil into the FTP, and constructing a cap as described below. Design Alaska, Inc. has prepared cap design drawings, presented in Appendix E. This effort will be completed by FAI personnel, an earthworks contractor, and other contractors. The purpose of the cap is to limit water infiltration into the FTP. The cap system is being designed for that purpose, and to accommodate occasional vehicle traffic. Although we understand the FTP cap is not considered a regulated industrial solid waste monofill per 18 AAC 60.485, the proposed cap meets the requirements of 60.485(c) and includes infiltration and erosion layers similar to those described in 60.485(d) and (e), and 60.395(a).

The removal and treatment of petroleum- and PFAS-containing water is described in Section 4.5.1. An earthworks contractor will carefully uncover the FTP primary barrier at several locations to determine the actual location of the lined area and depth of the barrier within the berms. Operators will use caution when working near the primary barrier to avoid damaging it. In the unlikely event the geomembrane is damaged, we will document it in our field notes and with photographs. The operators will also place excavated soil discussed in Section 4.3.1 into the FTP.

We have acquired a Notice of Intent (NOI) to discharge stormwater under the Alaska Pollution Discharge Elimination System (APDES) Construction General Permit (CGP), and prepared a Stormwater Pollution Prevention Plan (SWPPP) for the project; the SWPPP is included in Appendix F. The control copy of the plan is kept with the Certified Erosion & Sediment Control (CESCL) inspectors, the enclosed SWPPP should not be considered current. We are conducting weekly SWPPP inspections and will modify the control copy as construction progress.

The proposed extent of the capped area is indicated in Figure 2 with a yellow dotted line. The cap will consist of a geotextile placed directly on top of the FTP contents and newly placed excavated soil, followed by gravel fill, a 40-mil fortified polyolefin alloy geomembrane, two feet of silty soil, four inches of topsoil, and hydroseed. The surface will be slightly mounded to shed water away from the FTP. The extended FTP sump will pass through the 40-mil geomembrane; we will place a gasket, pipe boot, or similar sealing device around the sump pipe (Appendix E). The cap has been designed to accommodate occasional traffic of up to 12,000 pounds.

The 40-mil geomembrane included in the cap design has an equivalent effective hydraulic conductivity to that of the 80-mil primary FTP barrier installed in 1993, or on the order of 10^{-13} centimeters per second (Giroud and Bonaparte, 1989; Appendix E). We have selected the geomembrane based on its chemical and temperature resistance, effective hydraulic conductivity, and availability.

4.5.6 FTP Cap Institutional Controls

The FTP area will no longer be used for ARFF training following cap construction. Although the cap has been designed to accommodate infrequent traffic by vehicles and heavy equipment, we anticipate access will be limited to snow plowing and brush clearing. The FTP cap vicinity will be demarcated with a semi-permanent, removable barrier to prevent unintentional vehicle traffic. FAI maintenance personnel will visually inspect the cap integrity on an annual basis. The inspection will document signs of erosion, slope stability, vegetation cover, animal burrows, and exposed geomembrane or woody vegetation, if present. The FAI will note the former FTP location on internal maps to prohibit excavation, drilling, or other soil-disturbing activities within the boundaries of the cap.

We are unable to predict the likelihood of groundwater entering the training pit by overtopping the geomembrane berms beneath the FTP cap. We will monitor local surface and groundwater levels to better understand typical, seasonal variation with respect to the existing 80-mil geomembrane liner and berms. For one year following cap completion, a combination of Shannon & Wilson and FAI maintenance staff will:

- install a pressure transducer and datalogger in the water table MW nearest the FTP (programmed to read water levels weekly), and review and plot groundwater level data on a quarterly basis;
- monitor the streamflow and height of the Chena and Tanana Rivers at U.S. Geologic Survey gauge stations in downtown Fairbanks (No. 15514000) and south of the FAI (No. 15485500) by checking the USGS website on a monthly basis; and
- monitor water levels in the sump quarterly for the first year.

After the first year, we intend to monitor the sump and groundwater levels annually, at the time of year when groundwater levels are presumed to be at their highest. Should we encounter over 12 inches of water in the sump, we will coordinate with the FAI and DEC to develop a plan for water removal and treatment.

The FTP is a known source area under DEC contaminated site number 100.38.277 and the boundaries extend beyond the corrective action study area described in Section 1.1.3. In addition to monitoring groundwater levels, we intend to sample the upgradient and downgradient water table MWs annually beginning in 2020 per 18 AAC 60.025 (d) and (e). The analytical water samples will be submitted for PFOS, PFOA, DRO, and VOCs.

4.6 Equipment Decontamination

4.6.1 Sampling Equipment

All non-disposable equipment introduced into or contacting soil or groundwater at the site will be decontaminated prior to use/reuse or before leaving the site. We understand Golden Heart Utilities and College Utilities water may contain PFOS at up to 2.9 ng/L, PFOA at up to 3.5 ng/L, and/or other PFAS compounds (Consumer Confidence Report, 2018).

We will decontaminate sampling equipment using a four-part process as follows:

- a thorough non-phosphate detergent wash;
- tap-water rinse;
- distilled-water rinse; and
- laboratory grade PFAS-free water rinse.

4.6.2 Heavy Equipment

GeoTek will decontaminate their drilling tools using high-pressure water and contain their decontamination fluids using a duck pond or plastic basin. We will containerize drilling decontamination liquid and combine with other water for treatment. Heavy equipment including vehicle and drill rig tracks, buckets, etc. will be brushed to remove visible soil before it leaves the site.

4.7 Investigation-Derived Waste

Investigation-derived waste will consist of excavated soil, soil cuttings, decontamination rinsate water, rotary wash water, MW development and purge water, suspended solids filtered from the FTP water, filtration bags, and filtration media. Liquids will be containerized and combined with the FTP liquid contents for treatment. Monitoring well soil cuttings will be combined and placed in a 55-gallon drum and temporarily stored

onsite. Once the FTP has been dewatered, the drums will be combined with other petroleum- and PFAS-impacted soil within the FTP and capped. Excavated soil from west of the FTP and settled or suspended solids removed by the onsite water-treatment system will also be placed into the FTP. Spent water-treatment media will include organoclay and granular activated carbon. Filtration media will be thermally treated at NRC's Moose Creek facility.

Other investigation-derived waste will primarily consist of disposable sampling equipment (nitrile gloves, pump tubing) and filtration bags. These items will be disposed of at the Fairbanks North Star Borough landfill.

5 ANALYTICAL LABORATORIES AND METHODS

We will submit PFAS water and soil samples to TestAmerica Laboratories, Inc. (TestAmerica) in Sacramento, California or Vista Analytical Laboratory (Vista) in El Dorado Hills, California. TestAmerica's Sacramento location was certified for analysis of PFOS and PFOA by the DEC contaminated sites program in February 2018 (Approval 17-020).

We will submit hydrocarbon, glycol, and other non-PFAS samples to SGS Environmental Services, Inc. (SGS) in Anchorage, an DEC-approved analytical laboratory with National Environmental Laboratory Accreditation Program certification. We will request a rushed turnaround time for the treatment system effluent confirmation samples. We will request standard data-turnaround time, approximately two weeks, for other analytical samples. Exhibit 5-1 and Exhibit 5-2 summarize the analytes, laboratory methods, sample containers and volumes, and preservation methods for soil and groundwater samples.

Exhibit 5-1: Water Sample Containers, Preservation, and Holding Time Requirements

Analyte	Method	Container and Sample Volume	Preservation	Holding Time
PFOS / PFOA	EPA 537M or WS-LC-0025 (direct aqueous injection)	2 x 250-mL HDPE bottle	0 °C to 6 °C	28 days
TAH	EPA 624	3 x 40-mL amber glass VOA vials (filled with no headspace)	HCl, ascorbic acid, 0 °C to 6 °C	14 days
TAqH	EPA 625M-SIM	2 x 250-mL amber glass bottle	0 °C to 6 °C	7 days to extraction, analyzed within 40 days of extraction
DRO / RRO	AK 102 / AK 103	2 x 250-mL amber glass bottle	HCl to pH<4, 0 °C to 6 °C	14 days to extraction, analyzed within 40 days of extraction
Glycols	SW 8015M	3 x 40-mL amber glass VOA vials (filled with no headspace)	HCl to pH<4, 0 °C to 6 °C	14 days
Arsenic (total)	EPA 200.8	1 x 250 ml HDPE	HNO ₃ , 0 °C to 6 °C	180 days

Notes:

mL – milliliter

°C – degrees Celsius

SIM – selected ion monitoring

L – liter

Exhibit 5-2: Soil Sample Containers, Preservation, and Holding Time Requirements

Analyte	Method	Container and Sample Volume	Preservation	Holding Time
PFOS / PFOA	EPA 537M or WS-LC-0025 (solid phase extraction)	4-ounce HDPE jar filled to near capacity	0 °C to 6 °C	14 days to extraction, analyzed within 40 days of extraction
VOCs	EPA 8260B	1 x 4-ounce pre-weighted jar with septa; approximately 50 grams of soil.	25-mL MeOH, 0 °C to 6 °C	14 days
DRO / RRO	AK 102 / AK 103	1 x 4-ounce amber glass jar filled to near capacity	0 °C to 6 °C	14 days to extraction, analyzed within 40 days of extraction
TCLP Metals	SW 1311	1 x 8-ounce amber glass jar filled to near capacity	0 °C to 6 °C	28 days to extraction, analyzed within 180 days of extraction

Notes:

mL – milliliter

MeOH – methanol

°C – degrees Celsius

5.1 Chain of Custody, Storage, and Transport

Prior to the delivery to the laboratory, the soil and water samples will be in the custody of Shannon & Wilson personnel. During field activities, we will store the samples in a cooler with adequate quantities of ice substitute to maintain samples at 0° C to 6° C. At the end of each field day, if not transported to the laboratory, field personnel will transfer the samples to the designated sample refrigerator in a secure area at Shannon & Wilson’s Fairbanks office.

Our field representative will complete chain-of-custody records to document sample possession from the point of collection to the time of receipt by the laboratory’s sample-control center. Shannon & Wilson personnel will keep a copy of the chain-of-custody record.

We will ship the PFAS sample coolers to TestAmerica in West Sacramento, California using Alaska Air Cargo priority overnight service, also known as Goldstreak. Samples submitted to Vista in El Dorado Hills, California will be shipped using FedEx. Our field representative will pack the samples in a hard-plastic cooler with packing materials to prevent breakage, and sufficient ice substitute to maintain the required temperature during travel. We will place signed custody seals over the side of each sample cooler prior to shipping. We will hand-deliver the hydrocarbon, glycol, and other non-PFAS samples directly to the SGS laboratory sample-receiving office in Fairbanks. We will allow sufficient time for the

laboratory to analyze the samples within the holding-time requirements of applicable analytical methods.

5.2 Field Documentation

We will use field log sheets to document field information, including the following:

- Date
- Sampling team member(s)
- Weather and other salient observations
- Location of activity and site conditions
- Site sketches
- Field observations and comments
- Field measurements
- Changes to sampling protocol
- Sample identification
- Sample date and time
- Site photographs
- Location of sampling points

We will prepare field activity reports for each day we are in the field. Copies of our standard field forms are included in Appendix C.

5.3 Deviations and Modifications to Work Plan

Deviations from the procedures discussed in this document may be required due to circumstances that may arise during the course of a given sampling event. Deviations from the specified program and the purpose for the deviation will be clearly documented in field logs and reported to the project manager.

Our report will include a separate section discussing deviations from the procedures outlined in this Work Plan. Current unknowns such as cap specifications, fill thickness, berm height, etc. will be documented in the final report. Modifications to this Work Plan may be made in the form of an addenda.

6 QUALITY-CONTROL SAMPLES

QA and QC are important components of an environmental site investigation. QA is the integrated program for measuring the reliability of data. QC is the routine use of specific procedures set forth to meet defined standards for sampling and analysis.

6.1 Temperature Blanks

Each sample cooler will contain a temperature blank. We will add artificial ice as necessary to maintain an interior cooler temperature within the EPA's specified range of 0 °C to 6 °C (EPA publication SW-846); DEC has approved this range. Temperature blanks will consist of a jar filled with water and packed with the samples in each cooler. The water temperature in the blank will be measured at the laboratory. The laboratory will document sample and cooler conditions, including temperature.

6.2 Field Duplicates

We will collect duplicate samples at a minimum of 10 percent of the overall project samples for each sample matrix. We will collect field-duplicate samples by filling an additional, complete set of sample containers. Duplicates will be analyzed using the same analytical method used for the primary sample. If possible, we will collect duplicate samples from locations suspected to be contaminated, as calculation of duplicate precision is not possible for samples with contaminants below detection limits. We will assign a separate sample number to duplicates and submit them "blind" to the laboratory. We will use duplicate-sample results to test the comparability of analytical data.

6.3 MS/MSD

We will collect matrix spike/matrix spike duplicate (MS/MSD) samples for laboratory analysis at a minimum of 5 percent for soil samples. For PFOS and PFOA analysis, the laboratory will analyze soil within the same sample jar as the primary sample for the MS/MSD. For DRO, RRO, and metals analysis, extra volume may be needed. We will use duplicate-sample results to test the comparability of analytical data within a given sample matrix. We will not request MS/MSD analysis for groundwater or post-treatment water samples.

6.4 Equipment Blanks

We will collect one equipment blank or rinsate sample per type of submersible pump used to sample groundwater. We do not plan to perform decontamination of disposable soil sampling equipment. However, we will collect one equipment blank sample by pouring

certified PFAS-free water down the length of the direct push soil core liner and collecting the rinsate in a sample jar.

6.5 Field Blanks

Field blanks are used to assess whether airborne, particulate PFAS may be contaminating water samples during collection. We anticipate groundwater sampling will take two days; we will therefore collect two field-blank samples. We will collect the field blank after collecting a groundwater sample, without changing gloves, by pouring PFAS-free water into a sample jar. We will not collect field blank samples following post-treatment water-sample or soil-sample collection.

6.6 Trip Blanks

We will use trip blanks to detect and quantify potential volatile analyte cross-contamination between samples or contamination originating from an outside source. The laboratory will create one trip-blank set for each matrix (soil and groundwater) and sample cooler containing VOC, TAH, or TAqH samples. Field personnel will transport trip blanks to the sampling location and return them to the laboratory in the same cooler as their associated project samples. The laboratory will analyze the trip blank for VOCs, TAH, or TAqH using the same analytical method as the project samples. The concentration of any volatile artifacts found in the trip blank will be noted and compared to the project-sample results.

6.7 Laboratory Quality-Control Samples

The analytical laboratory will perform QC measurements to determine precision and accuracy of the entire measurement system, including initial and continuing calibration checks, analysis of method blanks, analysis of spiked samples, duplicate analyses, and evaluation of surrogate-analyte recoveries. Method blank results, spiked sample recoveries, duplicate analyses, and surrogate-recovery data will be presented with in the laboratory report. The laboratory will apply their in-house procedures for QC reporting.

7 DATA REDUCTION, EVALUATION, AND REPORTING

The laboratory supervisor or other responsible party will validate the laboratory tests and include evaluation for precision and accuracy of the data set. The laboratory QC officer or other responsible party will review and sign analytical data before release. Data reporting will be included in the laboratory reports submitted to Shannon & Wilson. Individual laboratory reports and completed DEC laboratory data review checklists will be included with our final report.

We will check analytical data generated by the laboratory for precision, accuracy, and completeness. Consistency in sampling procedures, sample-preservation methods, analytical methods, and data-reporting units will maintain comparability among samples.

Due to the heterogeneous nature of soils, exact duplication of soil samples is often not possible. In addition, matrix interference in soil samples can adversely affect comparability of duplicate laboratory results.

For analytical data, the objective is to meet acceptable QA standards of precision, accuracy, representativeness, comparability, and completeness. These terms are defined below:

- Precision: is a measure of agreement among replicate or duplicate results of the same analyte. The laboratory objective for precision is to equal or exceed the precision demonstrated for similar samples and shall be within the established control limits. Precision will also be measured as the relative percent difference between project and duplicate samples. Our goal is to exceed the DEC precision limits of ± 30 percent for water samples and ± 50 percent for soil samples.
- Accuracy: is a measure of bias in a measurement system. Accuracy will be expressed as the percent recovery of an analyte from a surrogate or MS sample, or a standard reference material. The laboratory objective for accuracy is to equal or exceed accuracy demonstrated for these analytical methods on similar samples and shall be within the established control limits.
- Representativeness: is a quality characteristic attributable to the type and number of samples to be taken to be representative of the medium/environment (e.g., soil or water). Sample locations will be selected in the field to be representative of the soils or water at that location, within the constraints of sample-location guidelines in the regulations.
- Comparability: is a qualitative parameter expressing the confidence with which one data set can be compared to another. The sampling method employed, methods used for the transfer of samples to the analytical laboratory, and analytical techniques implemented at the laboratory shall be performed in a uniform manner.
- Completeness: is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. The objective of completeness is to generate an adequate database to successfully achieve the goals of the investigation. Our goal is to exceed the DEC completeness limit of 85 percent for project samples.

8 REFERENCES

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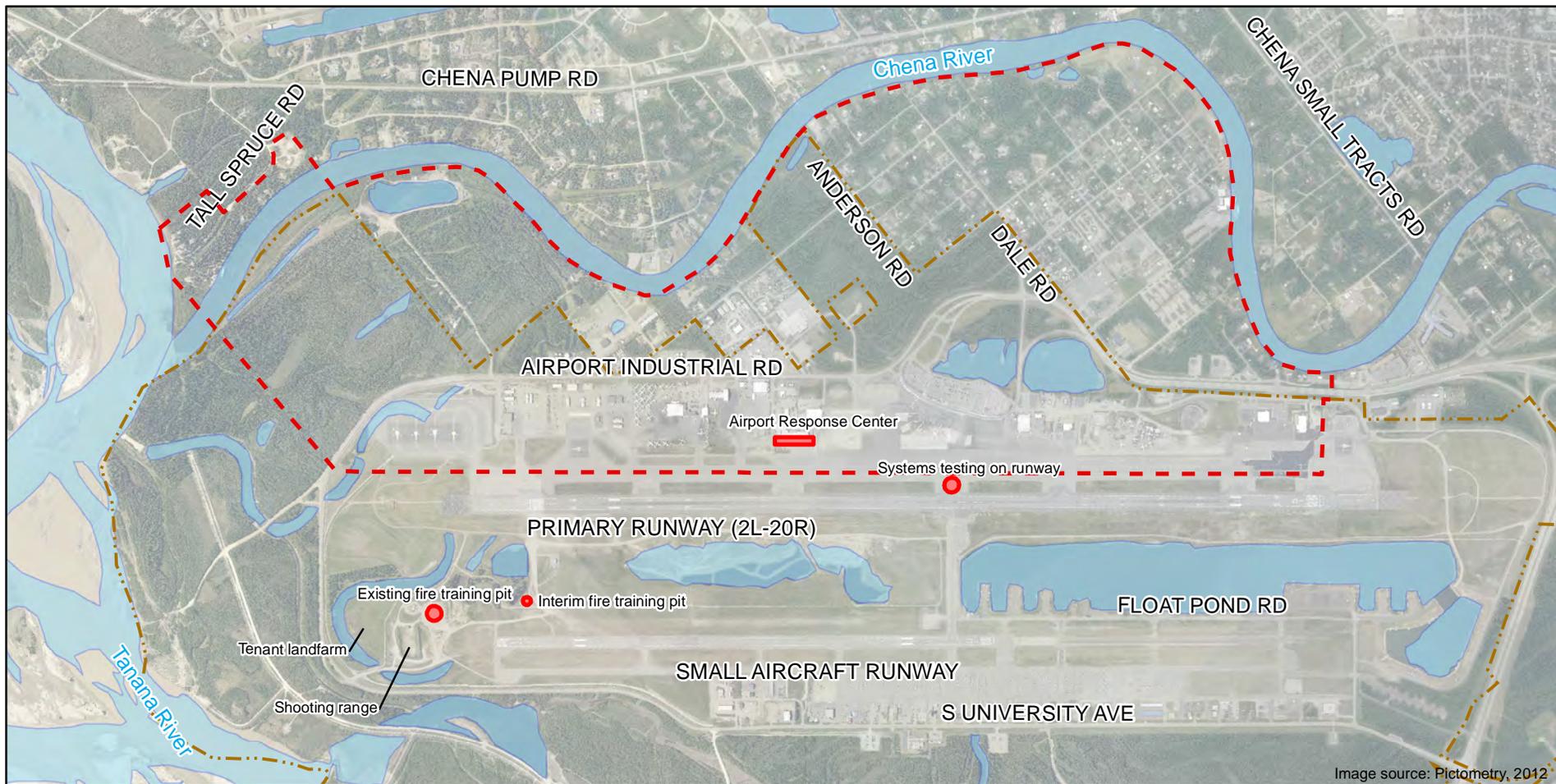
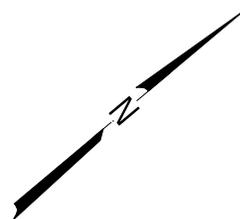
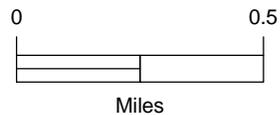


Image source: Pictometry, 2012

LEGEND

-  PFAS-impacted Area
-  Aircraft Rescue and Firefighting (ARFF) Training Sites
-  FAI Boundary



Fairbanks International Airport
Fairbanks, Alaska

**FAIRBANKS INTERNATIONAL
AIRPORT VICINITY**

September 2019

1002519

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1

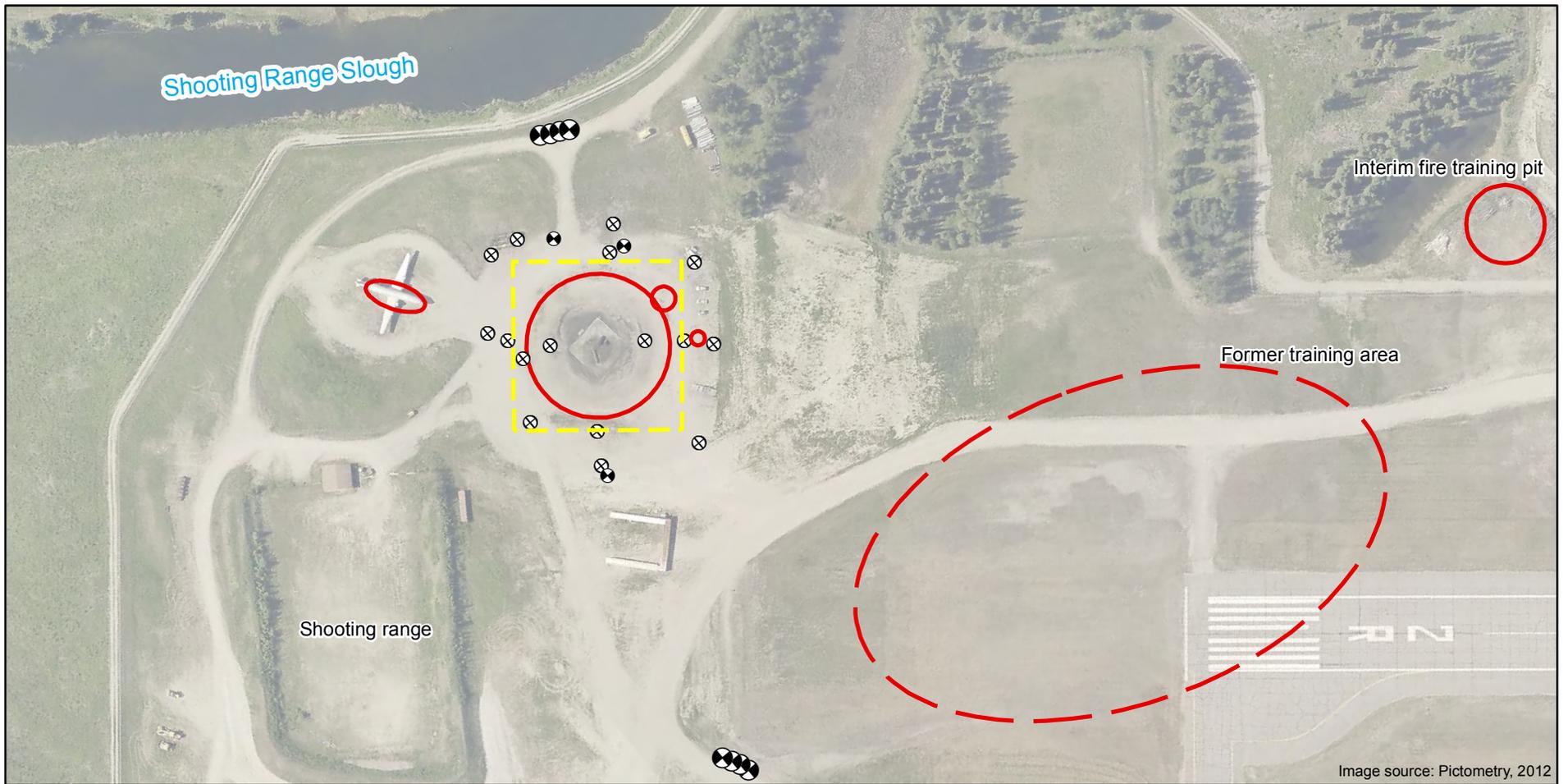
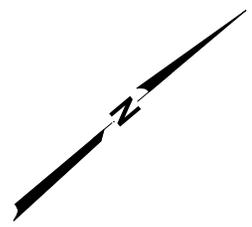
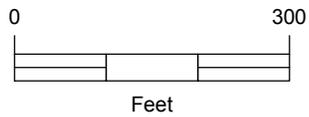


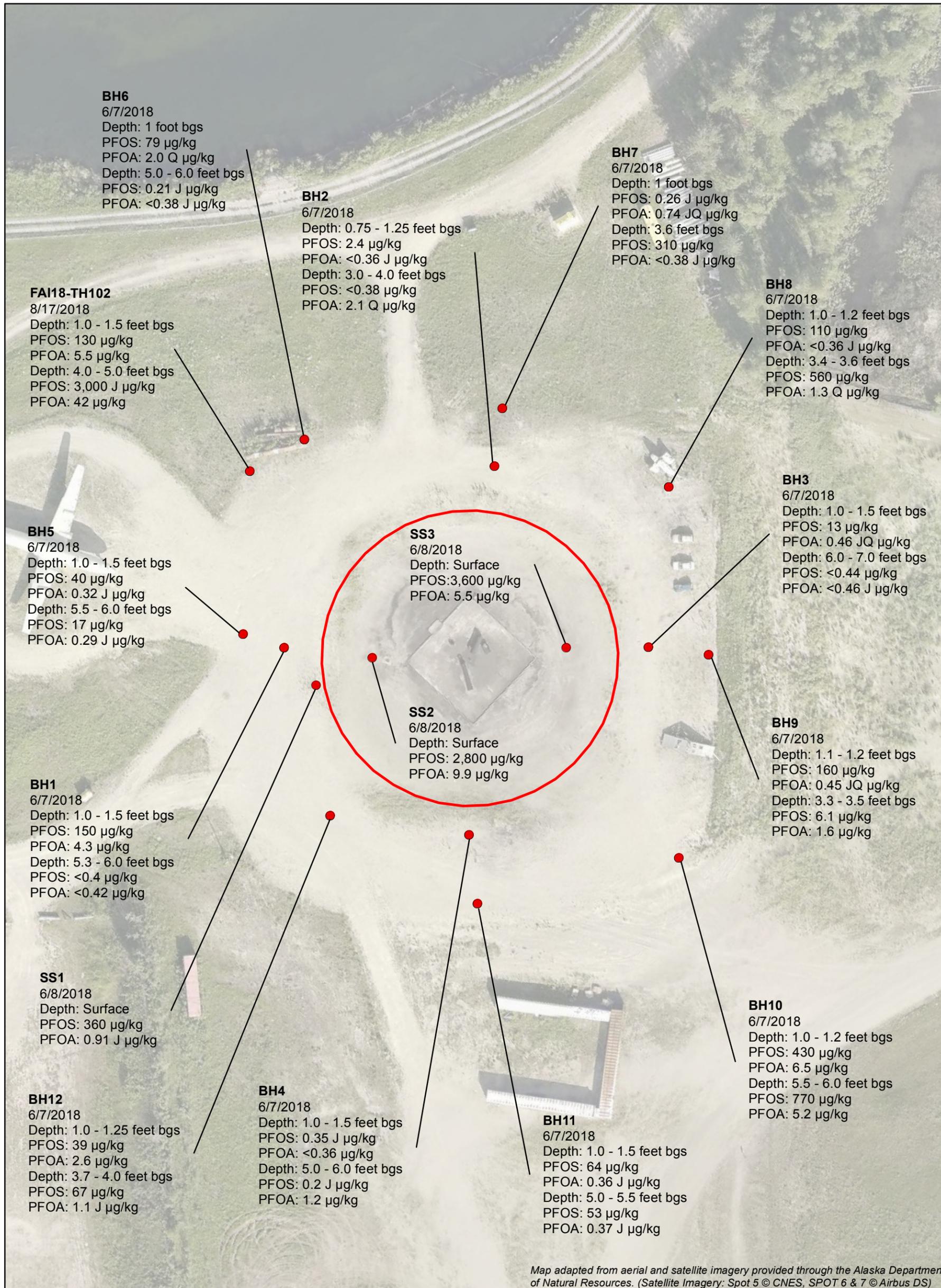
Image source: Pictometry, 2012

LEGEND

- Aircraft Rescue and Firefighting (ARFF) Training Sites
- ARFF Training Sites, Approx. Extent
- Proposed Area to be Capped
- ⊕ Proposed MW Location
- ⊕ Previous Soil Sample Locations (2018)
- ⊙ Previous MWs (1997)



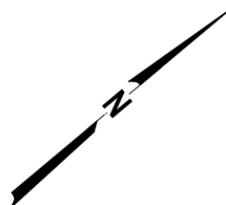
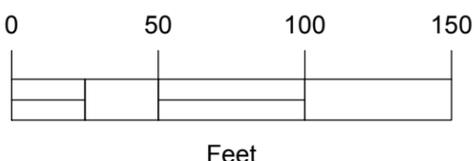
Fairbanks International Airport Fairbanks, Alaska	
FIRE TRAINING PIT VICINITY	
September 2019	1002519
SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	
Figure 2	



Map adapted from aerial and satellite imagery provided through the Alaska Department of Natural Resources. (Satellite Imagery: Spot 5 © CNES, SPOT 6 & 7 © Airbus DS)

LEGEND

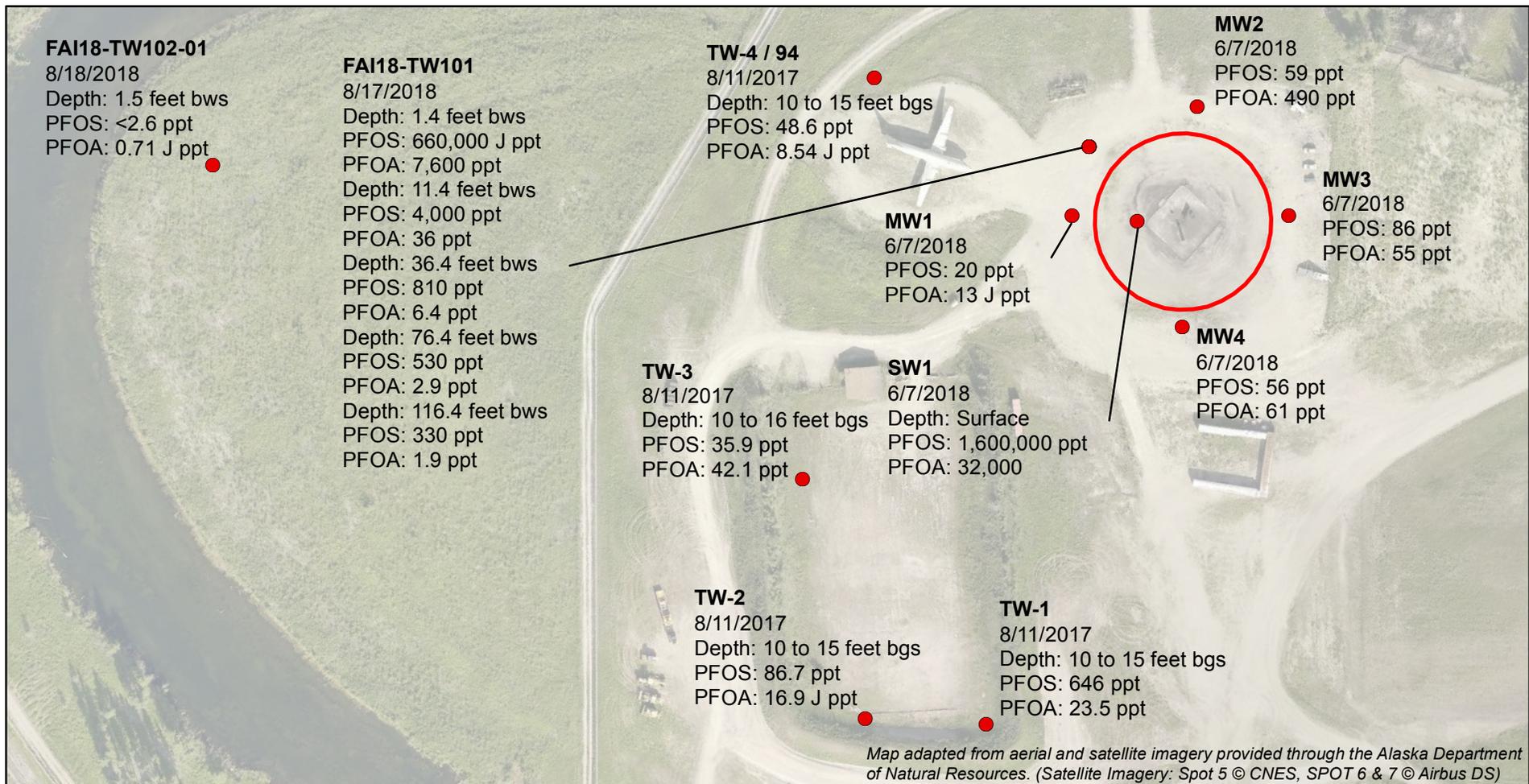
- Approximate Soil Sample Locations
- Fire Training Pit



NOTES:

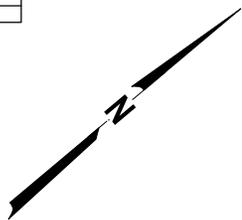
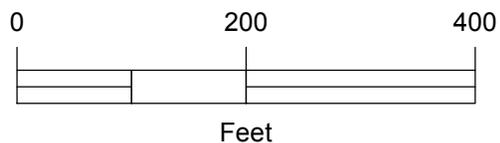
- J Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.
 - Q The sample result was affected by serious deficiencies in the ability to meet published method or project QC criteria. The presence or absence of the analyte cannot be verified. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.
- µg/kg micrograms per kilograms
bgs below ground surface

Fairbanks International Fairbanks, Alaska	
HISTORICAL SOIL RESULTS	
September 2019	102519-006
SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS	Figure 3



LEGEND

- Approximate Water Sample Locations
- Fire Training Pit



NOTES:

- J Estimated concentration. Flag applied by the laboratory.
- ppt parts per trillion
- bgs below ground surface
- bws below water surface

Fairbanks International Fairbanks, Alaska	
HISTORICAL WATER SAMPLE RESULTS	
September 2019	102519-004
SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	
Figure 4	

Figure 4

Appendix A

DEC Comment Letter and Matrices



THE STATE
of **ALASKA**
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental
Conservation
SPILL PREVENTION & RESPONSE
Contaminated Sites Program

610 University Avenue
Fairbanks, Alaska 99709
Main: 907.451.2143
Fax: 907.451.2155
www.dec.alaska.gov

File: 100.38.070
100.38.277

July 15, 2019

Alaska Department of Transportation and Public Facilities
Fairbanks International Airport
ATTN: Angela Spear
6450 Airport Way, Suite 1
Fairbanks, AK, 99709

RE: FIA – Fire Training Pit; Corrective Action Work Plan

Dear Ms. Spear:

The Alaska Department of Environmental Conservation (DEC) has received and reviewed the *Fairbanks International Airport Fire Training Pit Corrective Action Work Plan* submitted by Shannon & Wilson. The plan describes an interim removal action that will consolidate and cap a portion of the PFAS contaminated soil surrounding the current fire training pit by flattening soil berms into the lined pit and creating an impermeable cap to prevent infiltration from contacting contaminated soil and causing contaminant migration to groundwater or other media. Please see comments to the plan below and have your consultants submit a revised work plan for expedited review.

Section 4.1:

1. Please provide product specifications and/or an MSDS for drilling muds that will be used; Please ensure that drilling muds are PFAS-free.

Section 4.3:

2. If any saturated soil/sediment/sludge is to be left in place, DEC requests that it is sampled once water is removed in order to characterize contamination being left in place.

Section 4.5.1:

3. Please briefly describe the intended purpose of each part of the treatment train.
4. How much treated water will be discharged when waiting on sample results? What additional assurances can be provided to ensure that discharged water will not exceed cleanup levels for contaminants of concern (COCs) or cause a water quality violation?
5. Based on contaminant concentrations in fire pit water, at what volume of water would you expect breakthrough of contaminants in GAC vessels? Please discuss these details in the revised work plan or include a statement that they will be discussed in the final design submittal.

6. The separate submittal that includes final design of the treatment train will require DEC approval, and a permit for wastewater treatment and discharge will be required. Please coordinate with Jim Rypkema with the Wastewater Discharge Authorization program (james.rypkema@alaska.gov).

Section 4.5.2:

7. The methods for interstitial water removal will not need approval by DEC, however it may be beneficial to consult with the DEC project manager while making the field decision.

Section 4.5.4:

8. The work plan notes that soil berms will be flattened into the fire training pit. What is the approximate extent of the soils that will be pushed into the pit? Do they extend beyond the proposed cap extent? If the area of soil to be consolidated is different than the proposed cap area, please provide a figure depicting the extent.
9. Will confirmation samples be taken following soil berm flattening at areas where fresh soil will be exposed?
10. What will drive the decision on which type of cap/liner will be selected? The engineering plans should be submitted to DEC for approval prior to completion of the cap. DEC recommends considering the requirements of 18 AAC 60.025 in the final design plan.
11. As the work plan is written, it appears that clean material may be used as fill prior to installing the liner as part of the cap. DEC recommends that a liner be added above contaminated material, i.e., immediately after pushing in berms, in order to provide demarcation and separation of clean material from contaminated material.

Section 4.7:

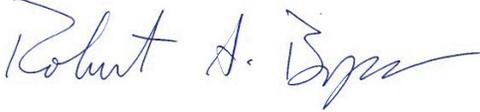
12. The work plan does not discuss the disposal of materials used in the water treatment train, including settled solids, filters, zeolite media, and GAC media. Please describe the plans for disposing of these materials.

General:

13. DEC notes that soil cleanup level exceedances were found from samples at locations that are outside the proposed extent of the cap. Of particular concern is the sample to the northwest of the proposed cap area (labeled FAI18-TH102 in figure 2), at which PFOS was detected at 3 mg/kg (note that units are incorrect on the figure), exceeding the human health cleanup level of 1.3 mg/kg, at a depth of 4-5 feet, and PFOS and PFOA were detected in exceedance of the migration to groundwater cleanup levels at depths of 1-1.5 feet and 4-5 feet. DEC strongly recommends either excavating soils at this location and adding them to the soil to be capped in the pit, or extending the cap to areas with cleanup level exceedances. This recommendation comes with the understanding that this action is not intended as a final cleanup, therefore it is not a requirement at this time, however DEC notes that future actions will be required to address soil exceedances.
14. Details regarding institutional controls and cap maintenance should be submitted in the revised work plan and/or as part of a separate deliverable that details the final, engineered cap design.

If you have any questions or concerns please feel free to contact me at (907)451-2153 or via email at robert.burgess@alaska.gov.

Sincerely,



Digitally signed by Robert Burgess
Date: 2019.07.15 13:38:29 -08'00'

Robert Burgess
Environmental Program Specialist III
DEC Contaminated Sites Program

cc (via email): Theresa Harvey, FAI/DOT
Sam Loud, DOT
Marcy Nadel, Shannon & Wilson
Kristen Freiburger, Shannon & Wilson
Janice Wiegers, DEC Contaminated Sites
Jim Rypkema, DEC Wastewater

Commenters: ADEC Contamination Sites, R. Burgess and J. Wiegers

Cmt. No.	Section	Comment/Recommendation	Response
1.	4.1, Monitoring Well Installation	Please provide product specifications and/or an MSDS for drilling muds that will be used; Please ensure that drilling muds are PFAS-free.	We do not anticipate drilling additives will be required. We have included product specifications for contingency drilling products in Appendix A and revised the text accordingly (see page 15).
2.	4.3, Saturated Soil Sampling	If any saturated soil/sediment/sludge is to be left in place, DEC requests that it is sampled once water is removed in order to characterize contamination being left in place.	We have added in-situ saturated soil samples (see Exhibit 4-1, page 17).
3.	4.5.1, Onsite Water Treatment	Please briefly describe the intended purpose of each part of the treatment train.	We have added a summary of the water treatment system to the revised text (see pages 19 and 20), and appendix containing additional detail (Appendix C, Water Treatment System Design).
4.		How much treated water will be discharged when waiting on sample results? What additional assurances can be provided to ensure that discharged water will not exceed cleanup levels for contaminants of concern (COCs) or cause a water quality violation?	We have added mid-treatment sampling for contaminants used in treatment system design, a redundant carbon vessel to each treatment train, and included supporting information documenting the assumptions used in NRC Alaska's breakthrough modeling (see pages 19 through 21, Appendix C).
5.		Based on contaminant concentrations in fire pit water, at what volume of water would you expect breakthrough of contaminants in GAC vessels? Please discuss these details in the revised work plan or include a statement that they will be discussed in the final design submittal.	NRC Alaska's Appendix C includes expected breakthrough estimates for both the organoclay and carbon vessels.
6.		The separate submittal that includes final design of the treatment train will require DEC approval, and a permit for wastewater treatment and discharge will be required. Please coordinate with Jim Rypkema with the Wastewater Discharge Authorization program.	We are coordinating with the Division of Water to obtain an excavation dewatering general permit (see page 20). We have added total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH) analysis in response to their comments (see Exhibits 3-1 and 4-1).
7.	4.5.2, Remaining Water and Saturated Soil Sampling	The methods for interstitial water removal will not need approval by DEC, however it may be beneficial to consult with the DEC project manager while making the field decision.	Noted.
8.	4.5.4, FTP Corrective Action	The work plan notes that soil berms will be flattened into the fire training pit. What is the approximate extent of the soils that will be pushed into the pit? Do they extend beyond the proposed cap extent? If the area of soil to be consolidated is different than the proposed cap area, please provide a figure depicting the extent.	We no longer intend to partially flatten the berms into the FTP, in order to minimize the potential for damaging or puncturing the existing primary barrier. A recently-completed topographic survey confirmed our assumption that the soil berms, designed to be 2 to 4 feet above existing grade, have flattened over time. The FTP cap will cover and extend beyond existing soil berms.
9.		Will confirmation samples be taken following soil berm flattening at areas where fresh soil will be exposed?	We do not plan to collect soil confirmation samples following the scaping of some berm soil into the FTP. As depicted in Figure 3, PFOS and PFOA was encountered in soil samples collected from the berm crown.
10.		What will drive the decision on which type of cap/liner will be selected? The engineering plans should be submitted to DEC for approval prior to completion of the cap. DEC recommends considering the requirements of 18 AAC 60.025 in the final design plan.	We have revised the text accordingly (see pages 22 and 23). We have selected a geomembrane liner instead of pavement based on site use, maintenance requirements, and longevity.

Alaska Department of Environmental Conservation
Comments on the *FAI Fire Training Pit Corrective Action Work Plan*
July 15, 2019

Commenters: ADEC Contamination Sites, R. Burgess and J. Wieggers

11.	4.5.4, FTP Corrective Action	As the work plan is written, it appears that clean material may be used as fill prior to installing the liner as part of the cap. DEC recommends that a liner be added above contaminated material, i.e., immediately after pushing in berms, in order to provide demarcation and separation of clean material from contaminated material.	We have revised the text accordingly (see pages 22 and 23).
12.	Section 4.7, Investigation-Derived Waste	The work plan does not discuss the disposal of materials used in the water treatment train, including settled solids, filters, zeolite media, and GAC media. Please describe the plans for disposing of these materials.	We have expanded our discussion of investigation-derived waste to address water-treatment waste products (see page 24).
13.	General	DEC notes that soil cleanup level exceedances were found from samples at locations that are outside the proposed extent of the cap. Of particular concern is the sample to the northwest of the proposed cap area (labeled FAI18-TH102 in figure 2), at which PFOS was detected at 3 mg/kg (note that units are incorrect on the figure), exceeding the human health cleanup level of 1.3 mg/kg, at a depth of 4-5 feet, and PFOS and PFOA were detected in exceedance of the migration to groundwater cleanup levels at depths of 1-1.5 feet and 4-5 feet. DEC strongly recommends either excavating soils at this location and adding them to the soil to be capped in the pit, or extending the cap to areas with cleanup level exceedances. This recommendation comes with the understanding that this action is not intended as a final cleanup, therefore it is not a requirement at this time, however DEC notes that future actions will be required to address soil exceedances.	We are aware soil exceeding the migration-to-groundwater soil-cleanup levels for PFOS and PFOA, noted in Exhibit 3-1, has been identified outside the proposed cap extent. We have corrected the units for soil boring <i>FAI18-TH102</i> in Figure 2, and added a limited soil excavation at this location (see Exhibit 4-1, page 17). The 4-to-5-foot soil sample from this boring exceeds the under-40-inch zone human health soil-cleanup level of 1.6 mg/kg for PFOS, in addition to the migration-to-groundwater level.
14.		Details regarding institutional controls and cap maintenance should be submitted in the revised work plan and/or as part of a separate deliverable that details the final, engineered cap design.	We are preparing an addendum to this Work Plan that will include cap design drawings, and have revised the text accordingly (see pages 22 and 23).

Commenters: ADEC Contamination Sites, R. Burgess and J. Wieggers. ADEC Solid Waste, D. Buteyn and N. Lehner

Cmt. No.	Comment/Recommendation	Response
1.	Please discuss available information on the distance between the high groundwater table and the bottom of the bottom liner as well as between the high groundwater table and the high point of the bottom liner. Because there will be a gap between the bottom and top liners, DEC is concerned that a high groundwater table could overtop the bottom liner and allow water to accumulate in the waste material. Also, if a high groundwater table rises above the lowest point of the bottom liner, and holes or weak spots in the liner could allow water to breach the liner and infiltrate the waste materials. Based on your knowledge of groundwater elevation in this area, are either if these scenarios possible, and if so, how likely are they to occur?	The typical, seasonal high groundwater level is likely near the lowest point of the existing 80-mil geomembrane liner. Correcting for differences in vertical datum between historic and modern topographic surveys, we estimate the typical July or August seasonal high groundwater level to be within one foot of the existing, bottom geomembrane (Glass et. al., 1996; Claar & Lily, 1997). In June 2018, the FAI's consultant encountered groundwater less than two feet below the existing geomembrane. The FAI's consultant also concluded the existing geomembrane is likely intact based on the concentrations of contaminants detected in the ponded water, compared with those in the groundwater outside the geomembrane (SLR, 2018). We are unable to predict the likelihood of groundwater entering the training pit by overtopping the geomembrane berms. Should either scenario occur after cap construction, the FAI can remove infiltrated groundwater through the extended sump access port.
2.	The design drawings include specifications of a 40 mil top liner but do not list the permeability. In the workplan, please discuss the known permeability of the 40 mil top liner and compare it to the permeability of the bottom liner. If the top liner is more permeable to water than the bottom lines, consider using two 80 mil liners welded together. Based on experience with lined landfills in the state, DEC believes the liners can be welded together effectively.	The 40-mil, Layfield 6040x Enviro Liner® geomembrane included in the cap design drawings has an equivalent effective hydraulic conductivity to that of the 80-mil primary fire training pit barrier installed in 1993, per Section 4.5.5 of the revised Work Plan. The existing and proposed geomembranes both have an effective hydraulic conductivity on the order of 10 ⁻¹³ centimeters per second.
3.	The 20 mil liner that will be placed between contaminated material and clean engineered fill should be graded and extended beyond the edge of the existing bottom liner so water cannot accumulate on top of the liner. Alternatively, if the purpose is only to provide a physical demarcation of the bottom of clean fill, the impermeable liner could be replaced with a permeable fabric.	The purpose of the secondary geomembrane was to separate contaminated FTP contents from offsite fill. We will replace the 20-mil geomembrane with non-woven geotextile fabric in the revised cap design.

Robert Burgess - Comments on:
Fairbanks International Airport Fire Training Pit Corrective Action Work Plan REV01

Cmnt No.	Page	Section	Comment / Recommendation	Response
1.	17	4.3.2	The work plan states that saturated soil samples will be analyzed for site COCs and TCLP metals. Why are other COCs not being analyzed with TCLP? Will any of the proposed work change if any COCs exceed thresholds for RCRA hazardous waste?	We have revised the Work Plan to reflect that in-situ saturated soil samples will be analyzed for PFOS, PFOA, DRO, RRO, and VOCs. Saturated soil samples will be analyzed for TCLP metals, in addition to these analytes, only if offsite disposal is required.
2.	21	4.5.3	The work plan states, "Upon receipt of the analytical results, NRC will transport and dispose of the soil containers in the appropriate manner." The "appropriate manner" is not defined, presumably because the decision to excavate has not been made. Please either add a discussion of various possibilities for disposal, or include a note that written approval will be sought from the DEC project manager prior to transport and disposal of any saturated soil that is removed from the fire training pit (FTP).	We do not intend to excavate and dispose of saturated soil offsite. However, if offsite disposal is required, NRC will transport and dispose of said material to an appropriate treatment, storage, and disposal (TSD) facility in accordance with federal, state, and local regulations, depending on the results of analytical sampling. If offsite disposal is required, we will seek written approval from DEC prior to transporting it from FAI property.
3.	22	4.5.5	The workplan states, "Operators will use caution when working near the primary barrier to avoid damaging it." In the unlikely event that the barrier is damaged, are there contingency plans in place for its repair?	Operators will use a combination of hand tools and a small excavator to probe for the existing 80-mil geomembrane near the peak of the FTP berm. In the unlikely event the geomembrane is damaged at one or more of these locations, we will document it in our field notes and with photographs. If the barrier is damaged, we do not anticipate it will impact drainage of liquid into the FTP sump. The proposed FTP cap will extend beyond the existing geomembrane. We therefore do not plan to attempt to patch the exiting geomembrane if it is damaged.
4.	22-23	4.5.5	This version of the workplan includes discussion of cap design specifications that were submitted separately and have been discussed and approved (e.g., "we expect the upper geomembrane will be...").	We have amended Section 4.5.5. to reflect the approved FTP cap design.
5.	23	4.5.6	Typo "animal burros"	We have revised the text accordingly.
6.	23	4.5.6	Please expand this section or include a separate section to propose institutional controls (ICs) for the cap. ICs should include frequent groundwater elevation monitoring for a period of time to evaluate the degree of groundwater fluctuation, an operation and maintenance (O&M) schedule to include monitoring of the water level in the sump (and removal of water if over 12 inches), flagging or demarcation of the cap area for site users, and any additional controls needed to ensure the cap maintains effectiveness and is not a threat to human health or the environment or a potential source of continued contamination. Alternatively, a statement can be made that an addendum will be submitted to propose ICs and O&M.	Section 4.5.6, Future FTP Vicinity Use, has been amended to include additional ICs and an O&M plan for the FTP cap. We do not anticipate the ICs will impact cap construction.
7.	--	General	Please include the final SWPP, final design drawings, the email chain discussing design drawings, and a detailed field schedule as attachments to the final work plan.	The revised Work Plan includes the final cap design drawings (Appendix E), cap design comment matrix, and our August 23, 2019 stormwater pollution prevention plan (SWPPP; Appendix F). We have provided a field schedule by e-mail and will coordinate with the DEC project manager to schedule site visits.

Appendix B

Site Safety and Health Plan

APPENDIX B: SITE SAFETY AND HEALTH PLAN

1.1 Applicability and Purpose

Shannon & Wilson prepared this Site Safety and Health Plan (SSHP) for site characterization activities at the Fairbanks International Airport (FAI) Fire Training Pit (FTP) and vicinity. The purpose of this SSHP is to protect the health and safety of field personnel from physical and chemical hazards associated with work at this site.

The provisions of this plan apply to Shannon & Wilson personnel who will potentially be exposed to safety and/or health hazards during this investigation. Shannon & Wilson employees are covered under our Corporate Safety and Health Program. General safety and health requirements described in that program will be met. Each Shannon & Wilson employee on the site will complete the personal acknowledgement form documenting they have read and understand this SSHP and agree to abide by its requirements. A copy of this SSHP will be kept on site throughout the duration of the corrective action field effort.

1.2 Site Hazard Analysis

There are two categories of hazards that may occur during the field work: potential chemical exposure hazards and physical hazards associated with site characterization activities. These hazards are discussed below.

1.2.1 Chemical-Exposure Hazards

Contaminated soil may be encountered during site exploration activities. Perfluoroalkyl-substances (PFAS) and petroleum constituents are believed to be the primary contaminants of potential concern and may be encountered in soil and water at unknown concentrations. Shannon & Wilson personnel will implement skin protection when they are to come into contact with potentially contaminated soil or water. Field personnel will wear work gloves or nitrile gloves as needed, and Level D personal protective equipment. Field personnel will not require respiratory protection based on our current understanding of site conditions and scope of services.

1.2.2 Physical Hazards

Primary physical hazards associated with site characterization activities include: being struck by equipment or other mechanically related injuries; temperature stress; lifting, slipping, tripping, falling; and risk of eye injuries. The best means of protection against accidents related to physical hazards are careful control of equipment activities in the planned work area, and use of experienced and safety- and health-trained field personnel.

Field personnel will not enter confined spaces for site characterization activities, nor will they enter trenches or excavations greater than four feet in depth.

1.2.2.1 Heavy Equipment

Our personnel will be working in close proximity to a backhoe, excavator, drill rig, and/or other heavy equipment during the project. Personnel will exercise caution when working around heavy equipment and maintain a safe distance from moving equipment. Eye contact will be made with the operator prior to entering the work area, and personnel within the work area will remain within sight of the operator at all times. A hardhat, high-visibility vest, safety-toe boots, and hearing protection will be worn whenever working around heavy equipment.

1.2.2.2 Slips, Trips, and Falls

The most common hazards on a job site are typically slips, trips, and falls. These hazards will be reduced through the following practices:

- Personnel will stay alert.
- All access-ways will be kept free of materials, supplies, and obstructions at all times.
- Tools and other materials will be located so as not to cause tripping or other hazards.
- Personnel should be aware of potential tripping hazards associated with vegetation, debris, and uneven ground.
- Personnel should be aware of limitations imposed by work clothing and personal protective equipment (PPE).

The project site may be inherently hazardous due to the potential presence of rain, snow, and ice, which can alter the character of the ground surface. The risk for slips, trips, and falls by site workers is increased due to wet surfaces; therefore, workers will use caution when walking at the site.

1.2.2.3 Insects and Animals

During the summer months mosquitoes and other insects are common, particularly near areas predominantly covered with vegetation. Wearing PPE should be sufficient to protect site workers. The site is located within a controlled area on FAI property; therefore animals such as loose dogs and moose are unlikely.

1.2.2.4 Temperature Stress

Wearing PPE may put a worker at risk of developing heat stress; however, since the field screening activities will be conducted in Level D PPE the risk of heat stress is considered low. Field personnel will be cautious to hydrate adequately.

1.2.2.5 Noise Hazards

Noise is considered a probably physical hazard given the proximity of the FTP to an active airport runway. Additionally, field personnel will be working around heavy equipment for a portion of this effort. Hearing protection will be used as necessary by field staff when near heavy equipment, drill rigs, or other loud equipment. Disposable earplugs will be used to reduce noise levels. Disposable earplugs will have the capacity to reduce noise by at least 30 decibels (dB), and below the OSHA PEL (eight-hour TWA) of 85 dB.

1.2.2.6 Lifting Hazards

Moving coolers of analytical samples or other heavy objects presents a lifting hazard. Personnel will use proper lifting techniques and obtain assistance when lifting objects weighing more than 40 pounds.

1.2.2.7 Congested Area

The site may become congested during project activities in and near the vehicle track. Field personnel will observe the speed and frequency of traffic proximal to the work site. We will use appropriate cones, barricades, or signs to secure the work area when required.

1.2.3 Other Hazards

Underground utilities are present at the site. We will request utility locates prior to conducting any ground penetrating work.

Biological or ionizing radiation hazards are not expected to be present.

1.3 Personnel Responsibilities, Training, and Medical Surveillance

1.3.1 Assignment of Responsibilities

We are responsible for understanding and complying with the requirements of this SSHP. Following is a list of responsibilities of all Shannon & Wilson personnel working on the site:

- Review and follow this SSHP.
- Attend and participate in safety meetings.

- Take appropriate action as described in this SSHP regarding accidents, fires, or other emergency situations.
- Take all reasonable precautions to prevent injury to themselves and their fellow workers.
- Perform only those tasks they believe they can do safely, and immediately report any accidents or unsafe conditions to Shannon & Wilson's Project Manager or Office Health and Safety Manager.
- Halt work, by themselves or by others, when they observe an unsafe act or potentially unsafe working condition.
- Report accidents, illnesses, and near-misses to the local contact and to Shannon & Wilson's Fairbanks office Health and Safety Manager.

1.3.2 Personnel Training

Shannon & Wilson personnel performing activities on this site and under this plan have completed the appropriate training requirements specified in 29 CFR 1910.120(e). Each individual has completed an annual eight-hour refresher-training course and/or initial 40-hour training course within the last year.

A personal acknowledgement form will be completed by field personnel prior to commencing field activities. This acknowledgment form will document that they have read and understand this SSHP.

1.3.3 Medical Surveillance Program

All field personnel performing activities on this site covered by this SSHP have undergone baseline and annual physical/medical examinations as part of Shannon & Wilson's Corporate Health and Safety Program. All field personnel are active participants in Shannon & Wilson's Medical Monitoring Program or in a similar program, which complies with 29 CFR 1910.120(f).

1.4 Personal Protective Equipment

PPE will be required during the course of the field work. PPE selection will be based primarily on work-task requirements and potential exposure. Field personnel will use Level D protective equipment during normal work activities. Personnel are trained in the use of PPE that is, or may be, required. All personnel shall wear Level D PPE as a minimum:

- standard work clothes or cotton overalls;
- reflective, high-visibility safety vest;

- safety-toe boots;
- safety glasses;
- gloves; and
- hard hat.

Disposable nitrile gloves will be worn during any activity that may require dermal contact with potentially contaminated media. Hearing protection will be worn as needed.

1.5 Decontamination Procedures

Equipment decontamination procedures are necessary for any reusable equipment that comes into contact with contaminated soil and/or water. Decontamination procedures are documented within the body of this work plan.

Shannon & Wilson will conduct all site characterization activities in Level D PPE. For this reason, personnel will not be decontaminated when leaving the work site unless gross visual contamination of protective clothing is present.

When decontamination is necessary, it will consist of the following:

- Personnel shall be instructed in proper decontamination technique. This entails removal of protective equipment in an “inside-out” manner. Removal of contaminants from protective clothing or equipment by blowing, shaking, or other means that may disperse material into the air is prohibited.
- Personnel protective clothing that has been removed shall remain at the decontamination station pending personnel re-donning the clothing. At the conclusion of site work each day, PPE will be placed in trash bags for off-site disposal.
- Personnel will not exit the work site until contaminated clothing and equipment have been removed and employees have washed their hands and face with soap and water. A washtub with soap and water will be available to personnel as they exit the work site.
- Employees will wash their hands and face with soap and water before eating, drinking, smoking, or applying cosmetics. These activities will be restricted to designated rest area(s).
- Decontaminated items will be visually inspected for residual contamination to determine if decontamination procedures are effective.

1.6 Accidents and Emergencies

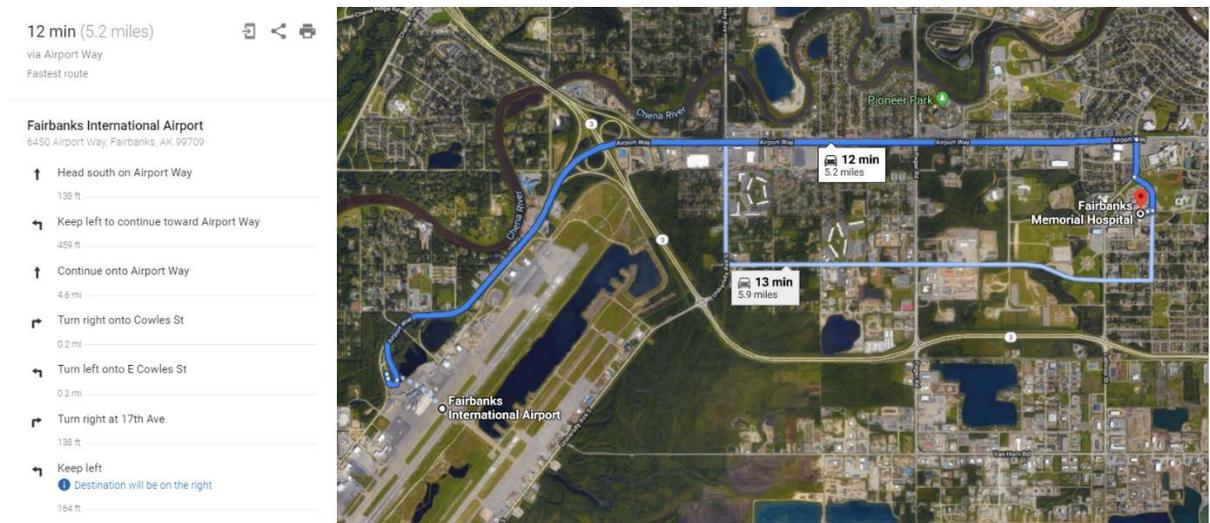
Shannon & Wilson field personnel are current in first aid and cardiopulmonary resuscitation (CPR) training. At a minimum, the following site safety equipment and first aid supplies shall be available in the field:

- PPE and clothing specialized for known site hazards;
- first aid kit;
- portable eye wash; and
- clean water in portable containers.

The primary emphasis of any health and safety plan is accident prevention. If an injury or illness occurs during the course of field work, the severity of the problem will dictate the level of response. Minor injuries or illness will be addressed with basic first aid measures as recommended by a registered nurse through our corporate Medcor service (1-800-775-5866).

FAI emergency services staff are available 24/7. If an emergency arises field personnel may call airport dispatch at (907) 474-2530 to reach FAI Police and Fire. More serious injuries may require assistance from the emergency medical staff at Fairbanks Memorial Hospital at 1650 Cowles Street, Fairbanks AK 99701. The telephone number for all emergencies is 911; the telephone number for the hospital is (907) 452-8181. We will keep field phones easily accessible in the case of an emergency.

Exhibit 1-1: Directions from Fairbanks International Airport to Fairbanks Memorial Hospital



Shannon & Wilson's Corporate Health and Safety Program requires accident reporting when there is a site-related accident, near-miss incident, or medical emergency. If an employee is treated by medical personnel, the medical attendant will complete an Incident Medical Treatment Documentation form. Completion of an Alaska Department of Labor Report of Occupational Injury or Illness is also required within 10 days for any work-related injury or illness.

1.7 General Site Safety Requirements

The following measures are designed to augment the specific health and safety guidelines provided in this plan:

- Field personnel will refrain from smoking, eating, drinking, or chewing tobacco while in work zones or a potentially contaminated area.
- Field personnel should avoid contact with potentially contaminated surfaces such as: walking through puddles or pools of liquid; kneeling on the ground; or leaning, sitting, or placing equipment on contaminated soil or containers.
- Field personnel will be familiar with procedures for initiating an emergency response.
- Hazard assessment is a continual process; personnel must be aware of their surroundings and any chemical/physical hazards present.
- Personnel in the exclusion area shall be the minimum number necessary to perform work tasks in a safe and efficient manner.
- Equipment contacting potentially contaminated soils must be decontaminated or properly discarded before leaving the site.

Field personnel will be familiar with the physical characteristics of the work site including wind direction, site access, and location of communication devices and safety equipment.

SITE SAFETY AND HEALTH PLAN

PERSONAL ACKNOWLEDGMENT FORM

FAI FIRE TRAINING PIT CORRECTIVE ACTION FAIRBANKS, AK

I have reviewed this document and understand its contents and requirements. A copy of the above-referenced document has been made available to me. I agree to abide by the requirements of this Site Safety and Health Plan.

Signature

Name (printed)

Date

Representing

Signature

Name (printed)

Date

Representing

Signature

Name (printed)

Date

Representing



QUIK-GEL®

Viscosifier

Description QUIK-GEL® viscosifier is an easy-to-mix, finely ground (200-mesh), premium-grade, high-yielding Wyoming sodium bentonite. QUIK-GEL viscosifier imparts viscosity, fluid loss control and gelling characteristics to freshwater-based drilling fluids.

Applications/Functions *The use of QUIK-GEL viscosifier promotes or assists the following:*

- Mix with fresh water to form a low-solids drilling fluid for general drilling applications
- Viscosify water-based drilling fluids
- Reduce filtration by forming a thin filter cake with low permeability
- Improve hole-cleaning capability of drilling fluids
- Mix with foaming agents to make "gel/foam" drilling fluids for air/foam drilling applications

Advantages

- NSF/ANSI Standard 60 certified
- Single-sack product and cost effective
- Can provide lubricity for drilling fluids
- Can mix easily and quickly reaches maximum viscosity
- Can yield more than twice as much mud of the same viscosity as an equal weight of API oilfield grades of bentonite

Typical Properties

- Appearance Grey to tan powder
- Bulk density, lb/ft³ 68 to 72 (compacted)
- pH (3% solution) 8.9

Recommended Treatment Mix slowly through a jet mixer or sift slowly into the vortex of a high-speed stirrer.

Approximate Amounts of QUIK-GEL viscosifier Added to Freshwater			
Application/Desired Result	lb/100 gal	lb/bbl	kg/m ³
Normal Drilling Conditions	15-25	6-10	18-30
Unconsolidated Formations	35-50	15-21	42-60
Make-Up For Gel/Foam Systems	12-15	5-7	14-18

- 1 bbl = 42 U.S. gallons

Additional Information**Note:**

- For optimum yield, pre-treat make-up water with 1-2 pounds of soda ash per 100 gallons of water (1.2-2.4 kg/m³).

Packaging

QUIK-GEL viscosifier is packaged in 50-lb (22.7-kg) multiwall paper bags.

Availability

QUIK-GEL viscosifier can be purchased through any Baroid Industrial Products Retailer. To locate the Baroid IDP retailer nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

Baroid Industrial Drilling Products**Product Service Line, Halliburton**

3000 N. Sam Houston Pkwy. E.

Houston, TX 77032

Customer Service (800) 735-6075 Toll Free (281) 871-4612

Technical Service (877) 379-7412 Toll Free (281) 871-4613

SAFETY DATA SHEET

Product Trade Name: QUIK-GEL®

Revision Date: 14-Aug-2017

Revision Number: 20

1. Identification

1.1. Product Identifier

Product Trade Name: QUIK-GEL®
Synonyms None
Chemical Family: Mineral
Internal ID Code HM003747

1.2 Recommended use and restrictions on use

Application: Viscosifier
Uses advised against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000

Halliburton Energy Services, Inc.
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Carcinogenicity	Category 1A - H350
Specific Target Organ Toxicity - (Repeated Exposure)	Category 1 - H372

2.2. Label Elements

Hazard Pictograms



Signal Word:	Danger
Hazard Statements	H350 - May cause cancer by inhalation H372 - Causes damage to organs through prolonged or repeated exposure if inhaled
Precautionary Statements	
Prevention	P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood P260 - Do not breathe dust/fume/gas/mist/vapors/spray P264 - Wash face, hands and any exposed skin thoroughly after handling P270 - Do not eat, drink or smoke when using this product P280 - Wear protective gloves/protective clothing/eye protection/face protection
Response	P308 + P313 - IF exposed or concerned: Get medical advice/attention P314 - Get medical attention/advice if you feel unwell
Storage	P405 - Store locked up
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Hazards not otherwise classified

This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface. Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz. A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer. In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Crystalline silica, quartz	14808-60-7	1 - 5%	Carc. 1A (H350) STOT RE 1 (H372)

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Ingestion	Rinse mouth with water many times.

4.2 Most important symptoms/effects, acute and delayed

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

None anticipated

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Keep from excessive heat. Do not reuse empty container. Product has a shelf life of 36 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Crystalline silica, quartz	14808-60-7	TWA: 50 µg/m ³	TWA: 0.025 mg/m ³

Exposures to crystalline silica that result from bentonite or other sorptive clays are exempt from the PEL in §1910.1053. The PEL in §1910.1000 Table Z-3 (i.e., the formula that is approximately equivalent to 100 µg/m³) applies to occupational exposures to respirable crystalline silica from sorptive clays.

8.2 Appropriate engineering controls

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

Hand Protection Normal work gloves.

Skin Protection Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

Eye Protection Wear safety glasses or goggles to protect against exposure.

Other Precautions None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Powder **Color** Various
Odor: Mild earthy **Odor** No information available
Threshold:

Property	Values
Remarks/ - Method	
pH:	8-10
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.6
Water Solubility	Partly soluble
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) No data available

10. Stability and Reactivity

10.1. Reactivity
 Not expected to be reactive.

10.2. Chemical stability
 Stable

10.3. Possibility of hazardous reactions
 Will Not Occur

10.4. Conditions to avoid
 None anticipated

10.5. Incompatible materials
 Hydrofluoric acid.

10.6. Hazardous decomposition products
 Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

11. Toxicological Information

11.1 Information on likely routes of exposure
Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation

Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

- Eye Contact**
- Skin Contact**
- Ingestion**

May cause mechanical irritation to eye.
 None known.
 None known.

Chronic Effects/Carcinogenicity

Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology

Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2). There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface (Wendlandt et al., 2007; Hochella and Muryama, 2010; SMI, 2014). Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz (Geh et al., 2006; Creutzenberg et al., 2008). A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer (Waxweiler et al., 1988; ACGIH, 1991; USEPA, 1996; IARC, 2005). In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Crystalline silica, quartz	14808-60-7	> 15000 mg/kg (human)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin

Substances	CAS Number	Serious eye damage/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the eye

Substances	CAS Number	Skin Sensitization
Crystalline silica, quartz	14808-60-7	No information available.

Substances	CAS Number	Respiratory Sensitization
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	Mutagenic Effects
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.

Substances	CAS Number	Carcinogenic Effects
Crystalline silica, quartz	14808-60-7	Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure.

Substances	CAS Number	Reproductive toxicity
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	STOT - single exposure
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Crystalline silica, quartz	14808-60-7	Not applicable

12. Ecological Information

12.1. Toxicity

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Crystalline silica, quartz	14808-60-7	EC50 (72 h) =440 mg/L (Selenastrum capricornutum)(similar substance)	LL0 (96 h) =10000 mg/L (Danio rerio)(similar substance)	No information available	LL50 (24 h) >10000 mg/L (Daphnia magna)(similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Crystalline silica, quartz	14808-60-7	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Crystalline silica, quartz	14808-60-7	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Crystalline silica, quartz	14808-60-7	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

Disposal methods If practical, recover and reclaim, recycle, or reuse by the guidelines of an approved local reuse program. Should contaminated product become a waste, dispose of in a licensed industrial landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information

US DOT

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information

US Regulations

US TSCA Inventory All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Crystalline silica, quartz	14808-60-7	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Crystalline silica, quartz	14808-60-7	Not applicable

EPA SARA (311,312) Hazard Class

Chronic Health Hazard

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Crystalline silica, quartz	14808-60-7	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Crystalline silica, quartz	14808-60-7	Not applicable

EPA RCRA Hazardous Waste Classification

If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

California Proposition 65

Substances	CAS Number	California Proposition 65
Crystalline silica, quartz	14808-60-7	carcinogen

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Crystalline silica, quartz	14808-60-7	Carcinogen Extraordinarily hazardous	1660	Present

NFPA Ratings: Health 0, Flammability 0, Reactivity 0

HMIS Ratings: Health 0*, Flammability 0, Physical Hazard 0, PPE: E

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date: 14-Aug-2017

Reason for Revision SDS sections updated:
2
8
11

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
d - day
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
h - hour
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The

information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

End of Safety Data Sheet



QUIK-GROUT®

One-Sack Borehole Grouting and Plugging Material

Description QUIK-GROUT® one-sack grouting and plugging material is a sodium bentonite-based grout designed for grouting water wells, monitoring wells, and for plugging boreholes. QUIK-GROUT grouting and plugging material does not contain any polymers.

Applications/Functions

- Can seal or grout plastic and steel casings
- Can seal downhole instrumentation in test and observation holes
- Can plug abandoned boreholes and earthen cavities
- Not recommended for use as a cement additive

Advantages

- Easy-to-use one sack grout
- Dust-free mixing
- Can be mixed and pumped using conventional rig equipment
- Rehydratable
- No heat of hydration
- Can develop a 20% active solids slurry weighing 9.4 lb/gal (1.13 g/cm³) with hydrostatic gradient of 0.489 psi/ft (11.1 kPa/meter)
- Can create a low permeability seal to prevent entry of contaminants from the surface
- Can develop a permanent, flexible seal to prevent commingling between aquifers
- NSF/ANSI Standard 60 certified

Typical Properties

• Appearance	Beige to tan granules
• Specific gravity	2.6
• pH (8% slurry)	8.2
• Electrical Resistivity	0.98 ohm-meter
• Yield Volume	26.3 gallons per 50-lb sack 99.5 liters per 23-kg sack
• Permeability (in fresh water)	2.5×10^{-8} cm/sec

Recommended Treatment For maximum results, pre-treat make-up water with Soda Ash to less than or equal to 100 mg/l total hardness and to a pH range of 8.5 – 9.5.

The recommended mixing rate is one 50-lb (23-kg) sack of QUIK-GROUT grouting and plugging material per 24 gallons (91 liters) of fresh water to create a 20% active solids by weight grout with a density of 9.4 lb/gal or 1.13 g/cm³.

**Recommended Mixing
Procedure**

Do not over mix and do not use a centrifugal pump.

1. Using a mixing device, blend one sack of QUIK-GROUT® grouting and plugging material into 24 gallons (91 liters) of fresh water. Rate of addition should be about 20 to 30 seconds per 50-lb (23-kg) bag.

Note: The resulting slurry should have an oatmeal consistency containing unyielded or partially yielded bentonite.

2. Pump slurry through tremie pipe into hole without delay. Grout slurry should be pumped through tremie pipe from bottom of interval to surface to ensure effective displacement. Maintain submergence of tremie pipe a minimum of 10-feet within grout column for uniform displacement.

Additional Information

- The grouting material and method selected will depend upon the specific subsurface environment including all prevailing geological and hydrological factors and any existing regulatory requirements. The grouting process may not be complete until the grout is static at the desired level.
- The use of bentonite may not be appropriate in environments where the formation water chemistry has a total hardness greater than 500 parts per million and/or a chloride content of greater than 1500 parts per million.
- If questions arise regarding subsurface environments it is always best to consult your local Baroid IDP representative to determine if the Baroid product of choice is appropriate for the given conditions.

Packaging

QUIK-GROUT grouting and plugging material is packaged in 50-lb (23-kg) multiwall paper bags, containing 0.7 ft³ (0.02 m³).

Availability

QUIK-GROUT grouting and plugging material can be purchased through any Baroid Industrial Drilling Products Retailer. To locate the retailer nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

Baroid Industrial Drilling Products

Product Service Line, Halliburton

3000 N. Sam Houston Pkwy E.

Houston, TX 77032

Customer Service (800) 735-6075 Toll Free (281) 871-4612

Technical Service (877) 379-7412 Toll Free (281) 871-4613

SAFETY DATA SHEET

Product Trade Name: QUIK-GROUT®

Revision Date: 14-Aug-2017

Revision Number: 16

1. Identification

1.1. Product Identifier

Product Trade Name: QUIK-GROUT®
Synonyms None
Chemical Family: Mineral
Internal ID Code HM003748

1.2 Recommended use and restrictions on use

Application: Grouting Material
Uses advised against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000

Halliburton Energy Services, Inc.
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Carcinogenicity	Category 1A - H350
Specific Target Organ Toxicity - (Repeated Exposure)	Category 1 - H372

2.2. Label Elements

Hazard Pictograms



Signal Word:	Danger
Hazard Statements	H350 - May cause cancer by inhalation H372 - Causes damage to organs through prolonged or repeated exposure if inhaled
Precautionary Statements	
Prevention	P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood P260 - Do not breathe dust/fume/gas/mist/vapors/spray P264 - Wash face, hands and any exposed skin thoroughly after handling P270 - Do not eat, drink or smoke when using this product P280 - Wear protective gloves/protective clothing/eye protection/face protection
Response	P308 + P313 - IF exposed or concerned: Get medical advice/attention P314 - Get medical attention/advice if you feel unwell
Storage	P405 - Store locked up
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Hazards not otherwise classified

This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface. Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz. A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer. In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Crystalline silica, quartz	14808-60-7	1 - 5%	Carc. 1A (H350) STOT RE 1 (H372)

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Ingestion	Under normal conditions, first aid procedures are not required.

4.2 Most important symptoms/effects, acute and delayed

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

None anticipated

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Crystalline silica, quartz	14808-60-7	TWA: 50 µg/m ³	TWA: 0.025 mg/m ³

Exposures to crystalline silica that result from bentonite or other sorptive clays are exempt from the PEL in §1910.1053. The PEL in §1910.1000 Table Z-3 (i.e., the formula that is approximately equivalent to 100 µg/m³) applies to occupational exposures to respirable crystalline silica from sorptive clays.

8.2 Appropriate engineering controls

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended:
Dust/mist respirator. (N95, P2/P3)

Hand Protection Normal work gloves.

Skin Protection Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

Eye Protection Wear safety glasses or goggles to protect against exposure.

Other Precautions None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Solid **Color** Beige to Tan
Odor: Odorless **Odor** No information available
Threshold:

Property	Values
Remarks/ - Method	
pH:	8-10
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.5
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) No data available

10. Stability and Reactivity

10.1. Reactivity
 Not expected to be reactive.

10.2. Chemical stability
 Stable

10.3. Possibility of hazardous reactions
 Will Not Occur

10.4. Conditions to avoid
 None anticipated

10.5. Incompatible materials
 Copper and copper alloys. Zinc.

10.6. Hazardous decomposition products
 Oxides of sulfur. Oxides of nitrogen. Ammonia. Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

11. Toxicological Information

11.1 Information on likely routes of exposure
Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

Eye Contact May cause mechanical irritation to eye.

Skin Contact None known.

Ingestion None known.

Chronic Effects/Carcinogenicity Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology

Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2). There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface (Wendlandt et al., 2007; Hochella and Muryama, 2010; SMI, 2014). Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz (Geh et al., 2006; Creutzenberg et al., 2008). A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer (Waxweiler et al., 1988; ACGIH, 1991; USEPA, 1996; IARC, 2005). In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Crystalline silica, quartz	14808-60-7	> 15000 mg/kg (human)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin

Substances	CAS Number	Serious eye damage/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the eye

Substances	CAS Number	Skin Sensitization
Crystalline silica, quartz	14808-60-7	No information available.

Substances	CAS Number	Respiratory Sensitization
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	Mutagenic Effects
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.

Substances	CAS Number	Carcinogenic Effects
Crystalline silica, quartz	14808-60-7	Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure.

Substances	CAS Number	Reproductive toxicity
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	STOT - single exposure
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Crystalline silica, quartz	14808-60-7	Not applicable

12. Ecological Information

12.1. Toxicity

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Crystalline silica, quartz	14808-60-7	EC50 (72 h) =440 mg/L (Selenastrum capricornutum)(similar substance)	LL0 (96 h) =10000 mg/L (Danio rerio)(similar substance)	No information available	LL50 (24 h) >10000 mg/L (Daphnia magna)(similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Crystalline silica, quartz	14808-60-7	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Crystalline silica, quartz	14808-60-7	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Crystalline silica, quartz	14808-60-7	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

Disposal methods If practical, recover and reclaim, recycle, or reuse by the guidelines of an approved local reuse program. Should contaminated product become a waste, dispose of in a licensed industrial landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information

US DOT

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information

US Regulations

US TSCA Inventory All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Crystalline silica, quartz	14808-60-7	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
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Chronic Health Hazard

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Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
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EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Crystalline silica, quartz	14808-60-7	Not applicable

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California Proposition 65

Substances	CAS Number	California Proposition 65
Crystalline silica, quartz	14808-60-7	carcinogen

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Crystalline silica, quartz	14808-60-7	Carcinogen Extraordinarily hazardous	1660	Present

NFPA Ratings: Health 0, Flammability 0, Reactivity 0
HMIS Ratings: Health 0*, Flammability 0, Reactivity 0

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date: 14-Aug-2017

Reason for Revision SDS sections updated:
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Additional information

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d - day
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
h - hour
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

Disclaimer Statement

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End of Safety Data Sheet

Appendix C Field Forms

CONTENTS

- Field Activity Report
- Daily Safety Meeting Log
- Soil Sample Collection Log
- Field Log of Boring
- Monitoring Well Construction Details
- Well Development Log
- Monitoring Well Sampling Log
- Chain-of-Custody Record

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. _____ Project Name _____ Project Number _____	Date Installed _____ Logged By _____ Driller _____
---	--

I. TOP SECTION (CASING)

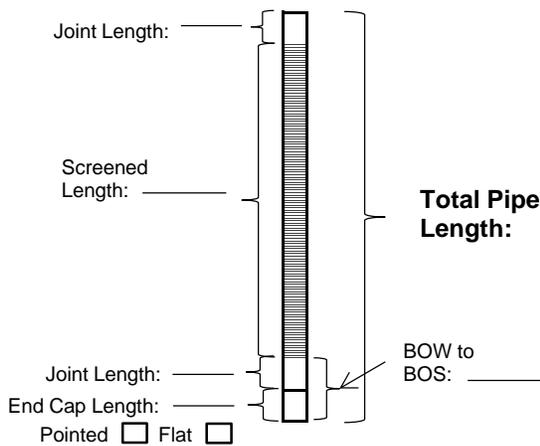
Initial Pipe Length _____
 Cutoff Length _____
 Add-on Length _____
Total Length _____

II. MID SECTION (CASING)

Number of Blank Sections _____
 Length of Section(s): _____

Sum of Lengths: _____

III. SCREENED SECTION(S)



IV. WELL DATA

Pipe Type: PVC SS Other _____
 Diameter: 2" 4" Other _____
 Slot Size: 0.01 0.02 Other _____
 Joint Pin End: Up Down Type _____

V. BACKFILL

	Bottom	Top
CEM (No Pipe)	_____	_____
CEM_PB	_____	_____
*SLUF_PB/FIL_PB	_____	_____
BCH_PB	_____	_____
*SLUF_PB/FIL_PB	_____	_____
BGR_PB	_____	_____
*SLUF_PB/FIL_PB	_____	_____
*SLUF_PS/FIL_PS	_____	_____
*SLUF/FIL (No Pipe)	_____	_____
*SLUF_PB/FIL_PB	_____	_____
Filter Pack Type or Gradation	_____	

VI. MONUMENTS

Stuckup Flushmount
 TOM to GS _____
 TOM to TOC _____
 ^TOC to GS _____
 Lock type _____

VII. MOISTURE CONTENT

Depth to Water Below GS _____

	Bottom	Top
Seasonal 1	_____	_____
Seasonal 2	_____	_____
Permafrost 1	_____	_____
Permafrost 2	_____	_____

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW _____
 - BOW to BOS _____
= TOC to BOS _____

 TOC to BOS _____
 - Screened Length _____
= TOC to TOS _____

TOC to BOW	_____
- TOC to GS	_____
BOW bgs	_____
TOC to TOS	_____
- TOC to GS	_____
TOS bgs	_____
TOC to BOS	_____
- TOC to GS	_____
BOS bgs	_____

WELL DEVELOPMENT LOG

Owner-Client _____ Well No. _____
 Location _____ Project No _____
 Weather _____ Date _____
 Development Personnel _____

Diameter and Type of Casing: _____
 Total Depth of Well **Before** Development (feet below top of casing): _____
 Depth to Water **Before** Development (feet below top of casing): _____
 Depth to Screen Top and Bottom (from Construction Log): Top: _____ Bottom: _____

Development Details

Feet of water in well _____ Time pumping started _____
 Gallons per foot _____ Flow rate (gal/min) _____
 Gallons in well _____ Flow-rate measurement method: _____
 Surge method _____
 Pump used _____ Time pumping ended _____
 Tubing used (ft) _____ Gallons Pumped _____
 Disposal: _____

Depth to Water **After** Development (feet below top of casing): _____
 Total Depth of Well **After** Development (feet below top of casing): _____

Observations

Time	Water Clarity (Visual)		Time	Water Clarity (Visual)

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1¼	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Owner/Client _____
 Location _____
 Sampling Personnel _____
 Weather Conditions _____ Air Temp. (°F) _____

Project No. _____
 Date _____
 Well _____
 Time started _____
 Time completed _____

Sample No. _____ Time _____
 Duplicate _____ Time _____
 Equipment Blank _____ Time _____

Purging Method _____ Diameter and Type of Casing _____
 Pumping Start _____ Approximate Total Depth of Well Below MP (ft.) _____
 Purge Rate (gal./min.) _____ Measured Total Depth of Well Below MP (ft.) _____
 Pumping End _____ Depth to Water Below MP (ft.) _____
 Pump Set Depth Below MP (ft.) _____ Depth to Ice (if frozen) Below MP (ft.) _____
 Tubing (ft.) _____ Feet of Water in Well _____
 Gallons per foot _____
 Gallons in Well _____
 Purge Water Volume (gal.) _____
 Purge Water Disposal _____

Monument Condition _____
 Casing Condition _____

Measuring Point (MP) Top of Casing (TOC) Monument type: *Stickup* *Flushmount*

Top-of-casing to monument (ft.) _____
 Monument to ground surface (ft.) _____

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking _____

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1¼	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

Well No. _____

CHAIN-OF-CUSTODY RECORD

Laboratory _____

Attn: _____

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Analysis Parameters/Sample Container Description (include preservative if used)						Remarks/Matrix
				Comp.	Grab				Total Number of Containers	

Project Information		Sample Receipt	
Project Number:		Total Number of Containers	
Project Name:		COC Seals/Intact? Y/N/NA	
Contact:		Received Good Cond./Cold	
Ongoing Project? Yes <input type="checkbox"/> No <input type="checkbox"/>		Delivery Method:	
Sampler:		(attach shipping bill, if any)	

Instructions	
Requested Turnaround Time:	
Special Instructions:	

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - Job File

Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Signature:	Time: _____	Signature:	Time: _____	Signature:	Time: _____
Printed Name:	Date: _____	Printed Name:	Date: _____	Printed Name:	Date: _____
Company:		Company:		Company:	
Received By: 1.		Received By: 2.		Received By: 3.	
Signature:	Time: _____	Signature:	Time: _____	Signature:	Time: _____
Printed Name:	Date: _____	Printed Name:	Date: _____	Printed Name:	Date: _____
Company:		Company:		Company:	

Appendix D

Water Treatment System Design

APPENDIX D: WATER TREATMENT SYSTEM DESIGN



August 12, 2019

Subject: Fairbanks International Airport Fire Training Pit Water Treatment Recommendations

Water Treatment System Design

The following narrative describes the water treatment system that has been designed by NRC to treat up to approximately 900,000 gallons of contaminated water that is present in the existing fire pit training area at the Fairbanks International Airport. The proposed treatment system relies on a sediment filtration system, followed by two parallel organoclay and granular activated carbon (GAC) treatment trains, followed by a final particulate filtration system. Parallel treatment trains are included to provide 1) adequate treatment for the identified volume of water and 2) a method to temporarily suspend operation of one train while sample analysis is being completed and allow treatment to continue through the second train. This parallel system is recommended to meet the treatment duration period of ~10 days (operating 24 hours per day) without the need for on-site temporary storage of treated water while waiting for the results of sample analysis. To provide an additional level of assurance that treated water will not exceed effluent standards, a third GAC treatment vessel is included with each treatment train. A process flow diagram detailing the individual components of the water treatment system is included with the recommendations summary.

NRC completed sample analysis of the fire pit water in April of 2019 for the identified contaminants of concern. That analysis included additional per- and polyfluoroalkyl substances (PFAS), which have been included in the modeling analysis to determine the empty bed contact time (EBCT) necessary for effective perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) removal. The water treatment system design has been based on the analytical results from the June 2018 sample analysis. A design based on the June 2018 data represents a worst-case-scenario approach, as the PFOS, PFOA, glycol, DRO, RRO, BTEX, and arsenic analytical results were higher in the June 2018 than the April 2019 sample analysis. The lower contaminant levels found in 2019 are in part due to the addition of deicing basin water, which contained lower concentrations of most of the contaminants of concern. By designing to the higher contaminant level values, the model analysis supports a more conservative treatment system design. Finally, the system design for PFAS treatment was based on PFOA as the design compound, as this carboxylate-based PFAS compound is known to have weaker adsorption than sulfonate-based PFOS and is therefore expected to be the first of the regulated compounds to break through the lead GAC vessel. The breakthrough calculation results from the model analysis are included with this design recommendation summary. Please take note that the model analysis was completed for two parallel trains containing two GAC vessels in each train. The third GAC vessel was added to each train to provide additional treatment capacity to ensure system reliability.

The following narrative details the individual components of the recommended treatment system and provides the supporting information for equipment and media selection.

Weir Tank

Contaminated water will be pumped from the "Fire Pit" into a Weir Tank (with internal baffles) to provide primary sediment removal. A floating inlet suction setup equipped with a suction filter will be placed in the center of the ponded water and will be used to remove free water in the pond. It is anticipated the FTP sump will be suitable to remove a substantial portion of the interstitial water from the sediment in the pond. An alternative dewater strategy may need to be employed to provide effective dewatering, and this requirement will be evaluated as the water is removed from the pit.



Particulate Filtration

Water will exit the weir tank and enter a 5-micron nominal five-stage bag filter followed by a 1-micron nominal five-stage bag filter to remove total suspended solids (TSS).

Organics Filtration – Organoclay Adsorption

Following the TSS removal stage, water will enter one of two 6-foot-diameter vessels each filled with 5,000 pounds of HS200 quaternary amine impregnated zeolite (organoclay) to reduce organic contaminants and arsenic.

The organoclay usage rate is predicted to be 1,700 pounds per million gallons of water treated. The calculated usage rate is based on a total hydrocarbon contamination load of over 100,000 micrograms per liter. The media is predicted to treat 5.9 million gallons for 32 days of continuous operation at 125 gallons per minute. The EBCT will be ~11 minutes during continuous operation at 62.5 gpm through each organoclay vessel (125 gpm combined). In order to accommodate a suitable flow rate through the organoclay vessels it was necessary to size these vessels to contain a quantity of organoclay capable of treating over six times the volume of contaminated water anticipated from the fire pit. It is also anticipated that, due to the low concentration of arsenic in the contaminated water and the small increment of removal necessary to meet the effluent standard, the additional adsorption capacity of the organoclay will be sufficient to reduce arsenic levels to below effluent standards.

PFAS Filtration – Carbon Adsorption

A lead GAC vessel, a lag GAC vessel, and a polish GAC vessel will follow each organoclay vessel. These vessels have been sized to remove PFOS and PFOA to levels below regulatory limits. The carbon vessels will be 6 feet in diameter and filled with 5,000 pounds of 12X40 acid-washed coal-based GAC. The model analysis was initially completed for a lead and lag only configuration, and this model calculated breakthrough to occur in the lead vessel at 640,000 gallons for each train for a combined treatment capability of 1,280,000 gallons and an EBCT of ~43.6 minutes. A polish vessel has been added to each train to:

- 1) increase the treatment capacity of each train by 300,000 gallons for a total treatment capacity of 1,880,000 gallons (two times the estimated anticipated volume),
- 2) allow testing to occur between the lag vessel and the polish vessel in the event breakthrough occurs in the lead vessel before water treatment is complete, and
- 3) eliminate the need to change vessels during execution of the project.

As stated previously, the model was prepared using PFOA as the design compound due to the lower adsorption potential of carboxylate PFAS. A multiplication factor of 25 times was applied to the higher PFOA concentration identified in the 2018 water analysis to provide the appropriate statistical assurance for PFAS adsorption in the GAC treatment system model. The model also factored in the additional PFAS compounds identified in the April 2019 water sample analysis. These additional design considerations ensure the modeled PFOS and PFOA breakthrough analysis is sufficiently protective to meet the identified effluent criteria.

Post-Filters

As a final step in the treatment process, the treated effluent will pass through a 1-micron high efficiency six-stage bag filter to remove fine particulate passing through the system. Post filtration is recommended for the removal of fine particulates associated with any remaining insoluble contaminants.



LIQUID-PHASE CARBON ADSORPTION MODEL CALCULATIONS

CARBONAIR ENVIRONMENTAL SYSTEMS
1480 COUNTY ROAD C WEST
ROSEVILLE, MN 55113
PHONE: 800-526-4999
FAX: 651-202-2985

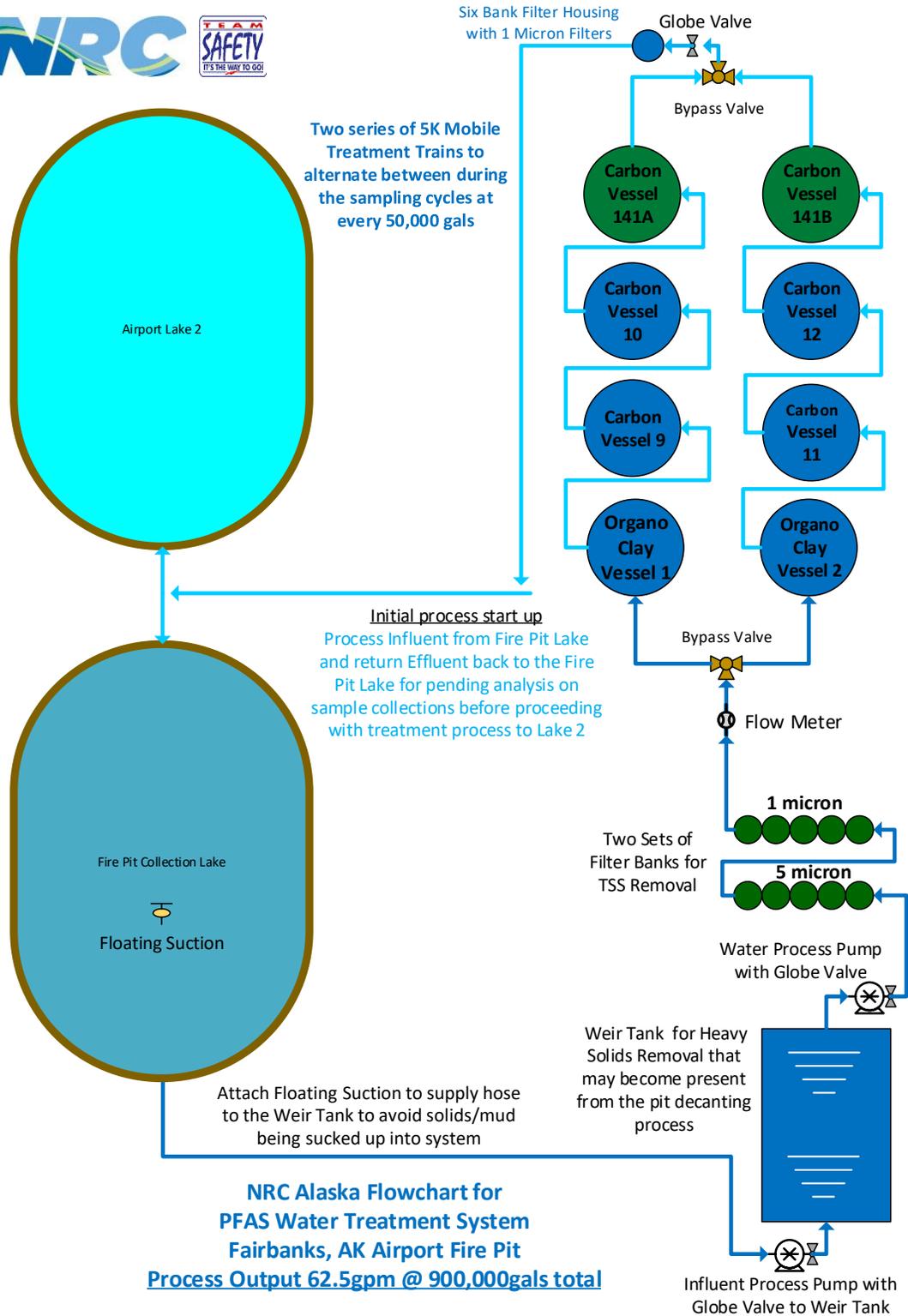
CARBON ADSORBERS: PC28
NO OF ADSORBERS IN SERIES: 2
TOTAL MASS OF CARBON (LBS): 10000.
FLOW RATE (GPM): 62.500 (2 trains)
HYDRAULIC LOADING (GPM/SQ.FT): 2.2073
EMPTY BED CONTACT TIME (MIN.): 43.617

DESIGN COMPOUND: PFOA(Valeria)
EXPECTED INFLUENT CONCENTRATION (PPB): 32.000
MODEL INFLUENT CONCENTRATION (PPB): 827.63
EFFLUENT CRITERIA (PPB): 0.40000
EFFECTIVE K-VALUE (%): 5.0000

TIME (DAYS)	VOLUME TREATED (GAL)	EFF. CONC. (PPB)
1.0	90000.	0.0000
2.0	180000.	0.0000
3.0	270000.	0.0000
4.0	360000.	0.0000
5.0	450000.	0.0000
6.0	540000.	0.1122
7.0	630000. (per train)	0.2905
8.0	720000.	88.0535
9.0	810000.	648.0931
10.0	900000.	788.5214
11.0	990000.	819.3492
12.0	1080000.	825.8889
13.0	1170000.	827.2628
14.0	1260000.	827.5665
15.0	1350000.	827.6520
16.0	1440000.	827.6433
17.0	1530000.	827.6308
18.0	1620000.	827.6354
19.0	1710000.	827.6377
20.0	1800000.	827.6362

Note: The model influent concentration results from the impact of the other background compounds, which is determined by using a competitive adsorption model

DISCLAIMER: ACTUAL RESULTS MAY VARY SIGNIFICANTLY FROM THE MODEL. THE MODEL IS BASED ON THE ASSUMPTIONS THAT THE FLOW RATE AND INFLUENT CONCENTRATION ARE CONSTANT, AND ONLY THE CONTAMINANTS PROVIDED TO CARBONAIR ARE PRESENT IN THE WATER. VARYING OPERATING CONDITIONS CAN HAVE ADVERSE EFFECTS ON CARBON ADSORPTIVE CAPACITY. THE PREDICTED BED LIFE IS NOT GUARANTEED.



Appendix E

Fire Training Pit As-Built Plans and Cap Design Drawings

CONSTRUCTION PLANS FOR
**FAIRBANKS INTERNATIONAL
AIRPORT**

EPA APPROVED FIRE TRAINING AREA

PROJECT NUMBER: 64849

1992

AS-BUILTS

SPONSORED BY THE STATE OF ALASKA

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
NORTHERN REGION AVIATION DESIGN GROUP

AS-BUILT PLANS

Initials: _____ Date: _____

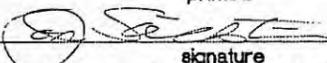
CONTRACTOR: ALASKA DEVELOPMENT SERVICES, INC.

DATE STARTED: MAY 7, 1992

DATE COMPLETED: JUNE 9, 1993

RESIDENT ENGINEER: JON SALLSTROM

printed

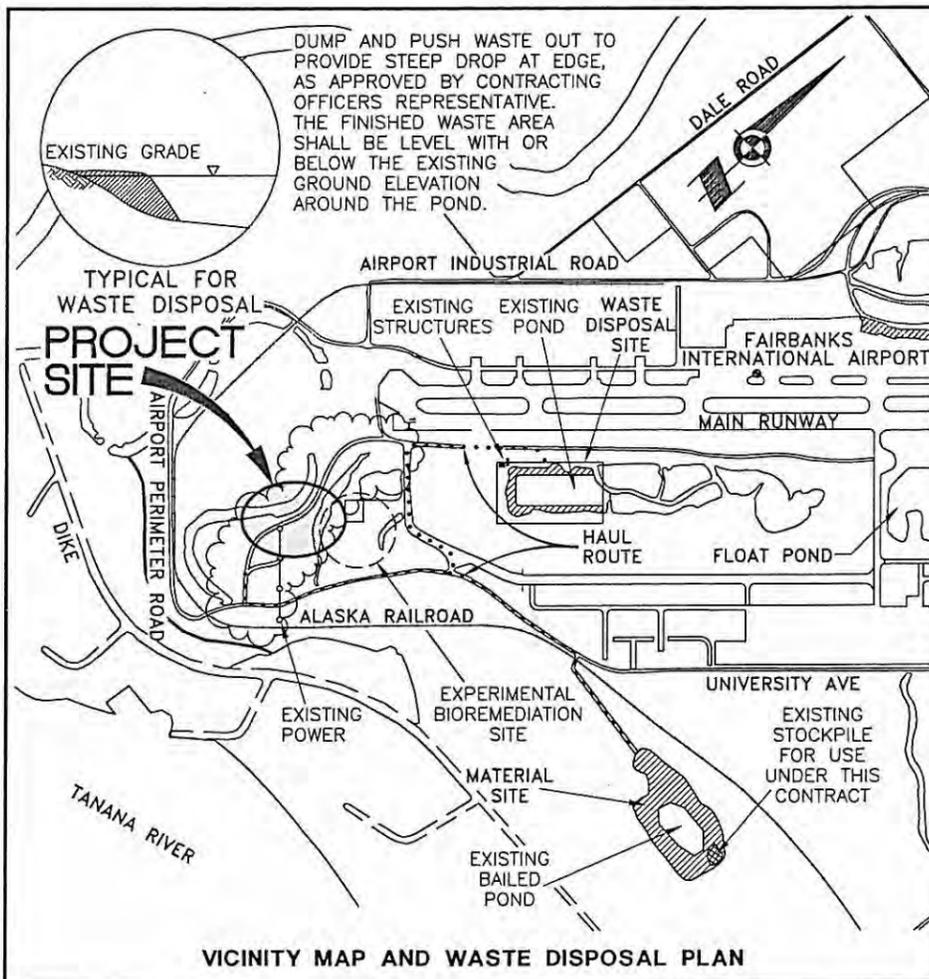
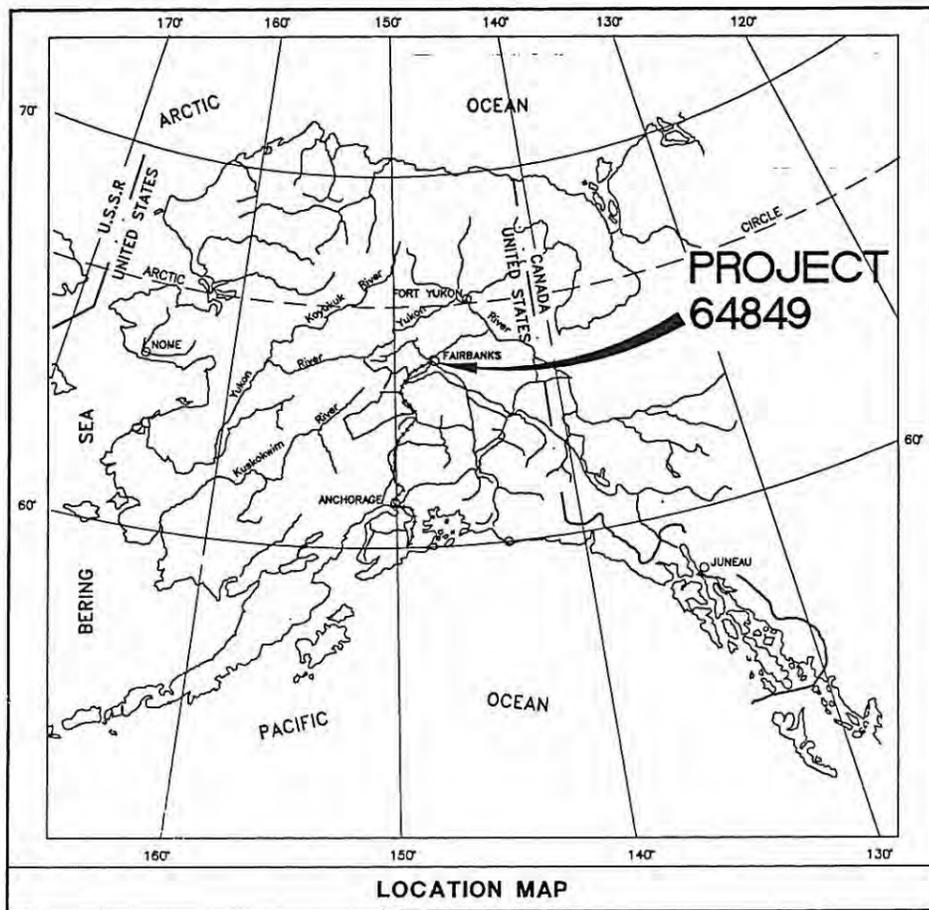
RESIDENT ENGINEER:  signature

I certify that revisions to these plans made during construction have been identified hereon in 'cloud' configuration, and that these as-built plans are an accurate record of construction.

APPROVED: _____ DATE: _____
DESIGN CHIEF, NORTHERN REGION DESIGN AND CONSTRUCTION

NOTE:
AS-BUILT ADDITIONS AND CORRECTIONS ARE INDICATED IN
CLOUD CONFIGURATION AS SHOWN:
AS-BUILT INFORMATION WAS FURNISHED BY CONSTRUCTION
CONTRACTOR AND TRANSFERRED TO DRAWINGS BY FPE/ROEN.
FPE/ROEN WAS NOT RETAINED TO FIELD VERIFY AS-BUILT
CONDITIONS.

EPA APPROVED
FIRE TRAINING AREA
SHEET 1 OF 11 | T1 | 64849



ESTIMATED QUANTITIES

NO.	ITEM	UNIT	QUANTITY
BASIC BID			
100	MOBILIZATION AND DEMOBILIZATION	L.S.	ALL REQ'D
121	CONSTRUCTION SURVEYING	L.S.	ALL REQ'D
122	DBE INCENTIVE	C.S.	ALL REQ'D
200f	CLEARING AND GRUBBING	L.S.	ALL REQ'D
331a	UNCLASSIFIED EXCAVATION	L.S.	ALL REQ'D
331b	SELECT MATERIAL	L.S.	ALL REQ'D
550a	GEOTEXTILE, SEPARATION	L.S.	ALL REQ'D
560	MEMBRANE SYSTEM	L.S.	ALL REQ'D
800	PORTLAND CEMENT CONCRETE	L.S.	ALL REQ'D
960	FUEL DELIVERY SYSTEM	L.S.	ALL REQ'D
ADDITIVE ALTERNATE #1			
960 (1)	FUEL STORAGE TANK, PUMP, & APPURT.	L.S.	ALL REQ'D
ADDITIVE ALTERNATE #2			
1600(2)	ELECTRICAL SYSTEM	L.S.	ALL REQ'D
ADDITIVE ALTERNATE #3			
960 (3)	FUEL LINE FROM BULK STORAGE TO PIT	L.S.	ALL REQ'D
CHANGE ORDER #1			
200f	CLEARING AND GRUBBING	L.S.	ALL REQ'D
331b	SELECT MATERIAL	L.S.	ALL REQ'D
550a	GEOTEXTILE SEPARATION	L.S.	ALL REQ'D
CHANGE ORDER #2			
560	MEMBRANE SYSTEM FUEL PUMP	L.S.	ALL REQ'D
CHANGE ORDER #3			
560	MEMBRANE SYSTEM DRAINAGE NETWORK	L.S.	ALL REQ'D
CHANGE ORDER #4			
1600(2)n	25" PRESSURE TREATED DROP POLE	L.S.	ALL REQ'D
CHANGE ORDER #5			
560g	MEMBRANE SYSTEM SUMP	L.S.	ALL REQ'D
CHANGE ORDER #6			
	ACCESS ROAD	L.S.	ALL REQ'D

APPROXIMATE QUANTITIES FOR ESTIMATING PURPOSES ONLY

NO.	ITEM	UNIT	QUANTITY
100	MOBILIZATION AND DEMOBILIZATION	L.S.	ALL REQ'D
121	CONSTRUCTION SURVEYING	L.S.	ALL REQ'D
122	DBE INCENTIVE	C.S.	ALL REQ'D
200f	CLEARING AND GRUBBING	AC.	4.0
331a	UNCLASSIFIED EXCAVATION	C.Y.	12000
331b	SELECT MATERIAL	C.Y.	18000
550a	GEOTEXTILE, SEPARATION	S.Y.	15300
560	MEMBRANE SYSTEM	S.F.	47000
800	PORTLAND CEMENT CONCRETE	C.Y.	88
960	FUEL DELIVERY SYSTEM	L.S.	ALL REQ'D
960 (1)	FUEL STORAGE TANK, PUMP, & APPURT.	L.S.	ALL REQ'D
1600(2)	ELECTRICAL SYSTEM	L.S.	ALL REQ'D
960 (3)	FUEL LINE FROM BULK STORAGE TO PIT	L.F.	225

INDEX

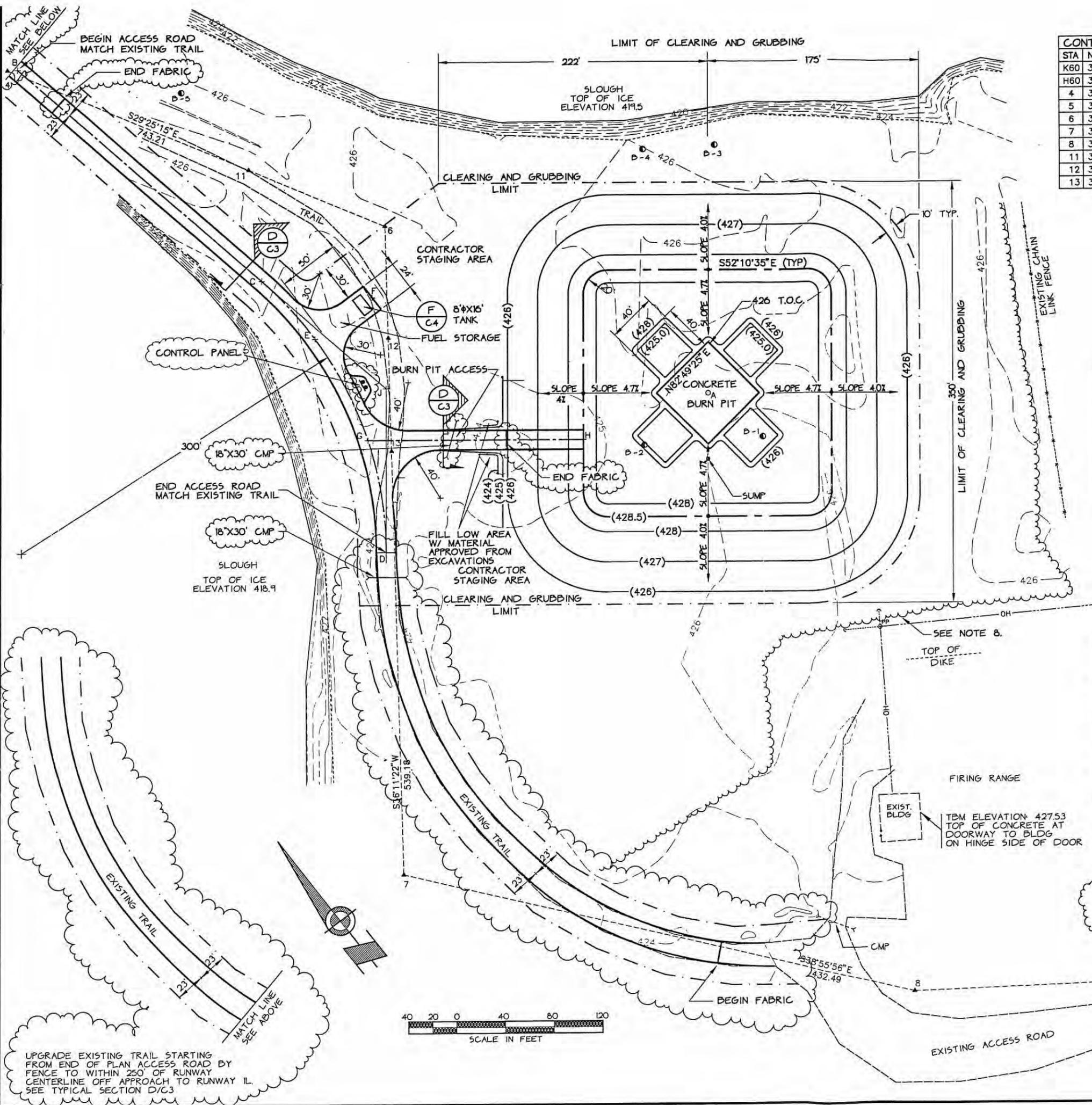
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TITLE SHEET	T1
LOCATION AND VICINITY MAP, ESTIMATED QUANTITIES AND INDEX	T2
PROJECT CIVIL SITE PLAN	C1
CONCRETE BURN PIT PLAN	C2
EARTHWORK SECTIONS	C3
MEMBRANE SYSTEM PLAN AND DETAILS	C4
CIVIL DETAILS	C5
MECHANICAL SITE PLAN	M1
MECHANICAL DETAILS	M2
ELECTRICAL SITE PLAN	E1
ELECTRICAL DETAILS	E2

AS-BUILT PLANS

Initials: *SM* Date: 11/09/93

EPA APPROVED
FIRE TRAINING AREA

SHEET 2 OF 11 | T2 | 64849



CONTROL POINT COORDINATES			
STA	NORTHING	EASTING	ELEV
K60	3955933.90	208659.46	432.93
H60	3960393.44	212371.28	
4	3952051.22	206670.16	426.3±
5	3950309.24	207441.46	
6	3951403.85	207035.24	426.3±
7	3950968.70	206716.88	423.4±
8	3950632.27	206988.65	426.8±
11	3951509.94	206975.42	
12	3951328.79	206980.28	
13	3951252.90	206924.83	

- LEGEND**
- ⊙ SOIL BORING B-1
 - ▲ CONTROL SPIKE
 - ⊙^{PP} POWER POLE
 - GUY ANCHOR
 - - - 426 - - EXISTING CONTOUR
 - (426) PROPOSED CONTOUR
 - - - - - LIMIT OF CLEARING AND GRUBBING
 - OH OVERHEAD POWER/PHONE LINE
 - TOP OF BANK/DIKE/SLOPE
 - EXISTING ROAD SHOULDER
 - ~ ~ ~ EXISTING TREE LINE
 - >--- EXISTING CULVERT PIPE

IMPROVEMENT COORDINATES				
STA	DESCRIPTION	NORTHING	EASTING	FINAL ELEV.
A	PIT CENTER	3951129.85	207160.17	NA
B	CL ROAD-MATCH TRAIL	3951695.25	206875.91	MATCH
C	CL ROAD PC	3951430.18	206927.27	425.5
D	CL ROAD PT-MATCH TRAIL	3951189.14	206869.72	MATCH
E	SI ROAD/FUEL STORAGE	3951364.99	206932.64	425.5
F	CL END FUEL STORAGE	3951363.42	206990.61	426
G	SI ROAD/BURN PIT ACCESS ROAD	3951271.74	206915.10	425.5
H	CL END BURN PIT ACCESS ROAD	3951162.53	207055.77	428.5
J	CL ROAD PI	3951296.61	206953.15	NA

MATCH NEW ACCESS TO MEET CENTERLINE GATE OPENING

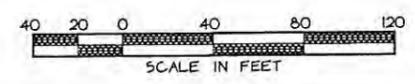
AS-BUILT PLANS

Initials: Date: 11/29/93

NOTES

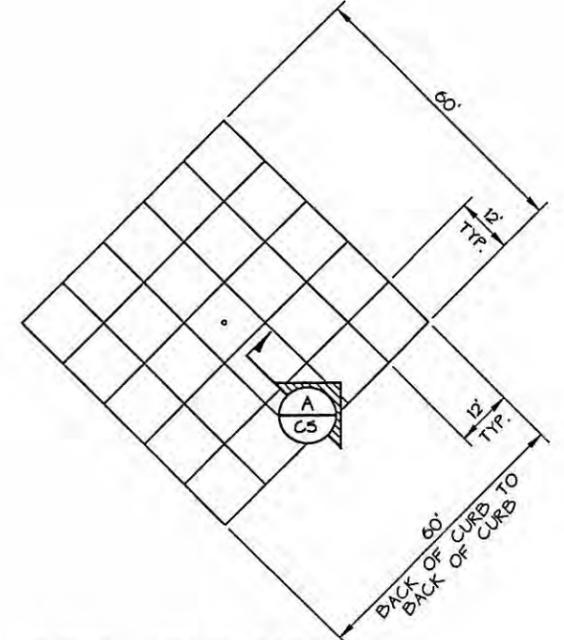
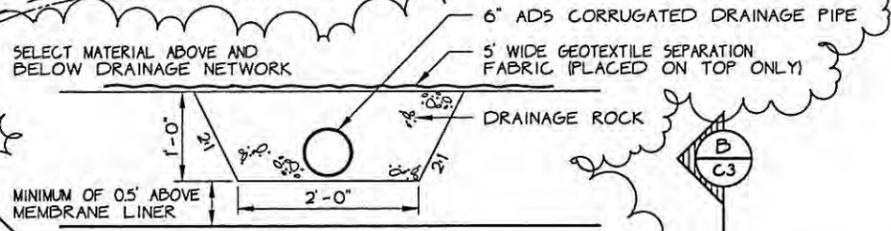
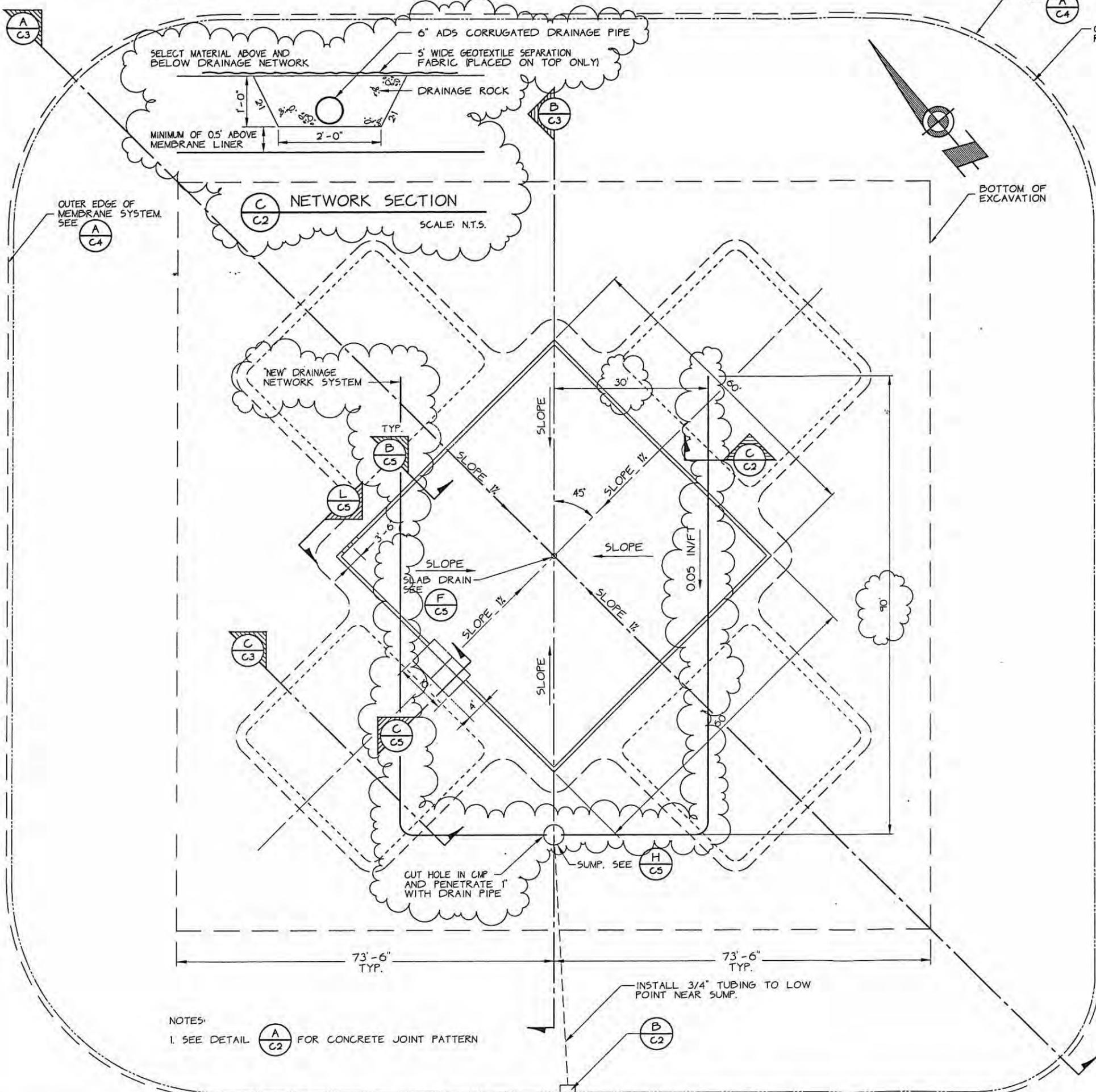
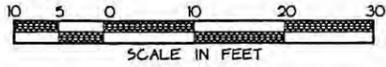
1. THIS SITE PLAN IS BASED ON A FIELD SURVEY PERFORMED BETWEEN OCTOBER 23 AND NOVEMBER 1, 1990. SEE ROEN FIELD BOOK NO. 683. SOIL BORINGS WERE LOCATED ON JANUARY 15, 1991.
2. DIFFERENTIAL LEVELS WERE USED TO ESTABLISH ELEVATIONS OF THE TEMPORARY BENCH MARK (TBM) AND ALL CONTROL SPIKES. TRIGONOMETRIC LEVELS WERE USED TO LOCATE ALL OTHER TOPOGRAPHIC DATA.
3. THIS SURVEY IS BASED ON A LOCAL GRID USING FIELD ANGLES AND FIELD DISTANCES. THE BASIS OF COORDINATES FOR THIS SURVEY IS THE RECORD ALASKA STATE PLANE ZONE 3 COORDINATES FOR U.S.C.G.S MONUMENT K60. THE BASIS OF BEARING IS THE RECORD ALASKA STATE PLANE ZONE 3 BEARING BETWEEN U.S.C.G.S. MONUMENTS K60 AND H60.
4. THE BASIS OF VERTICAL CONTROL IS THE RECORD ELEVATION OF U.S.C.G.S MONUMENT K60.
5. THE AREA ENCOMPASSED BY THIS SURVEY LIES WITHIN THE PROPERTY DESCRIBED AS THE FAIRBANKS INTERNATIONAL AIRPORT, AS DEPICTED ON THE OCTOBER, 1971, DRAWING TITLED "BOUNDARY SURVEY PHASE I, FAIRBANKS INTERNATIONAL AIRPORT."
6. THE BASE FLOOD ELEVATION FOR THIS AREA HAS BEEN ESTABLISHED AT 426', NGVD 1929, BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ACCORDING TO THE JANUARY 2, 1992 REVISION OF THE FLOOD INSURANCE RATE MAP FOR THIS AREA.
7. SLOPE ACCESS DRIVE TO MATCH ELEVATION AT EXISTING TRAIL.
8. MAINTAIN 15' BUFFER OF TREES BETWEEN THE FIRING RANGE AND THE NEW FIRE TRAINING AREA.

UPGRADE EXISTING TRAIL STARTING FROM END OF PLAN ACCESS ROAD BY FENCE TO WITHIN 250' OF RUNWAY CENTERLINE OFF APPROACH TO RUNWAY 1L. SEE TYPICAL SECTION D/C3

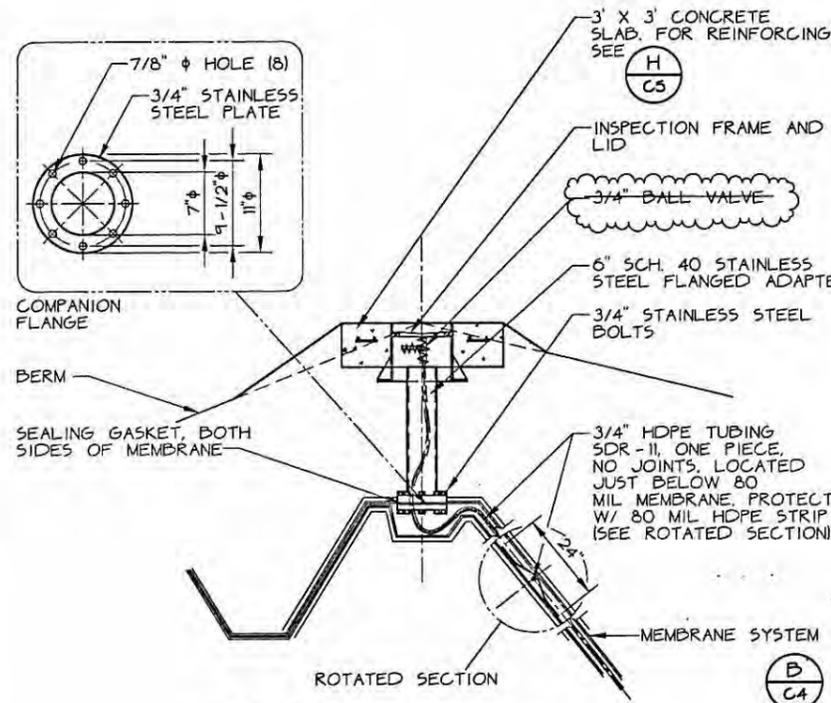


EPA APPROVED
FIRE TRAINING AREA
SHEET 3 OF 11 | C1 | 64849

1008590051.DWG\C1 Title Oct 26 16 22 58 1993



A C2 CONC. JOINT PATTERN
SCALE: N.T.S.



B C2 DETAIL MEMBRANE MONITOR SYSTEM
SCALE: N.T.S.

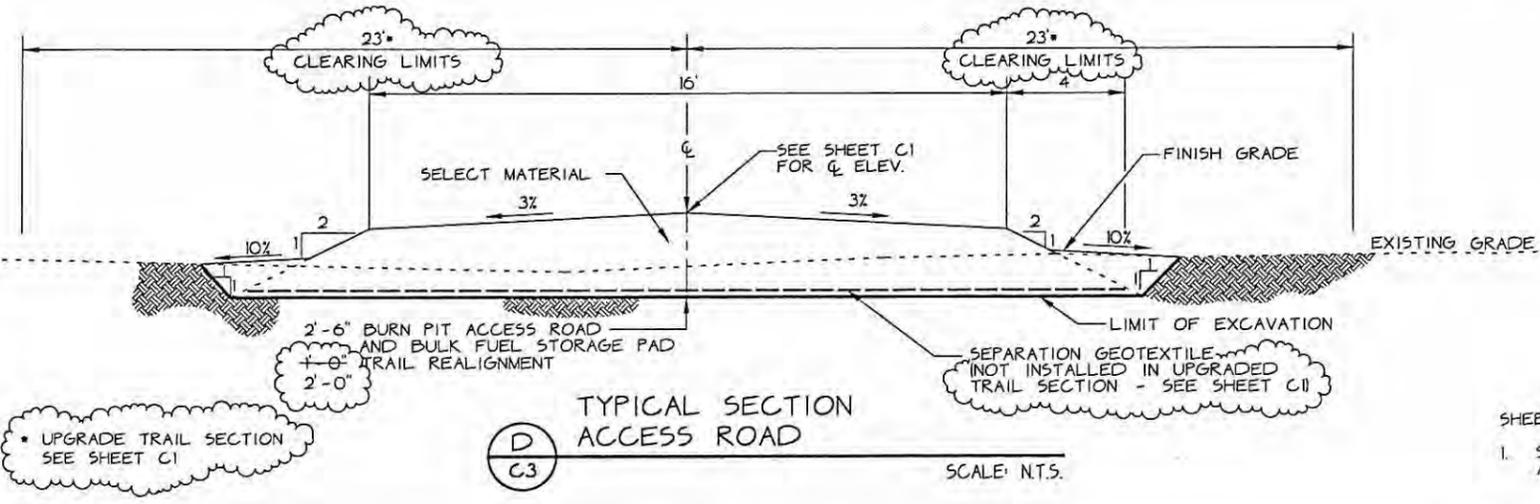
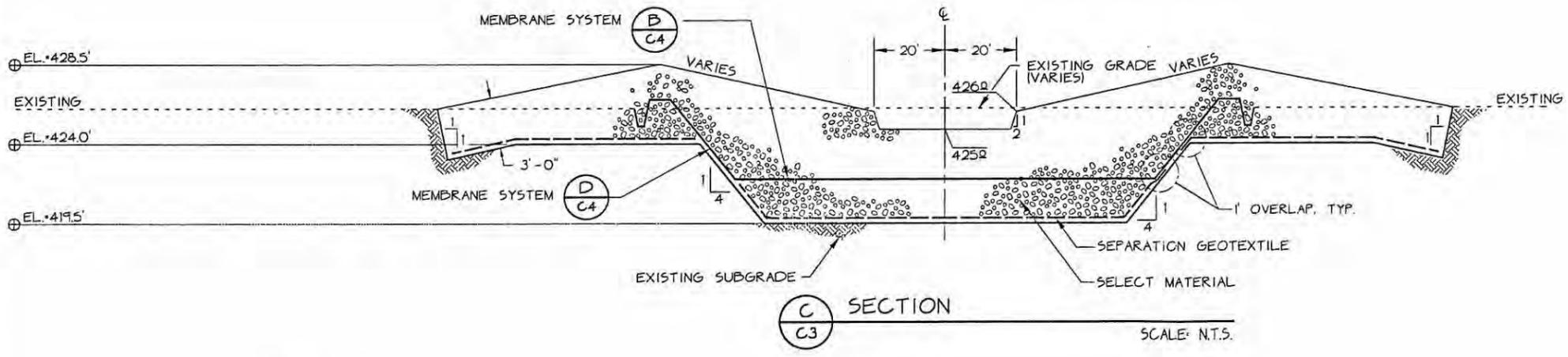
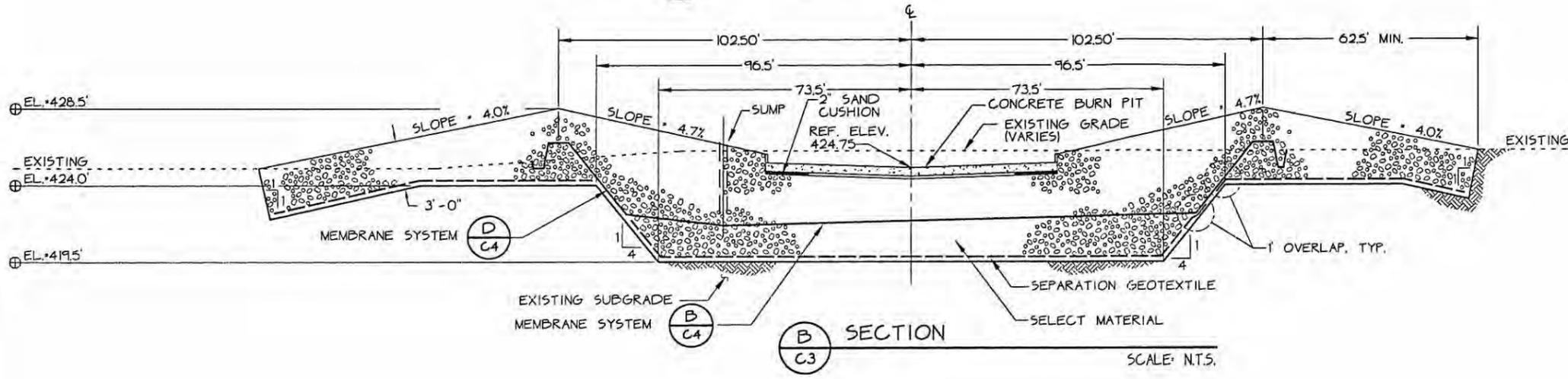
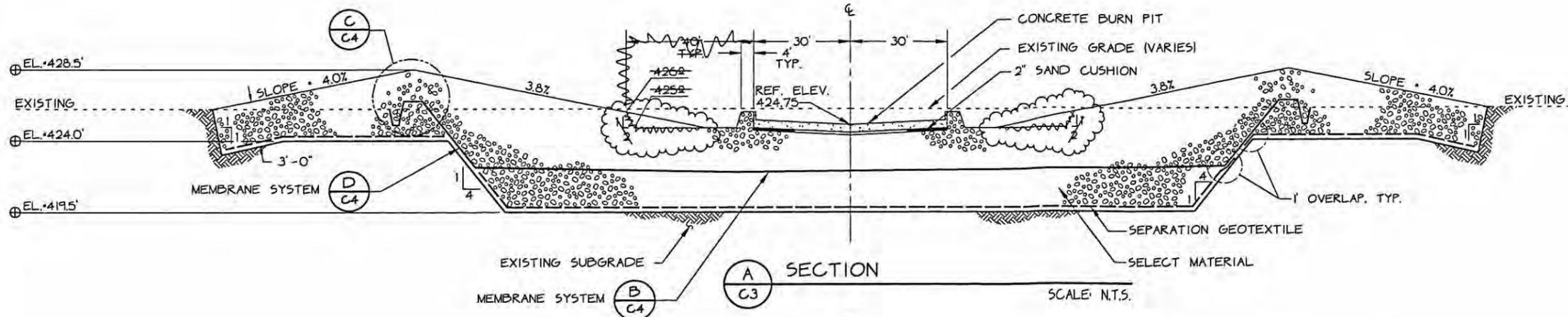
NOTES:
1. SEE DETAIL **A C2** FOR CONCRETE JOINT PATTERN

INSTALL 3/4" TUBING TO LOW POINT NEAR SUMP.

AS-BUILT PLANS

Initials: *[Signature]* Date: 11/19/93

EPA APPROVED
FIRE TRAINING AREA
SHEET 4 OF 11 | C2 | 64849



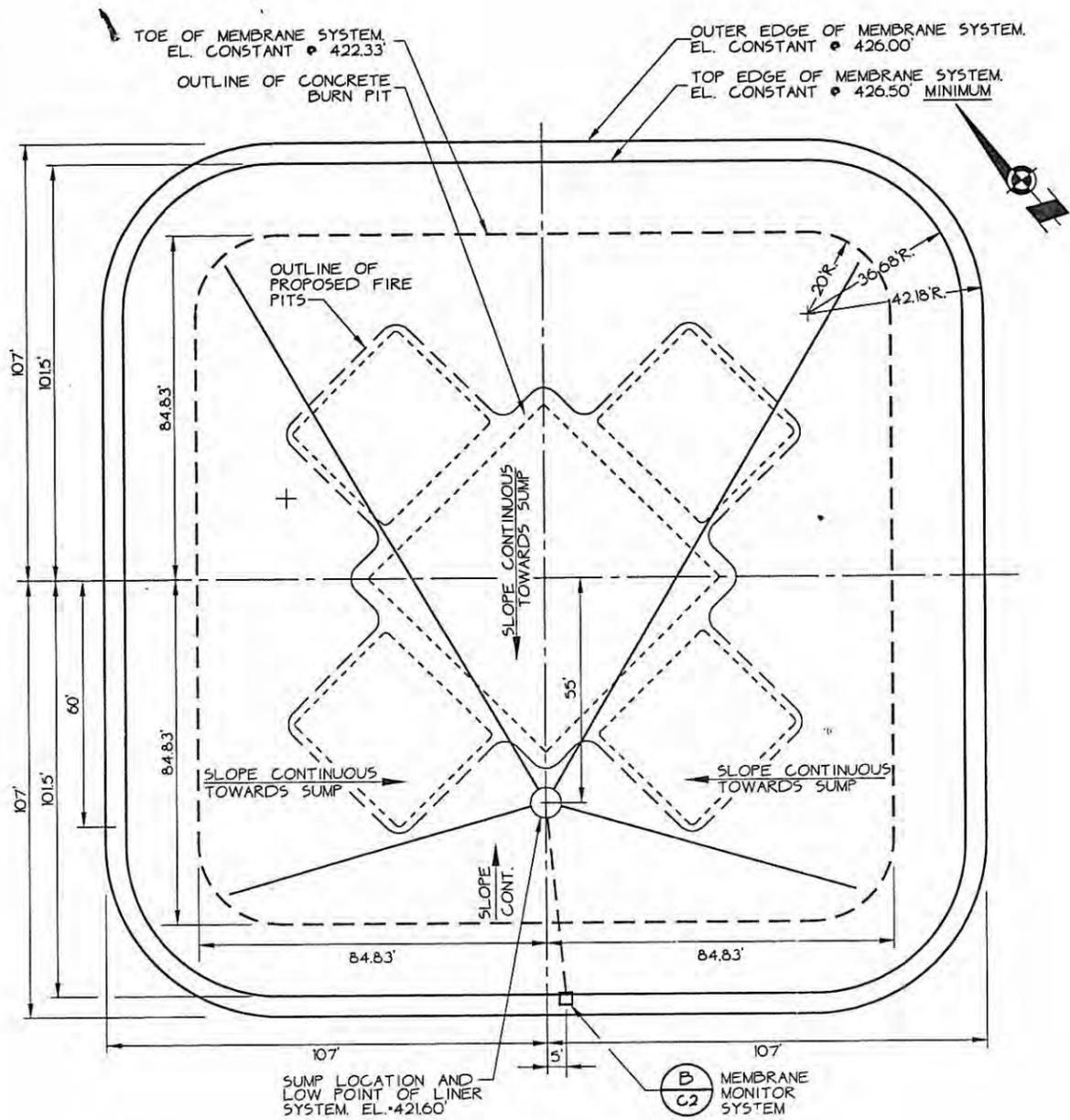
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 1. SEE A/C4 FOR MEMBRANE SYSTEM ELEVATIONS AND OTHER REQUIREMENTS.

AS-BUILT PLANS

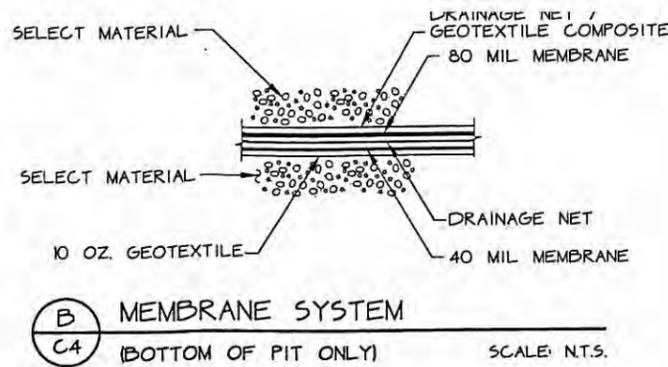
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EPA APPROVED
 FIRE TRAINING AREA
 SHEET 5 OF 11 | C3 | 64849

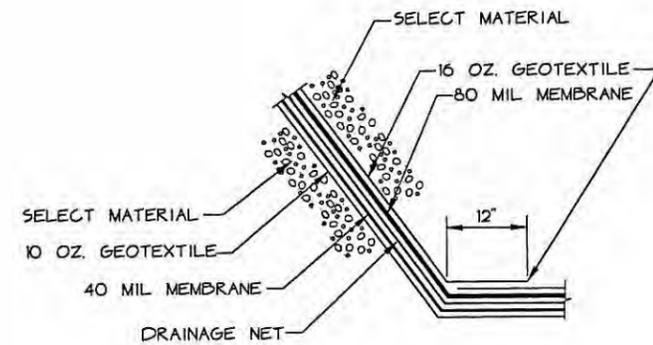
C:\068519005\1064\103 Tue Oct 26 16:47:11 1993



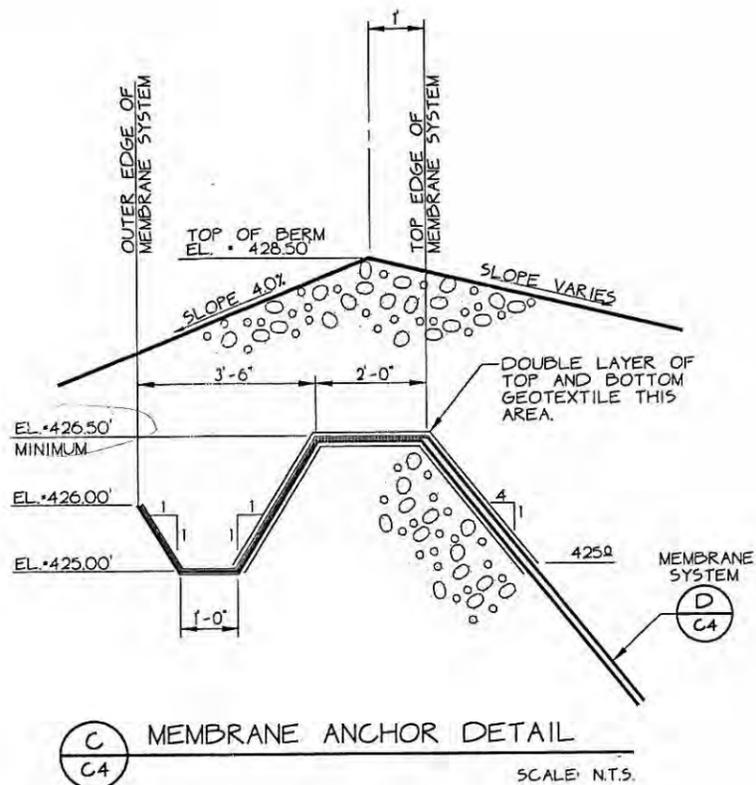
(A) MEMBRANE SYSTEM PLAN
SCALE: N.T.S.



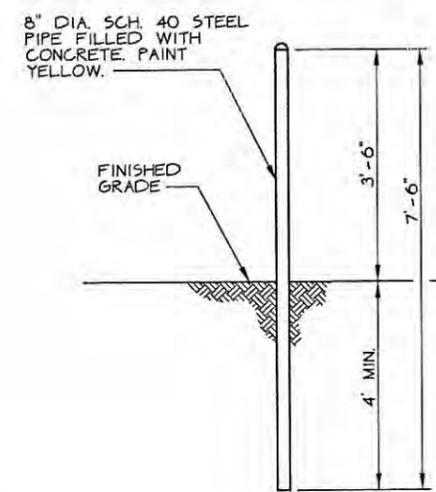
(B) MEMBRANE SYSTEM
(C4) (BOTTOM OF PIT ONLY) SCALE: N.T.S.



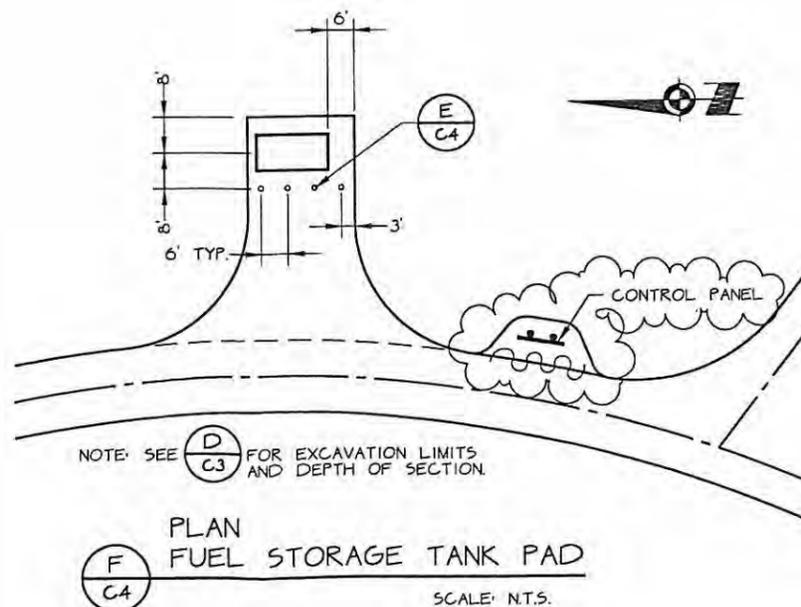
(D) MEMBRANE SYSTEM
(C4) SCALE: N.T.S.



(C) MEMBRANE ANCHOR DETAIL
(C4) SCALE: N.T.S.



(E) TYPICAL BOLLARD DETAIL
(C4) SCALE: N.T.S.



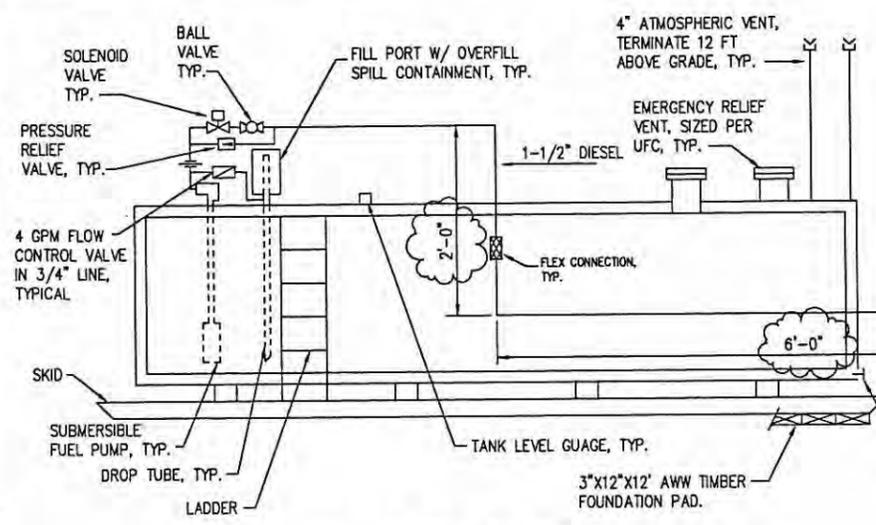
(F) PLAN FUEL STORAGE TANK PAD
(C4) SCALE: N.T.S.

AS-BUILT PLANS

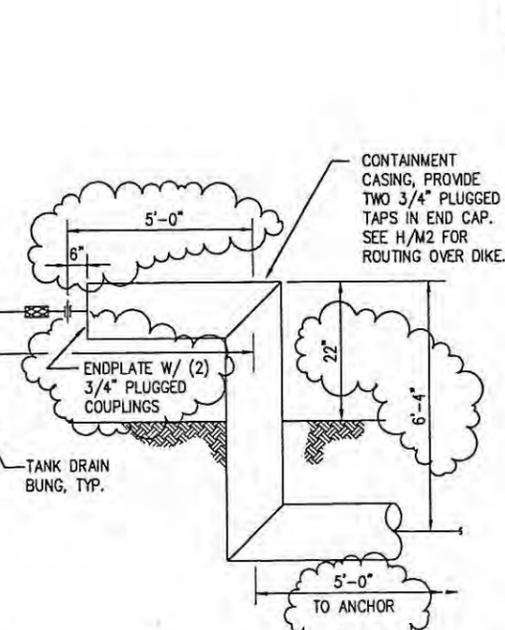
Initials: Date: 11/19/93

EPA APPROVED
FIRE TRAINING AREA

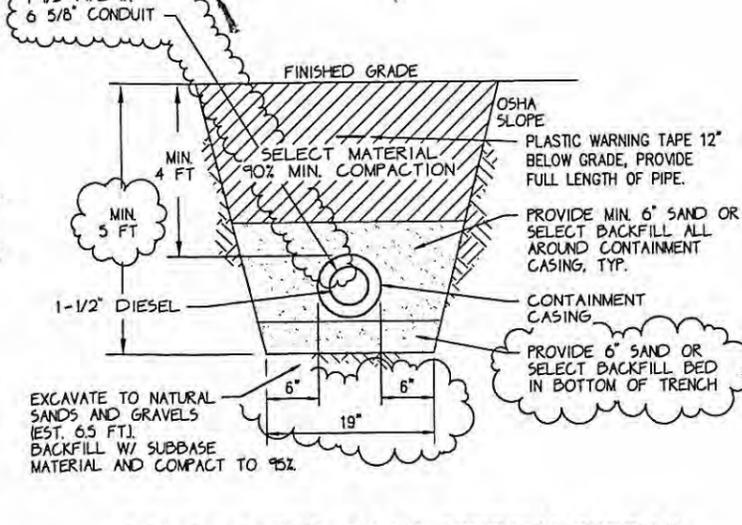
SHEET 6 OF 11 | C4 | 64849



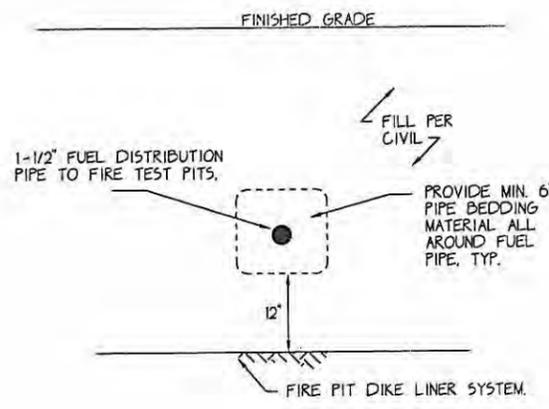
B
M2
FUEL STORAGE TANK
ALTERNATE #1 AND #3
SCALE: NONE



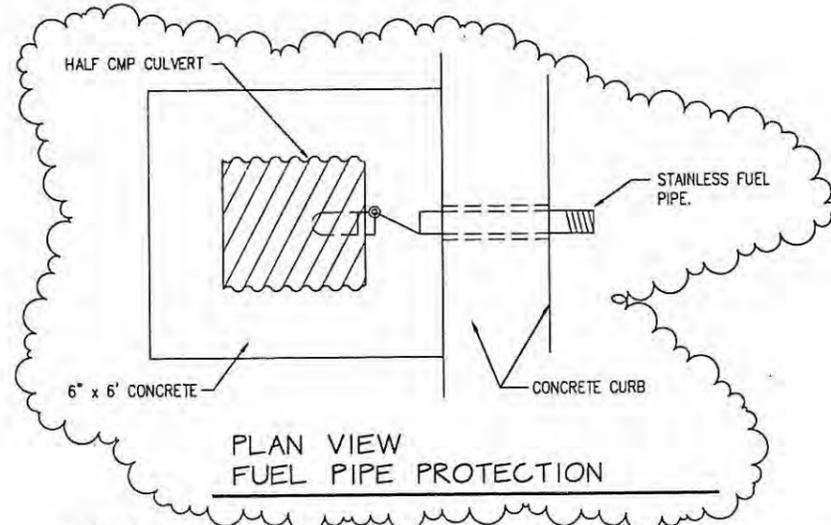
C
M2
CONTAINMENT CASE TRENCH DETAIL
ALTERNATE #3 ONLY
SCALE: NONE



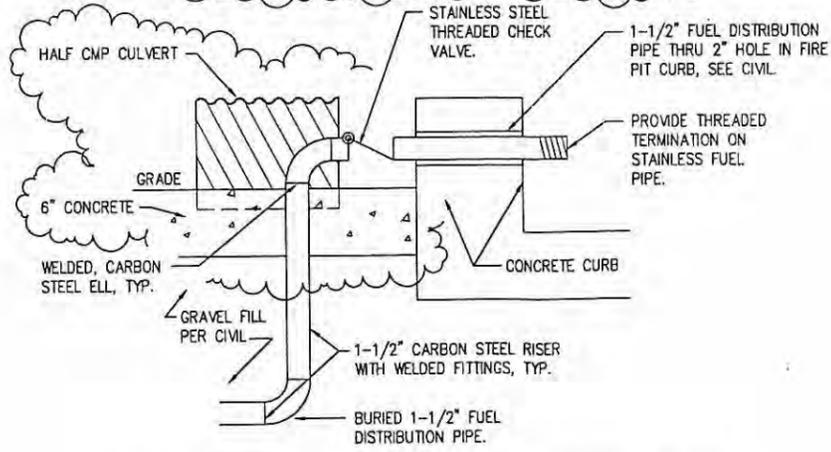
D
M2
FUEL MANIFOLD PIPING ISOMETRIC
BASE BID
SCALE: NONE



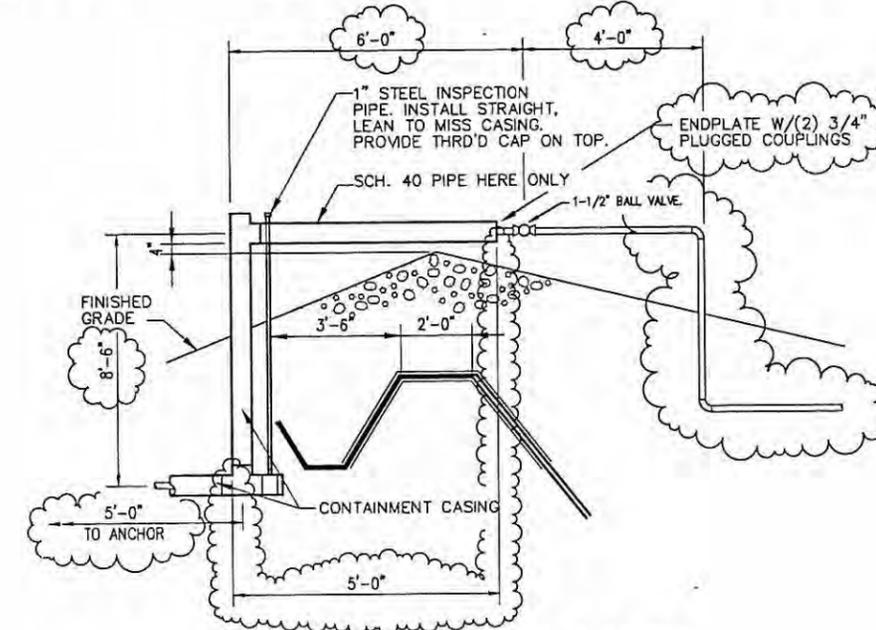
F
M2
FUEL DIST. PIPE TRENCH DETAIL
BASE BID
SCALE: NONE



**PLAN VIEW
FUEL PIPE PROTECTION**



G
M2
FUEL DIST. PIPE TERMINAL DETAIL
BASE BID
SCALE: NONE



H
M2
SECTION: CONTAINMENT CASING
ALTERNATE #3
SCALE: NONE

AS-BUILT PLANS

Initials: Date: 11/17/93

EPA APPROVED
FIRE TRAINING AREA
SHEET 9 OF 11 | M2 | 64849

SLOUGH

LEGEND

- UNDERGROUND WIRING
- OH OVERHEAD POWER/PHONE LINE
- PP POWER POLE
- GUY ANCHOR
- (M) MOTOR
- AG ABOVE GRADE
- TYP TYPICAL
- S1 EMERGENCY STOP PUSH-BUTTON STATION No. 1
- [] FUSE, SIZE AS SHOWN
- (M₁) MOTOR STARTER COIL FOR M₁ CONTACTS
- [•] EMERGENCY STOP PUSH-BUTTON

NOTES

1. ALL TYPE USE CONDUCTORS FROM ELBOWS BELOW GRADE TO TERMINATION ABOVE GRADE SHALL BE RUN IN RIGID STEEL CONDUIT, SIZED AS SHOWN.
2. ALL WIRING FROM THE CONTROL PANEL TO EQUIPMENT AND DEVICES IN THE DIKED AREAS SHALL BE TYPE XHHW CONDUCTORS RUN IN RIGID STEEL CONDUIT, SIZED AS SHOWN.
3. ~~NO WIRING INTO THE DIKED AREAS SHALL BE BURIED 9 INCHES INSIDE THE DIKE AREAS. WIRING SHALL UNDER NO CIRCUMSTANCES PENETRATE THE DIKE LININGS.~~ **ALLOWED**
4. A SEPARATE GROUNDING CONDUCTOR SHALL BE PROVIDED FOR ALL FLEXIBLE CONDUIT OR FITTINGS.
5. WIRING SHALL BE INSTALLED IN STRICT CONFORMANCE WITH NEC ARTICLES 514 AND 515. ANY PORTION OF UNDERGROUND WIRING WHICH IS BELOW THE SURFACE OF THE CLASS 1, DIVISION 1 OR DIVISION 2 LOCATIONS SHALL BE CONSIDERED TO BE IN A CLASS 1, DIVISION 1 LOCATION, WHICH SHALL EXTEND AT LEAST TO THE POINT OF EMERGENCE ABOVE GRADE AND SHALL WARRANT THE INSTALLATION OF EXPLOSION PROOF SEALS.

CLEARING AND GRUBBING LIMIT

3/4 HP MOTOR, 1Ø, 240V.

3 No. 12 TYPE USE DIRECT BURIAL

EMERGENCY STOP BUSH-BUTTON STATION S2 MOUNT ON A 4" x 4" x 10" PRESSURE TREATED POST +4'-6" A.G.

2 No. 12, 3/4"

CONTROL PANEL SEE DETAIL SHT. E-2

EXISTING CHAIN LINK FENCE

EDGE OF LINER DIKED AREA

KEEP ALL WIRING OUT OF THE DIKED AREA

SERVICE DROP POLE 25'-0" PRESSURE TREATED

SLOUGH

CLEARING AND GRUBBING LIMIT

3 No. 2 TYPE USE DIRECT BURIAL

TOP OF DIKE

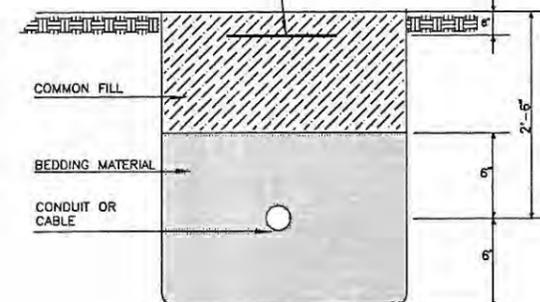
FIRING RANGE

EXIST. BLDG

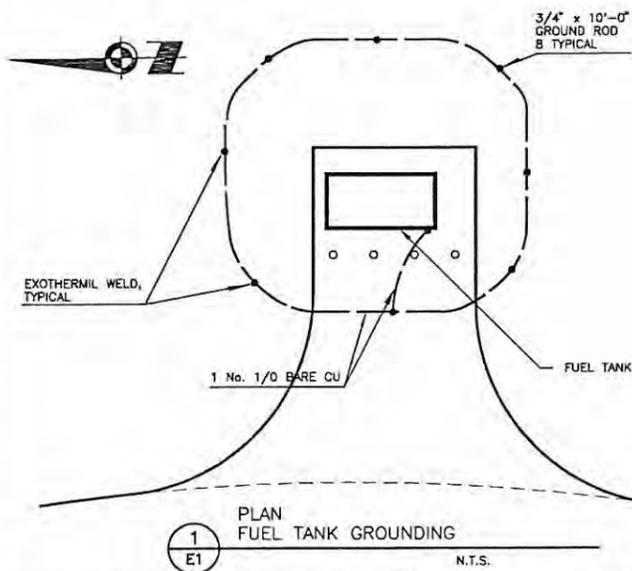
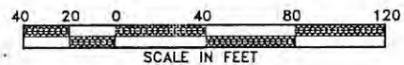
ELECTRICAL SITE PLAN

(ALTERNATE #2)

IDENTIFYING TAPE



UNDERGROUND CABLE BURIAL DETAIL NO SCALE



PLAN FUEL TANK GROUNDING

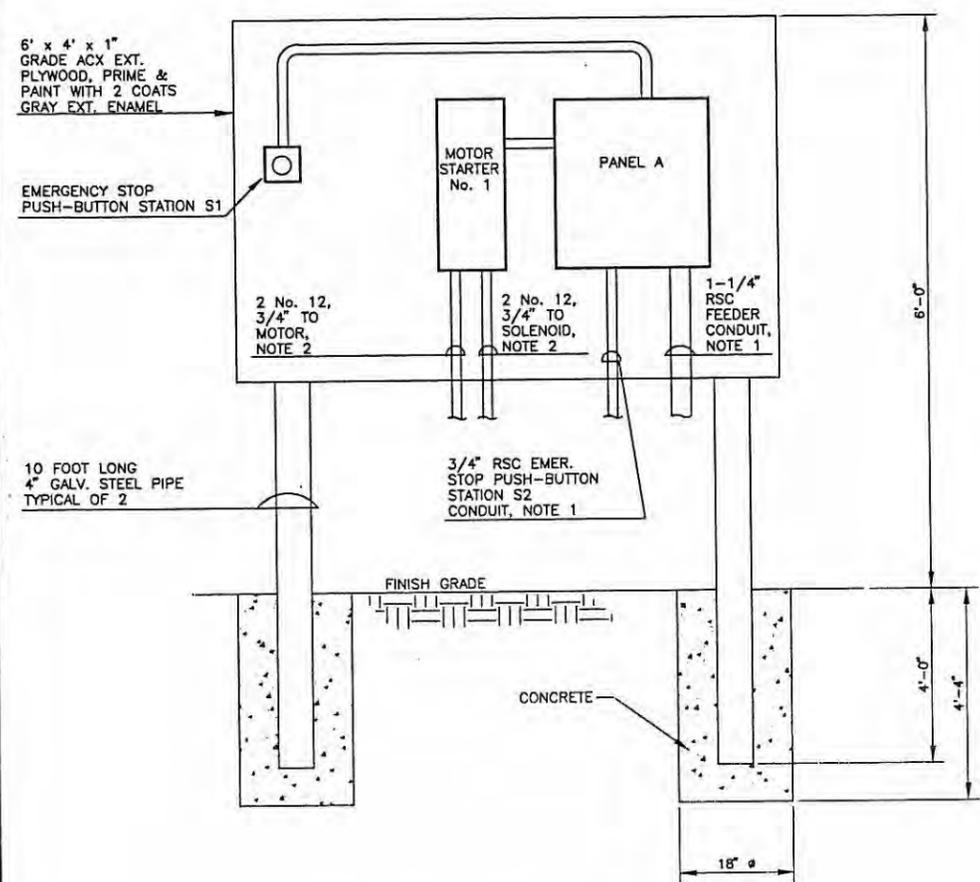
1 E1

N.T.S.

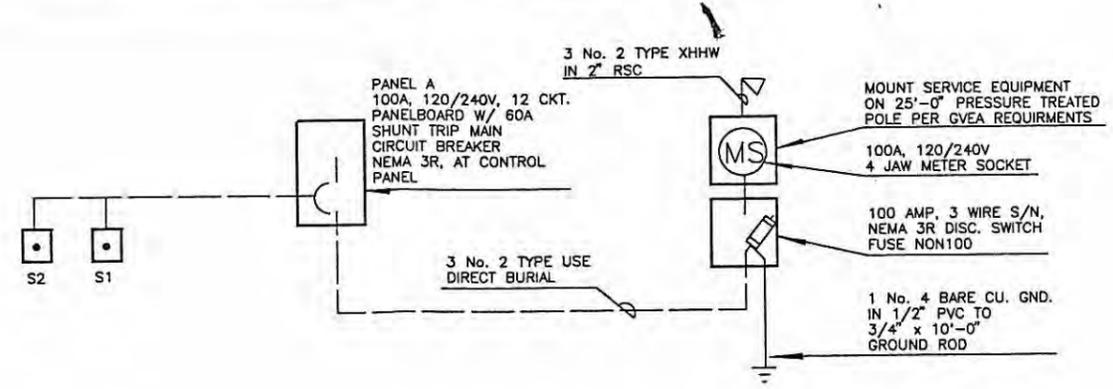
AS-BUILT PLANS

Initials: [Signature] Date: 11/19/93

EPA APPROVED FIRE TRAINING AREA SHEET 10 OF 11 E1 64849



CONTROL PANEL ELEVATION
N.T.S.



POWER ONE-LINE DIAGRAM

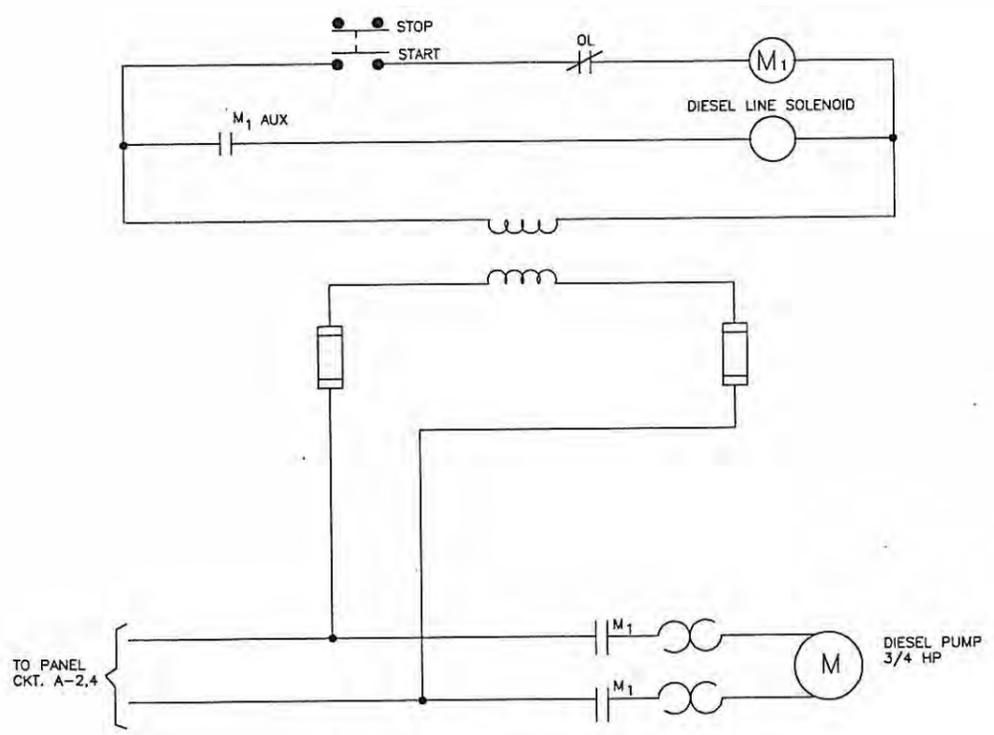
NO SCALE

DISC. SW.-FUSE-MAGNETIC STARTER SCHEDULE

HP	DISCONNECT SW.	FUSE	MAG.STR. SIZE	REMARKS
3/4	30A-2P	LPNRK-10A	0	NEMA TYPE 4 ENCLOSURE

PANEL	A	12	CKT	120/240v	3	ø	1	ø	MAINS	60A-2P	MCB	10,000	A.I.C.	SURFACE	MTD.
LOAD															
SPARE										828					3/4 HP DIESEL PUMP
SHUNT TRIP BKR. CONTROL										50					SPARE

- PANEL SCHEDULE NOTES**
- ALL BREAKERS 20A-1P UNLESS OTHERWISE INDICATED.
 - PROVIDE 20A-1P BREAKERS IN ALL PLACES MARKED SPARE.
 - REMAINING SPACES BLANK, TO MAKE TOTAL NUMBER OF CIRCUITS INDICATED ON PANEL.
 - PROVIDE 120V SHUNT TRIP CONTROL FOR THE MAIN CIRCUIT BREAKER.



ELEMENTARY MOTOR CONTROL WIRING DIAGRAM

165100051006102 Tue Oct 26 14:46:46 1993



LEGEND

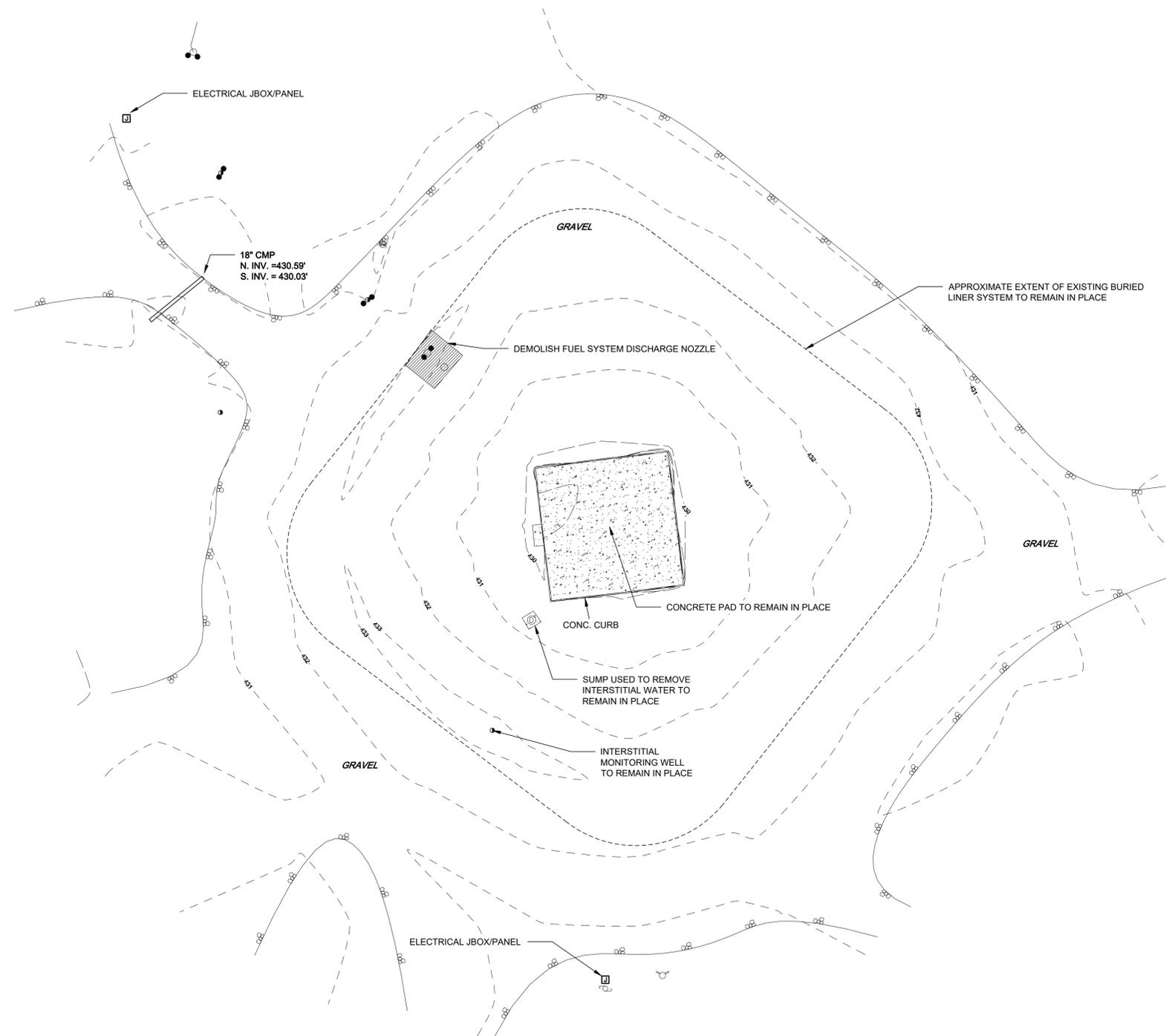
	MONITORING WELL
	EXISTING CONTOURS
	NEW CONTOURS
	DEMOLITION
	GRAVEL
	SIGN
	BOLLARD
	DIRECTION OF WATER FLOW
	SUMP
	HYDRANT
	UTILITY POLE
	JUNCTION BOX
	LIGHTPOLE
	ELECTRICAL MANHOLE

SURVEY NOTES

1. A SURVEY WAS PERFORMED WITH THE PURPOSE OF LOCATING TOPOGRAPHY AND IMPROVEMENTS AROUND THE FAI FIRE TRAINING PIT FOR ENGINEERING DESIGN.
2. COORDINATES ARE ALASKA STATE PLANE ZONE 3, NAD83 US FEET; ELEVATIONS ARE NAVD88 VERTICAL DATUM, FEET.
3. BURIED UTILITIES MAY EXIST THAT ARE NOT SHOWN. CONTACT ALASKA DIG LINE OR FAI PERSONNEL PRIOR TO EXCAVATION.

GENERAL AND DEMOLITION NOTES

1. NO BURIED UTILITY LOCATES WERE PERFORMED. CONTRACTOR SHALL CONFIRM UTILITY LOCATIONS PRIOR TO WORK.
2. CONTRACTOR SHALL PROTECT EXISTING FEATURES TO REMAIN SUCH AS UTILITIES, ENVIRONMENTAL MONITORING WELLS, ETC., AND ADJACENT AREAS OF THE PROPERTY.
3. DEMOLISH ALL COMPONENTS OF THE FUEL DELIVERY SYSTEM FROM THE DISCHARGE NOZZLE BACK TO THE TANK. TANK TO REMAIN IN PLACE
4. REMOVE AND PROPERLY DISPOSE OF ALL MATERIALS AND DEBRIS WITHIN THE WORK AREA, OR RELOCATE ON THE PROJECT SITE OUTSIDE OF THE WORK AREA, AS DIRECTED BY THE ENGINEER. ALL REMOVED ITEMS SHALL BE DISPOSED OF IN A LEGAL MANNER, COMPLYING WITH ALL LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS.
5. THESE DRAWINGS DO NOT ADDRESS THE EXCAVATION, HANDLING OR MANAGEMENT OF ANY CONTAMINATED SOIL OR WATER.
6. INTERSTITIAL MONITORING WELL TO BE FILLED WITH SEALING GROUT AND ABANDONED IN PLACE.



1 EXISTING CONDITIONS AND DEMOLITION PLAN
C100 1' = 30'

FAI FIRE TRAINING PIT CAP SURVEY AND DESIGN

ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

EXISTING CONDITIONS AND DEMOLITION PLAN

C100

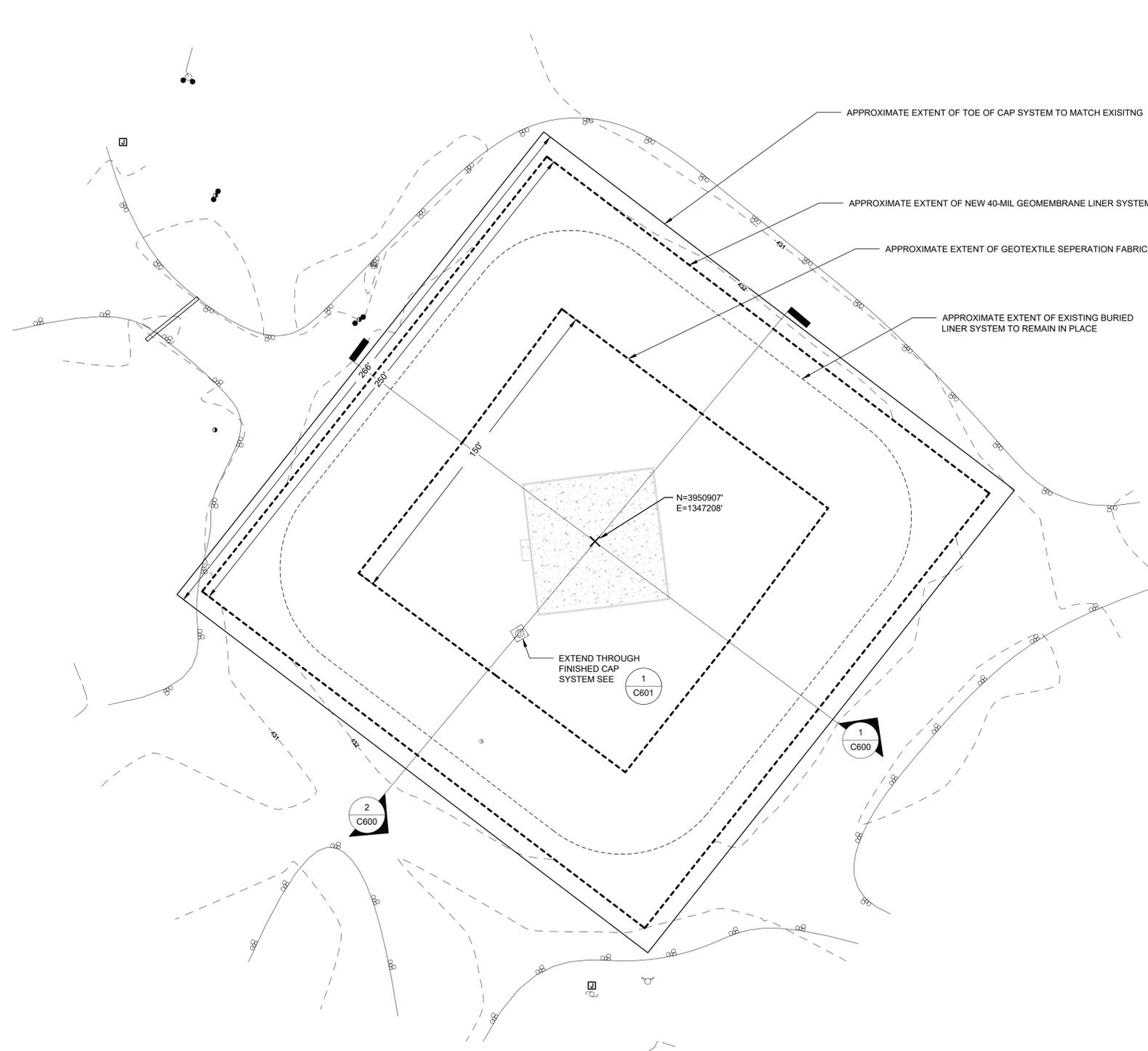


LEGEND

	MONITORING WELL
	EXISTING CONTOURS
	NEW CONTOURS
	DEMOLITION
	GRAVEL
	SIGN
	BOLLARD
	DIRECTION OF WATER FLOW
	SUMP
	HYDRANT
	UTILITY POLE
	JUNCTION BOX
	LIGHTPOLE
	ELECTRICAL MANHOLE

GENERAL NOTES

- CONSTRUCTION MUST OCCUR WHEN THE MINIMUM LOW TEMPERATURES ARE ABOVE 35°F TO ACHIEVE THE REQUIRED COMPACTION FOR STRUCTURAL FILL AND CAP MATERIALS AND THUS PROTECT THE INTEGRITY OF THE IMPERMEABLE LINER PER THE MANUFACTURER'S REQUIREMENTS. NO SNOW OR ICE MAY BE PRESENT OR ALLOWED TO ACCUMULATE AT THE SITE DURING CONSTRUCTION, AND ALL FILL MUST BE THAWED DURING PLACEMENT, COMPACTION, AND CONSTRUCTION OF SUCCESSIVE LIFTS. THIS ENGINEERED CAP SYSTEM DESIGN IS BASED UPON A CONSTRUCTION SEASON COMMENCING NO EARLIER THAN MAY 1ST AND EXTENDING NO LATER THAN OCTOBER 1ST AND MUST BE COMPLETED IN ONE SEASON.
- THE GEOMEMBRANE LINER SYSTEM AND SEPERATION FABRIC LAYER ARE LOCATED BASED ON THE CENTER OF EXISTING CONCRETE PAD. SEE SHEET C600.



1 SITE IMPROVEMENTS
C200 1' = 30'

FAI FIRE TRAINING PIT CAP SURVEY AND DESIGN

ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

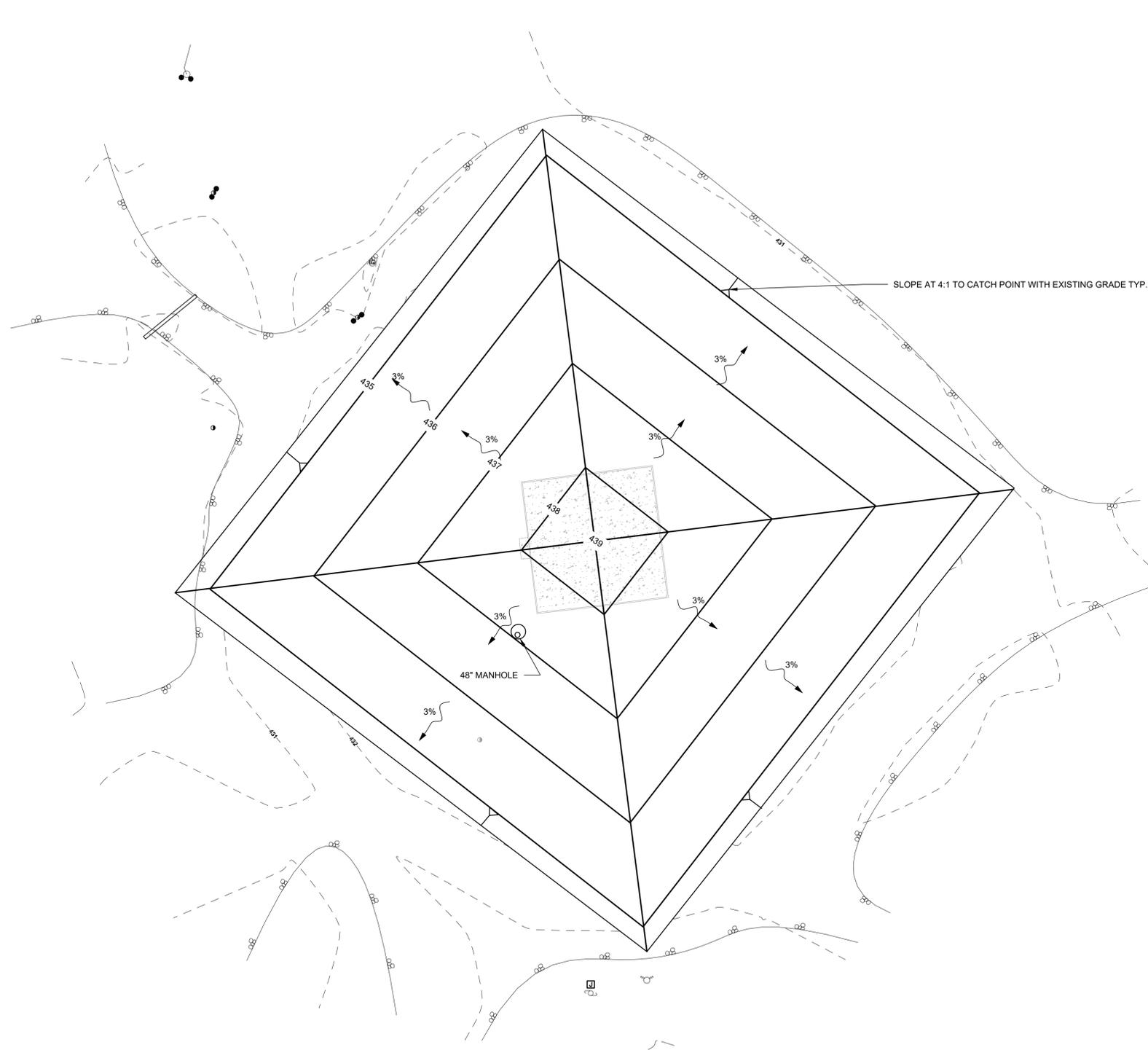
SITE IMPROVMENTS

C200



LEGEND

	MONITORING WELL
	EXISTING CONTOURS
	NEW CONTOURS
	DEMOLITION
	GRAVEL
	SIGN
	BOLLARD
	DIRECTION OF WATER FLOW
	SUMP
	HYDRANT
	UTILITY POLE
	JUNCTION BOX
	LIGHTPOLE
	ELECTRICAL MANHOLE



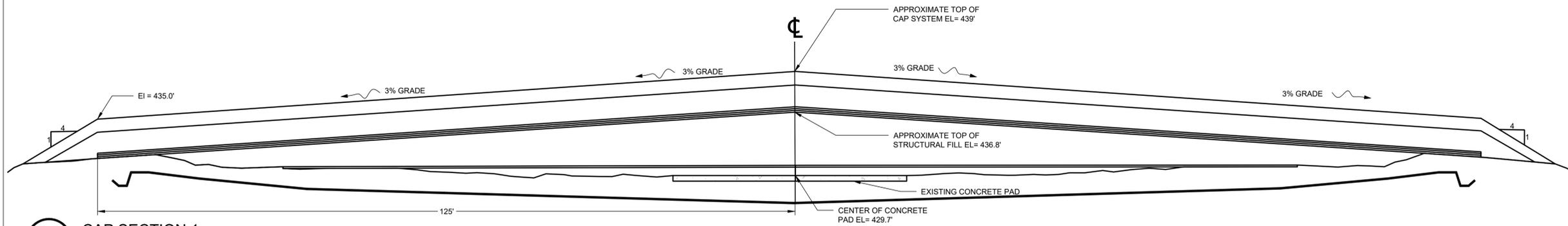
FAI FIRE TRAINING PIT CAP SURVEY AND DESIGN

ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

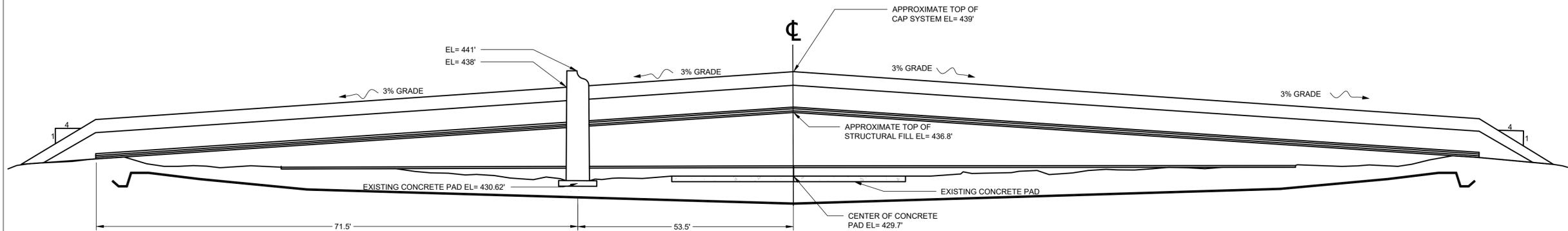
GRADING PLAN

1 GRADING PLAN
C300 1' = 30'

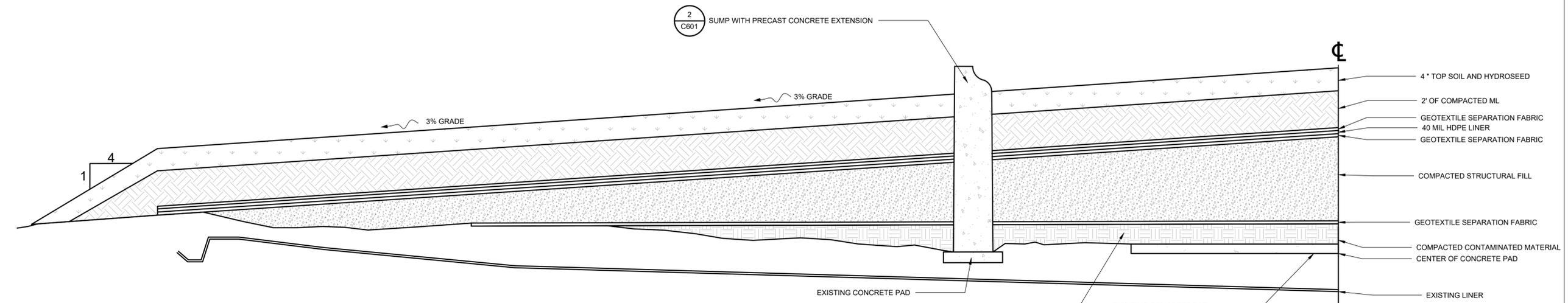
C300



1 CAP SECTION 1
 C600 NO SCALE



2 CAP SECTION 2
 C600 NO SCALE



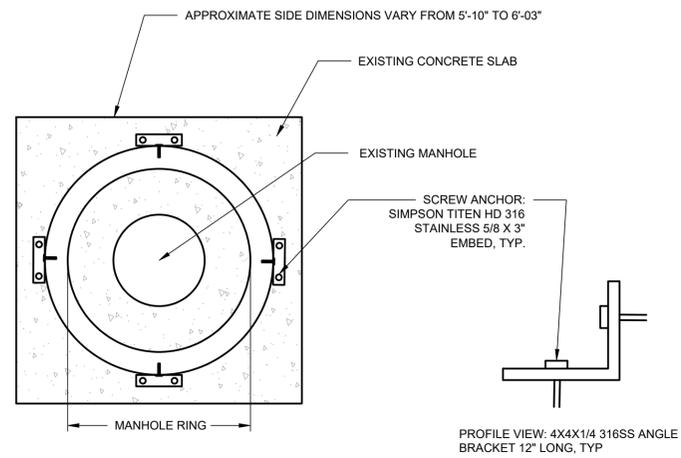
3 CUT OF CAP SECTION 2
 C600 NO SCALE

FAI FIRE TRAINING
 PIT CAP SURVEY
 AND DESIGN

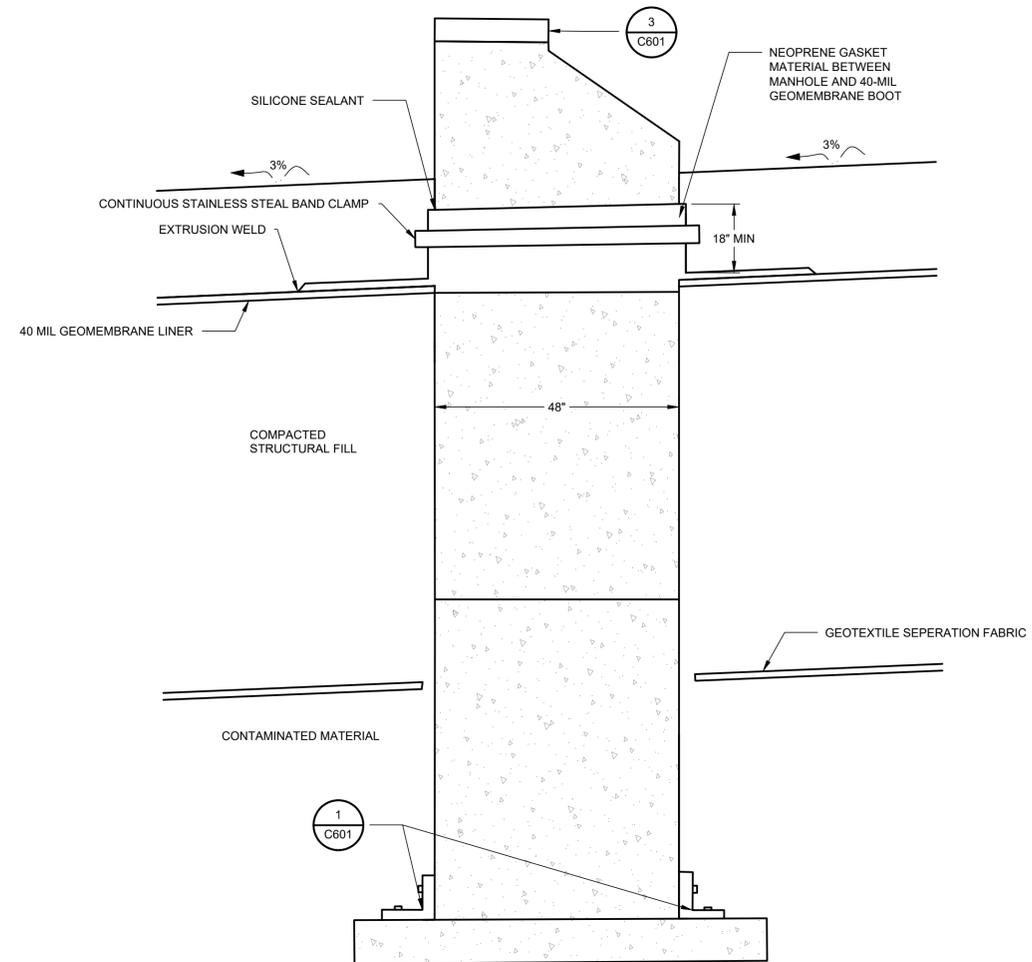
ISSUE DATE	06 SEPT 2019
COMM. NUMBER	281901
DESIGNED BY	MJS
DRAWN BY	IAL
SCALE	0" = 1"

SECTIONS

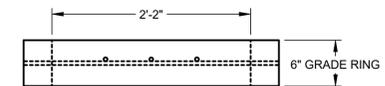
C600



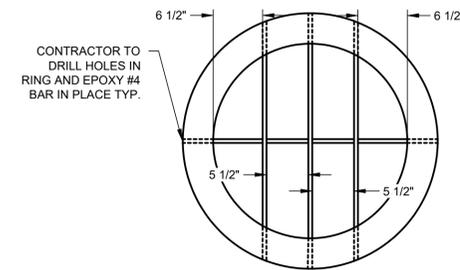
1 MOUNT FOR EXISTING SLAB
C601 N.T.S.



2 FIELD FABRICATED 40-MIL GEOMEMBRANE BOOT ON MANHOLE EXTENSION
C601 N.T.S.



PROFILE VIEW



PLAN VIEW

3 GRADE RING WITH REBAR
C601 N.T.S.

FAI FIRE TRAINING
PIT CAP SURVEY
AND DESIGN

ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

DETAILS

C601

CONCRETE MANHOLE

1. CONCRETE MANHOLES SHALL MEET ASTM C478 SPECIFICATIONS, 5,000 PSI MIX, WITH REINFORCEMENT 4X8-w4/s2.1
2. CONCRETE MANHOLE PROVIDING ACCESS TO THE EXISTING MONITORING SUMP SHALL BE 48-INCH DIAMETER PRECAST CONCRETE MANHOLE RISERS; TWO 4-FT TALL RISER SECTIONS, ONE 3-FOOT ECCENTRIC CONE RISER AND ONE 6-INCH GRADE RING WITH SOLID MANHOLE LID. THE BOTTOM RISER SECTION CONNECTING TO THE EXISTING MONITORING SUMP PAD SHALL BE FABRICATED WITHOUT A BOTTOM KEYWAY TO PROVIDE A FLAT MATING SURFACE AND TO FACILITATE THE ANCHORING OF THE RISER TO THE EXISTING MONITORING SUMP PAD AS SHOWN ON THE DRAWINGS.
3. ALL MANHOLE RISER SECTION JOINTS, INCLUDING RISER CONNECTION AT THE EXISTING MONITORING SUMP PAD, SHALL BE SEALED WITH CS102 BY CONCRETE SEALANTS INC., OR ENGINEER APPROVED EQUAL.
4. PROVIDE D&L A-2300 MANHOLE FRAME WITH GASKET LID

GEOMEMBRANE LINER AND GEOTEXTILE FABRIC NOTES:

1. ALL MATERIALS SHALL BE TRANSPORTED, STORED, HANDLED, PLACED, CONSTRUCTED AND BACKFILLED ACCORDING TO THE MANUFACTURER'S REQUIREMENTS AND IN COMPLIANCE WITH THE INTERNATIONAL ASSOCIATION OF GEOSYNTHETIC INSTALLERS, FROM [HTTP://WWW.IAQI.ORG](http://www.iaqi.org).
2. 40-MIL GEOMEMBRANE LINER: A 40-MIL GEOMEMBRANE LINER SHALL BE INCORPORATED INTO THE CAP SYSTEM PER THE DRAWINGS. THE LINER MATERIAL SHALL BE LAYFIELD 6040X ENVIRO LINER OR ENGINEER-APPROVED EQUAL MEETING ALL OF THE INDEX, PERFORMANCE AND ENDURANCE PROPERTIES OF THE 6040X.
3. NON-WOVEN GEOTEXTILE FABRIC: A 12-OUNCE NOMINAL WEIGHT NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED AS A SEPARATION FABRIC AND FOR LINER PROTECTION PER THE DRAWINGS. THE FABRIC SHALL BE MIRAFI S800 OR ENGINEER-APPROVED EQUAL.

STRUCTURAL FILL

THE STRUCTURAL FILL SHALL CONSIST OF PIT RUN MEETING THE GRADATION REQUIREMENTS AS FOLLOWS:

SIZE	% PASSING
3"	100
NO. 4 MESH	30-60
NO. 200 MESH	0-5

THE USE OF ANY CRUSHED STRUCTURAL FILL MATERIAL IS PROHIBITED. STRUCTURAL FILL SHALL BE PLACED IN LOOSE LIFTS WITH A THICKNESS NO GREATER THAN 8-INCHES, AND COMPACTED TO A MINIMUM 95% OF MAXIMUM DRY DENSITY ACCORDING TO STANDARD PROTECTOR TEST ASTM D698. A DENSITY TEST SHALL BE CONDUCTED FOR EVERY 6,000 SQUARE FEET OF LIFT AREA. ADDITIONAL COMPACTION TESTS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

THE STRUCTURAL FILL SURFACE FINISHED FOR PLACEMENT OF THE GEOTEXTILE FABRIC AND 40-MIL LINER SYSTEM SHALL BE FREE OF SHARP ROCK FRAGMENTS OR STONES, AND OTHER DELETERIOUS MATTER SUCH AS TREE ROOTS, ORGANICS, CONSTRUCTION DEBRIS, METALLIC OBJECTS, ETC. THE SURFACE SHALL NOT HAVE ANY NATURAL OR FOREIGN OBJECTS THAT PROTRUDES ABOVE THE SURFACE OF THE SUBGRADE WITH THE EXCEPTION OF THE CONCRETE MANHOLE PROVIDING FUTURE ACCESS TO THE MONITORING SUMP.

40-MIL GEOMEMBRANE LINER SYSTEM COVER MATERIAL

LINER COVER MATERIAL SHALL BE A CLEAN SILT CLASSIFIED AS (ML) WITH NO ROCKS OR OTHER DELETERIOUS MATTER SUCH AS TREE ROOTS, ORGANICS, CONSTRUCTION DEBRIS, METALLIC OBJECTS, ETC.

THE LINER COVER MATERIAL SHALL BE CONSTRUCTED AS PER THE DRAWINGS, PLACED IN LOOSE LIFTS WITH A THICKNESS NO GREATER THAN 8-INCHES, AND COMPACTED TO A MINIMUM 95% OF MAXIMUM DRY DENSITY ACCORDING TO STANDARD PROTECTOR TEST ASTM D698. A DENSITY TEST SHALL BE CONDUCTED FOR EVERY 6,000 SQUARE FEET OF LIFT AREA. ADDITIONAL COMPACTION TESTING MINIMUM OF ONE COMPACTION TEST PER LIFT SHALL BE PERFORMED. COMPACTION TESTING ON FILL WITHIN 24 INCHES OF THE 40-MIL GEOMEMBRANE LINER SHALL BE OBSERVED BY THE ENGINEER AND CONDUCTED IN SUCH A MANNER AS TO ENSURE THAT THE INTEGRITY OF THE FABRIC/LINER SYSTEM IS NOT COMPROMISED. ADDITIONAL COMPACTIONS TESTS MAY BE REQUIRED PER THE DISCRETION OF THE ENGINEER.

CONTRACTOR SHALL VERIFY MINIMUM LIFT THICKNESSES AND EQUIPMENT TYPE ALLOWED TO OPERATE ON THAT LIFT BASED ON THE GEOMEMBRANE LINER MANUFACTURER'S REQUIREMENTS AND THE INTERNATIONAL ASSOCIATION OF GEOSYNTHETIC INSTALLERS SPECIFICATIONS.

TOPSOIL

SHALL BE FRIABLE LOAM FREE OF SUBSOIL, LARGE ROOTS, GRASS, STONES, NOXIOUS WEEDS, DEBRIS, AND OTHER FOREIGN MATERIALS. SANDY-SILT OR SILTY SAND IS NOT ACCEPTABLE. SOIL MIXTURE MUST CONTAIN 25-45 PERCENT SAND, 35-55 PERCENT SILT, 10-20 PERCENT BY VOLUME OF FINELY CHOPPED, WELL MIXED ORGANIC MATERIALS, BE FREE OF STONES 1/2 INCH OR LARGER IN ANY DIMENSION AND OTHER EXTRANEIOUS MATERIALS HARMFUL TO PLANT GROWTH, AND HAVE A MAXIMUM MOISTURE CONTENT OF 50 PERCENT WITH AN ACIDITY (PH) RANGE BETWEEN 5.5 TO 7.0.

A TEST REPORT ON THE TOPSOIL PROPOSED FOR USE SHALL INCLUDE PH, NITROGEN, PHOSPHOROUS, POTASSIUM, PARTICLE SIZE AND ORGANIC CONTENT BY VOLUME.

TOPSOIL SHALL BE PLACED TO A 4-INCH LIGHTLY COMPACTED DEPTH. TOPSOIL SHALL NOT BE SPREAD OVER FROZEN OR EXCESSIVELY WET GROUND. RAKE THE SEEDBED LIGHTLY AND REMOVE DEBRIS, PLANT GROWTH AND IRREGULARITIES.

SEEDING

SEED MIX SHALL CONFORM TO THE FOLLOWING OR APPROVED EQUIVALENT:

NAME	PROPORTION BY WEIGHT	PURITY	GERMINATION
SEEDING -5 LBS/1,000 SF			
"KENAI" KENTUCKY (POA PRETENSIS "KENAI")	50%	90%	85%
CREEPING RED FESCUE (FESTUCA RUBRA "ARCTARED")	25%	90%	85%
PERENNIAL RYEGRASS (LOLIUM MULTIFLORUM)	25%	90%	85%

FERTILIZER: APPLY 12 POUNDS OF 17-17-17 FERTILIZER PER 1,000 SF AT THE TIME OF SEEDING.

HYDROSEEDED AREAS TO BE MULCHED USING NATURAL WOOD CELLULOSE FIBER SPECIFICALLY MANUFACTURED FOR THE PURPOSE SUCH AS WEYERHAEUSER COMPANY (SILVAFIBER), THE CONWEB CORPORATION (CONWEB), OR APPROVED EQUAL. PAPER MULCH IS UNACCEPTABLE. DYE GREEN SHALL BE USED TO FACILITATE METERING MATERIALS APPLICATION.

APPLY GRASS SEED MIXTURE SPECIFIED AT THE RATE OF 5 POUNDS PER 1,000 SQUARE FEET. SEED, FERTILIZER, AND MULCH MATERIAL MAY BE PLACED BY THE FOLLOWING METHODS:

- PLACE A SLURRY MADE OF SEED, FERTILIZER, SEEDING MULCH, AND WATER. MULCH SHALL BE ADDED TO THE WATER SLURRY IN THE HYDRAULIC SEEDER AFTER THE PROPORTIONATE AMOUNTS OF SEED AND FERTILIZER HAVE BEEN ADDED. SLURRY MIXTURE SHALL BE COMBINED AND APPLIED TO RESULT IN AN EVEN DISTRIBUTION OF ALL MATERIALS. HYDRAULIC SEEDING EQUIPMENT SHALL BE CAPABLE OF MAINTAINING A CONTINUOUS AGITATION SO THAT A HOMOGENEOUS MIXTURE CAN BE APPLIED THROUGH A SPRAY NOZZLE. THE PUMP SHALL BE CAPABLE OF PRODUCING SUFFICIENT PRESSURE TO MAINTAIN A CONTINUOUS, NON-FLUCTUATING SPRAY CAPABLE OF REACHING THE EXTREMITIES OF THE SEEDING AREA WITH THE PUMP UNIT LOCATED ON THE ROADBED. SUFFICIENT HOSE SHALL BE PROVIDED TO REACH AREAS NOT PRACTICAL TO SEED FROM THE NOZZLE UNIT SITUATED ON THE ROADBED.
- MECHANICAL SPREADER, SEED DRILLS, LANDSCAPE SEEDER, CULTI-PACKER SEEDER, FERTILIZER SPREADER, OR OTHER APPROVED MECHANICAL SPREADING EQUIPMENT MAY BE USED. FERTILIZER SHALL BE SPREAD SEPARATELY AT THE SPECIFIED RATES AND THEN INCORPORATED IN ONE OPERATION TO A MINIMUM DEPTH OF 2 INCHES. SEEDED AREAS SHALL BE COMPACTED WITHIN 24 HOURS FROM THE TIME THE SEEDING IS COMPLETED, WEATHER AND SOIL CONDITIONS PERMITTING. BY CULTI-PACKER, ROLLER OR OTHER EQUIPMENT SATISFACTORY TO THE LANDSCAPE ARCHITECT.
- SEEDING BY HAND IS NOT ACCEPTABLE.

GROWING SEASON IS DEFINED AS THE PERIOD BETWEEN MAY 1 AND SEPTEMBER 30. SEEDING AFTER SEPTEMBER 30 WILL BE DORMANT SEEDING.

ESTIMATED QUANTITIES SUMMARY

STRUCTURAL FILL ABOVE EXISTING GROUND	5,250	CU YD
SILT ML COVER OVER 40 MIL LINER SYSTEM	5,000	CU YD
TOPSOIL	900	CU YD
HYDROSEED	7,500	SQ YD
12 OZ GEOTEXTILE FABRIC	147,500	SQ FT
40 MIL GEOMEMBRANE LINER	62,500	SQ FT

GENERAL NOTES

1. CONSTRUCTION MUST OCCUR WHEN THE MINIMUM LOW TEMPERATURES ARE ABOVE 35°F TO ACHIEVE THE REQUIRED COMPACTION FOR STRUCTURAL FILL AND CAP MATERIALS AND THUS PROTECT THE INTEGRITY OF THE IMPERMEABLE LINER PER THE MANUFACTURER'S REQUIREMENTS. NO SNOW OR ICE MAY BE PRESENT OR ALLOWED TO ACCUMULATE AT THE SITE DURING CONSTRUCTION, AND ALL FILL MUST BE THAWED DURING PLACEMENT, COMPACTION, AND CONSTRUCTION OF SUCCESSIVE LIFTS. THIS ENGINEERED CAP SYSTEM DESIGN IS BASED UPON A CONSTRUCTION SEASON COMMENCING NO EARLIER THAN MAY 1ST AND EXTENDING NO LATER THAN OCTOBER 1ST AND MUST BE COMPLETED IN ONE SEASON.



NOTES

Appendix F

Stormwater Pollution Prevention Plan

Storm Water Pollution Prevention Plan
For
Fairbanks International Airport
Fire Training Pit Corrective Action

Fairbanks International Airport (FAI)
Fairbanks, Alaska 99709

Operator(s)

Alaska Department of Transportation & Public Facilities (DOT&PF)
6450 Airport Way, Suite 1
Fairbanks, Alaska 99709

SWPPP Contact(s)

Shannon & Wilson, Inc.
Valerie Webb
2355 Hill Road
Fairbanks, Alaska 99709
(907)458-3152
vew@shanwil.com

SWPPP Preparation Date

8/23/2019

Estimated Project Dates

Start of Construction	Completion of Construction
<u>8/30/2019</u>	<u>9/1/2020</u>

APDES Project or Permit Authorization Number:

AKG002158

OPERATOR PLAN AUTHORIZATION/CERTIFICATION/DELEGATION

(To be signed by Responsible Corporate Officer)

I state that based on my review this SWPPP meets the minimum requirements of the Construction General Permit and that the project foreman, Mr. RJ Stumpf, has day-to-day operational control of the project site. Mr. Stumpf is responsible for the maintenance and implementation of the SWPPP including inspections, documentation, and application of the Best Management Practices at the site. Mr. Stumpf will notify all subcontractors of the requirement of this SWPPP. Mr. Stumpf has operational control over the project specifications, including the ability to make changes to the project specifications.

I hereby designate Valerie Webb of Shannon & Wilson, Inc. SWPPP Administrator as my authorized representative. This designee is responsible for the overall operations of the site and will be responsible for the implementation of the Storm Water Pollution Prevention Plan, compliance with the Construction General Permit, selecting and implementing 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 Mr. Stumpf 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.

Alaska Department of Transportation & Public Facilities

Signature

Mr. RJ Stumpf

Printed Name

Date

Project Foreman

Title

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TABLE OF CONTENTS

1.0	PERMITTEE (5.3.1)	9
1.1	Operator(s)/Contractor(s)	9
1.2	Subcontractors	9
2.0	STORM WATER CONTACTS (5.3.2)	11
3.0	PROJECT INFORMATION (5.3.3)	12
3.1	Project Information	12
3.2	Project Site Specific Conditions (5.3.3).....	12
4.0	NATURE OF CONSTRUCTION ACTIVITY (5.3.4)	13
4.1	Scope of Work	13
1.	Dewater the fire training pit.....	13
2.	Treat and discharge 500,000 to 900,000 gallons of the fire training pit’s liquid contents.	13
3.	Collect saturated soil and/or sludge samples from solids remaining after dewatering of the fire training pit. 13	
4.	Remove the aboveground storage tank (AST) and associated piping used for fire training.	13
5.	Excavate 20 to 30 cubic yards (cy) of soil from a previously-identified area adjacent to the fire training pit with elevated PFAS concentrations.....	13
6.	Extend the existing fire training pit sump.	13
7.	Cap the dewatered fire training pit.....	13
8.	Backfill the fire training pit with clean gravel fill.....	13
9.	Install and sample two clusters of four groundwater monitoring wells (MWs), one each upgradient and downgradient of the fire training pit.....	13
4.2	Project Function (5.3.4.1)	13
4.3	Support Activities (As Applicable)	14
4.4	Sequence and Timing of Soil-disturbing Activities (5.3.4.2)	14
4.5	Size of property and total area expected to be disturbed (5.3.4.3).....	14
	Runoff calculations were estimated using the middle value for Unimproved Areas listed in Table 8-2 of <i>Water Resources Engineering</i> by Ralph A. Wurbs and Wesley P. James (2002). No significant change in the runoff coefficient is expected because the excavated hot spot area will be backfilled into the FTP. The FTP will be backfilled, capped, and seeded.	15
4.6	Identification of All Potential Pollutant Sources (5.3.4.5).....	15
5.0	SITE MAPS (5.3.5)	16
6.0	DISCHARGES	16
6.1	Locations of Other Industrial Storm Water Discharges (5.3.8)	16
6.2	Allowable Non-Storm Water Discharges (1.4.3; 4.3.7; 5.3.9)	16
7.0	DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO TOTAL MAXIMUM DAILY LOADS (3.2, 5.6).....	16

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

7.1	Identify Receiving Waters (5.3.3.3)	17
7.2	Identify TMDLs (5.6.1)	17
8.0	DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO ENDANGERED SPECIES (3.3, 5.7)	17
8.1	Information on Endangered or Threatened Species or Critical Habitat (5.7.1)	17
9.0	APPLICABLE FEDERAL, STATE, TRIBAL, OR LOCAL REQUIREMENTS (4.15)	17
10.0	CONTROL MEASURES/BEST MANAGEMENT PRACTICES	18
10.1	Minimize Amount of Soil Exposed During Construction Activity	18
10.2	Maintain Natural Buffer Areas	18
10.3	Control Storm Water Discharges and Flow Rates	18
10.3.1	Protect Steep Slopes (4.2.6)	19
10.4	Storm Water Inlet Protection Measures (4.3.1)	19
10.5	Water Body Protection Measures (4.3.2)	19
10.6	Down-Slope Sediment Controls (4.3.3)	20
10.7	Stabilized Construction Vehicle Access and Exit Points (4.3.4)	20
10.8	Dust Generation and Track-Out from Vehicles (4.3.5)	20
10.9	Soil Stockpiles (4.3.6)	21
10.10	Sediment Basins (4.3.8)	21
10.11	Dewatering (4.4)	21
10.12	Soil Stabilization (4.5, 5.3.6.3)	22
10.13	Treatment Chemicals	23
10.13.1	Treatment Chemicals	23
10.14	Active Treatment System Information	23
10.15	Good Housekeeping Measures	24
10.15.1	Washing of Equipment and Vehicles	24
10.15.2	Fueling and Maintenance Areas (4.8.2)	24
10.15.3	Washout of Applicators/Containers Used for Paint, Concrete, and Other Materials (4.8.4)	24
10.15.4	Fertilizer or Pesticide Use (4.8.5)	24
10.16	Spill Notification (4.9)	24
10.17	Construction and Waste Materials (4.8.6, 5.3.7)	25
11.0	INSPECTIONS (5.4; 6.0)	25
11.1	Inspection Schedules	25
11.2	Inspection Form or Checklist	25
11.3	Corrective Action Procedures	25
11.4	Inspection recordkeeping	25
12.0	MONITORING PLAN (If Applicable) (5.5; 7.0)	26
12.1	Determination of Need for Monitoring Plan	26
13.0	POST-AUTHORIZATION RECORDS (5.8)	26
13.1	Additional Documentation Requirements	26

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: [FAI Fire Training Pit Corrective Action](#)

DATE: [8/23/2019](#)

13.1.1	Records of Employee Training.....	26
14.0	MAINTAINING AN UPDATED SWPPP (5.9).....	26
14.1	Log of SWPPP Modifications.....	27
14.2	Deadlines for SWPPP Modifications.....	27
15.0	ADDITIONAL SWPPP REQUIREMENTS (5.10).....	27
15.1	Retention of SWPPP	27
15.2	Main Entrance Signage.....	27
15.3	Availability of SWPPP.....	27
15.4	Signature and Certification.....	27

APPENDICES

- A. Site Maps and Drawings
- B. BMP Details
- C. Project Schedule
- D. Supporting Documentation:
 - Alaska’s Impaired Waters 2010
 - Excavation Dewatering Permit (AKG002158)
 - USFWS Vegetation Clearing Limits
 - Shannon & Wilson Fire Training Pit Corrective Action Work Plan Rev 1
- E. Permit Conditions:
 - Copy of Signed Notice of Intent
 - Copy of Letter from ADEC Authorizing Coverage, with ADEC NOI Tracking Number
 - Copy of 2016 Construction General Permit
- F. Grading and Stabilization Records
- G. Training Records
- H. Corrective Action Log
- I. Inspection Records
- J. Spill Log and ADEC Spill Reporting Placard
- K. Rain Gauge Log

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Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

1.0 PERMITTEE (5.3.1)

Identify permittee and any subcontractors.

1.1 Operator(s)/Contractor(s)

Operator Information			
Organization: Alaska Department of Transportation & Public Facilities	Name: Mr. RJ Stumpf	Title: Project Foreman	
Phone: (907)474-2587	Fax (optional):	Email: rj.stumpf@alaska.gov	
Mailing Address:	Street (PO Box): 6450 Airport Way, Suite 1		
	City: Fairbanks	State: Alaska	Zip: 99709
Area of Control	Day-to-day operational control of those activities at a site which are necessary to ensure compliance with a SWPPP or other permit conditions.		

Owner Information			
Organization: Alaska Department of Transportation & Public Facilities	Name: Mr. RJ Stumpf	Title: Project Foreman	
Phone: (907)474-2587	Fax (optional):	Email: rj.stumpf@alaska.gov	
Mailing Address:	Street (PO Box): 6450 Airport Way, Suite 1		
	Fairbanks	Alaska	99709
Area of Control	Operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications.		

1.2 Subcontractors

Subcontractor Information			
Organization: Shannon & Wilson, Inc.	Name: Marcy Nadel	Title: Environmental Lead	
Phone: (907)458-3150	Fax (optional):	Email: mdn@shanwil.com	
Mailing Address:	Street (PO Box): 2355 Hill Road		
	City: Fairbanks	State: Alaska	Zip: 99709
Area of Control	Assist in recommending modifications to the SWPPP, conduct SWPPP inspections, modify SWPPP as needed. Will coordinate with FAI and contractor staff regarding any recommended changes to the SWPPP.		

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

Subcontractor Information			
Organization: NRC	Name: Mr. Shaun Tucker	Title: Waste Handler Lead	
Phone: (907) 646-5050	Fax (optional):	Email: stucker@nrcc.com	
Mailing Address:	Street (PO Box): 619 East Ship Creek Avenue, Suite 309		
	City: Anchorage	State: Alaska	Zip: 99501
Area of Control	Collection and treatment of PFAS-impacted water from the fire training pit.		

Subcontractor Information			
Organization: Great Northwest, Inc.	Name: TBD	Title: Excavation and earthwork activities	
Phone: (907)452-5617	Fax (optional):	Email: xxxxx@grtnw.com	
Mailing Address:	Street (PO Box): 2975 Van Horn Road		
	City: Fairbanks	State: Alaska	Zip: 99709
Area of Control	Excavation and earthwork		

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Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

2.0 STORM WATER CONTACTS (5.3.2)

Identify the qualified persons responsible for the following required positions (note: a small project may have all these responsibilities carried out by one person):

- Storm Water Lead (5.3.2); person updating the SWPPP (5.3.2.2); Person(s) Conducting Inspections (5.3.2.3); Person(s) Conducting Monitoring (if applicable, 5.3.2.4), and Person(s) Operating Active Treatment System (if applicable, 5.3.2.5).
- Document that the named individuals are Qualified Persons as described in CGP Appendix C. Include documentation of qualifications in Appendix E of the SWPPP.

<u>Qualified Personnel</u>	<u>Responsibility</u>
Storm Water Lead DOT&PF Mr. RJ Stumpf 6450 Airport Way, Suite 1 Fairbanks, Alaska 99709 (907)474-2587 rj.stumpf@alaska.gov	Authority to stop and/or modify construction activities as necessary to comply with the SWPPP and the terms and conditions of the permit.
SWPPP Preparer Shannon & Wilson, Inc. Valerie Webb, CPG 2355 Hill Road Fairbanks, Alaska 99709 (907)458-3152 vew@shanwil.com	Possess the skills to assess conditions at the construction site that could impact storm water quality. Familiar with Part 5 as a means to implement the permit.
Storm Water Inspectors Shannon & Wilson, Inc. Chris Darrah, CPESC, CPG & Valerie Webb, CPG 2355 Hill Road Fairbanks, Alaska 99709 (907)458-3143 & (907)458-3152 cbd@shanwil.com & vew@shanwil.com	Assess conditions at the construction site that could impact storm water quality. Assess the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharge, and familiar with Part 6 as a means to ensure compliance with the permit.
Monitoring Person (If Applicable) Shannon & Wilson, Inc. Marcy Nadel 2355 Hill Road Fairbanks, Alaska 99709 (907)458-3150	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 (If Applicable) Shaun Tucker NRC 619 East Ship Creek Avenue, Suite 309 Anchorage, Alaska 99501 (907) 646-5050	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. Familiar with Part 4.5 as a means to implement and comply with the permit.

3.0 PROJECT INFORMATION (5.3.3)

This section gathers all relevant site data together to assist with filing for permit coverage.

3.1 Project Information

Project Name: FAI Fire Training Pit Corrective Action			
Location Address:	Street:	Borough or similar government subdivision:	
	6450 Airport Way, Suite 1	Fairbanks North Star Borough	
	City:	State:	Zip:
	Fairbanks	Alaska	99709
Latitude (decimal degree, 5 places):		Longitude (decimal degree, 5 places):	
64.7992		-147.8808	
Determined By: <input type="checkbox"/> GPS <input checked="" type="checkbox"/> Web Map: Google Earth <input type="checkbox"/> USGS Topo Map, Scale: Enter Text <input type="checkbox"/> Other: Enter Text			

3.2 Project Site Specific Conditions (5.3.3)

Mean annual precipitation based on nearest weather stations (inches): 10.53 inches at the Fairbanks International Airport. Information obtained from the Western Regional Climate Center website www.wrcc.dri.edu.

Soil Type(s) and Slopes (describe soil type(s) and current slopes; note any changes due to grading or fill activities): The greater Fairbanks area is located in the alluvial plains of the Tanana River. Soils originate from glacial outwash, loess, or erosion of upland bedrock material, deposited by running water.

Landscape Topography: The project area is generally flat, however roadbeds are elevated slightly above the surrounding vegetation. The FTP itself is a man-made basin bounded by a slight berm.

Drainage Patterns: Drainage patterns for the project site include shedding of water from roadbeds to the adjacent vegetated areas where stormwater either infiltrates or drains to a culvert located to west of the project area ultimately discharging to the Shooting Range Slough. Within the FTP, stormwater is retained in the basin, outside of the FTP, water is shed to drain to the surrounding vegetated areas.

Approximate Growing Season: The Fairbanks growing season is approximately mid-May through mid-September, per the National Weather Service information from 1930 to 2015.

Type of Existing Vegetation: The National Wetlands Inventory (NWI) provided by the U.S. Fish and Wildlife Service and a site visit from Shannon & Wilson were used to identify the following wetlands vegetation within the proposed construction area.

Historic site contamination evident from existing site features and known past usage of the site: Fairbanks International Airport is an Alaska Department of Environmental Conservation (ADEC) listed contaminated site due to the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater and surface water (ADEC File Number 100.38.277, Hazard ID 26816).

The FAI fire training pit is listed as a separate contaminated site (File Number 100.38.070, Hazard ID 1071). A work plan under separate cover has been submitted to the ADEC contaminated sites division for the corrective

action covered under this SWPPP. Refer to the work plan for additional information on the ADEC contaminated sites at FAI.

4.0 NATURE OF CONSTRUCTION ACTIVITY

4.1 Scope of Work

The objective of this project is to implement corrective actions addressing known PFAS and hydrocarbon contamination at and near the FAI's former fire training pit. Construction will be phased and will aim to reduce the volume of contaminated media at the fire training pit and minimize the impact to groundwater by reducing surface- water infiltration through PFAS- contaminated soil remaining onsite. The phases of construction are planned to be:

1. Dewater the fire training pit.
2. Treat and discharge 500,000 to 900,000 gallons of the fire training pit's liquid contents.
3. Collect saturated soil and/or sludge samples from solids remaining after dewatering of the fire training pit.
4. Remove the aboveground storage tank (AST) and associated piping used for fire training.
5. Excavate 20 to 30 cubic yards (cy) of soil from a previously-identified area adjacent to the fire training pit with elevated PFAS concentrations.
6. Extend the existing fire training pit sump.
7. Cap the dewatered fire training pit.
8. Backfill the fire training pit with clean gravel fill.
9. Install and sample two clusters of four groundwater monitoring wells (MWs), one each upgradient and downgradient of the fire training pit.

4.2 Project Function

The project function is to close the fire training pit as part of an interim corrective action for this contaminated site.

FAI is comprised of major air carrier operations, cargo operations, commuter and air taxi operations, and general aviation operations. Runway facilities consist of a primary 11,800-foot paved runway, a paved 3,190-foot paved general aviation runway, a gravel strip, and a float pond.

FAI's existing FTP and former fire training area are south of the primary FAI runway. The FTP was constructed in summer 1993 as a lined, 205-foot diameter basin. The basin contains well-drained fill material. The FTP is surrounded by soil berms designed to be 2 to 4 feet above existing grade, although they have been flattened over time.

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

The FAI Aircraft Rescue and Firefighting (ARFF) program has used aqueous film-forming foam (AFFF) for training, systems testing, and emergency response at the FAI for many years. The precise timeline and locations of AFFF use at the FAI are unknown. AFFF training and systems testing were likely conducted at several locations near what is now the southwest end of the small aircraft runway (2R-20L).

AFFF contains PFAS, a category of persistent organic compounds considered as emerging contaminants.

4.3 Support Activities

Support activities for this project are:

<u>Support Activity</u>	<u>Location</u>	<u>Dedicated</u>	
		<u>Yes</u>	<u>No</u>
Equipment Staging Yards	FTP Project Area	<input type="checkbox"/>	<input type="checkbox"/>
Material Storage Areas	FTP Project Area	<input type="checkbox"/>	<input type="checkbox"/>
Excavated Material Disposal Areas	Fire Training Pit	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Borrow Areas	South University Avenue	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.4 Sequence and Timing of Soil-disturbing Activities

The project will be phased as most of the corrective action cannot happen with freezing temperatures. This SWPPP is intended to cover 2019 and 2020 activities and will be phased in the following general sequence:

- Phase 1 – stockpiling of borrow material from an existing FAI gravel pit. Borrow material will be transported to the FTP project area.
- Phase 2 – excavation of the PFAS-impacted “hot spot” identified in the work plan. The excavated material will be deposited into the FTP.
- Phase 3 – water treatment of PFAS-impacted water from the FTP.
- Phase 4 – backfill and capping of the FTP.

4.5 Size of property and total area expected to be disturbed

The following are estimates of the construction site:

Total Project Area:.....	4.8	acres
Construction-site area to be disturbed:	3.5	acres
Percentage impervious area BEFORE construction:.....	15	%
Runoff coefficient BEFORE construction:	0.20	
Percentage impervious area AFTER construction:	15	%
Runoff coefficient AFTER construction:.....	0.20	

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

Runoff calculations were estimated using the middle value for Unimproved Areas listed in Table 8-2 of *Water Resources Engineering* by Ralph A. Wurbs and Wesley P. James (2002). No significant change in the runoff coefficient is expected because the excavated hot spot area will be backfilled into the FTP. The FTP will be backfilled, capped, and seeded.

4.6 Identification of All Potential Pollutant Sources

Potential sources of sediment to storm water runoff:

Excavation and fill material stockpiles are potential sources of sediment to storm water runoff.

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

Construction Materials and Activities	Storm Water Pollutants	Location
Vehicles and equipment	Diesel fuel, gasoline, oil, lubricants, heavy metals	Active work areas and equipment storage areas
Project operations	Debris, trash, litter	Active work areas on site
Exposed soils from excavation and fill material	Total suspended solids (TSS), total dissolved solids (TDS), turbidity	Near active excavation area
Water treatment of FTP water	PFAS	FTP

5.0 SITE MAPS

We have included a general location map and construction phasing maps in Appendix A of this SWPPP. The site maps show the project area and identify the following site-specific information:

- North arrow
- Property boundaries
- Locations where earth-disturbing activities will occur, noting phasing
- Location of areas that will not be disturbed and natural features to be preserved
- Location of all storm water conveyances including ditches, pipes, and swales
- Locations of storm water inlets and outfalls, with a unique identification code for each outfall
- Locations where storm water and/or authorized non-storm water discharges to waters of the U.S. (including wetlands).
- Direction of storm water flow and approximate slopes anticipated after grading activities
- Locations where control measures will be or have been installed
- Locations where exposed soils will be or have been stabilized
- Locations of support activities
- Locations of all waters of the U.S. on-site (including significant wetland areas $\geq 10,000$ ft²) and those within 2,500 feet of the site boundary
- Sampling point(s)
- Areas where final stabilization has been accomplished
- Staging and material storage areas (construction materials, hazardous materials, fuels, etc.)

Porta-potties will be moved as construction progresses, and their locations will be updated on the SWPPP site maps as they move.

6.0 DISCHARGES

Subject to compliance with the terms and conditions of the 2016 CGP, the permittee is authorized to discharge pollutants in storm water discharges from the site. 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. This section describes the allowable storm water and non-water discharges for this project.

6.1 Locations of Other Industrial Storm Water Discharges

The storm water discharge for this project are projected to be primarily from equipment staging yards, excavation, stockpiles, and backfill operations. Refer to Section 11.0 for inspection requirements for these areas.

6.2 Allowable Non-Storm Water Discharges

Authorized non-storm water discharges for this project include treated water from the corrective action, and water used for dust control and landscaping irrigation.

7.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO TOTAL MAXIMUM DAILY LOADS

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 the discharge of pollutants from the site is consistent with the assumptions and requirements of the TMDL. The SWPPP must include documentation supporting a determination of permit eligibility with regard to waters that have a TMDL.

7.1 Identify Receiving Waters

Description of receiving waters: The main receiving water body is the Unnamed Slough, locally known as "Shooting Range Slough". There are also several other unnamed ponds and wetlands surrounding the project area.

Description of storm sewer and/or drainage systems: There are ditches and culverts in the project area that direct stormwater towards the Shooting Range Slough. The project area and drainage systems are not a part of the Fairbanks North Star Borough's MS4 system.

7.2 Identify TMDLs

Is an EPA-established or approved TMDL published for the receiving water(s) listed in Section 7.1? Yes No.

8.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO ENDANGERED SPECIES

The SWPPP includes documentation supporting a determination of permit compliance with regards to the Endangered Species Action (Appendix D).

8.1 Information on Endangered or Threatened Species or Critical Habitat

Are endangered or threatened species and critical habitats on or near the project area? Yes No.

Describe how this determination was made: Per the U.S. Fish and Wildlife Services (USFWS) database, there are twelve threatened and/or endangered animal species and one threatened plant species in Alaska. According to the USFWS Threatened & Endangered Species Active Critical Habitat – Online Mapper viewed on August 22, 2019.

Will species or habitat be adversely affected by storm water discharge? Yes No.

The Alaska Department of Fish and Game (ADF&G) database does not identify any locations that are designated as critical habitat or as wildlife sanctuaries within the proposed project area.

However, due to nesting activities of native birds, the USFWS's Timing Recommendations for Land Disturbances & Vegetation Clearing (June 2017) recommends avoiding land disturbances and vegetation clearing for interior Alaska from May 1 through July 20, for all habitat types, except eagle habitat. If eagle nests are present, the recommended times to avoid land disturbances and vegetation clearing are March 1 through August 31. This is a recommendation and land clearing activities may occur during these times. However, if any nesting in the area is observed, all vegetation clearing and land disturbance activities must cease in the observed area.

9.0 APPLICABLE FEDERAL, STATE, TRIBAL, OR LOCAL REQUIREMENTS

A permittee must ensure 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.

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

The work area is within the Fairbanks North Star Borough (FNSB). However, due to the size of the project (less than 5 acres) coordination with the FNSB Storm Water team is not required.

The proposed work area also falls under the permitting authority of the ADEC. In 2008, the ADEC took operational control from the EPA's National Pollution Discharge Elimination Systems (NPDES) discharge permitting and compliance program established under the Clean Water Act. The requirements set in this SWPPP are in accordance with the requirements by the ADEC Storm Water Program's CGP. There are no tribal lands in the proposed work area.

10.0 CONTROL MEASURES/BEST MANAGEMENT PRACTICES

This section describes the types and locations of control measures and BMPs to be installed and maintained in accordance with Section 4.0 of the CGP. This section describes each control measure and BMP, including installation schedule and maintenance, inspection, and removal requirements. The BMP detail sheets include installation, maintenance, inspection, removal requirements, and manufacturer's specifications are included in Appendix B. The BMP detail sheets were obtained from the December 2011 Alaska Storm Water Guide, the September 2005 IDEQ Storm Water Best Management Practices Catalog, or the EPA's Storm Water Menu for BMPs website.

The person(s) identified in Section 2.0 of this SWPPP will be responsible for ensuring compliance with the installation, maintenance, inspection, and removal of these control measures.

10.1 Minimize Amount of Soil Exposed During Construction Activity

There is very minimal excavation required for the project. As such, soil disturbance is expected to be very minimal for this project.

10.2 Maintain Natural Buffer Areas

Are stream crossings or waters of the U.S. located within or immediately adjacent to the property? Yes No.

Construction activities will include discharge of treated water to the Unnamed Slough, locally known as "Shooting Range Slough". Both an ADEC Work Plan and an APDES Dewatering Permit have been authorized for this work.

There will be two stockpiles for the project. The stockpiles will be covered and protected with straw wattles at the cover base. These BMPs are a precautionary action to prevent storm water runoff from entering the surrounding receiving waters.

10.3 Control Storm Water Discharges and Flow Rates

BMP Description: Preserve Natural Vegetation

Installation Schedule: NA; pre-existing conditions at the site which will be kept undisturbed as much as possible.

Maintenance and Inspection: The preservation of natural vegetation will be preserved as much as possible. The integrity of the natural system will be inspected and maintenance will be required to repair damaged vegetation, if necessary.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

BMP Description: Straw Wattles

Installation Schedule: Installation of straw wattles will be completed prior to construction activities for a given phase. Refer to the BMP detail sheet in Appendix B for details on the installation of this BMP.

Maintenance and Inspection: Straw wattles will be inspected for splitting, tears, unravelling, slumping, and proper installation. Maintenance or replacement is required if the straw wattles exhibits splitting, tears, unravelling, slumping, improper installation, or if sediment has accumulated more than 50-percent of the straw wattle's above grade height.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

10.3.1 Protect Steep Slopes

Will steep slopes be present at the site during construction? Yes No.

10.4 Storm Water Inlet Protection Measures

Culverts in the project area will require inlet and outlet protections. Since the area is relatively flat, straw wattles are recommended for protection in these areas.

BMP Description: Straw Wattles

Installation Schedule: Installation of straw wattles will be completed prior to construction activities for a given phase. Refer to the BMP detail sheet in Appendix B for details on the installation of this BMP.

Maintenance and Inspection: Straw wattles will be inspected for splitting, tears, unravelling, slumping, and proper installation. Maintenance or replacement is required if the straw wattles exhibits splitting, tears, unravelling, slumping, improper installation, or if sediment has accumulated more than 50-percent of the straw wattle's above grade height.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

10.5 Water Body Protection Measures

The control measures used to minimize discharge of sediment prior to entry into the several water bodies (the slough, ponds, and wetlands) in the project area are described below.

BMP Description: Preserve Natural Vegetation

Installation Schedule: NA; pre-existing conditions at the site which will be kept undisturbed as much as possible.

Maintenance and Inspection: The preservation of natural vegetation will be preserved. The integrity of the natural system will be inspected and maintenance will be required to repair damaged vegetation, if necessary.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

10.6 Down-Slope Sediment Controls

This section describes the sediment controls for down-slope perimeter areas where storm water will be discharged from disturbed areas of the site.

BMP Description: Preserve Natural Vegetation

Installation Schedule: NA; pre-existing conditions at the site which will be kept undisturbed as much as possible.

Maintenance and Inspection: The preservation of natural vegetation will be preserved. Integrity of the natural system will be inspected and maintenance will be required to repair damaged vegetation, if necessary.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

10.7 Stabilized Construction Vehicle Access and Exit Points

There will be transportation of gravel and soils from existing FAI gravel pits to the FTP. Once in the project area, the material will be stockpiled for use in the FTP backfill and capping.

BMP Description: Vehicle Tracking Entrance/Exit

Installation Schedule: Installation of rumble strips for the vehicle tracking entrance and exits will be completed prior to construction activities for a given phase. Refer to the BMP detail sheet in Appendix B for details on the installation of this BMP.

Maintenance and Inspection: Rumble strips of gravel will be placed at the exit/entry points from the gravel pit and from the FTP project area. Inspection and maintenance will happen on at least a monthly basis.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

10.8 Dust Generation and Track-Out from Vehicles

This section describes the control measures used to minimize the generation of dust and off-site vehicle tracking of sediment. Once final stabilization is initiated, calcium chloride mixed with water will be sprayed on these areas to minimize dust generation until final stabilization is achieved.

BMP Description: Dust control (sprinkling/irrigation)

Installation Schedule: As needed.

Maintenance and Inspection: Dust control will be considered as-needed based on dry weather and wind. If dust is observed during inspections or by field personnel, recommendations to implement dust control will be suggested.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

10.9 Soil Stockpiles

Will soil stockpiles be at the site during construction? Yes No.

This section describes the control measures that will be used to control sediment loss from temporary, active and inactive stockpiles of excavated material. For the purposes of this SWPPP, a stockpile is considered inactive if the stockpile is intended to be left overnight.

BMP Description: Stockpile Management

Installation Schedule: When a stockpile is inactive, a 6-mil liner will be used to cover the stock pile and straw wattles will be used at the base to aid in sediment control. Active stock piles will not be covered but straw wattles may be utilized at the base to aid in sediment control.

Maintenance and Inspection: The cover of the stockpile will be inspected for tears, fraying, tightness, and proper installation (soil not exposed to storm water). Maintenance or replacement is required if the cover exhibits tears, fraying, looseness, or improper installation.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

BMP Description: Straw Wattles

Installation Schedule: Installation of straw wattles will be completed prior to construction activities for a given phase. Refer to the BMP detail sheet in Appendix B for details on the installation of this BMP.

Maintenance and Inspection: Straw wattles will be inspected for splitting, tears, unravelling, slumping, and proper installation. Maintenance or replacement is required if the straw wattles exhibits splitting, tears, unravelling, slumping, improper installation, or if sediment has accumulated more than 50-percent of the straw wattle's above grade height.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

10.10 Sediment Basins

Will a sediment basin be required during construction? Yes, No.

A sediment basin is required if 10 or more acres are disturbed at one time, per Section 4.3.8 of the CGP.

10.11 Dewatering

Will dewatering be conducted during construction? Yes, No.

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

Will excavation dewatering be conducted within 1,500 feet of a DEC mapped contaminated site found on the following website? Yes, No. <http://www.arcgis.com/home/item.html?id=315240bfbaf84aa0b8272ad1cef3cad3>

Although we do not define water treatment as dewatering, we have secured a DEC Excavation Dewatering permit (Authorization AKG002158).

10.12 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. Soil stabilization requirements vary depending on the mean annual precipitation for the site, as described in Section 4.5 of the CGP.

Deadline to Initiate Stabilization. Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site or temporarily ceased on any portion of the site and will not resume for a period exceeding:

- Fourteen (14) calendar days for those areas of the state with a mean annual precipitation less than forty (40) inches.

Note: In the context of this provision, “immediately” means no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

Deadline to Complete Temporary Stabilization Activities. As soon as practicable, but no later than 14 calendar days after the initiation of soil stabilization measures consistent with Part 4.5.1.1, the following are required to be completed:

- For vegetative stabilization, all activities necessary to initially seed or plant the area to be stabilized; and/or

For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

The Alaska Plant Materials Center’s A Revegetation Manual for Alaska and Coastal Revegetation & Erosion Control Guide at <http://plants.alaska.gov> was referenced for help in selecting appropriate seed mixes and information on methods for revegetation.

The seed used for final cover will be obtained from and applied by Great Northwest, Inc. The revegetation seed used for the project is a mixture of the following native seeds:

Name	Proportion by Weight	Purity	Germination
“Kenai” Kentucky Bluegrass (Poa pretensis “Kenai”)	50%	90%	85%
Creeping Red Fescue (Festuca rubra “Arctared”)	25%	90%	85%
Perennial Ryegrass (Lolium multiflorum)	25%	90%	85%

BMP Description: Permanent Seeding

Storm Water Pollution Prevention Plan (SWPPP)

PROJECT NAME: FAI Fire Training Pit Corrective Action

DATE: 8/23/2019

Permanent Temporary

Installation Schedule: Upon completion of each phased section.

Maintenance and Inspection: Permanent seeding will be installed in general accordance with the BMP detail sheet for Temporary Seeding.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

BMP Description: Mulching

Permanent Temporary

Installation Schedule: Upon completion of each phased section.

Maintenance and Inspection: Mulching will be installed and inspected in accordance with the BMP detail sheet for Mulching.

Responsible Staff: The SWPPP Lead and Inspector defined in Section 2.0 of this SWPPP are responsible for inspecting BMPs and notifying the proper personnel to conduct maintenance of the BMPs.

BMP Description: Surface Roughening

Permanent Temporary

Installation Schedule: Upon completion of each phased section.

10.13 Treatment Chemicals

Will treatment chemicals be used to control erosion and/or sediment during construction? Yes, No.

10.13.1 Treatment Chemicals

The use of treatment chemicals to reduce erosion from the land or sediment in a storm water discharge is allowed provided all the requirements of CGP Section 4.6 are met. As mentioned in Section 10.8, calcium chloride will be added to dust control water for areas that have initiated final stabilization, but have not yet achieved final stabilization.

10.14 Active Treatment System Information

Will an ATS be used as a control measure at the site? Yes, No.

A permittee who uses an Active Treatment System (ATS) as a control measure must submit information required by the ADEC for review at least 14 days prior to start of operation of the ATS at the project. Specific submittal requirements can be found at 4.6.3. However, ATS is not planned for this project.

10.15 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 at the site.

10.15.1 Washing of Equipment and Vehicles

Will equipment and vehicle washing and/or wheel wash-down be conducted at the site? Yes, No.

Equipment washing will not be conducted onsite for this project.

10.15.2 Fueling and Maintenance Areas

Will equipment and vehicle fueling or maintenance be conducted at the site? Yes, No.

Fueling of equipment and vehicles will not be conducted on site.

10.15.3 Washout of Applicators/Containers Used for Paint, Concrete, and Other Materials

Will washout areas for trucks, applicators, or containers of concrete, paint, or other materials be used at the site? Yes, No.

Washout areas for trucks, applicators, or containers will not be used onsite for this project.

10.15.4 Fertilizer or Pesticide Use

Will fertilizers or pesticides be used at the site? Yes, No.

Fertilizers may be used for this project to assist with the growth of the final cover material. However, the fertilizers will not be stored onsite for this project.

10.16 Spill Notification

A permittee is prohibited from discharging hazardous substances or oil from a spill or other release. Alaska state law (18 AAC 75.300) requires all oil and hazardous substance release be reported to DEC Spill Prevention and Response program. The ADEC Spill Reporting Placards can be found in Appendix K.

To report a spill, the ADEC Area Response Team Office in Fairbanks can be reached at (907) 451-2121 during normal business hours or at (800) 478-9300 to report a spill outside regular business hours. Within seven calendar days of knowledge of a release, the permittee must provide a description of the release, the circumstances leading up to the release, and the data of the release to the Fairbanks ADEC Area Response Team Office. The permittee must also implement corrective measures to prevent future spills and to respond to these releases.

10.17 Construction and Waste Materials

The construction material to be used onsite are geotextile fabric, geomembrane, precast concrete manhole lengths, concrete sealant and epoxy, and associated brackets, and bolts. These items will be stored onsite until installed.

Waste material will include general trash from field personnel, contaminated soil and purge water, piping and associated items from the demolition of a fueling system. The field personnel are responsible for general pickup and cleanliness of the work site. Work areas will be inspected for cleanliness and corrective actions will be implemented, if necessary. Contaminated soil generated during this project will be placed in the FTP as an approved method of disposal. Contaminated water will be treated onsite to remove contaminants and discharged to the Shooting Range Slough. The fueling system will be flushed prior to demolition and all items will be removed from and disposed of offsite.

11.0 INSPECTIONS

This section describes the inspection schedule, areas of inspection, maintenance/repairs of BMPs, and inspection logs.

11.1 Inspection Schedules

Inspection frequency: Weekly

Estimated date of winter shutdown: Not applicable.

11.2 Inspection Form or Checklist

The weekly inspection form is included in Appendix J of this SWPPP. The inspections will focus on areas where the soil has been disturbed and has not achieved final stabilization. The inspections will focus on assessing the condition and effectiveness of BMPs. Recommendations to maintain, repair, or replace BMPs will be included in the inspection forms.

The overall work area will be inspected for good housekeeping and evidence of unauthorized release or prohibited discharges from the project site. The site access and exit points will also be inspected for sediment tracking from the site. Any discharge points and water conveyance channels within the active work area will be inspected for pollutants (sediment, trash, litter, etc.).

11.3 Corrective Action Procedures

After inspections are complete, recommendations to repair, replace, and maintain BMPs will be provided to CUC. The BMPs detail sheets include information regarding maintenance, repair, and installation. The Corrective Action Log in Appendix I of this SWPPP will be updated to describe the actions taken, date completed, identify the person who completed the work, and reference the inspection report that identified the issue.

11.4 Inspection recordkeeping

Completed inspection reports will be appended to this SWPP in Appendix J. Records will be maintained for a minimum period of at least three (3) years after the permit is terminated.

12.0 MONITORING PLAN (If Applicable)

12.1 Determination of Need for Monitoring Plan

Is there an EPA-established or approved TMDL for **Tanana River**? Yes, No.

Is the receiving water listed as impaired for turbidity and/or sediment? Yes, No.

What is the acreage of the disturbance in the proposed construction project? 3.5 acres

Is the disturbed acreage equal to or greater than 20 acres? Yes, No.

13.0 POST-AUTHORIZATION RECORDS

The SWPPP must contain the following documents in Appendix E:

- copy of 2016 CGP;
- copy or signed and certified NOI form submitted to ADEC; and
- upon receipt, a copy of letter from ADEC authorizing permit coverage, providing tracking number.

13.1 Additional Documentation Requirements

- Dates when grading activities occur (Appendix F).
- Dates when construction activities temporarily or permanently cease on a portion of the site (Appendix F).
- Dates when stabilization measures are initiated (Appendix F).
- Date of beginning and ending period for winter shutdown (Appendix F).
- Copies of inspection reports (Appendix J).
- Copies of monitoring reports (Appendix G).
- Documentation of maintenance and repairs of control measures (Appendix I).
- Documentation of any rainfall monitoring records (Appendix L).

13.1.1 Records of Employee Training

Training staff and subcontractors is an effective BMP. Document all training conducted for your staff, those with specific storm water responsibilities (e.g. installing, inspecting, and maintaining BMPs), and subcontractors in Appendix H. Include dates, number of attendees, subjects covered, and length of training.

14.0 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 SWPPP (5.9.1.1);
- if inspections of site investigations by staff or by local, state, tribal, or federal officials determine SWPPP modifications are necessary for permit compliance (5.9.1.2); and
- 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).

14.1 Log of SWPPP Modifications

A permittee must keep a log showing dates, name of person authorizing the change, and a 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 template.

14.2 Deadlines for SWPPP Modifications

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

15.0 ADDITIONAL SWPPP REQUIREMENTS (5.10)

15.1 Retention of SWPPP

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

15.2 Main Entrance Signage

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.

15.3 Availability of SWPPP

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 MS4 operators, upon request.

15.4 Signature and Certification

The SWPPP must be signed and certified in accordance with the requirements of the 2016 CGP Appendix A, Part 1.12. The certification form on page ii of this template meets the requirements of this paragraph.

APPENDICES

APPENDIX A – SITE MAPS AND DRAWINGS

APPENDIX B – BMP DETAILS

APPENDIX C – PROJECT SCHEDULE

APPENDIX D – SUPPORTING DOCUMENTATION:

- ALASKA'S IMPAIRED WATERS 2010
- EXCAVATION DEWATERING PERMIT (AKG002158)
- USFWS VEGETATION CLEARING LIMITS
- SHANNON & WILSON FIRE TRAINING PIT CORRECTIVE ACTION WORK PLAN REV 1

APPENDIX E – PERMIT CONDITIONS:

- COPY OF SIGNED NOTICE OF INTENT
- COPY OF LETTER FROM ADEC AUTHORIZING COVERAGE, WITH ADEC NOI TRACKING NUMBER
- COPY OF 2016 ALASKA CONSTRUCTION GENERAL PERMIT

APPENDIX F – GRADING AND STABILIZATION RECORDS

APPENDIX G – TRAINING RECORDS

APPENDIX H – CORRECTIVE ACTION LOH

APPENDIX I – INSPECTION REPORTS

APPENDIX J – SPILL LOG AND ADEC SPILL REPORTING PLACARD

APPENDIX K – RAIN GAUGE LOG

APPENDIX A
SITE MAPS AND DRAWINGS

DRAFT

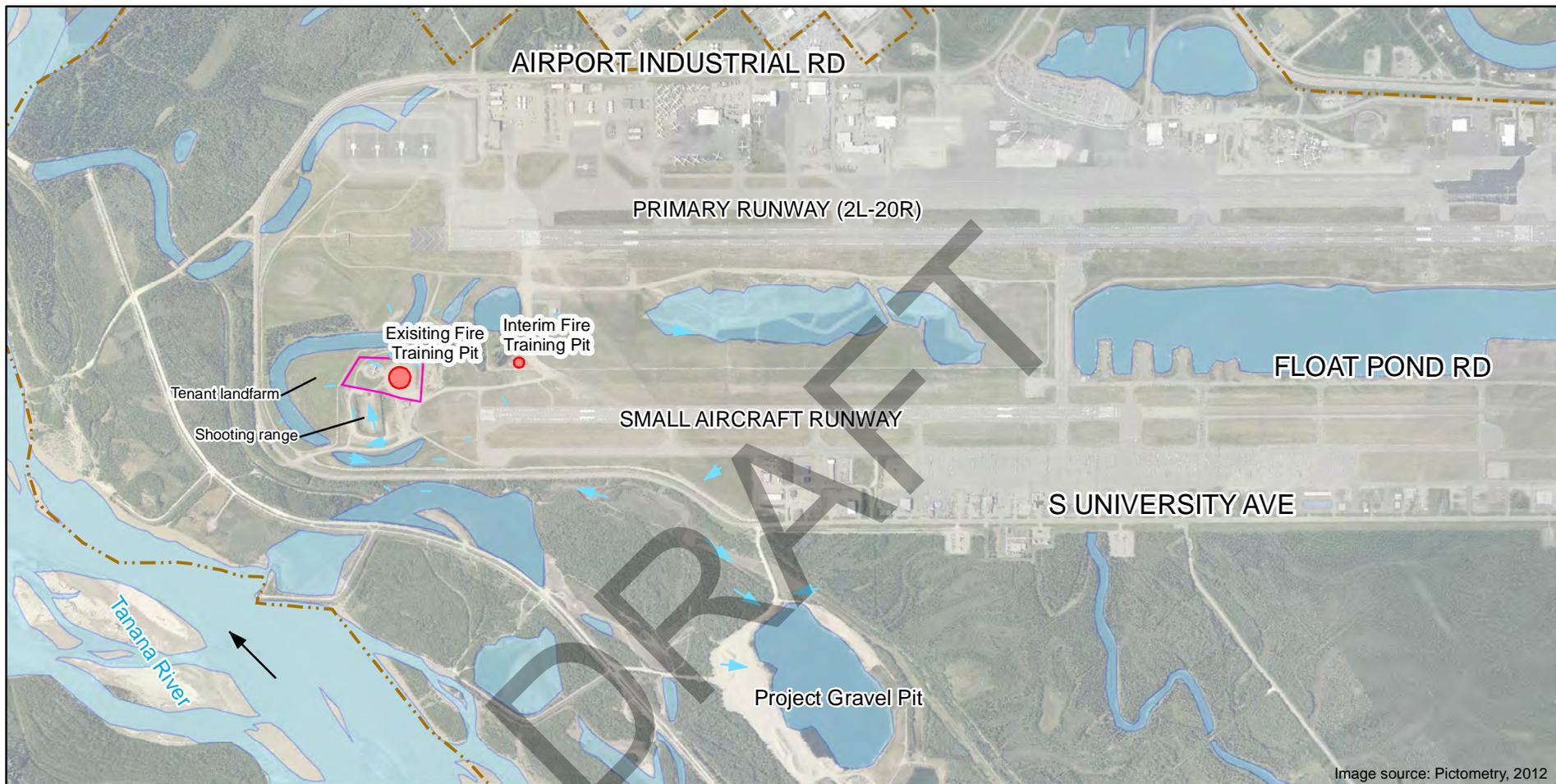
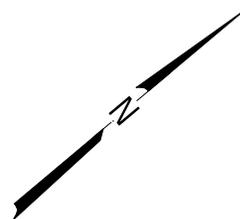
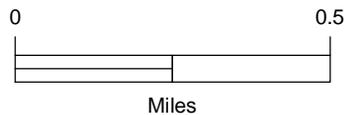


Image source: Pictometry, 2012

LEGEND

-  Surface Water Flow Direction
-  General River Flow Directions
-  Aircraft Rescue and Firefighting (ARFF) Training Sites
-  Project Area
-  FAI Boundary



Fairbanks International Airport Fire Training Pit Corrective Action Storm Water Pollution Prevention Plan	
SITE VICINITY	
August 2019	1002519
 SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	
Figure 1	

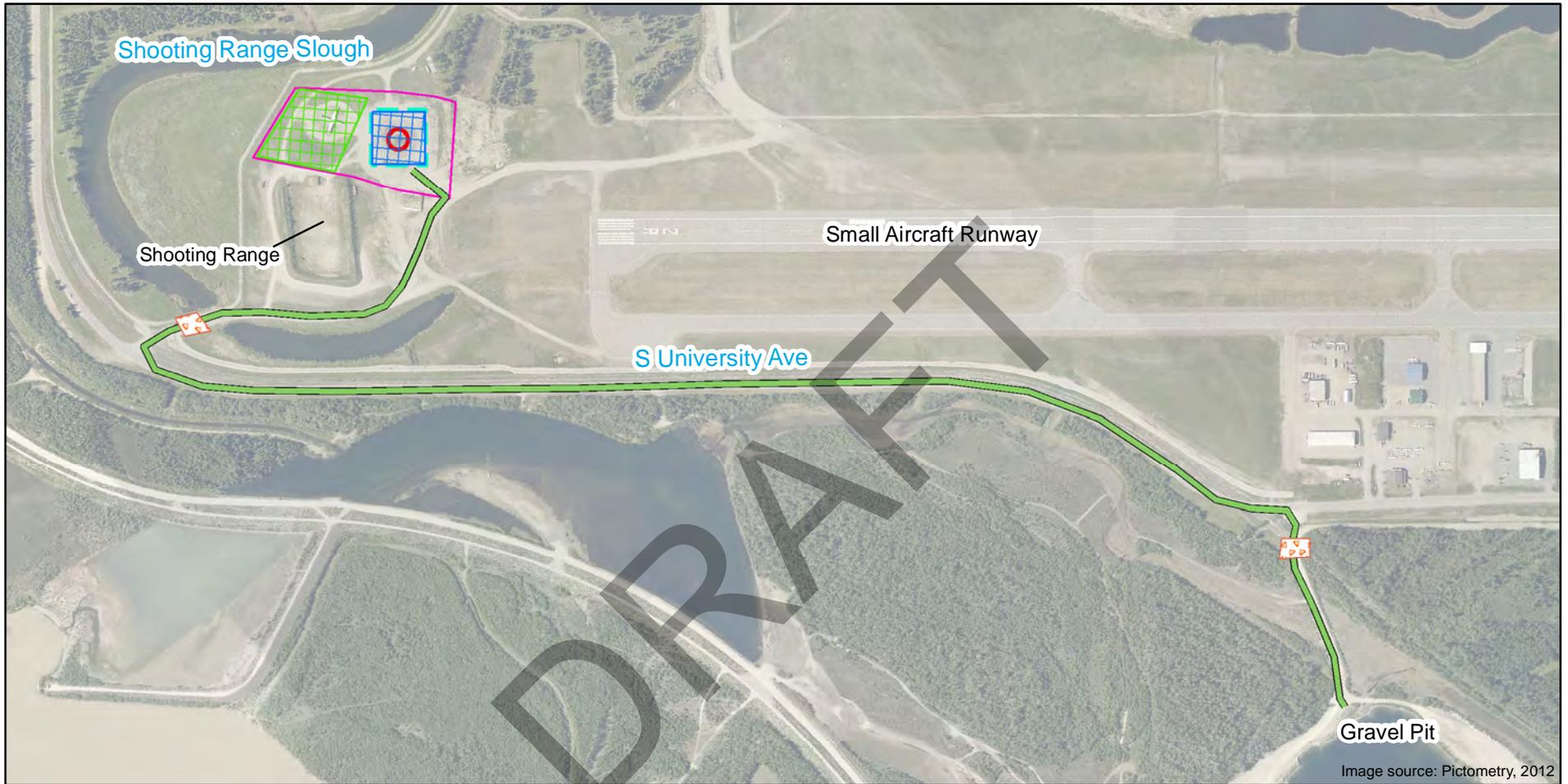
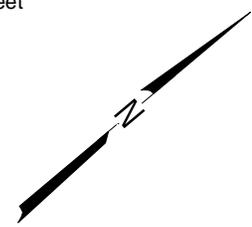
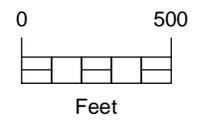


Image source: Pictometry, 2012

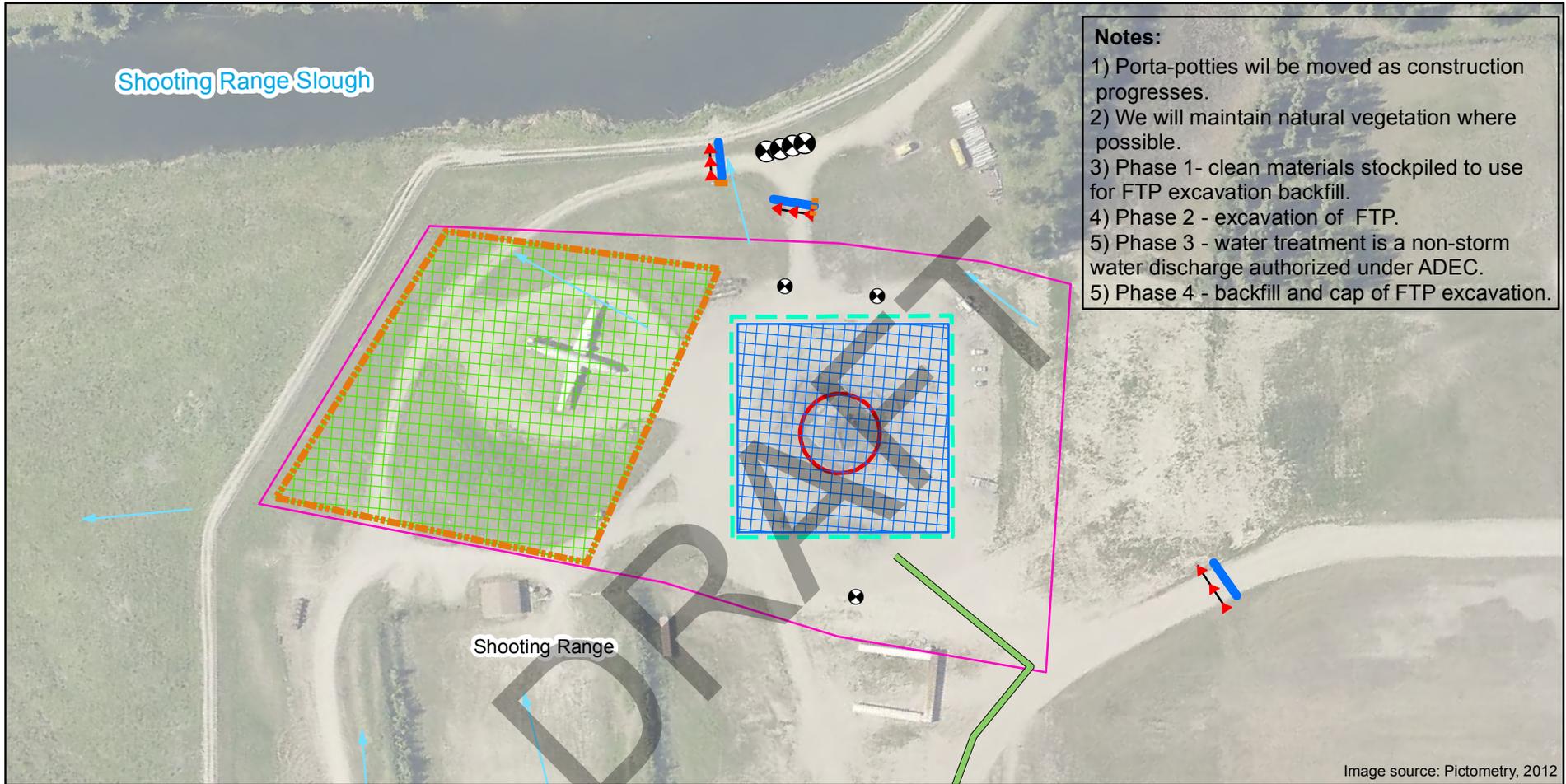


LEGEND

- Project Area
- Burn Pit
- Phase 1 Boundary - Stockpiles
- Phases 2,3, and 4 Boundary
- Proposed Area to be Capped
- Vehicle Tracking Entrance/Exit
- Aggregate Haul Route

Fairbanks International Airport Fire Training Pit Corrective Action Storm Water Pollution Prevention Plan	
SITE VICINITY AND CONSTRUCTION PHASING	
August 2019	1002519
SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	Figure 2

Shooting Range Slough

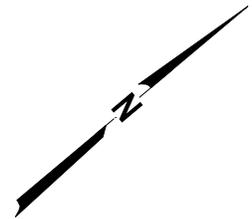
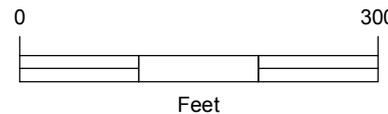


- Notes:**
- 1) Porta-potties will be moved as construction progresses.
 - 2) We will maintain natural vegetation where possible.
 - 3) Phase 1- clean materials stockpiled to use for FTP excavation backfill.
 - 4) Phase 2 - excavation of FTP.
 - 5) Phase 3 - water treatment is a non-storm water discharge authorized under ADEC.
 - 5) Phase 4 - backfill and cap of FTP excavation.

Image source: Pictometry, 2012

LEGEND

- Project Area and Construction Limits
- Burn Pit
- Straw_Wattles
- Phase 1 Covered Stockpiles
- Phases 2,3, and 4 Boundary
- Proposed Area to be Capped
- Drainage Flow Direction
- Culverts
- Aproximate Surface Water Flow Directions
- Aggregate Haul Route
- + Proposed Monitor Well Location
- Previous Monitor Well Locations (1997)



Fairbanks International Airport
Fire Training Pit Corrective Action
Storm Water Pollution Prevention Plan

**SWPPP PROJECT AREA
AND
CONSTRUCTION PHASING**

August 2019 1002519

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 3

APPENDIX B
BMP DETAILS

DRAFT

Dust Control

[Click here to comment on this fact sheet](#)

Minimum Measure: Construction Site Stormwater Runoff Control

Subcategory: Erosion Control

Description

Dust control BMPs reduce surface activities and air movement that causes dust to be generated from disturbed soil surfaces. Construction sites can generate large areas of soil disturbance and open space for wind to pick up dust particles. Limited research at construction sites has established an average dust emission rate of 1.2 tons/acre/month for active construction (WA Dept. of Ecology, 1992). Airborne particles pose a dual threat to the environment and human health. First, dust can be carried offsite, thereby increasing soil loss from the construction area and increasing the likelihood of sedimentation and water pollution. Second, blowing dust particles can contribute to respiratory health problems and create an inhospitable working environment.



Applicability

Dust control measures are applicable to any construction site where there is the potential for air and water pollution from dust traveling across the landscape or through the air. Dust control measures are especially important in arid or semiarid regions, where soil can become extremely dry and vulnerable to transport by high winds. Implement dust control measures on all construction sites where there will be major soil disturbances or heavy equipment construction activity such as clearing, excavation, demolition, or excessive vehicle traffic. Earthmoving activities are the major source of dust from construction sites, but traffic and general disturbances can also be major contributors (WA Dept. of Ecology, 1992). The dust control measures that are implemented at a site will depend on the topography and land cover of the site and its soil characteristics and expected rainfall.

Siting and Design Considerations

When designing a dust control plan for a site, the amount of soil exposed will dictate the quantity of dust generation and transport. Therefore, construction sequencing and disturbing only small areas at a time can greatly reduce problematic dust from a site. If land must be disturbed, consider using temporary stabilization measures before disturbance. A number of methods can be used to control dust from a site; not all will be applicable to a site. The owner, operator, and contractors responsible for dust control at a site will have to determine which practices accommodate their needs according to specific site and weather conditions. The following is a brief list of some control measures and design criteria.

- **Sprinkling/Irrigation.** Sprinkling the ground surface with water until it is moist is an effective dust control method for haul roads and other traffic routes (Smolen et al., 1988). This practice can be applied to almost any site.
- **Vegetative Cover.** In areas not expected to handle vehicle traffic, vegetative stabilization of disturbed soil is often desirable. Vegetative cover provides coverage to surface soils and slows wind velocity at the ground surface, thus reducing the potential for dust to become airborne.
- **Mulch.** Mulching can be a quick and effective means of dust control for a recently disturbed area (Smolen et al., 1988).
- **Wind Breaks.** Wind breaks are barriers (either natural or constructed) that reduce wind velocity through a site and, therefore, reduce the possibility of suspended particles. Wind breaks can be trees or shrubs left in place during site clearing or constructed barriers such as a wind fence, snow fence, tarp curtain, hay bale, crate wall, or sediment wall (USEPA, 1992).

- *Tillage*. Deep tillage in large open areas brings soil clods to the surface where they rest on top of dust, preventing it from becoming airborne.
- *Stone*. Stone can be an effective dust deterrent for construction roads and entrances or as a mulch in areas where vegetation cannot be established.
- *Spray-on Chemical Soil Treatments (palliatives)*. Examples of chemical adhesives include anionic asphalt emulsion, latex emulsion, resin-water emulsions, and calcium chloride. Chemical palliatives should be used only on mineral soils. When considering chemical application to suppress dust, determine whether the chemical is biodegradable or water-soluble and what effect its application could have on the surrounding environment, including waterbodies and wildlife.

Table 1 shows application rates for some common spray-on adhesives, as recommended by Smolen et al. (1988).

Table 1. Application rates for spray-on adhesives (Source: Smolen et al., 1988)

Spray-on adhesive	Water dilution	Type of nozzle	Application (gal/acre)
Anionic asphalt emulsion	7:1	Coarse spray	1,200
Latex emulsion	12.5:1	Fine spray	235
Resin in water	4:1	Fine spray	300

Limitations

Applying water to exposed soils can be time intensive, and if done to excess, could result in excess runoff from the site or vehicles tracking mud onto public roads. Use chemical applications sparingly and only on mineral soils (not muck soils) because their misuse can create additional surface water pollution from runoff or contaminate ground water. Chemical applications might also present a health risk if excessive amounts are used.

Maintenance Considerations

Because dust controls are dependent on specific site and weather conditions, inspection and maintenance requirements are unique for each site. Generally, however, dust control measures involving application of either water or chemicals require more monitoring than structural or vegetative controls to remain effective. If structural controls are used, inspect them regularly for deterioration to ensure that they are still achieving their intended purpose.

Effectiveness

- *Mulch*. Can reduce wind erosion by up to 80 percent.
- *Wind Breaks/Barriers*. For each foot of vertical height, an 8- to 10-foot deposition zone develops on the leeward side of the barrier. The permeability of the barrier will change its effectiveness at capturing windborne sediment.
- *Tillage*. Roughening the soil can reduce soil losses by approximately 80 percent in some situations.
- *Stone*. The size of the stones can affect the amount of erosion to take place. In areas of high wind, small stones are not as effective as 20 cm stones.
- *Spray-on Chemical Soil Treatments (palliatives)*. Effectiveness of polymer stabilization methods range from 70 percent to 90 percent, according to limited research.

Cost Considerations

Costs for chemical dust control measures can vary widely depending on specific needs of the site and the level of dust control desired.

References

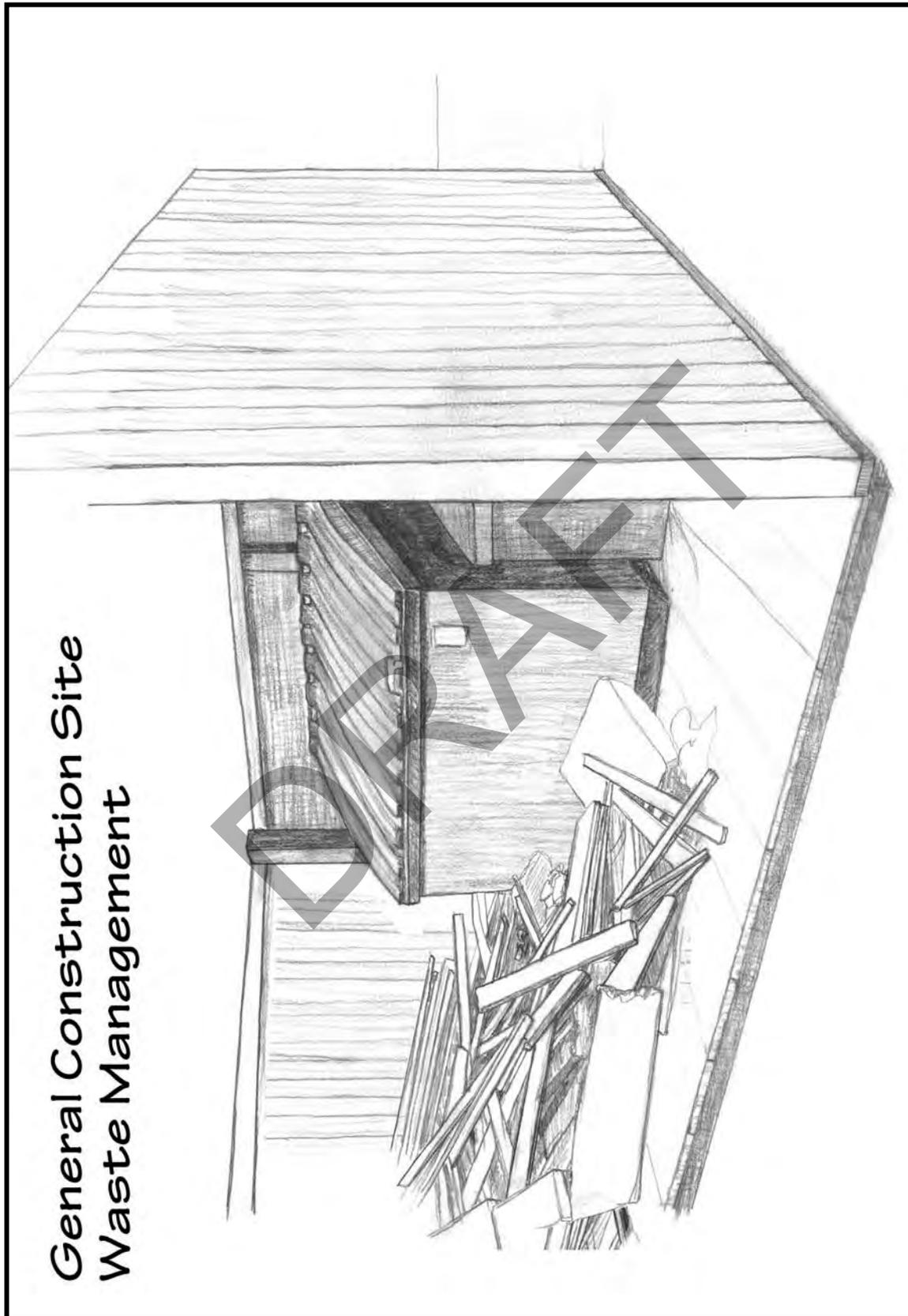
Smolen, M.D., D.W. Miller, L.C. Wyatt, J. Lichthardt, and A.L. Lanier. 1988. *Erosion and Sediment Control Planning and Design Manual*. North Carolina Sedimentation Control Commission; North Carolina Department of Environment, Health, and Natural Resources; and Division of Land Resources, Land Quality Section, Raleigh, NC.

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General Construction Site Waste Management

Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
General Construction Site Waste Management Feasibility	○	○	○	○	○
Description	<p>Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or groundwater.</p>				
Installation	<p>Solid Wastes:</p> <ul style="list-style-type: none"> • Designate a waste collection area on the site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterbody. • Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible. • If secondary containment is used, include a protocol in the SWPPP and train employees on disposal of accumulated precipitation. • Schedule waste collection to prevent the containers from overflowing. • Clean up spills immediately. For hazardous materials, follow cleanup instructions on the package. Use an absorbent material such as sawdust or kitty litter to contain the spill. • During the demolition phase of construction, provide extra containers and schedule more frequent pickups. • Collect, remove and dispose of all construction site wastes at authorized disposal areas. Contact a local environmental agency to identify these disposal sites. <p>Hazardous Materials and Wastes:</p> <ul style="list-style-type: none"> • Consult with local waste management authorities about the requirements for disposing of hazardous materials. • To prevent leaks, empty and clean hazardous waste containers before disposing of them. • Never remove the original product label from the container because it contains important safety information. Follow the manufacturer's recommended method of disposal, which should be printed on the label. • Never mix excess products when disposing of them, unless specifically recommended by the manufacturer. 				

General Construction Site Waste Management *(continued)*

<p>Installation <i>(continued)</i></p>	<p>Pesticides and fertilizers:</p> <ul style="list-style-type: none"> • Follow all federal, state and local regulations that apply to the use, handling or disposal of pesticides and fertilizers. • Store pesticides and fertilizers in a dry, covered area. • Construct berms or dikes to contain stored pesticides and fertilizers in case of spillage. • Follow the recommended application rates and methods. • Have equipment and absorbent materials available in storage and application areas to contain and clean up any spills that occur. <p>Petroleum Products:</p> <ul style="list-style-type: none"> • Store new and used petroleum products in covered areas, where practicable, and place within berms or dikes to contain any spills. • Immediately contain and clean up any spills with absorbent materials. • Have equipment available in fuel storage areas and in vehicles to contain and clean up any spills that occur. <p>Detergents:</p> <ul style="list-style-type: none"> • Use detergents only as recommended, and limit their use on the site. Do not dump wash water containing detergents into the storm drain system; direct it to a sanitary sewer or contain it so that it can be treated at a wastewater treatment plant. 		
<p>Maintenance</p>	<p>Inspect storage and use areas and identify containers or equipment that could malfunction and cause leaks or spills. Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness. Immediately repair or replace any that are found to be defective.</p>		
<p>Feasibility symbols:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><input type="radio"/> Widely feasible</p> <p><input type="checkbox"/> Might be feasible in certain situations</p> </td> <td style="width: 50%; vertical-align: top;"> <p><input checked="" type="checkbox"/> Feasible only with major design adaptation</p> <p><input type="checkbox"/> Infeasible and not recommended</p> </td> </tr> </table>		<p><input type="radio"/> Widely feasible</p> <p><input type="checkbox"/> Might be feasible in certain situations</p>	<p><input checked="" type="checkbox"/> Feasible only with major design adaptation</p> <p><input type="checkbox"/> Infeasible and not recommended</p>
<p><input type="radio"/> Widely feasible</p> <p><input type="checkbox"/> Might be feasible in certain situations</p>	<p><input checked="" type="checkbox"/> Feasible only with major design adaptation</p> <p><input type="checkbox"/> Infeasible and not recommended</p>		

Grass-Lined Channels

[Click here to comment on this fact sheet](#)

Minimum Measure: Construction Site Stormwater Runoff Control

Subcategory: Runoff Control

Description

A grass-lined channel conveys stormwater runoff through a stable conduit. Vegetation lining the channel slows down concentrated runoff. Because grassed channels are not usually designed to control peak runoff loads by themselves, they are often used with other BMPs, such as subsurface drains and riprap stabilization.

Where moderately steep slopes require drainage, grassed channels can include excavated depressions or check dams to enhance runoff storage, decrease flow rates, and improve pollutant removal. Peak discharges can be reduced by temporarily holding them in the channel. Pollutants can be removed from stormwater by filtration through vegetation, by deposition, or in some cases by infiltration of soluble nutrients into the soil. The degree of pollutant removal in a channel depends on how long the water stays in the channel and the amount of contact with vegetation and the soil surface. Local conditions affect the removal efficiency.



Applicability

The first choice of lining should be grass or sod because this reduces runoff velocity and provides water quality benefits through filtration and infiltration. If the velocity in the channel would erode the grass or sod, riprap, concrete, or gabions can be used (USEPA, 2004). Geotextile materials can be used in conjunction with either grass or riprap linings to provide additional protection at the soil-lining interface. Use grassed channels in areas where erosion-resistant conveyances are needed, including areas with highly erodible soils and moderately steep slopes (though less than 5 percent). Install them only where space is available for a relatively large cross section. Grassed channels have a limited ability to control runoff from large storms, so do not use them in areas where flow rates exceed 5 feet per second.

Siting and Design Considerations

Site grass-lined channels in accordance with the natural drainage system. They should not cross ridges. The channel design should not have sharp curves or significant changes in slope. The channel should not receive direct sedimentation from disturbed areas and should be sited only on the perimeter of a construction site to convey relatively clean stormwater runoff. To reduce sediment loads, separate channels from disturbed areas by using a vegetated buffer or another BMP.

Basic design recommendations for grassed channels include the following:

- Construct and vegetate the channel before grading and paving activities begin.
- Make sure design velocities are less than 5 feet per second.
- Consider using geotextiles to stabilize vegetation until it is fully established.
- Consider covering the bare soil with sod, mulches with netting, or geotextiles to provide reinforced stormwater conveyance immediately.
- Use triangular channels with low velocities and small quantities of runoff; use parabolic grass channels for larger flows and where space is available; use trapezoidal channels with large, low-velocity flows (low slope).

- Install outlet stabilization structures if the runoff volume or velocity might exceed the capacity of the receiving area.
- Slope the sides of the channel less than 2:1; slope triangular channels along roads 2:1 or less for safety.
- Remove all trees, brushes, stumps, and other debris during construction.

Effectiveness

Grass-lined channels can effectively transport stormwater from construction areas if they are designed for expected flow rates and velocities and if they do not receive sediment directly from disturbed areas.

Limitations

If grassed channels are not properly installed, they can change the natural flow of surface water and adversely affect downstream waters. And if the design capacity is exceeded by a large storm event, the vegetation might not be adequate to prevent erosion and the channel might be destroyed. Clogging with sediment and debris reduces the effectiveness of grass-lined channels for stormwater conveyance.

Maintenance Considerations

The maintenance requirements for grass channels are relatively minimal. While vegetation is being established, inspect the channels after every rainfall. After vegetation is established, mow it, remove litter, and perform spot vegetation repair. The most important objective in grassed channel maintenance is to maintain a dense and vigorous growth of turf. Periodically clean the vegetation and soil buildup in curb cuts so that water flow into the channel is unobstructed. During the growing season, cut the channel grass no shorter than the level of the design flow.

Cost Considerations

Costs of grassed channels range according to depth. The cost of a 1.5-foot-deep grassed channel with 3:1 side slopes and a 2-foot-wide channel bottom is estimated to cost between \$202 and \$625 per 100 feet of channel length. The cost of a 3-foot-deep grassed channel with 3:1 side slope and a 2-foot-wide bottom is expected to cost between \$397 and \$1,198 for 100 feet of channel (SEWRPC, 1991). Grassed channels can be left in place permanently after the construction site is stabilized to contribute to long-term stormwater management. The channels, in combination with other practices that detain, filter, and infiltrate runoff, can substantially reduce the size of permanent detention facilities like stormwater ponds and wetlands, thereby reducing the overall cost of stormwater management.

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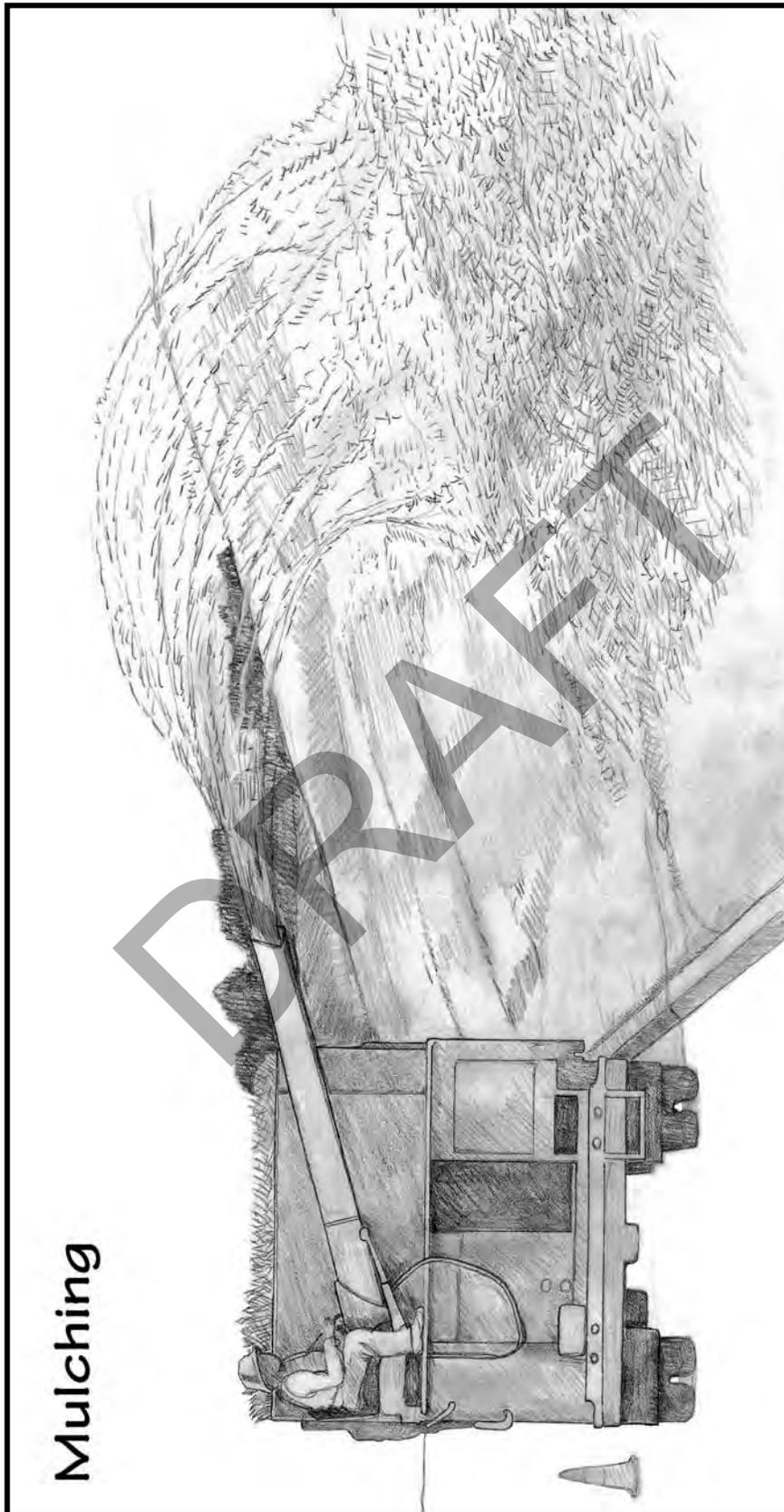
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Mulching

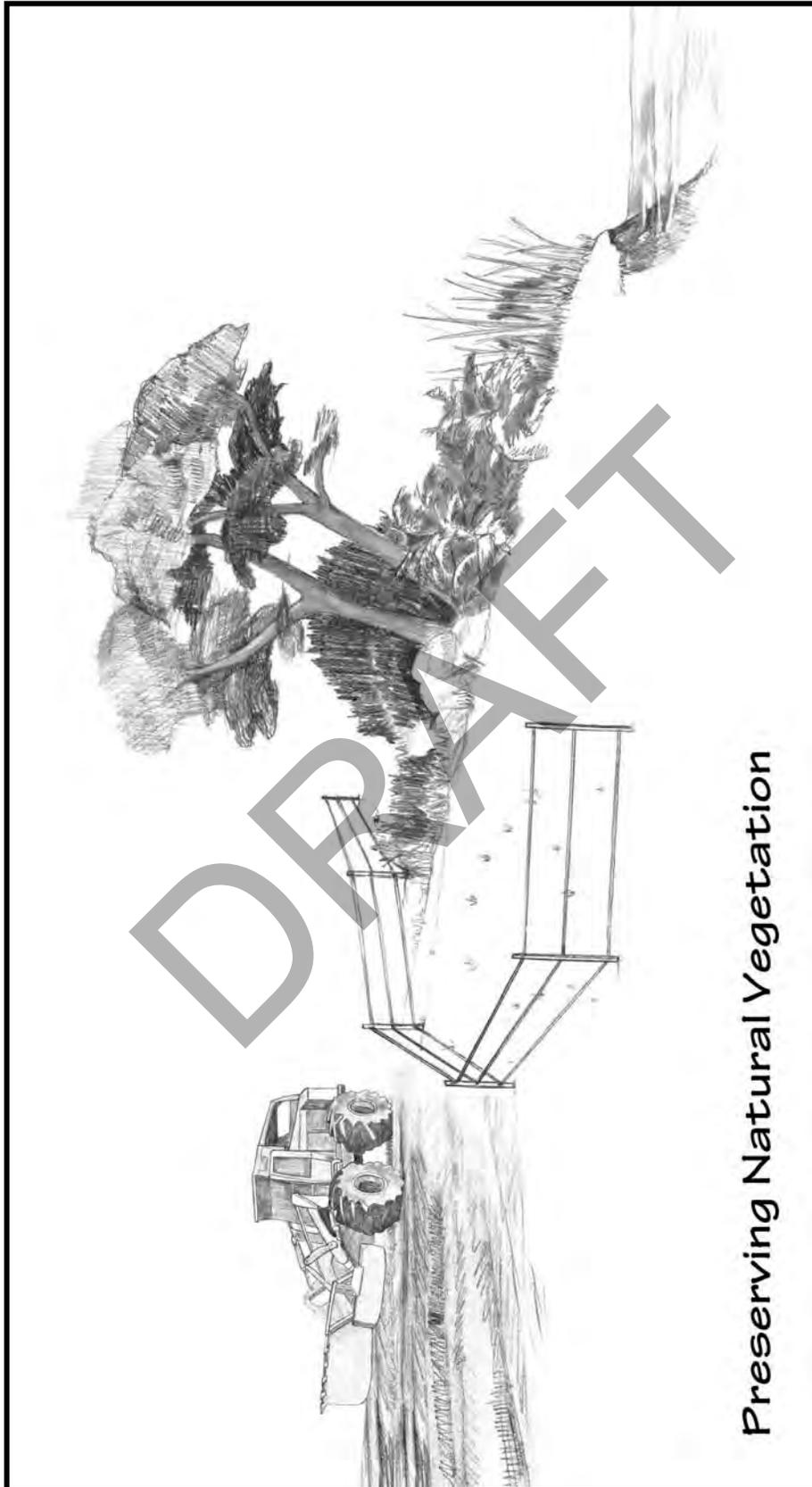
Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
Mulching Feasibility	□	○	○	○	□
Description	<p>Mulching is the application of plant materials such as straw or other materials to the soil surface. Surface mulch is an effective and cost-effective means of controlling runoff and erosion on disturbed areas before revegetation. Mulch absorbs the raindrop impact energy and minimizes soil detachment, which is the first step of erosion. Mulching is a temporary BMP that helps seedlings germinate and grow by conserving moisture and can be used in unseeded areas to protect against erosion during winter or until final grading and stabilization can be accomplished. Mulches should be free of weeds and unwanted seeds to prevent invasive plants.</p>				
Selection	<p>Mulch can be used successfully on the majority of construction projects. There are many types of mulches available for use on various slopes (see the specifications on the next page). Mulching in the Arctic climatic region might be limited unless additional measures are taken to hold the mulch in place on frozen ground and in wind-prone areas.</p>				
Implementation	<p>Mulch is most commonly used in conjunction with seeding. Mulch should be uniformly spread by hand or blower, and it should cover all ground surface if used alone and without seed. When straw mulch could be exposed to wind, it must be anchored immediately after spreading. Mulch should be applied immediately after seeding to improve seed germination.</p>				
Maintenance	<p>After mulch has been applied and anchored properly, little additional maintenance is required during the first few months. After high winds or significant rainstorms, check the mulch-covered areas for adequate cover and remulched if necessary. To be effective, mulch must last until vegetation develops to provide an erosion-resistant cover.</p> <ul style="list-style-type: none"> • Confirm that the mulch is adequately watered. • Check to ensure that erosion is not occurring. • Watch for and repair washout of mulch. • Mulching can degrade slowly; therefore, some mulches might need to be removed once vegetation is established. 				

Feasibility symbols:

- | | |
|---|---|
| <p>○ Widely feasible</p> <p>□ Might be feasible in certain situations</p> | <p>★ Feasible only with major design adaptation</p> <p>■ Infeasible and not recommended</p> |
|---|---|

Mulching Specifications

Mulch type	Characteristics	Application
Straw	<ul style="list-style-type: none"> • Should be air dried, come from wheat or oats, and be free of weeds and coarse material. • Most commonly used in conjunction with seeding and where the need for protection is for shorter than 3 months. 	<ul style="list-style-type: none"> • Spread by hand or machine to a minimum 4 inches thick. • Anchor by crimping, disking, rolling, or punching into the soil, covering with netting or keeping moist.
Wood Chips	<ul style="list-style-type: none"> • Should be small enough to use as a mulching medium. • Suitable for areas that will not be closely mowed and around ornamental plantings. 	<ul style="list-style-type: none"> • Can be obtained from trees that were cleared from the site to provide inexpensive mulch. • Apply to slopes less than 6 percent (16:1) to avoid clogging of drainage inlets by chips washed downslope.
Bark Chips	<ul style="list-style-type: none"> • Should be small enough to use as a mulching medium. • Use in landscape plantings. 	<ul style="list-style-type: none"> • Use in areas to be planted with grasses and not closely mowed. • Apply by hand or mechanically.
Wood Fiber Cellulose (partially digested wood fibers)	<ul style="list-style-type: none"> • Dyed green; should not contain growth-inhibiting factors. • Short cellulose fibers do not require tacking, but longer fiber lengths provide better erosion control. 	<ul style="list-style-type: none"> • Use in hydroseeding operations as part of the slurry. • Apply with hydromulcher: 25 to 30 pounds per 1,000 square feet.
Bonded Fiber Matrix	<ul style="list-style-type: none"> • Hydraulically applied fibers and adhesives that form an erosion resistant blanket • Biodegradable, promotes growth of vegetation 	<ul style="list-style-type: none"> • Apply hydraulically • Typically applied at rates from 3,000 to 4,000 lb/acre • Do not apply immediately before, during or after rainfall
Flexible Growth Medium	<ul style="list-style-type: none"> • Generally provides good protection • No cure time (can be applied under most conditions) 	<ul style="list-style-type: none"> • Hydraulically applied • Typically applied at rates of 3,500 lb/acre



Preserving Natural Vegetation

Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
Preserving Natural Vegetation Feasibility	○	○	○	○	○
Description	The principal advantage of preserving natural vegetation is protecting desirable trees, vines, bushes and grasses from damage during project development. Vegetation provides erosion control, storm water detention, biofiltration and aesthetic values to a site during and after construction activities. Any existing vegetation should be saved unless it is determined to be invasive or otherwise harmful.				
Selection	Designers should be aware of and respond to local climate and other conditions, including project scheduling, that might influence the use of natural vegetative stabilization measures. Before clearing activities begin, clearly mark the vegetation that is to be preserved. Prepare a site map with the locations of trees and boundaries of environmentally sensitive areas and buffer zones to be preserved. Plan the location of roads, buildings and other structures to avoid these areas. This requires careful site management to minimize the impact of construction activities on existing vegetation. Protect large trees near construction zones because damage during construction activities could result in reduced vigor or death after construction has ceased. Extend and mark the boundaries around contiguous natural areas and tree drip lines to protect the root zone from damage.				
Maintenance	Even if workers take precautions, some damage to protected areas might occur. If this happens, repair or replace damaged vegetation immediately to maintain the integrity of the natural system. When planning for new vegetation, choose kinds that enhance the existing vegetation. Ensure that new structures do not harm protected areas.				

Feasibility symbols:

- Widely feasible
 Might be feasible in certain situations
- Feasible only with major design adaptation
 Infeasible and not recommended

Seeding

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Minimum Measure: Construction Site Stormwater Runoff Control

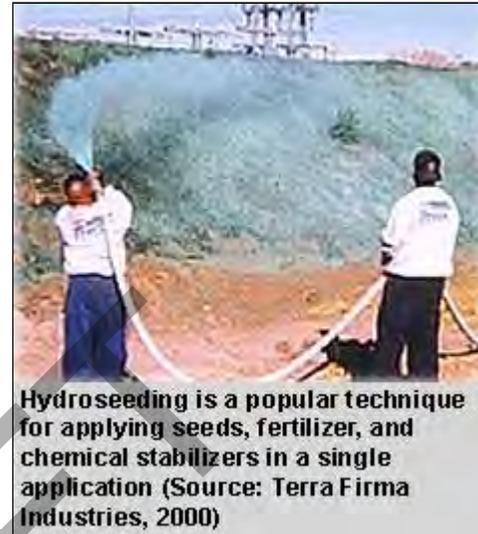
Subcategory: Erosion Control

Description

Seeding is used to control runoff and erosion on disturbed areas by establishing perennial vegetative cover from seed. It reduces erosion and sediment loss and provides permanent stabilization. This practice is economical, adaptable to different site conditions, and allows selection of a variety of plant materials.

Applicability

Seeding is well-suited in areas where permanent, long-lived vegetative cover is the most practical or most effective method of stabilizing the soil. Use seeding on roughly graded areas that will not be regraded for at least a year. Vegetation controls erosion by protecting bare soil surfaces from displacement by raindrop impacts and by reducing the velocity and quantity of overland flow. Seeding's advantages over other means of establishing plants include lower initial costs and labor needs.



Hydroseeding is a popular technique for applying seeds, fertilizer, and chemical stabilizers in a single application (Source: Terra Firma Industries, 2000)

Siting and Design Considerations

Seed or plant permanent vegetation in areas 1 to 4 months after the final grade is achieved unless temporary stabilization measures are in place. Maximize successful plant establishment with planning; considering soil characteristics; selecting plant materials that are suitable for the site; preparing, liming, and fertilizing the seedbed adequately; planting timely; and maintaining regularly. Major factors that dictate the suitability of plants for a site include climate, soils, and topography. Prepare and amend the soil on a disturbed site to provide sufficient nutrients for seed germination and seedling growth. Loosen the soil surface enough for water infiltration and root penetration. If soils are too acidic, increase the pH to between 6.0 and 6.5 with liming or choose plants that are appropriate for the soil characteristics at your site. Protect seeds with mulch to retain moisture, regulate soil temperatures, and prevent erosion during seedling establishment.

Limitations

The effectiveness of seeding can be limited by high erosion during establishment, the need to reseed areas that fail to establish, limited seeding times, or unstable soil temperature and soil moisture content during germination and early growth. Seeding does not immediately stabilize soils; therefore, use temporary erosion and sediment control measures to prevent pollutants from disturbed areas from being transported off the site.

Maintenance Considerations

Maintenance for seeded areas will vary depending on the level of use expected. Use long-lived grass perennials that form a tight sod and are fine-leaved for areas that receive extensive use, such as homes, industrial parks, schools, churches, and recreational areas. Whenever possible, choose native species that are adapted to local weather and soil conditions to reduce water and fertilizer inputs and lower maintenance overall. In arid areas, consider seeding with non-grass species that are adapted to drought conditions, called xeriscaping, to reduce the need for watering.

Low-maintenance areas are mowed infrequently or not at all and do not receive lime or fertilizer regularly.

Plants must be able to persist with minimal maintenance over long periods of time. Use grass and legume mixtures for these sites because legumes fix nitrogen from the atmosphere. Sites suitable for low-maintenance vegetation include steep slopes, stream or channel banks, some commercial properties, and "utility" turf areas such as road banks.

Grasses should emerge within 4-28 days and legumes 5-28 days after seeding, with legumes following grasses. A successful stand has the following characteristics:

- Vigorous dark green or bluish green (not yellow) seedlings
- Uniform density, with nurse plants, legumes, and grasses well intermixed
- Green leaves that remain green throughout the summer--at least at the plant bases

Inspect seeded areas for failure and, if needed, reseed and repair them as soon as possible. If a stand has inadequate cover, reevaluate the choice of plant materials and quantities of lime and fertilizer. Depending on the condition of the stand, repair by overseeding or reseeding after complete seedbed preparation. If timing is bad, overseed with rye grain or German millet to thicken the stand until a suitable time for seeding perennials. Consider seeding temporary, annual species if the season is not appropriate for permanent seeding. If vegetation fails to grow, test the soil to determine if low pH or nutrient imbalances are responsible.

On a typical disturbed site, full plant establishment usually requires refertilization in the second growing season. Use soil tests to determine if more fertilizer needs to be added. Do not fertilize cool season grasses in late May through July. Grass that looks yellow might be nitrogen deficient. Do not use nitrogen fertilizer if the stand contains more than 20 percent legumes.

Effectiveness

Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids from stormwater runoff, with an average removal of 90 percent (USEPA, 1993).

Cost Considerations

Seeding costs range from \$200 to \$1,000 per acre and average \$400 per acre. Maintenance costs range from 15 to 25 percent of initial costs and average 20 percent (USEPA, 1993).

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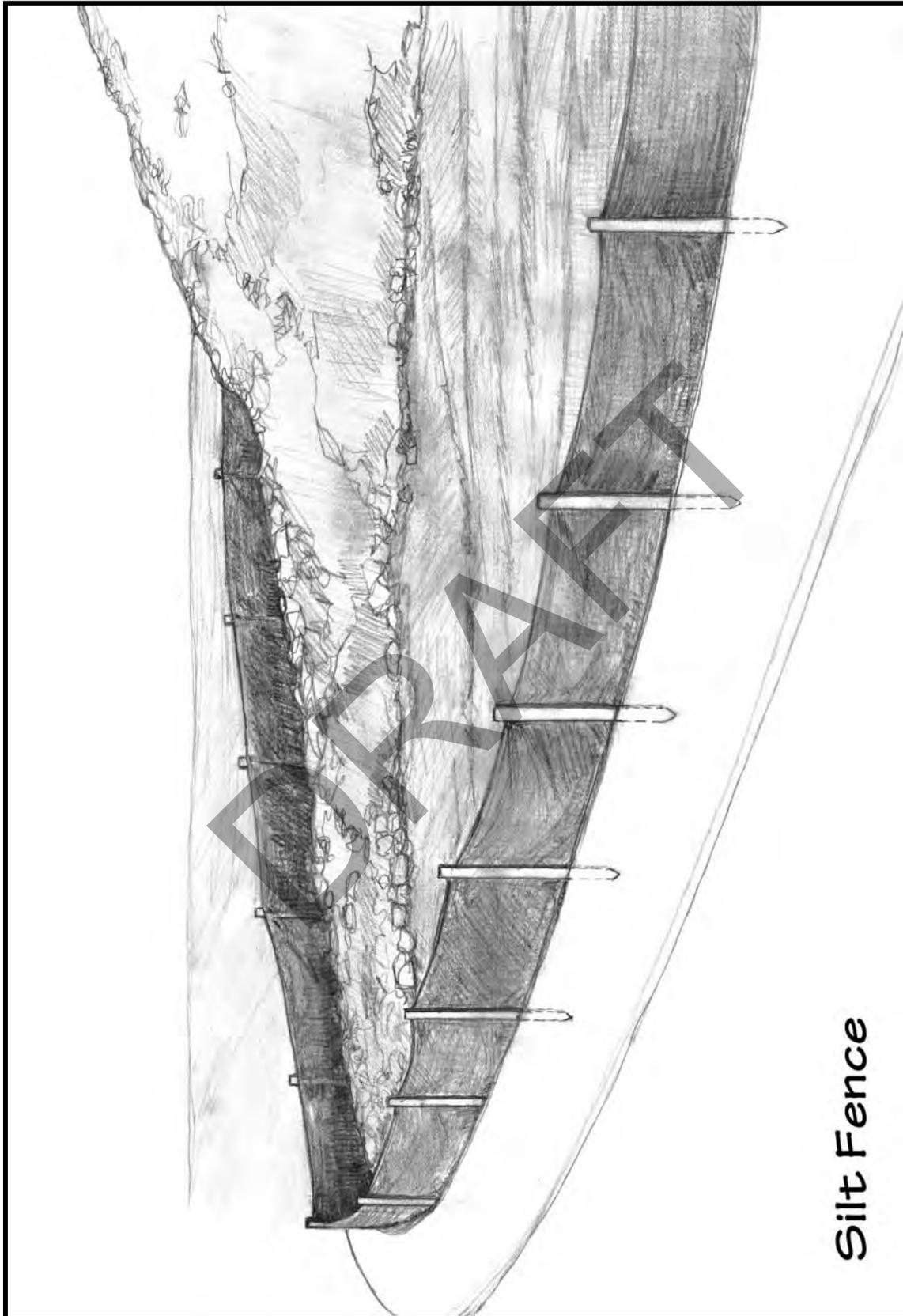
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Silt Fence

Silt Fence

Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
Silt Fence Feasibility	○	○	○	○	○
Description	Silt fences are used to pond sheet flow runoff on sloped areas, thus allowing heavy sediment particles to settle out while water and lighter particles leak slowly through the fence material. The fences can be very effective in removing sediment from runoff.				
Selection	<p>Silt fences are appropriate for the majority of construction sites that are not more than moderately sloped. The design life a silt fence is 6 months or less. The maximum contributory sheet flow drainage area should not exceed 0.25 acres per 100 feet of silt fence. Use of a silt fence is usually more complex, expensive, and maintenance-prone than other sediment control measures.</p> <p>Silt fence might not be the most appropriate control measure for uneven terrain or when vegetative mat contains high density of roots that preclude keying in the fabric.</p>				
Implementation	Silt fences should be installed at right angles to the slope and along contours. Silt fences should be installed at the bottom of a slope or on a bench on a slope. Because of the difficulty of installing silt fence on frozen ground, installation should take place, where possible, before the ground freezes. Posts should be securely installed with the fabric attached to the uphill side of the post. The filter fabric should be securely attached to the posts. The filter fabric should be keyed into the surrounding earth. Silt fences should <i>not</i> be used in locations with concentrated flow, including streams or other storm water conveyances. Silt fence should only be used to contain sediment on-site.				
Maintenance	<p>The filter fabric should be kept up to maintain its function. If it is torn or frayed, replace it. The posts should be reinstalled if loose. The filter fabric should be reinstalled if it is not keyed into the surrounding earth. The silt fence should be cleaned when sediment accumulates (see the most current CGP for specific requirements; the CGP specifies 50 percent of design capacity) and cleaned or replaced when it is covered with sediment.</p> <ul style="list-style-type: none"> • Confirm that the fence posts are secure. • Assure that the filter fabric is securely attached to the fence posts. • Look for and repair filter fabric that is torn or frayed. • Check for evidence of runoff overtopping the filter fabric; correct as necessary. • Verify that the silt fence is not leaning over. • Check for underflow and re-key if necessary. • Remedy fence sags as needed. 				

Feasibility symbols:

- | | |
|---|---|
| <p>○ Widely feasible</p> <p>□ Might be feasible in certain situations</p> | <p>★ Feasible only with major design adaptation</p> <p>■ Infeasible and not recommended</p> |
|---|---|

Description Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials such as Portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called “cold mix” asphalt), and pressure-treated wood.

Applications Implement in all projects that stockpile soil and other materials.

Limitations

Drainage area – N/A	Maximum slope – N/A
Minimum bedrock depth - N/A	Minimum water table - N/A
NRCS soil type – N/A	Freeze/thaw – good
Drainage/flood control – no	

Targeted Pollutants Sediment

Construction Guidelines

General

- Locate stockpiles a minimum of 50 ft away from concentrated flows of stormwater, drainage courses, and inlets.
- Protect all stockpiles from stormwater run-on using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbags, or gravel bags.
- Implement wind erosion control practices as appropriate on all stockpiled material.
- Place bagged materials on pallets and under cover.

Protection of Non-Active Stockpiles

- Soil stockpiles: During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times. During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- Stockpiles of PCC rubble, AC, asphalt concrete rubble, aggregate base, or aggregate sub base: During the rainy season, the stockpiles should be covered or protected with a temporary sediment perimeter barrier at all times. During the non-rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- Stockpiles of “cold mix”: During the rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material at all times. During the non-rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable materials prior to the onset of precipitation.
- Stockpiles/storage of pressure-treated wood: During the rainy season, pressure-treated wood should be covered with plastic or comparable

material at all times. During the non-rainy season, pressure-treated wood should be covered with plastic or comparable material at all times.

Protection of Active Stockpiles

- All stockpiles should be protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of “cold mix” should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Maintenance

- Inspect and verify that BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are underway, inspect weekly during the rainy season and at 2-week intervals in the non-rainy season to verify continued BMP implementation.
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.

DRAFT

Straw or Hay Bales

[Click here to comment on this fact sheet](#)

Minimum Measure: Construction Site Stormwater Runoff Control

Subcategory: Sediment Control

Description

Straw or hay bales have historically been used on construction sites for erosion and sediment control as check dams, inlet protection, outlet protection, and perimeter control. Many applications of straw bales for erosion and sediment control are proving ineffective due to the nature of straw bales, inappropriate placement, inadequate installation, or a combination of all three factors (Fifeld, 1999). In addition, straw bales are maintenance-intensive and can be expensive to purchase. Because many applications of straw and hay bales have been ineffective, EPA recommends that other BMP options are carefully considered. This fact sheet provides more information and options for alternatives to straw and hay bales.



Limitations

Straw bales cannot be used to reduce erosion in a drainage channel because if a straw bale structure is installed across the channel, the cross-sectional area is reduced, resulting in increased velocity of stormwater flow (IECA, 2005). This would lead to increased erosion around the bales, widening the channel's cross-section.

Straw bales do not work well in areas with heavy rain or on sites with large drainage areas or steep slopes. Straw bales should never be used on streets or sidewalks as they cannot be properly staked into concrete or asphalt and will float away.

Straw bales are very impermeable and are not able to withstand high flows, and care must be taken during placement and installation to avoid failure from undercutting, overtopping, and end-running. USDA NRCS (no date) states that water depth should never exceed 1 foot at any one time and straw bale structures should never be installed across streams, ditches, or where flow is concentrated because they can exacerbate erosion and flooding.

Straw bale installations have a high failure rate. According to some erosion control experts, straw bale installations are seldom designed, installed, and maintained properly (Fifeld, 1999). In addition, straw bales are difficult to transport and to carry around on-site, especially when attempting to dispose of them when they are waterlogged. Oftentimes, the bindings break and the straw can wash into storm drains, causing clogging.

Straw bales will rot and fall apart over time, especially in areas of high rainfall, and therefore require intensive maintenance; they only last for approximately three months. Straw bales will float and therefore must be properly staked even in low flow conditions. As previously stated, in high flow conditions, the water will flow around a straw bale barrier or undercut spaces between the bales.

Another factor to consider is that straw bales may introduce undesirable non-native plants to the area if there are seeds in the bales.

Alternatives

The following is a list of typical applications for straw and hay bales and some alternative practices that have proven to be more effective.

Common uses of straw or hay bales	Alternative to straw or hay bales
Perimeter controls	Silt fence
Check dams	Rock check dams Fiber Rolls
Slope protection	Geotextiles Compost blankets
Storm drain inlet protection	Filter fabric, gravel bags, and other designs
Concrete washout structures	Prefabricated concrete washout containers

Considerations

If straw bales are used (only in limited circumstances), each bale should be a minimum of 14 inches wide, 18 inches high, 36 inches long and should have a minimum mass of 50 pounds. The straw bale should be composed entirely of vegetative matter except for the binding material. Bales should be bound by steel wire or nylon or polypropylene string. Jute and cotton binding should not be used. Baling wire should be a minimum 14-gauge diameter. Nylon or polypropylene string should be approximately 12-gauge in diameter with a breaking strength of 80 pounds of force. Wood stakes should be commercial quality lumber that is free from decay, splits, or cracks longer than the thickness of the stake, or other defects that would weaken the stakes and cause them to be structurally unsuitable. Steel bar reinforcement should be equal to a #4 designation or greater. End protection should be provided for any exposed bar reinforcement.

Maintenance Considerations

Straw bales degrade, and rotting bales will need to be replaced on a regular basis (as often as every 3 months depending on local conditions). Erosion from washouts around the bales will need to be repaired. Sediment that settles in ponded areas around correctly installed bales will need to be cleaned out when the sediment accumulation reaches one-third of the bale height. Straw bales will also have to be removed when they burst open or are no longer needed.

Effectiveness

Straw bale barriers have not been as effective as expected due to improper use, such as if they are placed incorrectly in drainageways where runoff volumes and velocities have caused the barriers to wash out. In addition, failure to stake and entrench the straw bale has allowed undercutting and end flow.

Often straw bale barriers will fill to capacity after small storms and can be washed away if not staked correctly. Straw bale structures cannot be designed for large storms and tend to fail during large runoff events.

Cost Considerations

Straw bales cost \$5 to \$7 each, or \$9 to \$15 per bale installed (\$3 - \$5 per linear foot). This does not include labor or material costs associated with maintenance.

References

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p. 189-203.

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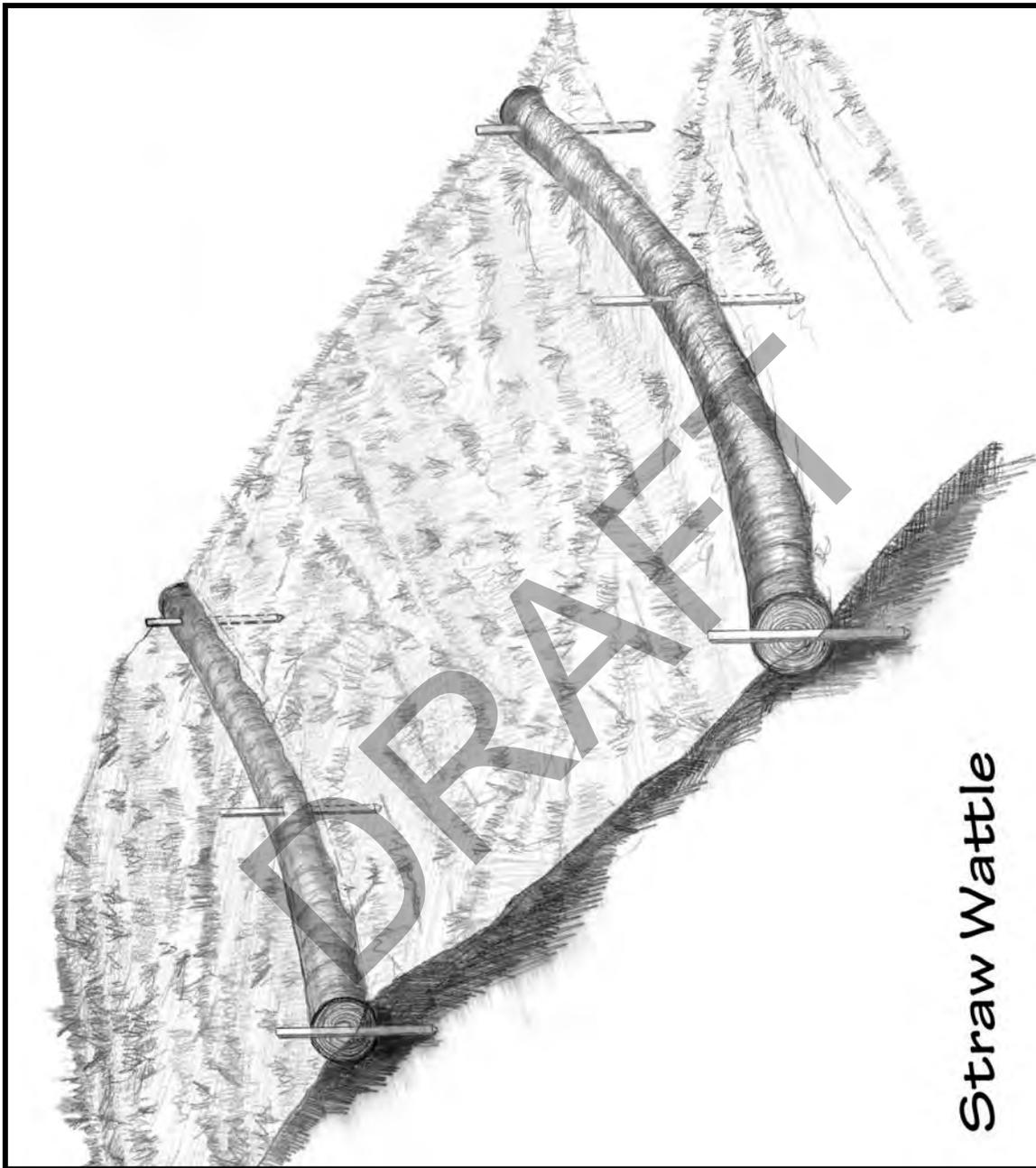
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Last updated on June 01, 2006

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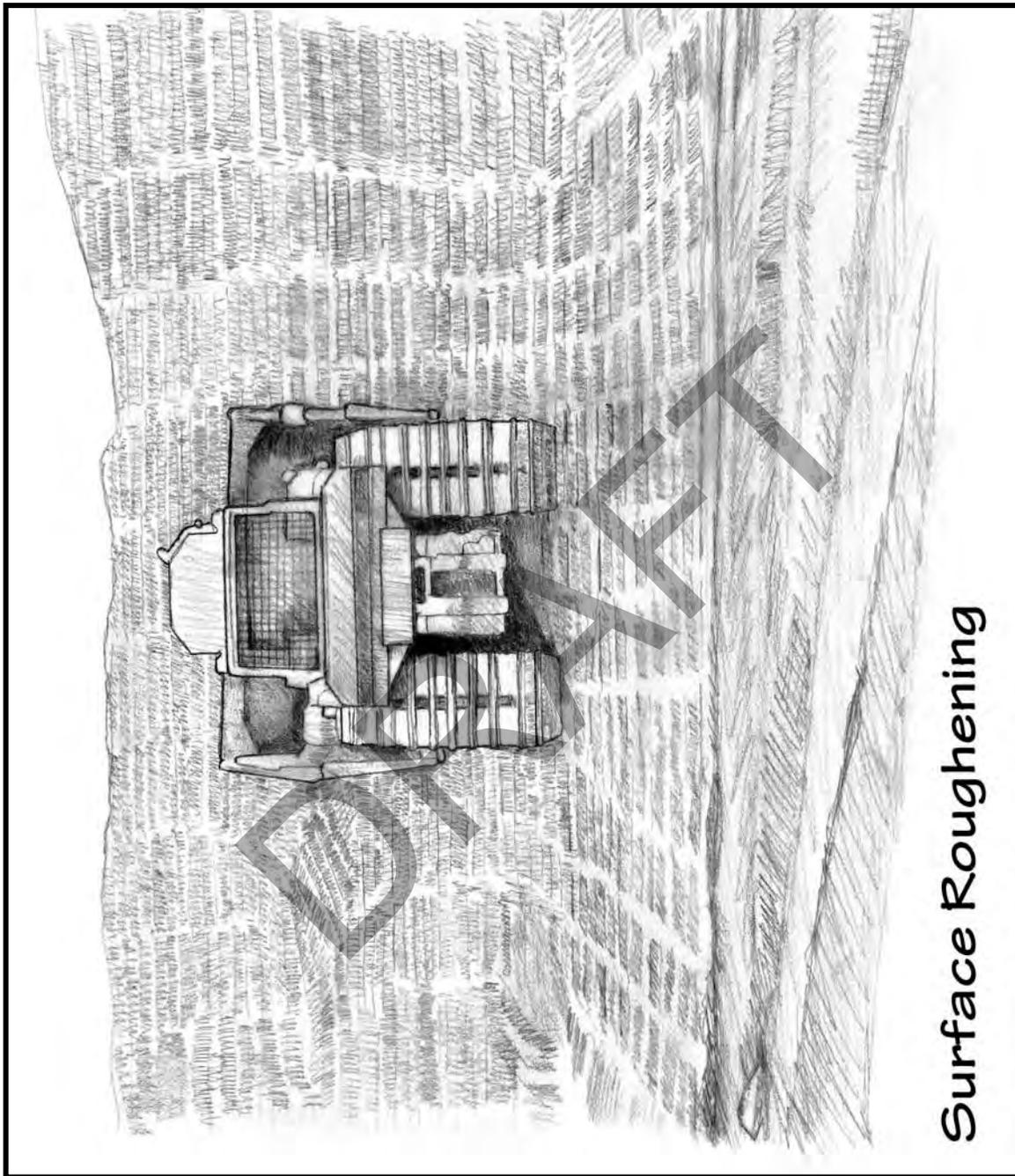
Straw Wattle

Straw Wattle

Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
Straw Wattle Feasibility	○	○	○	○	○
Description	Straw wattles, also called fiber rolls, consist of straw, flax or other similar materials bound into a tight tubular roll. When straw wattles are placed at the toe and on the face of slopes, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide removal of sediment from the runoff. By interrupting the length of a slope, straw wattles can also reduce erosion.				
Selection	Straw wattles are appropriate for the majority of construction sites that are not more than moderately sloped. Straw wattles can be used around temporary stockpiles, down-slope of exposed soil areas, along the perimeter of a project, or as grade breaks along a slope.				
Implementation	To be effective, straw wattles must be trenched (2–4 inches deep) and staked. Similar to silt fence, straw wattles should be placed on the contour. On slopes, straw wattles should be placed at intervals depending on the degree of slope.				
Maintenance	Inspect as specified in the SWPPP. Inspect straw wattles to identify locations that are split, torn, unraveling or slumping. Repair or replace straw wattles in those locations. Remove sediment from behind wattles when it reaches at least one-half the height of the wattle.				

Feasibility symbols:

- Widely feasible
 Might be feasible in certain situations
- Feasible only with major design adaptation
 Infeasible and not recommended



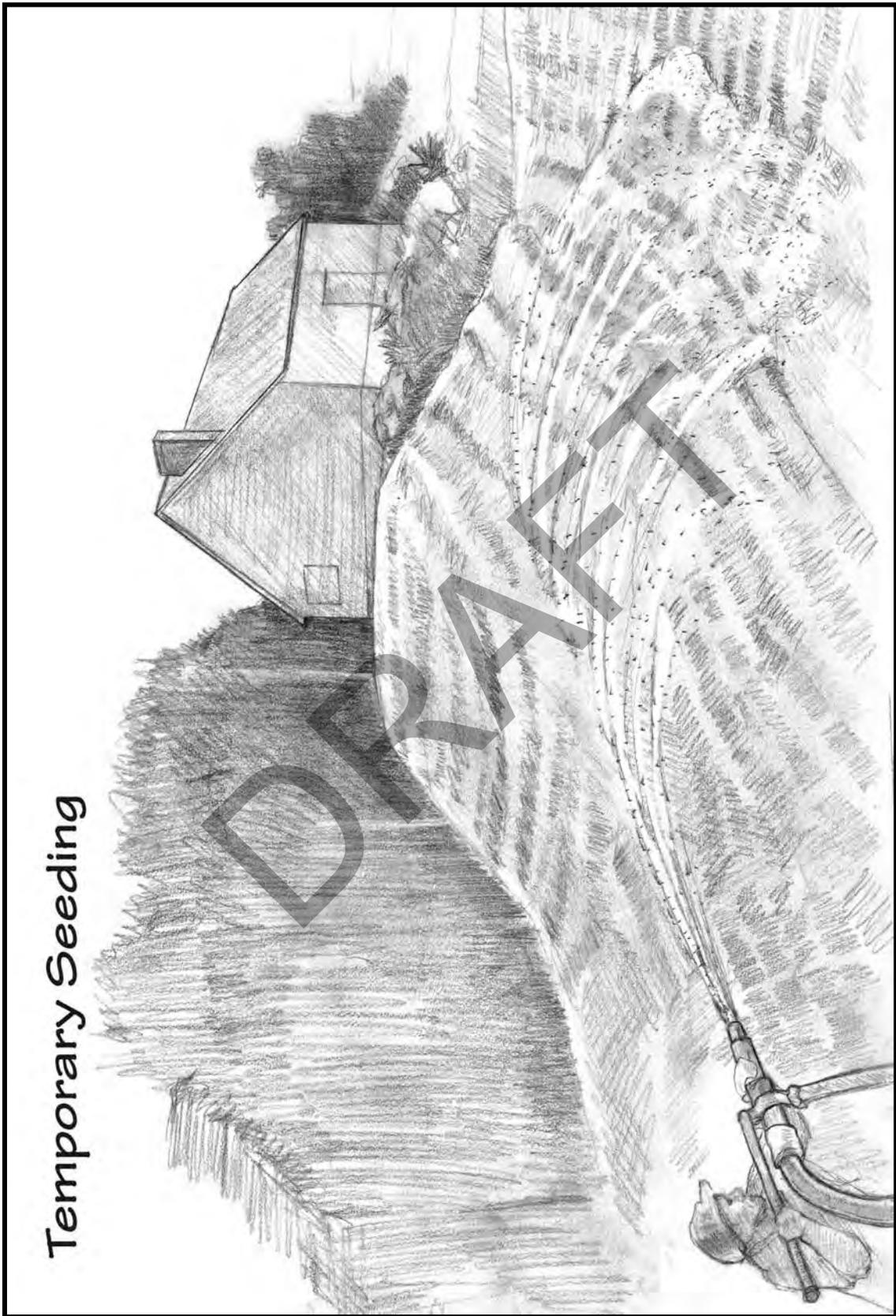
Surface Roughening

Surface Roughening

Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
Surface Roughening Feasibility	□	○	○	○	○
Description	Surface roughening, also called cat-tracking, is used on slopes to provide small pockets for trapping runoff and allowing infiltration. Surface roughening helps establish vegetation cover by providing a rough soil surface with horizontal depressions.				
Selection	Surface roughening works on most sloped areas, except hard pan. Surface roughening in high precipitation areas (Coastal climatic region) might not be feasible depending on soil type and slope.				
Implementation	<ul style="list-style-type: none"> • The contractor should run tracked machinery along the fall line of the slope with the blade raised. • Roughening with tracked machinery must be limited to avoid compacting the soil surface. • Tracking should be performed in a manner that covers the slope with no more than one foot between tracks. • Roughened areas should be seeded and mulched immediately. • Ensure that track marks are parallel and not perpendicular to the contour of the slope. 				
Maintenance	<p>Surface roughening is a temporary measure and should be inspected and shaped after a rainfall that causes erosion. Surface roughening decreases the erosion potential and, in the majority of cases, should be used in conjunction with other BMPs to be considered stabilized.</p> <ul style="list-style-type: none"> • Make sure the area is adequately covered with tracking. • Check for erosion after significant rainstorms. If rills appear, regrade and roughen again and reseed the eroded area immediately, as appropriate. 				

Feasibility symbols:

- | | |
|---|---|
| <p>○ Widely feasible</p> <p>□ Might be feasible in certain situations</p> | <p>★ Feasible only with major design adaptation</p> <p>■ Infeasible and not recommended</p> |
|---|---|



Temporary Seeding

Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
Temporary Seeding Feasibility	□	○	○	○	■
Description	Seeding is the establishment of perennial vegetation, usually lawns, on disturbed areas from seed. Seeding can be a temporary or permanent measure. The seed mixture should be free of weeds and unwanted seeds to prevent invasive plants.				
Selection	<p>This practice is used when vegetation is desired for temporary or final stabilization. Temporary seeding is not recommended if permanent seeding will be completed in the same growing season. The temporary seed mix is usually different from the permanent seed mix. Other temporary stabilization should be considered.</p> <p>Temporary seeding typically requires additional control measures to provide stabilization until vegetation is established.</p>				
Implementation	<p>Proper seedbed preparation and the use of high quality seed are essential to the success of this practice.</p> <ul style="list-style-type: none"> • Seeding should take place as soon as practicable after the last ground-disturbing activities in an area. For specific planting recommendations for your part of the state, contact the Alaska Department of Natural Resources, Plant Materials Center. • Supplement topsoil as necessary to ensure a minimum of 4 inches of topsoil, or the thickness specified in the plans, in areas to be permanently seeded. Work the topsoil into the layer below for a depth of at least 6 inches, or the thickness specified in the plans. • Follow the project plans and specifications produced by the landscape architect or engineer. • Seeding itself is not an erosion control until the seed germinates and vegetative cover grows. Seeding should be used in conjunction with mulch or other controls to protect the topsoil while seed germinates. 				
Maintenance	<p>All seeding should be inspected periodically following installation. Seeded areas should be checked for erosion and flooding after significant rainstorms. Any repairs must be made immediately.</p> <ul style="list-style-type: none"> • Water seeded areas daily until initial ground cover is established if rainfall does not provide moisture for seed germination. • Check the area to ensure the grass is growing; replant at appropriate times if required. • Look for damage to the seeded area due to runoff and repair before the next runoff event. • Check for erosion and flooding after significant rainstorms and repair before the next runoff event. 				

Feasibility symbols:

- | | |
|---|--|
| ○ Widely feasible | ★ Feasible only with major design adaptation |
| □ Might be feasible in certain situations | ■ Infeasible and not recommended |

APPENDIX C
PROJECT SCHEDULE

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**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
Fairbanks International Airport Fire Training Pit Corrective Action**

Phase	Anticipated Start Date	Anticipated End Date	Actual Start Date	Actual End Date
1	09/09/2019	09/27/2019		
2	09/09/2019	09/27/2019		
3	09/28/2019	09/28/2019		
4	09/14/2019	09/21/2019		
5	09/03/2019	09/04/2019		
6	09/28/2019	06/30/2019		
7	09/28/2019	06/30/2019		
8	09/28/2019	10/31/2019		
9	09/03/2019	09/31/2019		

The US Fish & Wildlife Service's *Timing Recommendations for Land Disturbances & Vegetation Clearing* (June 2017) recommends avoiding land disturbances and vegetation clearing for interior Alaska from May 1 through July 20, for all habitat types, except eagle habitat. If eagle nests are present, the recommended times to avoid land disturbances and vegetation clearing are March 1 through August 31.

APPENDIX D

SUPPORTING DOCUMENTATION

- Alaska's Impaired Waters 2010
- Excavation Dewatering Permit (AKG002158)
- USFWS Vegetation Clearing Limits
- Shannon & Wilson Fire Training Pit Corrective Action Work Plan REV01 (Omitted in Appendix to Work Plan REV02)

ALASKA'S IMPAIRED WATERS – 2010

As of September 2010

Impaired Waterbody Categories:

Category 4a – Impaired water with a final/approved TMDL

Category 4b – Impaired water with other pollution controls

Category 5 – Impaired water, Section 303(d) list, require TMDL

Within the tables waters are listed by region - -Interior, Southcentral, Southeast – and alphabetically.

Category 4a Waterbodies								
<u>Alaska's 2010</u>								
Category 4a Waterbodies – Impaired but not needing a TMDL, TMDL has been completed								
<u>Region</u>	<u>Category</u>	<u>Alaska ID #</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 4a	40402-001	Birch Creek Drainage:- Upper Birch Creek; Eagle Creek; Golddust Creek	North of Fairbanks	N/A	Turbidity	Turbidity	Placer Mining
IN	Category 4a	40506-009	Garrison Slough	Eielson Air Force Base	N/A	Toxic & Other Deleterious Organic and Inorganic Substances	Polychlorinated biphenyls (PCBs)	Military Base/ Operations
IN	Category 4a	40506-003	Noyes Slough	Fairbanks	7 miles	Residues	Debris	Urban Runoff
SC	Category 4a	30102-604	Akutan Harbor	Akutan Island	N/A	Residues Dissolved Gas	Settleable Solids Low Dissolved Oxygen	Seafood Processing/ Waste
SC	Category 4a	20401-004	Campbell Creek	Anchorage	10 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-402	Campbell Lake	Anchorage	125 acres	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff

SC	Category 4a	20401-003	Chester Creek	Anchorage	4.1 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff, Industrial
SC	Category 4a	20402-002	Eagle River	Eagle River	N/A	Toxic & Other Deleterious Organic and Inorganic Substances	Ammonia, Chlorine, Copper, Lead, Silver	Wastewater Treatment Facility
SC	Category 4a	20401-005	Fish Creek	Anchorage	6.4 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-006	Furrow Creek	Anchorage	5.3 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	30101-501	King Cove	King Cove	N/A	Residues	Seafood Waste Residue	Seafood Processing/ Waste
SC	Category 4a	20505-409	Lake Lucille	Wasilla	N/A	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff
SC	Category 4a	20401-017	Little Campbell Creek	Anchorage	8.3 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-024	Little Rabbit Creek	Anchorage	6.2 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-018	Little Survival Creek	Anchorage	3.0 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-020	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Anchorage	Glenn Hwy. Bridge. to Mouth	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	30102-603	South Unalaska Bay	Unalaska Island	N/A	Residues, Low Dissolved Oxygen (BOD5)	Seafood Waste Residues, Dissolved Gas	Seafood Processing Waste
SC	Category 4a	30102-607	Udagak Bay	Unalaska Island	N/A	Residues	Settleable solids	Seafood Processing Waste
SC	Category 4a	20401-419	University Lake	Anchorage	10 acres	Fecal Coliform	Fecal Coliform Bacteria	Urban Runoff

						Bacteria		
SC	Category 4a	20401-421	Westchester Lagoon	Anchorage	30 acres	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SE	Category 4a	10301-005	Duck Creek	Juneau	N/A	Dissolved Gas, Residues, Toxic & Other Deleterious Organic and Inorganic Substances, Fecal Coliform Bacteria Turbidity	Low Dissolved Oxygen, Debris, Iron, Fecal Coliform Bacteria, and Turbidity	Urban Runoff, Landfill, Road Runoff, Land Development
SE	Category 4a	10203-005	Granite Creek	Sitka	N/A	Turbidity Sediment	Turbidity, Sediment	Gravel Mining
SE	Category 4a	10203-601-001	Herring Cove of Silver Bay	Sitka	102 acres	Residues	Bark & Woody Debris	Log Storage from former Pulp Mill Operations
SE	Category 4a	10301-004	Jordan Creek	Juneau	3 miles from tide-water up-stream	Dissolved Gas, Residues, Sediment	Debris, Sediment Low Dissolved Oxygen	Land Development, Road Runoff
SE	Category 4a	10203-602	Klag Bay	West Chichagof Island	1.25 acres	Toxic & Other Deleterious Organic and Inorganic Substances	Metals – Arsenic, Cobalt, Copper, Lead, Manganese, Mercury, Silver, Zinc	Mining

SE	Category 4a	10301-001	Lemon Creek	Juneau	N/A	Turbidity Sediment	Turbidity, Sediment	Urban Runoff, Gravel Mining
SE	Category 4a	10301-014	Pederson Hill Creek	Juneau	Lower two miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Septic Tanks
SE	Category 4a	10303-004	Pullen Creek (Lower Mile)	Skagway	Lower mile of Pullen Creek	Toxic & Other Deleterious Organic and Inorganic Substances	Metals – Cadmium, Copper, Lead, Zinc	Industrial
SE	Category 4a	10203-601	Silver Bay	Sitka	6.5 acres	Residues Toxic & Other Deleterious Organic and Inorganic Substances	Pulp Residues, Logs, Bark & Woody Debris, Sediment Toxicity due to Wood Decomposition By-products	Industrial, Historical Pulp Mill Activity
SE	Category 4a	10103-602	Thorne Bay	Prince of Wales Island	7.5 acres	Residues	Bark & Wood Debris	Historical Log Transfer Facility
SE	Category 4a	10301-017	Vanderbilt Creek	Juneau	N/A	Turbidity Residues Sediment	Turbidity, Debris, Sediment	Urban Runoff
SE	Category 4a	10102-601	Ward Cove	Ketchikan	250 acres	Residues Dissolved Gas	Pulp Residues, Logs, Bark & Woody Debris, Low Dissolved Oxygen	Industrial

Category 4b Waterbodies

Alaska's 2010

Category 4b Waterbodies – Impaired, not needing a TMDL, and under “other pollution controls” and expected to meet standards in a reasonable time period

<i>Region</i>	<i>Category</i>	<i>Alaska ID #</i>	<i>Waterbody</i>	<i>Location</i>	<i>Area of Concern</i>	<i>Water Quality Standard</i>	<i>Pollutant Parameters</i>	<i>Pollutant Sources</i>
IN	Category 4b	40501-001	Cabin Creek	Nabesna	1.5 miles	Toxic & Other Deleterious Organic and Inorganic Substances	Manganese, Arsenic, Iron, Copper & Cadmium	Mine Tailings
SC	Category 4b	N/A	Exxon Valdez Beaches	Prince William Sound - Alaska	23 beaches	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Oil Spill

				Peninsula				
SE	Category 4b	10203-808	East Port Frederick	NE Chichagof Island	0.4 acres	Residues	Bark & Woody Debris	Log Transfer Facility
SE	Category 4b	10103-031	Fubar Creek	Prince of Wales Island	N/A	Sediment	Sediment	Timber Harvesting

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2010

Category 5 Waterbodies – Impaired by pollutant(s) for one or more designated uses and requiring a TMDL; Clean Water Act Section 303(d) Listed Waters

<u>Region</u>	<u>Category</u>	<u>Alaska ID #</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 5 Section 303(d) listed	40506-007	Chena River	Fairbanks	15 miles	Sediment	Sediment	Urban Runoff
IN	Category 5 Section 303(d) listed	40506-002	Chena Slough	Fairbanks	13 miles	Sediment	Sediment	Urban Runoff
IN	Category 5 Section 303(d) listed	40402-010	Crooked Creek Bonanza Crooked Deadwood Ketchem Mammoth Mastodon Porcupine	North of Fairbanks	77 miles	Turbidity	Turbidity	Placer Mining
IN	Category 5 Section 303(d) listed	40509-001	Goldstream Creek	Fairbanks	70 miles	Turbidity	Turbidity	Placer Mining
IN	Category 5 Section 303(d) listed	30501-002	Kuskokwim River	Red Devil	1,000 feet, 900 feet down river and 100 feet upriver from mouth of Red	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Antimony, Arsenic, Mercury	Mining

					Devil Creek			
IN	Category 5 Section 303(d) listed	40506-003	Noyes Slough	Fairbanks	7 miles	Sediment, Petroleum Hydrocarbons, Oil & Grease	Sediment, Petroleum Products,	Urban Runoff
IN	Category 5 Section 303(d) listed	30501-002	Red Devil Creek	Red Devil	0.5 mile of creek	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Antimony, Arsenic, Mercury	Inactive Mine
IN	Category 5 Section 303(d) listed	40510-101	Slate Creek	Denali National Park	2.5 miles	Turbidity	Turbidity	Mining
SC	Category 5 Section 303(d) listed	20505-401	Big Lake	Wasilla	1,250 acres	Petroleum Hydrocarbons	Total Aromatic Hydrocarbons (TAH)	Motorized watercraft

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SC	Category 5 Section 303(d) listed	30101-503	Cold Bay	King Cove, Alaska Peninsula	0.01 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Military, Fuel Storage
SC	Category 5 Section 303(d) listed	20505-001	Cottonwood Creek	Wasilla	7 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff, Urban Development
SC	Category 5 Section 303(d) listed	30102-606	Dutch Harbor	Unalaska Island	0.5 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Industrial, Urban Runoff
SC	Category 5 Section 303(d) listed	30203-001	Egegik River	Egegik	0.25 mile	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Spills, Fuel Tanks, Underground Fuel Tanks
SC	Category 5 Section 303(d) listed	20201-401	Eyak Lake	Cordova	50 feet of shoreline	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products, Petroleum Contamination, Sheen	Above Ground Storage Tanks, Spills
SC	Category 5 Section 303(d) listed	20401-412	Hood/ Spenard Lake	Anchorage	307 acres	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff, Industrial
SC	Category 5 Section 303(d) listed	30102-602	Iliuliuk Harbor	Dutch Harbor	1.4 acres	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Urban Runoff
SC	Category 5 Section 303(d) listed	20402-001	Matanuska River	Palmer	½ mile	Residues	Debris	Landfill
SC	Category 5 Section 303(d) listed	30101-502	Popof Strait	East Aleutians Borough	5 miles	Residues	Seafood Waste Residue	Seafood Processor
SC	Category 5 Section 303(d) listed	30102-409	Red Lake Anton Road Ponds	Kodiak	2.0 acres	Toxic & Other Deleterious Organic and Inorganic Substances	Metals – Iron, Manganese	Urban Runoff

SC	Category 5 Section 303(d) listed	20401-020	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Anchorage	11 miles, Glenn Hwy. Bridge. Down to Mouth	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Urban Runoff
SE	Category 5 Section 303(d) listed	10203-002	Katlian River	N. of Sitka, Baranof Island	4.5 miles	Sediment, Turbidity	Sediment, Turbidity	Timber Harvest
SE	Category 5 Section 303(d) listed	10103-504	Salt Chuck Bay	Kasaan Area, Prince of Wales Island	0.03 square miles	Toxic & Other Deleterious Organic and Inorganic Substances	Metals -- Copper	
SE	Category 5 Section 303(d) listed	10303-601	Skagway Harbor	Skagway	1.0 acre	Toxic & Other Deleterious Organic and Inorganic Substances	Metals – Cadmium, Copper, Lead, Mercury, Zinc	Industrial

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SE	Category 5 Section 303(d) listed	10103-010	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3027 (Stream 3)	Prince of Wales Island	0.4 mile	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Aluminum, Cadmium, Copper, Iron	Road Construction
SE	Category 5 Section 303(d) listed	10103-012	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3021 (Stream 6)	Prince of Wales Island	1.14 mile	Toxic & Other Deleterious Organic and Inorganic Substances, Dissolved Inorganic Substances	Metals – Aluminum, Cadmium, Copper, Iron, Manganese, Sulfate	Road Construction
SE	Category 5 Section 303(d) listed	10103-013	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3019 tributary (Stream 7)	Prince of Wales Island	0.3 mile	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Aluminum, Cadmium, Copper, Iron, Manganese	Road Construction
SE	Category 5 Section 303(d) listed	10103-014	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3019 (Stream 8)	Prince of Wales Island	0.3 mile	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Cadmium, Copper, Iron, Manganese, Nickel, Zinc	Road Construction
SE	Category 5 Section 303(d) listed	10103-015	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3017 (Stream 9)	Prince of Wales Island	0.8 mile	Toxic & Other Deleterious Organic and Inorganic Substances, Dissolved Inorganic Substances	Metals – Aluminum, Cadmium, Copper, Iron, Manganese, Nickel, Zinc, Sulfate	Road Construction



THE STATE
of **ALASKA**
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental
Conservation

DIVISION OF WATER

Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

July 26, 2019

Ms. Angie Spear
ADOT&PF
6450 Airport Way
Fairbanks, AK, 99709

Re: Authorization AKG002158 FAI Fire Training Pit Corrective Action

Dear Ms. Spear:

The Alaska Department of Environmental Conservation (DEC) has completed its review of your AKG002000 Excavation Dewatering Notice of Intent (NOI) for the FAI Fire Training Pit Corrective Action and is issuing authorization number AKG002158 for this project. The discharge from this project is authorized in accordance with the terms of the general permit and any site specific requirements in this authorization.

An electronic copy of the Excavation Dewatering general permit is available at <http://dec.alaska.gov/water/wastewater/stormwater/dewater-hydrostatic/#dewater> and a copy of this authorization letter is posted to the DEC water permit search <http://dec.alaska.gov/Applications/Water/WaterPermitSearch/Search.aspx>.

The authorization effective date is 7/26/2019.

The authorization to discharge expires upon submittal of a Notice of Termination, see Permit Part 7.

The authorized discharge location is to a water as described in the NOI.

The following are site specific conditions:

- Once the final design of the FTP water treatment system is completed, submit design drawings and standard operating procedures for operation and effluent monitoring testing to DEC for review (DEC contact William Ashton, 269-6283, William.Ashton@alaska.gov).
- Include TAH and TAqH effluent monitoring in addition to the parameters identified in Part 4.5.1 Onsite Water Treatment of the site work plan.

The permittee is reminded of the following permit requirements:

- Compliance with Standards and Limits, see Permit Part 3.1 Requirements for all Projects.
- Control Measures, see Permit Parts 4.0 and 4.1 – Erosion and Sediment Control Measures.
- Limitations, Inspections, and Monitoring Requirements, see Permit Part 5.1 Land Disposal Discharges of Excavation Dewatering, see Permit Part 5.2 Surface Water Discharges of Excavation Dewatering.
- Reporting and Recordkeeping, see Permit Part 6.

A copy of the General Permit AKG002000 and this authorization must be kept at the project site. This authorization does not relieve the permittee from other local, state, or federal government permitting requirements.

If discharge is to water: The DMR form can also be found and completed on the following website, <http://dec.alaska.gov/water/compliance/permittee/>. Once the DMR is completed it shall be submitted to the following address:

Department of Environmental Conservation
Division of Water
Compliance and Enforcement Program
555 Cordova Street
Anchorage, Alaska 99501
Telephone Nationwide (877) 569-4114
In Anchorage Area/International (907) 269-4114
Fax (907) 269-4114
Email: dec-wqreporting@alaska.gov

If you have any questions regarding the above, please contact me at 907.334.2288.

Sincerely,

James Rypkema
Program Manager, Storm Water and Wetlands

cc: Jessica Miller, DNR, Water Resources Section
Robert Burgess, DEC, Contaminated Sites
Marcy Nadel, Shannon & Wilson, Inc
Valarie Webb, Shannon & Wilson, Inc



U.S. Fish & Wildlife Service Region 7

Timing Recommendations for Land Disturbance & Vegetation Clearing

Planning Ahead to Protect Nesting Birds

In Alaska all native birds except grouse and ptarmigan, which are managed by the State of Alaska, are protected by the Migratory Bird Treaty Act (MBTA). Under the MBTA (16 U.S.C. 703) it is illegal for anyone to “take” migratory birds, their eggs, feathers or nests, unless permitted by regulations. “Take” is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture or collect” a migratory bird (50 CFR §10.12). For more information, please see:

<http://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php>.

Destruction of active nests, eggs, or nestlings can result from spring and summer vegetation clearing, grubbing, brush hogging, burning, stockpiling fill, and other land disturbance and construction activities. An “active” nest is indicated by intact eggs, live chicks, or presence of at least one adult on the nest. Human disturbance and repeated loud noises near nest sites can cause nest failure and is considered “take”. Avoiding nesting seasons during project implementation minimizes the risk of encountering an active nest or inadvertently causing a nest to fail.



Lucas DeCicco/USFWS

Rusty Blackbird

Some bird species and their nests have additional protections under other federal laws, including Bald and Golden eagles under the Bald and Golden Eagle Protection Act (Eagle Act), and those listed under the Endangered Species Act (ESA). Please contact the U.S. Fish and Wildlife Service if these species may be present in your project area to ensure Eagle Act and ESA compliance.

Implementing the following timing recommendations considerably reduces the risk of “take” under the MBTA. Final compliance with the law is your responsibility.

Recommendations:

1. Conduct land disturbance and vegetation clearing activities as described above outside of the nesting season (please see nesting season timing for your area on the next page).
2. If you encounter an active nest *at any time*, including before or after the local recommended avoidance times, leave it undisturbed until the eggs hatch and the young depart the nest.
3. If you have any questions regarding the MBTA, the timing recommendations, or if you are unable to comply with the timing recommendations, please contact your local U.S. Fish and Wildlife Service Fish and Wildlife Conservation Office for assistance:

Anchorage (includes Juneau and Kenai areas) - (907) 271-2888

Fairbanks (includes the North Slope, Interior, and Western Alaska) - (907) 456-0203



U.S. Fish & Wildlife Service Region 7

Timing Recommendations for Land Disturbance & Vegetation Clearing

Planning Ahead to Protect Nesting Birds

Nesting Seasons by Habitat Type and Region:

Recommended Times to Avoid Land Disturbance & Vegetation Clearing

HABITAT TYPE → REGION ↓	Forest or Woodland (i.e., trees present)	Shrub or Open (i.e., shrub cover or marsh, pond, tundra, gravel, or other treeless/shrubless ground habitat)	Seabird Colonies (including cliff and burrow colonies)	Eagles ^e
Southeast	April 15-July 15 ^a	May 1-July 15 ^{a, b}	May 1-September 15	March 1-August 31
Kodiak Archipelago			April 15-September 7	
Southcentral (Lake Illiamna to Copper River Delta; north to Talkeetna)	May 1-July 15 ^{a, b}			
Bristol Bay/AK Peninsula (north to Lake Illiamna)	May 1-July 15 ^{a, b, c}		May 10-September 15	
Interior (north of Talkeetna to south slope Brooks Range; west to treeline)	May 1-July 15 ^{a, b}		May 1-July 20 ^d	
Aleutian Islands		April 25-July 15 ^a	May 1-September 15	
Yukon-Kuskokwim Delta	May 1-July 15	May 5-July 25 ^{a, b, c}	May 20-September 15	
Seward Peninsula	May 1-July 15	May 10-July 20 ^{a, c}		
Northern (includes northern foothills of Brooks Range)		June 1-July 31 ^{a, c}		
Pribilof and Bering Sea Islands		May 15-July 15 ^a	May 15-September 15	

^a Raptors may nest two or more months earlier than other birds.

^b Canada geese and swans begin nesting April 20.

^c Black scoter are known to nest through August 10.

^d Seabird colonies in Interior refer to terns and gulls.

^e Eagles and their nests have additional protections under the Eagle Act and a permit may be required to conduct activities near an eagle nest. Visit the U.S. Fish and Wildlife Service's Alaska Region Eagle Permit Program web page (<https://www.fws.gov/alaska/eaglepermit/guidelines/disturbnestingbaea1.htm>) or call your local Fish and Wildlife Conservation Office for step-by-step guidance to determine if your activity is likely to take or disturb eagles and for conservation measures to that avoid disturbance.

APPENDIX E

PERMIT CONDITIONS

- Copy of Signed Notice of Intent
- Copy of Letter from ADEC Authorizing Coverage, with ADEC NOI Tracking Number
- Copy of 2016 Construction General Permit



Thank you for using the ADEC eNOI system. This Signature Page NOI must be signed by:

Susan Ault

Alaska Department of Transportation & Public Facilities

Please sign on the appropriate line in the Certification Information Section (Section VIII, page 3 of 5) of this Signature NOI.

In order to complete the certification of your electronic Notice of Intent (eNOI) application, submit all pages of this Signature Page NOI via mail, fax, or email to:

Attn: Storm Water Program
Division of Water
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
Fax Number: (907) 269-3487
Phone Number: (907) 269-8117
Email Address: DEC.Water.OPAHelp@alaska.gov

If you have any questions regarding this signature page or other questions concerning the eNOI System, please call ADEC at: (907) 269-8117.

Thank you for using the ADEC eNOI system.



Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under an APDES Construction General Permit

Submission of this Notice of Intent (NOI) constitutes notice that the party identified in Section II of this form requests authorization to discharge pursuant to the APDES Construction General Permit (CGP, AKR100000). Submission of this NOI also constitutes notice that the party identified in Section II of this form meets the eligibility requirements of the CGP for the project identified in Section IV of this form. Permit authorization is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Refer to the instructions at the end of this form.

I. Single/Multiple NOI Project			
Is this NOI for a project with a single NOI?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If "No," then your project has multiple NOIs, will the fee be paid with this NOI?			<input type="checkbox"/> Yes <input type="checkbox"/> No
If "No," then enter the name of the operator paying the fee:			
II. Operator Information			
Organization: Alaska Department of Transportation & I		Name: RJ Stumpf	Title: Project Forman
Phone: (907) 474-2587	Fax (optional):	Email: rj.stumpf@alaska.gov	
Mailing Address:	Street (PO Box): 6450 AIRPORT WAY STE 1		
	City: FAIRBANKS	State: AK	Zip: 99709-4671
III. Billing Contact Information			
Organization: Alaska Department of Transportation & Public Facilities		Name: Susan Ault	Title: Business Manager
Phone: (907) 474-2577	Fax (optional):	Email: susan.ault@alaska.gov	
Mailing Address:	Street (PO Box): 6450 AIRPORT WAY STE 1		
<input type="checkbox"/> Check if same as Operator Information	City: FAIRBANKS	State: AK	Zip: 99709-4671
IV. Project / Site Information			
Project Name: Fairbanks International Airport Fire Training Pit		Estimated Start Date: 08/30/2019	Estimated End Date: 09/01/2020
Brief Description of Project:		Estimated Area to be Disturbed (nearest tenth acre): 3.5	
The project site is the fire training area at the Fairbanks International Airport. The training area is located at the southeast end of the airport, north of University South, south of runway 2L/20R, and southwest of runway 2R/20L.			
Is your project / site less than one-acre, but part of a common plan of development?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If "Yes", provide the Permit Authorization Number and name of the common plan of development:		Number: Name:	
Have storm water discharges from your project / site been authorized previously by a DEC permit?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If "Yes," provide the Permit Authorization Number for the previous DEC permit? Select			
If "Yes," have you updated your SWPPP according to the most recently issued CGP?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Location Address:	Street: 6450 Airport Way		Borough or similar government subdivision: Fairbanks North Star Borough
	City: Fairbanks	State: Alaska	Zip: 99709
Latitude (decimal degree, 5 places):	Longitude (decimal degree, 5 places):	Determined By: Internet - Other	
64.7992	-147.8808	<input type="checkbox"/> USGS Topographic Map, scale:	
		<input type="checkbox"/> Other: Google Earth	

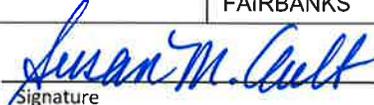
V. SWPPP (Storm Water Pollution Prevention Plan)			
Has the SWPPP been prepared in advance of filing this NOI?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
For projects with 5 or more acres of disturbance, has a SWPPP been submitted to DEC?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No, ≤ 5 acres
Location of SWPPP for Viewing: <input type="checkbox"/> Address in Section II <input type="checkbox"/> Address in Section IV <input checked="" type="checkbox"/> Other			
If other:	Street: 6450 AIRPORT WAY STE 1		
	City: FAIRBANKS	State: AK	Zip: 99709-4671
SWPPP Contact Information (if different than that in Section II):			
Organization: Shannon & Wilson, Inc.		Name: Valerie Webb	Title: Senior Professional III
Phone: (907) 458-3152		Fax (optional):	Email: vew@shanwil.com
Mailing Address: <input type="checkbox"/> Check if same as Operator Information	Street (PO Box): 2355 HILL RD		
	City: FAIRBANKS	State: AK	Zip: 99709-5326
VI. Permanent Storm Water Controls			
Will you construct a permanent storm water management control measure at the project site (Part 4.11)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If "Yes", indicate the type of measure to be installed:			
<input type="checkbox"/> Pond <input type="checkbox"/> Oil/Water/Grit Separator <input type="checkbox"/> Proprietary Storm Water Sedimentation Device			
<input type="checkbox"/> Other:			
VII. Discharge Information			
Does your project discharge into a Municipal Separate Storm Sewer System (MS4)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, name of the MS4 Operator:			
Receiving Water and Wetlands Information: (if additional space is needed for this question, attach separate sheet or annotate in Section XI.)			
Impaired waters/303d Listed waters: (see https://dec.alaska.gov/media/11173/impaired-waters.pdf or https://dec.alaska.gov/water/water-quality/map , and https://dec.alaska.gov/water/water-quality/impaired-waters/)			
a. Identify the name(s) of waterbodies or wetlands to which you discharge.	b. Are any of your discharges directly into any segment of a 303d Listed Water, i.e. "Impaired" Water?		c. If you answered YES to question b, then answer the following three questions:
			i. What pollutant(s) are causing the impairment?
	Yes	No	ii. Are the pollutant(s) causing the impairment present in your discharge?
	Yes	No	iii. Is the discharge consistent with the assumptions and requirements of applicable EPA approved or established Total Maximum Daily Load (TMDL(s))?
Unnamed Slough	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Tanana River	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
VIII. Treatment Chemicals			
Will you use control measures such as polymers, flocculants or other treatment chemicals at your construction site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<i>NOTE: If you are unsure at the filing of the NOI, check "No" and then if you use treatment chemicals file an NOI Modification form indicating "Yes."</i>			
If "Yes", indicate the following polymers, flocculants, or other treatment chemicals that will be used at your construction site:			
<input type="checkbox"/> Alum <input type="checkbox"/> Gypsum			
<input type="checkbox"/> Polyacrylamide (PAM) <input type="checkbox"/> Polyaluminum Chloride			
<input checked="" type="checkbox"/> Other: Calcium Chloride			

IX. Certification Information

An Alaska Pollutant Discharge Elimination System (APDES) permit application or report must be signed by an individual with the appropriate authority per 18 AAC 83.385. For additional information, please refer to 18 AAC 83.385 at the following link: <http://www.legis.state.ak.us/basis/aac.asp#18.83.385>.

Corporate Executive Officer 18 AAC 83.385 (a)(1)(A)	For a corporation, 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.
Corporate Operations Manager 18 AAC 83.385 (a)(1)(B)	For a corporation, the manager of one or more manufacturing, production, or operating facilities, if (i) 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; (ii) the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and (iii) authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
Sole Proprietor or General Partner 18 AAC 83.385 (a)(2)	For a partnership or sole proprietorship, the general partner or the proprietor respectively.
Public Agency, Chief Executive Officer 18 AAC 83.385 (a)(3)(A)	For a municipality, state, or other public agency, the chief executive officer of the agency.
Public Agency, Senior Executive Officer 18 AAC 83.385 (a)(3)(B)	For a municipality, state, or other public agency, a senior executive officer having responsibility for the overall operations of a principal geographic unit or division of the agency.
<p><i>*For Delegated Authority: the delegation must be made in writing and submitted to the DEC. An Example of written authorization delegating authority can be found on the Division of Water website: https://dec.alaska.gov/media/11172/delegation-authorization-form.pdf</i></p>	
Operations Manager (Delegated Authority)* 18 AAC 83.385 (b)(2)(A)	For a duly authorized representative, 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.
Environmental Manager (Delegated Authority)* 18 AAC 83.385 (b)(2)(B)	For a duly authorized representative, an individual or position having overall responsibility for environmental matters for the company.

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.

Organization: Alaska Department of Transportati	Name: Susan Ault	Title: Business Manager
Phone: (907) 474-2577	Fax (optional):	Email: susan.ault@alaska.gov
Mailing Address: <input type="checkbox"/> Check if same as Operator Information	Street (PO Box): 6450 AIRPORT WAY STE 1	
	City: FAIRBANKS	State: AK
		Zip: 99709-4671
 Signature	8/23/19 Date	

X. NOI Preparer (Complete if NOI was prepared by someone other than the certifier.)

Organization: Shannon and Wilson, Inc.	Name: Valerie Webb	Title: Senior Professional III
Phone: (907) 458-3152	Fax (optional):	Email: vew@shanwil.com
Mailing Address: <input type="checkbox"/> Check if same as Operator Information	Street (PO Box): 2355 HILL RD	
	City: FAIRBANKS	State: AK
		Zip: 99709-5326

XI. Document Attachments and Supplemental Information

--

Attachment 1. (Fill in as necessary if more space is required for Receiving water and Wetlands Information.)

a. What is the name(s) of your receiving water(s) that receive storm water directly and/or through a MS4? If your receiving water is impaired, then identify the name of the impaired segment, if applicable, in parenthesis following the receiving water name.	b. Are any of your discharges directly into any segment of an "impaired" water?		c. If you answered yes to question b, then answer the following three questions:				
	Yes	No	ii. Are the pollutant(s) causing the impairment present in your discharge?		iii. Has the TMDL been completed for the pollutant(s) causing the impairment?		
			Yes	No	Yes	No	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM

**GENERAL PERMIT FOR DISCHARGES FROM LARGE AND
SMALL CONSTRUCTION ACTIVITIES
(Construction General Permit) – FINAL**

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 (CWA), 33 U.S.C. §1251 et. seq., 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 applicable 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 1.4.4 of this permit, are authorized to discharge storm water associated with construction activity to waters of the U.S., in accordance with the conditions and requirements set forth herein. Permit authorization is required from the “commencement of construction activities” until “final stabilization” as defined in Appendix C.

This permit shall become effective on February 1, 2016.

This permit and the authorization to discharge shall expire at midnight, January 31, 2021.

Wade Strickland

Signature

December 29, 2015

Date

Wade Strickland

Program Manager

TABLE OF CONTENTS

1.0 COVERAGE UNDER THIS PERMIT..... 9

1.1 Introduction..... 9

1.2 Person(s) Responsible for Obtaining Authorization under this Permit 9

1.3 Permit Area 10

1.4 Eligibility 10

- Allowable Storm Water Discharges..... 10
- Authorized Non-Storm Water Discharges 11
- Limitations on Coverage..... 11
- Emergency Repairs or Reconstruction of a Facility..... 12

1.5 Waivers for Certain Small Construction Activities 12

2.0 AUTHORIZATION UNDER THIS GENERAL PERMIT 13

2.1 Submittal Requirements Prior to Construction 13

- Projects Using Active Treatment Systems..... 15
- Projects that Discharge to an Outstanding Natural Resource Water 15

2.2 How to Obtain Authorization..... 15

2.3 How to Submit an Notice of Intent (NOI) 16

2.4 Submission Deadlines 17

- New Projects 17
- Permitted Ongoing Projects 17
- Change of Permittee for a Permitted Ongoing Project 17
- Unpermitted Ongoing Project..... 17

2.5 Date of Authorization to Begin Discharge..... 18

2.6 Continuation of Expired General Permit 18

2.7 Submittal of a Modification to Original NOI 18

2.8 Alternative Permits 19

- DEC Requiring Authorization under an Alternative Permit 19
- Operator Requesting Authorization under an Alternative Permit 19

3.0 COMPLIANCE WITH STANDARDS AND LIMITS 20

3.1 Requirements for all Projects..... 20

3.2 Discharge to Impaired Water Body 20

- Discharging into a Receiving Water Body with an Approved or Established TMDL (Category 4a or 4b) (e.g., Turbidity or Sediment)..... 21

3.3 Protection of Endangered Species 22

4.0 CONTROL MEASURES 22

4.1 Control Measure Selection and Design Considerations..... 22

4.2 Erosion Control Measures..... 24

- Delineation of Site..... 24
- Minimize the Amount of Soil Exposed during Construction Activity..... 24
- Maintain Natural Buffer Areas 24
- Clearing Vegetation 24
- Control Storm Water Discharges and Flow Rates 24
- Protect Steep Slopes..... 25

4.3 Sediment Control Measures 25

- *Storm Water Inlet Protection Measures* 25
- *Water Body Protection Measures* 25
- *Down-Slope Sediment Controls* 25
- *Stabilized Construction Vehicle Access and Exit Points* 25
- *Dust Generation and Track-Out from Vehicles* 26
- *Soil Stockpiles* 26
- *Authorized Non-Storm Water Discharges* 26
- *Sediment Basins* 26
- 4.4 Dewatering 27
- 4.5 Soil Stabilization 27
 - *Minimum Requirements for Soil Stabilization* 27
 - *Deadline to Initiate Stabilization* 27
 - *Deadline to Complete Temporary Stabilization Activities* 28
 - *Exceptions to the Deadlines for Initiating and Completing Stabilization* 29
 - *Deadline to Complete Final Stabilization* 29
 - *Stabilization Requirements for Terminating Permit Authorization* 30
- 4.6 Treatment Chemicals 30
 - *Selection of Treatment Chemicals* 30
 - *Use of Treatment Chemicals* 30
 - *Application of Treatment Chemicals* 31
 - *Land Application* 31
 - *Water Application* 31
 - *Active Treatment Systems* 32
- 4.7 Prohibited Discharge 32
- 4.8 Good Housekeeping Measures 32
 - *Washing of Equipment and Vehicles and Wheel Wash-Down* 33
 - *Fueling and Maintenance Areas* 33
 - *Staging and Material Storage Areas* 33
 - *Washout of Applicators/Containers used for Paint, Concrete, and Other Materials* 34
 - *Fertilizer or Pesticide Use* 34
 - *Storage, Handling, and Disposal of Construction Waste* 34
- 4.9 Spill Notification 34
- 4.10 Projects near a Public Water System (PWS) 35
- 4.11 Permanent Storm Water Management Control 35
- 4.12 Winter Considerations 35
 - *Winter Shutdown* 35
 - *Winter Construction* 36
- 4.13 Maintenance of Control Measures 36
- 4.14 Storm Water Lead and Training of Employees 36
- 4.15 Applicable Federal, State, Tribal, or Local Requirements 36
- 5.0 STORM WATER POLLUTION PREVENTION PLAN 37**
 - 5.1 Storm Water Pollution Prevention Plan (SWPPP) 37
 - 5.2 Deadlines for SWPPP Preparation 37
 - 5.3 SWPPP Contents 37
 - *Permittee* 37

- *Storm Water Contact(s)* 37
- *Project Site-Specific Conditions* 37
- *Nature of Construction Activity* 38
- *Site Map(s)* 38
- *Control Measures* 39
- *Construction and Waste Materials* 40
- *Locations of Other Industrial Storm Water Discharges* 40
- *Non-Storm Water Discharges* 40

5.4 Inspections 40

5.5 Monitoring Plan (if applicable) 40

5.6 Documentation of Permit Eligibility Related to a Total Maximum Daily Load 41

5.7 Documentation of Permit Eligibility Related to Endangered Species 41

5.8 Post-Authorization Records 41

- *Copy of Permit Requirements* 41
- *Additional Documentation Requirements* 41

5.9 Maintaining an Updated SWPPP 42

- *SWPPP Modifications* 42
- *Log of SWPPP Modifications* 42
- *Deadlines for SWPPP Modifications* 42

5.10 Additional SWPPP Requirements 43

- *Retention of the SWPPP* 43
- *Main Entrance Signage* 43
- *Availability of SWPPP* 43
- *Signature and Certification* 44

5.11 Requirements for Different Types of Operators 44

6.0 INSPECTIONS **45**

6.1 Inspection Frequency 45

6.2 Case-by-Case Reductions in Inspection Frequency 45

6.3 Qualified Person 45

6.4 Site Inspection 45

- *Location of Inspections* 45
- *Scope of Inspection* 46

6.5 Linear Project Inspections 46

6.6 Inspections by DEC or Applicable Government Authority 47

6.7 Inspection Report 47

7.0 MONITORING **47**

7.1 General Requirements 47

7.2 Qualified Person 48

7.3 Discharge Monitoring Requirements 48

- *Sampling Parameter* 48
- *Sampling Frequency* 48
- *Sampling Locations* 48
- *Representative Discharge Point for a Linear Project* 48
- *Commingled Discharges* 49
- *Sample Type* 49

- *Sampling and Analysis Methods* 49
- *Rainfall Monitoring* 49
- *Recording Monitoring Data*..... 49
- *Reporting Monitoring Results*..... 49

7.4 Visual Monitoring for a Linear Project..... 50

- *Visual Monitoring Frequency*..... 50
- *Visual Monitoring Locations* 50
- *Visual Monitoring Parameters* 50
- *Recording Visual Monitoring Data* 50

8.0 CORRECTIVE ACTIONS..... **51**

8.1 Corrective Action Conditions 51

8.2 Deadlines for Corrective Actions..... 51

8.3 Corrective Action Log 52

8.4 Corrective Action Report..... 52

8.5 Substantially Identical Outfalls..... 52

9.0 REPORTING AND RECORDKEEPING..... **52**

9.1 Annual Report..... 52

9.2 Corrective Action Report..... 53

9.3 Spill of Hazardous Substances Report..... 53

9.4 Retention of Records..... 53

9.5 Request for Submittal of Records 54

10.0 TERMINATION OF PERMIT AUTHORIZATION **54**

10.1 Submitting a Notice of Termination (NOT) 54

10.2 When to Submit a Notice of Termination..... 54

10.3 Submitting a Notice of Termination 54

11.0 PERMIT REOPENER CLAUSE **55**

11.1 Procedures for Modification or Revocation..... 55

11.2 Water Quality Protection 55

11.3 Timing of Permit Modification..... 55

Appendix A Standard Permit Conditions

Appendix B Acronyms

Appendix C Definitions

Appendix D Small Construction Waivers and Instructions

Appendix E Forms

- Notice of Intent (NOI)
- Notice of Termination (NOT)
- Notice of Intent Modification
- Low Erosivity Waiver
- Annual Report

TABLES

Table 1: Schedule of Submissions 6

Table 2: Summary of Permit Required On-Site Documentation 8

Table 3: SWPPP Submittal within Municipality of Anchorage MS4 area 14

Table 4: Recommended Experience or Required Training for Specific Roles..... C-12

SCHEDULE OF SUBMISSIONS

The Schedule of Submissions (Table 1) summarizes the required submissions and activities the permittee must complete and/or submit to the Alaska Department of Environmental Conservation (DEC or the Department) during the terms of this permit. The operator is responsible for all submissions and activities even if they are not summarized below.

Table 1: Schedule of Submissions

Permit Part	Type of Project	Submittal Requirement	Frequency	Due Date	Submit to ¹
Prior to Construction					
1.4.4.7, 2.1.1, and 2.1.2	Projects that will construct Permanent Storm Water Management Controls	Engineering Plans	Once	At least 30 calendar days before the start of construction or as required by the MS4 Operator	Permitting Program or MS4 Operator
1.5	Small construction activities that use a waiver in lieu of CGP authorization	Waiver Certification	Once	At least five business days before proposed start of construction	Permitting Program
2.1.3	Projects that disturb greater than or equal to 5 acres of land and are outside an MS4 area	SWPPP ²	Once	With NOI	Permitting Program
2.1.4	Projects inside an MS4 area	SWPPP	Once	Depends on requirements of MS4 operator	MS4 Operator
2.1.5 and 4.6.3.3	Project that use an Active Treatment System	Engineering Plans and Project Details	Once	At least 14 calendar days before use of the system	Permitting Program
2.1.6	Projects that discharge to an Outstanding Natural Resource Water	Site-Specific Antidegradation Analysis	Once	At least 14 calendar days before filing NOI	Permitting Program
2.3	Projects that disturb greater than or equal to 1 acre of land	Notice of Intent	Once	At least five business days before the start of construction	Permitting Program

Table 1: Schedule of Submissions

Permit Part	Type of Project	Submittal Requirement	Frequency	Due Date	Submit to ¹
During Construction					
2.4.2 2.6	For an authorized permittee if the permittee intends to continue operations and discharges beyond the term of this permit	Submit a complete and accurate new NOI according to Part 2.3	Once	Within 90 calendar days of the effective date of this permit	Permitting Program
2.7	To update or correct information on the original NOI	NOI Modification	As needed	As needed	Permitting Program
3.2, 8.4, and 9.2	If the difference between upstream and downstream samples exceed WQS for turbidity	Corrective Action Report	As necessary	At least 14 calendar days after receiving monitoring results	Compliance Program
9.1	Projects that disturb greater than or equal to 20 acres of land	Annual Report	As needed for sites meeting Part 3.2	By December 31st or with NOT	Compliance Program
9.5	All projects with an active NOI	Request for Submittal of Records	As requested by DEC	At least 30 calendar days after receipt of request	As requested by DEC
Post Construction					
10.2	All projects with an active NOI	Notice of Termination (NOT)	Once	Within 30 calendar days of completion of the project	Permitting Program
Note:					
1 See Appendix A, Part 1.1 for Permitting and Compliance Program contact information and addresses					
2 All projects that require an NOI must prepare a SWPPP. However, only operators who are developing projects that disturb greater than or equal to five (5) acres of land and are outside an MS4 area are required to submit a SWPPP to DEC.					

REQUIRED ON-SITE DOCUMENTATION

The Summary of Required On-Site Documentation (Table 2) lists the documents the permittee must have available at the project site or the project management office.

Table 2: Summary of Permit Required On-Site Documentation

Permit Part	Document	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 CGP
2.7	NOI Modification	As needed	To modify the original NOI if project conditions or personnel change
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.
5.4; 6.7	Inspection Reports	Conducted at frequency specified in SWPPP	To monitor compliance with SWPPP and CGP
5.5; 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 (TMDL)	Once at start of project	To document compliance with TMDL requirements
5.7	Permit Eligibility related to Endangered Species Act (ESA)	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
9.1	Annual Report (if required)	Annually or at NOT	To report result of discharge monitoring
9.4	Records	As needed	To maintain project records
10.2	NOT	Once at completion of project	To notify DEC that the permittee is terminating permit coverage

1.0 COVERAGE UNDER THIS PERMIT

1.1 Introduction

The Alaska Construction General Permit (CGP) authorizes storm water discharges from large and small construction-related activities that result in a total land disturbance of equal to or greater than one acre and where those discharges enter waters of the U.S. (directly or through a storm water conveyance system) 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 certain construction support activities and some non-storm water discharges commonly associated with construction sites.

The goal of this permit is to minimize erosion and reduce or eliminate the discharge of pollutants, such as sediment carried in storm water runoff from construction sites through implementation of appropriate control measures. Polluted storm water runoff can adversely affect fish, animals, plants, and humans. In order to ensure protection of water quality and human health, this permit describes control measures that must be used to manage storm water runoff during construction activities. This permit replaces the CGP that became effective July 1, 2011, and expired on January 31, 2016.

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

1.2.1 All operators of large or small construction activities that meet the conditions in Part 1.4 must obtain authorization under this permit. For the purposes of this permit, an “operator” is any party associated with a construction project that meets either of the following two criteria:

- 1.2.1.1 The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- 1.2.1.2 The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit).

Note: Subcontractors generally are not considered operators for the purposes of this permit.

Note: Where there are multiple operators associated with the same project, all operators are required to obtain permit authorization. The following applies in these situations:

- *If one operator has control over plans and specifications and a different operator has control over activities at the project site, they may divide responsibility for compliance with the terms of this permit as long as they develop a group storm water pollution prevention plan (SWPPP) (see Part 5.1), which documents which operator has responsibility for each requirement of the permit.*
- *If an operator only has operational control over a portion of a larger project (e.g., one of four homebuilders in a subdivision), the operator is responsible for compliance with all applicable effluent limits, terms, and conditions of this permit as it relates to the activities on their portion of the construction site, including protection of endangered species, critical habitat, and historic properties, and implementation of control measures described in the SWPPP in the areas under their control.*
- *An operator must ensure either directly or through coordination with other permittees, that their activities do not render another permittee’s pollutant discharge controls ineffective.*

1.3 Permit Area

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

1.4 Eligibility

- 1.4.1 **Eligibility Requirements.** To be authorized under this permit, the project must meet the following conditions or be notified by DEC that the site is eligible for permit coverage.
- 1.4.1.1 The project will disturb one or more acres of land, or will disturb less than one acre of land but is part of a common plan of development or sale that will ultimately disturb one or more acres of land;
 - 1.4.1.2 The site will discharge storm water to waters of the U.S. (directly or through a storm water conveyance system) or a MS4 leading to a waters of the U.S.;
 - 1.4.1.3 The project area is located in an area where DEC is the permitting authority;
 - 1.4.1.4 The project is not already covered under a different APDES permit;
 - 1.4.1.5 The project does not discharge to an impaired waterway with an EPA-approved or established Total Maximum Daily Load (TMDL) that specifically precludes such discharges; and
 - 1.4.1.6 The project is not likely to jeopardize the continued existence or cause a take of any threatened or endangered species protected under the Endangered Species Act (ESA) or their designated critical habitat.
- 1.4.2 **Authorized Storm Water Discharges.** Subject to compliance with the terms and conditions of this permit, the following discharges are authorized under this permit:
- 1.4.2.1 Storm water discharges associated with large and small construction activities, including those that are part of a common plan of development or sale that will ultimately disturb one or more acres of land.
 - 1.4.2.2 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).
 - 1.4.2.3 Storm water discharges from support activities (such as 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:
 - 1.4.2.3.1 The support activity is directly related to the construction site required to have permit authorization for discharges of storm water associated with construction activity under this permit;
 - 1.4.2.3.2 The support activity is not a commercial operation serving multiple unrelated construction projects by different permittees;
 - 1.4.2.3.3 The support activity does not operate beyond the completion of the construction activity at the project it supports; and
 - 1.4.2.3.4 Appropriate control measures are identified in the Storm Water Pollution Prevention Plan (SWPPP) and pollutant discharges are minimized in compliance with Parts 3.0 and 4.0 of the permit.
 - 1.4.2.4 Discharges composed of allowable discharges listed in Parts 1.4.2 and 1.4.3 commingled with a discharge authorized by a different APDES permit and/or a discharge that does not require APDES permit authorization.

1.4.3 Authorized 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 that the discharge is in compliance with the SWPPP requirements in Part 5.3.9:

- 1.4.3.1 Discharges from fire-fighting activities;
- 1.4.3.2 Fire hydrant flushings;
- 1.4.3.3 Waters used to wash vehicles where detergents are not used;
- 1.4.3.4 Water used to control dust;
- 1.4.3.5 Potable water including uncontaminated water line flushings;
- 1.4.3.6 Routine external building wash down where detergents are not used;
- 1.4.3.7 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;
- 1.4.3.8 Uncontaminated air conditioning or compressor condensate;
- 1.4.3.9 Uncontaminated, non-turbid discharges of ground water or spring water;
- 1.4.3.10 Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated groundwater;
- 1.4.3.11 Construction dewatering waters that are treated by an appropriate control measure in compliance with Part 4.4.2, or have been treated with treatment chemicals in compliance with Part 4.6; and
- 1.4.3.12 Landscape irrigation.

1.4.4 Limitations on Coverage. The following discharges are not authorized under this permit:

- 1.4.4.1 **Post-Construction Discharges.** Discharges that originate from the project after construction activities have ceased and a Notice of Termination (NOT) has been submitted in accordance to Part 10.0, including any temporary support activity.
- 1.4.4.2 **Discharges that May Exceed Water Quality Standards.** Discharges that DEC, prior to authorization under this permit, determines will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard (WQS). 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 provide permit authorization after the applicant has included appropriate controls and implementation procedures designed to bring the discharge into compliance with WQS's in accordance with Part 3.1.
- 1.4.4.3 **Discharges to Water Quality Impaired Waters.** 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 EPA-approved version), or with an approved or established TMDL analysis, unless the discharges are in accordance with Part 3.2.
- 1.4.4.4 **Comingled Discharges.** Discharges that are mixed with non-storm water, unless they are listed as allowable non-storm water discharges in Part 1.4.3.
- 1.4.4.5 **Discharges Currently or Previously Covered by another Permit.** Unless the permittee received written notification from DEC specifically allowing these discharges to be authorized under this permit, the permittee is not eligible for coverage under this permit for any of the following:

- 1.4.4.5.1 Storm water discharges associated with construction activity that have been covered under an individual permit, an alternative APDES general permit, or are required to obtain authorization under an alternative general permit in accordance with Part 2.8.
- 1.4.4.5.2 Discharges from sites where any APDES permit has been or is in the process of being denied, terminated, or revoked by DEC (*this does not apply to the routine reissuance of permits every five years*).
- 1.4.4.6 **Discharges of Dredged or Fill Material.** Discharges of dredged or fill material into waters of the U.S. requiring federal authorization through the U.S Army Corps of Engineers CWA Section 404 Regulatory Program.
- 1.4.4.7 **Discharges from Nondomestic Treatment Works.** Discharges of storm water to the land or groundwater from a nondomestic wastewater treatment works (as defined in 18 AAC 72) using permanent storm water management controls unless they are in compliance with 18 AAC 72.600 and EPA Underground Injection Control regulations¹.

1.4.5 Emergency Repairs or Reconstruction of a Facility

- 1.4.5.1 Discharges from construction activities conducted in response to a disaster (as defined in Alaska Statute 26.23.900) are conditionally authorized, provided that the operator does the following:
 - 1.4.5.1.1 Submits a Notice of Intent (NOI) and SWPPP (if project disturbs five or more acres in accordance with Part 2.1) to the Department in accordance with Part 2.3 and 2.4 within 30 calendar days of initiating construction activities.
 - 1.4.5.1.2 Implements appropriate control measures as soon as possible after initiating construction activities. For discharges occurring during the initial 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

- 1.5.1 **Waiver Criteria.** An operator of a small construction activity may qualify for a waiver in lieu of obtaining authorization under this permit if one of the following three criteria are met. Details of the three waiver options and procedures for requesting a waiver are provided in Appendix D:
 - 1.5.1.1 The project has a low rainfall erosivity factor;
 - 1.5.1.2 DEC or EPA has established or approved a TMDL that addresses the pollutant(s) of concern and has determined storm water control measures are not needed to protect water quality;
 - 1.5.1.3 The operator develops an equivalent analysis that determined allocations for pollutant(s) of concern are not needed to protect water quality. This waiver is only available for non-impaired waters.

¹ For additional information refer to DEC's Engineered Wastewater Disposal System web page at https://dec.alaska.gov/Water/wwdp/onsite/ww_planreview-cklist.htm and EPA's Underground Injection Control web page at <http://www.epa.gov/uic/underground-injection-control-region-10-ak-id-or-and-wa>

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 DEC 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 Permanent Storm Water Management Controls (Outside MS4).** An operator installing permanent storm water management controls in accordance with Part 4.11 and where the project is located outside of an APDES permitted MS4, must submit information required by the DEC in Part 4.11 at least thirty (30) calendar days prior to filing the NOI for the project. The operator must receive the DEC's written reply prior to the commencement of construction activities.
- 2.1.2 Permanent Storm Water Management Controls (Inside MS4).** An operator installing permanent storm water management controls in accordance with Part 4.11 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. Check with the respective MS4 operator for their particular submittal requirements. (See <http://dec.alaska.gov/water/wnpssp/stormwater/SWPPPSubmittalRqmts.htm> for further MS4 operator contact information.)
- 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** Operators of construction activities for Alaska Department of Transportation & Public Facilities (ADOT&PF) construction projects within the Municipality of Anchorage shall submit information to:
- ADOT&PF
Construction and Operations, Central Region
4111 Aviation Ave.
P.O. 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

2.1.2.6 Operators of construction activity within the Joint Base Elmendorf-Richardson shall submit information to:

Storm Water Lead
 673rd CES/CEIEC
 724 Quartermaster Drive
 Joint Base Elmendorf-Richardson

2.1.2.7 Operators of construction activity within the Port of Anchorage shall submit information to:

Port of Anchorage
 Operations and Maintenance
 2000 Anchorage Port Road
 Anchorage, AK 99501

2.1.3 **SWPPP Submittal to DEC.** An operator developing a project that disturbs five or more acres of land must submit a copy of the SWPPP to the DEC (Appendix A, Part 1.1.1) at the time the NOI is filed (electronic attachments to the eNOI are preferred).

2.1.4 **SWPPP Submittal to MS4.** 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. (See <http://dec.alaska.gov/water/wnpssc/stormwater/SWPPPSubmittalRqmts.htm> for further MS4 operator contact information.)

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.

Table 3: SWPPP Submittal within Municipality of Anchorage MS4 area.

Project Type	Submit SWPPP to
Government (Federal, state, or Port of Anchorage) road projects and other government sponsored transportation projects such as ports, railroads, or airports	DEC
Government (municipal) road projects and other government transportation projects	Municipality
Public or private utility projects when 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 Municipality 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 DEC shall be to the address in Appendix A, Part 1.1.1.
- 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 DEC for review at the address in Appendix A, Part 1.1.1.
- 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 public-funded project disturbing one or more acres of land shall submit a copy of the SWPPP to the DEC for review at the address in Appendix A, Part 1.1.1.
- 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 public-funded project disturbing one or more acres of land shall submit a copy of the SWPPP to the DEC for review at the address in Appendix A, Part 1.1.1.
- 2.1.4.5 Within the Joint Base Elmendorf-Richardson, check with the latest SWPPP submittal requirements at the address given in Part 2.1.2.6.
- 2.1.4.6 Within the Port of Anchorage, check with the latest SWPPP submittal requirements at the address given in Part 2.1.2.7.
- 2.1.5 **Projects Using Active Treatment Systems.** Submit engineering plans and projects details listed in Part 4.6.3.3 to DEC (Appendix A, Part 1.1.1) at least 14 calendar days prior to use of the active treatment system at the construction site.
- 2.1.6 **Projects that Discharge to an Outstanding Natural Resource Water.** Contact DEC at least 30 calendar days prior to commencement of construction activities 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), to discuss the need to conduct a site-specific antidegradation analysis. If an antidegradation analysis is required, it must be submitted at least 14 calendar days prior to filing the NOI. Before beginning construction activities, operators must receive a written approval of the analysis from the DEC.

Note: No Outstanding Natural Resource Waters are designated in Alaska as of the date of this permit issuance.

2.2 How to Obtain Authorization

- 2.2.1 To obtain authorization under this permit, an operator must:
 - 2.2.1.1 Be responsible for a project located in the area where DEC is the permitting authority;
 - 2.2.1.2 Meet the eligibility requirements of Part 1.4;
 - 2.2.1.3 Develop a SWPPP according to the requirements in Part 5.0 prior to filing for an NOI and submit a copy of the SWPPP as specified in Part 2.1;
 - 2.2.1.4 Select, design, install, and implement control measures in accordance with Part 4.0 to meet non-numeric effluent limits;

- 2.2.1.5 Submit a complete and accurate NOI either using DEC's electronic system or using a paper form in accordance with Part 2.3 prior to commencing construction activities;
- 2.2.1.6 Pay the general permit authorization fees in accordance with 18 AAC 72.956;
- 2.2.1.7 Submit any additional information requested by the DEC or MS4 Operator (if applicable); and
- 2.2.1.8 Be granted authorization to discharge by the DEC.
- 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 meets 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 requires the operator to obtain authorization under an individual permit or an alternative general permit; or
 - 2.2.2.3 The discharge does not meet the eligibility requirements under Part 1.4.
- 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 **Operator:** organization name, contact person and title, complete mailing address, telephone number and fax number and email address;
 - 2.2.3.2 **Billing Contact:** organization name, contact person and title, complete mailing address, telephone number and fax number and email address. 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 **Project/site:** 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 **SWPPP:** 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, SWPPP contact if different than the operator contact;
 - 2.2.3.5 **Discharge:** the name(s) of the waterbody 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 **Treatment Chemicals:** 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 Signatory information in compliance with Appendix A, Part 1.12.

2.3 How to Submit an Notice of Intent (NOI)

- 2.3.1 **Submittal Options.** Each operator must submit an NOI to be authorized to discharge under this permit at least five business days prior to commencement of construction activities. DEC may need additional time for manual processing of NOIs. The complete and accurate NOI can be submitted either:

- 2.3.1.1 Electronically (*strongly encouraged*): Go to DEC's Water Online Application System (OPA) web page at <http://dec.alaska.gov/water/oasys/index.html> to prepare and submit electronic NOI (eNOI). *Note the eNOI will likely be processed more quickly and result in faster receipt of an authorization to discharge.*
- 2.3.1.2 Paper NOI Form: Complete the CGP NOI form on DEC's APDES Storm Water Forms web page at <http://dec.alaska.gov/water/wnpssc/stormwater/2016CGPForms.htm>. Once the form is complete, scan and email the entire form (5 pages) to the permitting email address in Appendix A, Section 1.1.1 or submit a paper copy to DEC at the address listed in Appendix A, Section 1.1.1.
- 2.3.1.3 Applicants must pay the general permit authorization fee (in accordance with 18 AAC 72.956) before their NOI is considered complete.

2.4 Submission Deadlines

- 2.4.1 **New Projects.** The operator must submit a complete and accurate NOI and SWPPP (if project disturbs five or more acres in accordance with Part 2.1) prior to commencement of construction activities consistent with Parts 2.2.1 and 2.3 to obtain authorization under this permit.
- 2.4.2 **Permitted Ongoing Projects.**
 - 2.4.2.1 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 2011 CGP (AKR100000). To continue coverage, a permittee must:
 - 2.4.2.1.1 Continue to comply with the terms and conditions of the 2011 CGP until the permittee has been granted authorization under this permit or an alternative APDES permit, or submits a NOT;
 - 2.4.2.1.2 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 2.4.2.1.3; and
 - 2.4.2.1.3 Submit a complete and accurate new NOI within 90 calendar days of the effective date of this permit according to Part 2.3.
 - 2.4.2.2 If the permittee is eligible to submit a NOT (e.g., construction is finished and final stabilization has been achieved) before the 90th day, a new NOI is not required to be submitted provided a NOT is submitted within 90 calendar days after the effective date of this permit.
- 2.4.3 **Change of Permittee for an Authorized 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 who 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/Late Notification.**

An operator who commences construction activities without authorization to discharge for a project that requires submission of a NOI consistent with Part 2.2 must develop and/or update a project-specific SWPPP and submit a complete and accurate NOI consistent with

Part 2.3 as soon as practicable. The applicant is authorized to discharge in accordance with Part 2.5. The 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

Authorization to discharge under this general permit requires the operator seeking authorization to submit to DEC a complete and accurate NOI and payment of fee. If the project disturbs five or more acres, a copy of the SWPPP must be submitted in accordance with Part 2.1 prior to commencement of construction activities consistent with Parts 2.2.1 and 2.3.. The operator must receive written notification of authorization from DEC that coverage has been granted, and that a specific authorization number has been assigned prior to construction activities.

A permittee is authorized to discharge storm water from construction activities under the terms and conditions of this general permit upon the date specified in the issuance of the DEC authorization letter, which is posted on DEC's water permit search website (<http://dec.alaska.gov/Applications/Water/WaterPermitSearch/Search.aspx>).

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 for discharges that were covered prior to expiration.

- 2.6.1 The permittee is required to abide by all limitations, monitoring, and reporting included herein if the permit enters administrative extension until such time a permit is reissued authorizing the discharge or an NOT is submitted by the permittee.
- 2.6.2 A permittee who is authorized to discharge under this permit prior to the expiration date, any discharges authorized will automatically remain covered by this permit until the earliest of:
 - 2.6.2.1 Authorization for coverage under a reissued permit or replacement of this permit following a permittee's timely and appropriate submittal of a complete NOI requesting authorization to discharge under the new permit and compliance with the requirements of the new permit;
 - 2.6.2.1.1 If a permittee fails to submit a timely NOI for coverage under the reissued or replacement permit, the permittee's coverage will expire at midnight on the date that the NOI is due.
 - 2.6.2.2 Submittal of a NOT;
 - 2.6.2.3 Issuance of an individual permit for the project's discharges; or
 - 2.6.2.4 A formal permit decision by DEC to not reissue this general permit or not cover a particular discharger previously covered by the general permit, at which time DEC will identify a reasonable time period for covered dischargers to seek coverage under an alternative general permit or an individual permit. Coverage under this permit will cease at the end of this time period.

2.7 Submittal of a Modification to Original NOI

- 2.7.1 **Modification.** A permittee must file an NOI modification form to DEC (see Part 2.3) to update or correct the following information on the original NOI within 30 calendar days of the change:

- 2.7.1.1 Owner/Operator address and contact information;
- 2.7.1.2 Site information;
- 2.7.1.3 Estimated start or end dates;
- 2.7.1.4 Number of acres to be disturbed;
- 2.7.1.5 Change in decision to use or not use treatment chemicals; or
- 2.7.1.6 SWPPP location and contact information.
- 2.7.1.7 Continuation of expired permit in accordance with Part 2.6.
- 2.7.2 If the original project disturbance was between one and less than five acres, and will now disturb five acres or more, a SWPPP must be submitted with the NOI modification.
- 2.7.3 No general permit authorization fee is required when submitting an NOI modification.
- 2.7.4 **NOT Instead of Modification.** The permittee must submit a NOT instead of an NOI modification form to DEC within 30 calendar days when the operator has changed. The new owner/operator must file a new NOI to obtain coverage under the CGP. Coverage is not transferrable.

2.8 Alternative Permits

2.8.1 DEC Requiring Authorization under an Alternative Permit

DEC may terminate or revoke a permittee's authorization under this permit and may require a permittee to apply for and/or obtain authorization to discharge under an alternative permit (i.e., an APDES individual permit or an alternative APDES general permit in accordance with 40 CFR §122.64 and §124.5). If DEC requires a permittee to apply for an alternative permit, DEC will notify the permittee in writing that a permit application is required. This notification will include a brief statement of the reasons for this decision, alternative permit application requirements, 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 authorization or denial of authorization under the alternative general permit as it applies to the permittee, authorization under this general permit will automatically terminate. An application must be submitted to DEC at the address in Appendix A, Section 1.1.1. DEC may grant additional time to submit the application upon a written request by the permittee provided the request is received prior to expiration of the deadline. If the permittee is covered under this permit and fails to submit an alternative permit application in a timely manner as required by DEC, then the authorization under this permit will automatically terminate at the end of the day specified by DEC as the deadline for application submittal. The DEC may take appropriate enforcement action for any unpermitted discharge.

2.8.2 Operator Requesting Authorization under an Alternative Permit

An operator 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 Appendix A, Part 1.1.1. DEC may grant the request by issuing an individual permit or authorization under an alternative general permit if DEC deems that the reasons cited are adequate to support the request.

- 2.8.3 When a permittee is issued an APDES individual permit or is authorized to discharge under an alternative APDES general permit, the authorization under this permit is automatically terminated on the effective date of the individual permit or the date of authorization under the alternative general permit, whichever the case may be. If the permittee is denied an APDES individual permit or an alternative APDES general permit, the authorization under this permit is automatically terminated on the date of such denial, unless otherwise specified by DEC.

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 to minimize the discharge of pollutants as necessary to meet WQS's (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 WQS (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 WQS. 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 WQSs; or
 - 3.1.3.3 Minimize 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 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 recommendation in the Implementation Section of the TMDL and incorporate applicable measures into the operation.

3.2.1 Discharging to an Impaired Water Body for Turbidity or Sediment (Category 5)

3.2.1.1 Permittees who (1) discharge into a water body that is listed on Alaska's 303(d) List of Impaired Waters (Category 5) for turbidity or sediment (<http://dec.alaska.gov/wqsar/Docs/Impairedwaters.pdf>) and (2) disturbs 20 or more 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) that drains to an impaired water must:

- 3.2.1.1.1 Develop, implement, and modify as necessary a written site-specific monitoring plan consistent with Part 7.0 that specifies the sampling frequency and location.
- 3.2.1.1.2 Conduct turbidity sampling at the following locations to evaluate compliance with the WQS for turbidity;
 - 3.2.1.1.2.1 Upstream turbidity in the impaired water at a representative location (upgradient) from the point of storm water discharge into the impaired water or outside the area of influence of the storm water discharge; and
 - 3.2.1.1.2.2 Downstream turbidity at a representative location downstream from the point of discharge into the impaired water, 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.
- 3.2.1.1.3 Based on the sampling (as described in Part 3.2.1.1.2), the resulting water quality must meet the state WQS for turbidity, as follows:
 - 3.2.1.1.3.1 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
 - 3.2.1.1.3.2 The downstream sample 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.
- 3.2.1.1.4 If the difference between the upstream and downstream sample exceeds the WQS for turbidity, the permittee must:
 - 3.2.1.1.4.1 Review the SWPPP and the control measures selected for the project and make appropriate improvements and corrections to the control measures within seven calendar days of the date the discharge exceeds the WQS;
 - 3.2.1.1.4.2 Update the SWPPP with the improvements and changes to the control measures;
 - 3.2.1.1.4.3 Submit a corrective action report consistent with Part 9.2; and
 - 3.2.1.1.4.4 Continue to sample daily until the discharged storm water is less than the WQS for turbidity for the receiving water.

3.2.2 Discharging to an Impaired Water Body with an Approved or Established TMDL for Turbidity or Sediment (Category 4a or 4b)

- 3.2.2.1 Operators are not eligible for authorization under this permit if:
- 3.2.2.1.1 An EPA-approved or established TMDL specifically precludes such discharges; or
 - 3.2.2.1.2 The project involves a discharge of pollutants of concern (e.g. turbidity, sediment, debris, etc.) to waters with an EPA-approved or established TMDL for turbidity or sediment, unless control measures are implemented as necessary for consistency with the assumptions and requirements of the TMDL.

- 3.2.2.2 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.
- 3.2.2.3 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.
- 3.2.2.4 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.

3.3 Protection of Endangered Species

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

- 3.3.1 An applicant 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) are likely to jeopardize the continued existence of any species that are federally-listed as endangered or threatened (listed) under the ESA or result in the adverse modification or destruction of federally-designated critical habitat under the ESA.
- 3.3.2 An applicant 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.

4.0 CONTROL MEASURES

4.1 Control Measure Selection and Design Considerations

- 4.1.1 Permittees must select, design, install, and implement the control measures in this Part to the extent practicable. The specific control measures are based on the requirements of the national effluent limitation guidelines (ELG) that apply to the construction and development industry (40 CFR §450).
- 4.1.2 The selection, design, installation, maintenance, and removal of control measures must be in accordance with good engineering practices manufacturer specifications and address site-specific conditions such as precipitation, site topography, soil characteristics, and growing season. Permittees may deviate from such manufacturer's specifications where the permittee provides justification for such deviation and includes documentation of their rationale in the SWPPP. If a permittee finds that their control measures are not achieving their intended effect of minimizing pollutant discharges, the permittee must modify these control measures in accordance with the corrective action requirements set forth in Part 8.0.

- 4.1.3 Erosion and Sediment Controls. A permittee must design, install, and maintain effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:
- 4.1.3.1 Control storm water volume and velocity to minimize soil erosion and pollutant discharges;
 - 4.1.3.2 Control storm water discharges, including both peak flowrates and total storm water volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points;
 - 4.1.3.3 Minimize the amount of soil exposed during construction activity;
 - 4.1.3.4 Minimize the disturbance of steep slopes;
 - 4.1.3.5 Minimize sediment discharges from the site. The design, installation, and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity, duration of precipitation; the nature of resulting storm water runoff; and soil characteristics, including the range of soil particle sizes expected to be present on the site;
 - 4.1.3.6 Provide and maintain natural buffers around waters of the U.S., direct storm water to vegetated areas and maximize storm water infiltration to reduce pollutant discharges, unless infeasible;
 - 4.1.3.7 Minimize soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates it be compacted.
 - 4.1.3.8 Unless infeasible, preserve topsoil. Preserving topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.
- 4.1.4 Additional Erosion and Sediment Controls Selection and Design Considerations:
- 4.1.4.1 Preventing storm water from coming into contact with polluting materials is generally more effective, and less costly, than removing pollutants from storm water;
 - 4.1.4.2 Using a combination of control measures is more effective than using control measures in isolation for minimizing pollutants in the storm water discharge;
 - 4.1.4.3 Using technologically available, economically practicable, and achievable methods in light of best industry practices;
 - 4.1.4.4 Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to designing effective control measures that will achieve the limits in this permit;
 - 4.1.4.5 Minimizing impervious areas at the permittees facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches) can reduce runoff and improve groundwater recharge and stream base flows in local streams, although care must be taken to avoid ground water contamination;
 - 4.1.4.6 Dissipate storm water runoff into open vegetated swales and natural depressions to reduce in stream impacts of erosive flows;
 - 4.1.4.7 Conserving and/or restoring of riparian buffers will help protect streams from storm water runoff and improve water quality; and
 - 4.1.4.8 Using treatment interceptors (e.g., sand filters) may be appropriate in some instances to minimize the discharge of pollutants.

4.2 Erosion Control Measures

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

4.2.1 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:

- 4.2.1.1 All areas where soil disturbing construction activities will occur; and
- 4.2.1.2 Specific areas that will be left undisturbed such as trees, boundaries of sensitive areas, or buffers established under Part 4.2.3.

4.2.2 Minimize the Amount of Soil Exposed during Construction Activity

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

- 4.2.2.1 Preserve areas of native topsoil on the site, unless infeasible; and
- 4.2.2.2 Sequence or phase construction activities to minimize the extent and duration of exposed soils.

4.2.3 Maintain Natural Buffer Areas

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 construction activity in accordance with the following:

- 4.2.3.1 The buffer must be a minimum of 25 feet wide, or the width as required by local ordinance, unless infeasible based on site dimensions;
- 4.2.3.2 Exceptions are allowed for water dependent activities, specific water access activities, or necessary water crossings;
- 4.2.3.3 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.

4.2.4 Clearing Vegetation

- 4.2.4.1 Clearing of vegetation that disturbs the vegetative mat and exposes soil is **prohibited** prior to obtaining authorization under this permit.
- 4.2.4.2 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 vegetation clearing that disturbs the vegetative mat and occurs after the onset of spring thaw (as defined in Appendix C) or conditions that consist of above freezing temperatures that cause melting of snow, the permittee must develop a SWPPP and file an NOI. Operators must receive authorization under this permit and otherwise comply with the terms of this permit prior to such clearing.

4.2.5 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:

- 4.2.5.1 Divert storm water around the site so that it does not flow onto the project site and cause erosion of exposed soils;
- 4.2.5.2 Slow down or contain storm water that may collect and concentrate within a site and cause erosion of exposed soils;

- 4.2.5.3 Avoid placement of structural control measures in active floodplains to the degree technologically and economically practicable and achievable;
- 4.2.5.4 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
- 4.2.5.5 Install permanent storm water management controls, where practical, so that they are functional prior to construction of site improvements (e.g., impervious surfaces).

4.2.6 Protect Steep Slopes

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

- 4.2.6.1 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);
- 4.2.6.2 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
- 4.2.6.3 Stabilize exposed areas of the slope in accordance with Part 4.5.

4.3 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.

4.3.1 Storm Water Inlet Protection

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 storm water inlets located on site or immediately downstream of the site.

4.3.2 Water Body Protection

A permittee must install appropriate protection measures (e.g. velocity dissipation devices in accordance with Part 4.2.5.4) 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.

4.3.3 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.

4.3.4 Stabilized Construction Vehicle Access and Exit Points

A permittee must establish construction vehicle access and exit points. 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.

4.3.5 **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.

4.3.6 **Soil Stockpiles**

In accordance with Part 4.5.1, a permittee must stabilize or cover soil stockpiles, protect with sediment measures. Locate soil stockpiles away from storm water inlets, water bodies, and conveyance channels, if possible.

4.3.7 **Authorized Non-Storm Water Discharges**

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

4.3.8 **Sediment Basins**, where applicable:

- 4.3.8.1 For common drainage locations that serve an area with 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.
 - 4.3.8.1.1 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.
 - 4.3.8.1.2 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.
- 4.3.8.2 For drainage locations which serve 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).
- 4.3.8.3 For drainage locations serving less than 10 acres, 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 trap 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.
- 4.3.8.4 Surface outlets. When discharging from basins and impoundments, utilize outlet structures that withdraw water from the surface, unless infeasible.

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.

4.4 Dewatering

- 4.4.1 If a construction activity includes excavation dewatering that may adversely impact a local drinking water well, a DEC-identified contaminated site or groundwater plume, or waters of the U.S., the permittee may be required to obtain authorization under the DEC General Permit for Excavation Dewatering (AKG002000 or most current version) in addition to this permit.
- 4.4.2 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.

4.5 Soil Stabilization

A permittee must stabilize all disturbed areas of the site to minimize 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 and a natural buffer is maintained wherever possible, and disturbed portions of the site are stabilized (Part 4.2.3). A permittee should avoid using impervious surfaces for stabilization. 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 Polyacrylamide (PAM);
- Early application of gravel base on areas to be paved; and
- Dust control.

4.5.1 **Minimum Requirements for Soil 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.

4.5.1.1 **Deadline to Initiate Stabilization.** Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site or temporarily ceased on any portion of the site and will not resume for a period exceeding:

4.5.1.1.1 Seven (7) calendar days for those areas of the state with a mean annual precipitation of forty (40) inches or greater; or

4.5.1.1.2 Fourteen (14) calendar days for those areas of the state with a mean annual precipitation less than forty (40) inches.

Note: In the context of this provision, “immediately” means no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

Note: Earth-disturbing activities have temporarily ceased when clearing, grading, and excavation within any area of the site that will not include permanent structures will not resume (i.e., the land will be idle) for a period of seven or 14 or more calendar days (dependent on mean annual precipitation from above), but such activities will resume in the future.

The timeframe above begins counting as soon as you know that construction work on a portion of your site will be temporarily ceased. In circumstances where you experience unplanned or unanticipated delays in construction due to circumstances beyond your control (e.g., sudden work stoppage due to unanticipated problems associated with construction labor, funding, or other issues related to the ability to work on the site; weather conditions rendering the site unsuitable for the continuation of construction work) and you do not know at first how long the work stoppage will continue, your requirement to immediately initiate stabilization is triggered as soon as you know with reasonable certainty that work will be stopped for the time period above. At that point, you must comply with Parts 4.5.1.1 and 4.5.1.2.

4.5.1.1.3 Types of activities considered to constitute initiation of stabilization, but is not limited to:

- 4.5.1.1.3.1 Prepping the soil for vegetative stabilization by performing all activities necessary to initially seed or plant the area to be stabilized or for non-vegetative stabilization by installing or application of physical, structural, or mechanical measures;
- 4.5.1.1.3.2 Applying mulch or other non-vegetative product to the exposed area;
- 4.5.1.1.3.3 Seeding or planting the exposed area;
- 4.5.1.1.3.4 Starting any of the activities in Part 4.5.1.1.3.1 - 4.5.1.1.3.3 on a portion of the area to be stabilized, but not on the entire area; and
- 4.5.1.1.3.5 Finalizing arrangements (e.g., delivery of stabilization products, scheduling the installation of the products) to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization in Parts 4.5.1.1 and 4.5.1.2.

4.5.1.2 **Deadline to Complete Temporary Stabilization Activities.** As soon as practicable, but no later than 14 calendar days after the initiation of soil stabilization measures consistent with Part 4.5.1.1, the following are required to be completed:

- 4.5.1.2.1 For vegetative stabilization, all activities necessary to initially seed or plant the area to be stabilized; and/or
- 4.5.1.2.2 For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

Note: DEC may determine, based on an inspection carried out under Part 6.6 and corrective actions required under Part 8.1.1.4 Corrective Action Required by DEC, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing storm water controls, DEC may require stabilization to correct this problem and may take appropriate enforcement action.

4.5.1.3 **Exceptions to the Deadlines for Initiating and Completing Stabilization.**

4.5.1.3.1 *Projects in Arid or Semi-Arid, or Drought-Stricken Areas.* For those areas of the state with a mean annual precipitation is less than or equal to 20 inches and where initiating perennial vegetative stabilization measures is infeasible within 14 calendar days after construction activity has temporarily ceased, vegetative or non-vegetative stabilization measures must be initiated as immediately.

Note: In the context of this provision, “immediately” means no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

4.5.1.3.1.1 Immediately initiate, and within 14 calendar days complete, the installation of non-vegetative stabilization measures to prevent erosion.

4.5.1.3.1.2 If construction is occurring during a drought-stricken period, indicate in the SWPPP the beginning and ending dates of the drought-stricken period and your site conditions. Include the schedule for initiating and completing vegetative stabilization.

4.5.1.3.2 *Deadlines for projects that are affected by circumstances beyond the control of the permittee that delay the initiation and/or completion of vegetative stabilization as required in Parts 4.5.1.1 and/or 4.5.1.2.* If the permittee is unable to meet the deadlines in Parts 4.5.1.1 and/or 4.5.1.2 due to circumstances beyond the permittee’s control², and is using vegetative cover for temporary stabilization, the permittee may comply with the following stabilization deadlines instead:

4.5.1.3.2.1 Immediately initiate, and within 14 calendar days complete, the installation of temporary non-vegetative stabilization measures to prevent erosion;

4.5.1.3.2.2 Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on the site; and

4.5.1.3.2.3 Document the circumstances in the SWPPP that prevent meeting the deadlines required in Parts 4.5.1.1 and/or 4.5.1.2 and the proposed schedule for initiating and completing stabilization.

4.5.1.3.3 Winter Considerations, see Part 4.12.

4.5.1.3.4 In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed.

4.5.1.4 **Deadline to Complete Final Stabilization Activities.** A permittee must consider the selection and implementation of control measures and the sequence of project construction as they apply to the project site.

4.5.1.5 The permittee must within seven (7) calendar days of initiating final stabilization complete or continue maintenance for the following on any portion of the site that has reached final grading and for areas where clearing, grading, excavating, or other earth disturbing activities have permanently ceased:

4.5.1.5.1 All soil conditioning, seeding, watering, mulching, and any other required activities for the establishment of vegetative cover;

4.5.1.5.2 The installation or application of all such measures for vegetative cover; and/or

² Examples include problems with the supply of seed stock or with the availability of specialized equipment, unsuitability of soil conditions due to excessive precipitation and/or flooding.

4.5.1.5.3 The placement of non-vegetative final stabilization measures.

4.5.2 **Stabilization Requirements for Terminating Permit Authorization**

To terminate authorization under this permit, final stabilization (as defined in Appendix C), must be achieved on all portions of the site for which a permittee is responsible and all ground disturbing construction activity or use of related support activities must be completed, in accordance with Part 10.2.1.

4.6 **Treatment Chemicals**

The use of treatment chemicals to reduce erosion or sediment in a storm water discharge is allowed provided that all of the requirements of this Part are met.

4.6.1 **Selection of Treatment Chemicals.** Because environmental and climactic conditions, such as soil type, water temperature, and topography vary widely within the state, it is critical that treatment chemicals be selected to accommodate site-specific conditions at each construction site. Permittees must select treatment chemicals that meet the following criteria and document the selection process in the SWPPP:

4.6.1.1 The chemical is appropriate for soils likely to be exposed during construction, the amount of precipitation expected at the site, topography, and water chemistry;

4.6.1.2 Manufacturer and/or supplier provided Material Safety Data Sheets, specifications, and instructions for the transport, handling, storage, application, and disposal of the treatment chemical;

4.6.1.3 Approval by EPA for potable water use;

4.6.1.4 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;

4.6.1.5 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;

4.6.1.6 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 4.6.3.3; and

4.6.1.7 All person(s) who handle and apply treatment chemicals at the construction site must receive training in the proper handling and application of treatment chemicals. The names and titles of persons who receive training and the date(s) training occurred must be documented in the SWPPP in accordance with Part 5.8.2.7.

4.6.2 **Use of Treatment Chemicals.** If treatment chemicals are used, the permittee must comply with the following requirements:

4.6.2.1 Use treatment chemicals in accordance with good engineering practices and product-specific specifications. If during an inspection the DEC finds the permittee exceeds the manufacturer specifications in the use of a treatment chemical, the DEC may prohibit further use of the treatment chemical at the construction activity;

4.6.2.2 Prior to and after use, install appropriate physical control measures (e.g., rolled erosion control products, ditch check dams, sediment basins, sediment bags, filtration) to ensure effectiveness of the treatment chemical;

4.6.2.3 Document the following in the SWPPP:

4.6.2.3.1 Specific chemicals and chemical treatment systems used;

- 4.6.2.3.2 Names and titles of person(s) who handle and apply treatment chemicals;
- 4.6.2.3.3 Title of training conducted, date, instructor name, and attendees.
- 4.6.2.3.4 A permittee must train employees who handle treatment chemicals to comply with the information required by Part 4.6.1.
- 4.6.2.4 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 waters of the U.S.
- 4.6.3 **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.
 - 4.6.3.1 **Land Application**
 - 4.6.3.1.1 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;
 - 4.6.3.1.2 A permittee shall use an application method that provides uniform coverage of the target area and avoids drift to non-target areas;
 - 4.6.3.1.3 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.
 - 4.6.3.2 **Water Application** (including conveyance channel)
 - 4.6.3.2.1 A permittee shall follow the manufacturer and/or suppliers written recommended application rate, including site-specific considerations;
 - 4.6.3.2.2 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.;
 - 4.6.3.2.3 Treatment chemicals shall not be applied directly to a waters of the U.S.; and
 - 4.6.3.2.4 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 waters of the U.S. to provide a place for sedimentation to occur; DEC may approve other alternatives on a case-by-case basis.

4.6.3.3 **Active Treatment Systems.** A permittee who uses an Active Treatment System must submit the following project information to the DEC at least 14 days prior to the start of operation of an active treatment system at the project location³. At a minimum, the information must provide details on the following:

- Relevant information required by Part 4.6.1,
- Engineering plans,
- Description of treatment process,
- Site conditions (including soil types),
- Treatment chemicals and 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.

4.7 Prohibited Discharge

4.7.1 A permittee is prohibited from discharging the following from the site:

- 4.7.1.1 Wastewater from concrete washout, unless managed by an appropriate control measure;
- 4.7.1.2 Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other hazardous construction materials;
- 4.7.1.3 Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
- 4.7.1.4 Soaps or solvents used in vehicle and equipment washing.

4.8 Good Housekeeping Measures

A permittee must design, install, implement, and maintain effective good housekeeping measures to prevent and/or minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented, and maintained to:

- Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to storm water. Minimization of exposure is not required in cases where the exposure to precipitation and to storm water will not result in a discharge of pollutants, or where exposure of a

³ Specific submittal requirements can be found at the DEC storm water website at http://dec.alaska.gov/water/wnpspc/stormwater/sw_construction.htm

specific material or product poses little risk of storm water contamination (such as final products and materials intended for outdoor use); and

- Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

A permittee must include appropriate measures for any of the following activities that are used at the site.

- 4.8.1 **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:
- 4.8.1.1 Designate areas to be used for washing of equipment and vehicles and/or wheel wash-down and conduct such activities only in these areas;
 - 4.8.1.2 Locate such activities, to the extent practicable, away from storm water conveyance channels, storm water inlets, and waters of the U.S.;
 - 4.8.1.3 Treat all wash water in a sediment basin or use alternative control measures that provide equivalent or better treatment prior to discharge; and
 - 4.8.1.4 To comply with the prohibition in Part 4.7.1.4, the discharge of soaps and solvents used in equipment and vehicle washing and/or wheel wash-down is strictly prohibited.
- 4.8.2 **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:
- 4.8.2.1 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);
 - 4.8.2.2 Locate such activities, to the extent practicable, away from storm water conveyance channels, storm water inlets, and waters of the U.S.;
 - 4.8.2.3 Minimize the exposure to precipitation and storm water or use secondary containment structures designed to eliminate the potential for spills or leaked chemicals; and
 - 4.8.2.4 To comply with the prohibition in Part 4.7.1.3, a permittee must:
 - 4.8.2.4.1 Clean up spills or contaminated surfaces immediately;
 - 4.8.2.4.2 Ensure adequate clean up supplies are available at all times to handle spills, leaks, and disposal of used liquids;
 - 4.8.2.4.3 Use drip pans or absorbents under or around leaky equipment and vehicles; and
 - 4.8.2.4.4 Dispose of liquid wastes or materials used for fueling and maintenance in accordance with Part 4.8.6.
- 4.8.3 **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:
- 4.8.3.1 Designate areas to be used for staging and material storage areas;
 - 4.8.3.2 Locate such activities, to the extent practicable, away from storm water conveyance channels, storm water inlets, and waters of the U.S.; and
 - 4.8.3.3 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.

- 4.8.4 **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:
- 4.8.4.1 Designate areas to be used for washout;
 - 4.8.4.2 Locate such activities, to the extent practicable, away from storm water conveyance channels, storm water inlets, and waters of the U.S.;
 - 4.8.4.3 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;
 - 4.8.4.4 Dispose of liquid wastes in accordance with Part 4.8.6; and
 - 4.8.4.5 For concrete washout areas, remove hardened concrete waste when it has reached one-half ($\frac{1}{2}$) the height of the container or pit and dispose of in accordance with Part 4.8.6.
- 4.8.5 **Fertilizer or Pesticide Use.** If a permittee uses fertilizers or pesticides the permittee must comply with the following requirements:
- 4.8.5.1 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
 - 4.8.5.2 Obtain authorization under the Pesticide General Permit for Discharges from the Application of Pesticides (AKG870000 or current version) from the DEC Division of Water and/or a Pesticide-Use Permit from the DEC Division of Environmental Health⁴.
 - 4.8.5.3 Use pesticides in compliance with federal, state, and local requirements.
- 4.8.6 **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:
- 4.8.6.1 Locate areas dedicated for management of construction waste, to the extent practicable, away from storm water conveyance channels, storm water inlets, and waters of the U.S.;
 - 4.8.6.2 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;
 - 4.8.6.3 Store hazardous or toxic waste in appropriate sealed containers and dispose of these wastes in accordance with manufacture's recommended method of disposal or federal, state or local requirements; and
 - 4.8.6.4 Provide containment of sanitation facilities (e.g., use of 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.

4.9 Spill Notification

- 4.9.1 A permittee is prohibited from discharging hazardous substance or oil from a spill or other release. Upon discovery of a spill, a permittee must report the spill in accordance with Part 9.3.

⁴ Detailed information on the General Permit for Discharges from the Application of Pesticides can be accessed at: <http://dec.alaska.gov/water/wnpspc/stormwater/PesticideGP.html> and information on Pesticide-Use Permits can be accessed at: <http://dec.alaska.gov/eh/pest/pe.htm>

4.10 Projects near a Public Water System (PWS)

- 4.10.1 Where the project intersects a PWS drinking water protection area (DWPA) (see Part 5.3.5.15), notify the PWS contact. PWS contact information can be obtained using the online application, Drinking Water Watch, <http://dec.alaska.gov:8080/DWW> by entering the appropriate 6-digit PWS ID (e.g., 225025).
- 4.10.2 Within the identified DWPA, restrict project activities that could significantly change the natural surface water drainage or groundwater gradient.
- 4.10.3 Immediately notify the nearby PWS of any identified potential contamination, such as spills or excess erosion.

4.11 Permanent Storm Water Management Control

A permittee must comply with applicable APDES MS4 permit requirements, local requirements, and the applicable requirements under 18 AAC 72.600 (i.e., Nondomestic Wastewater System Plan Review) 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.

- 4.11.1 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 Appendix A Part 1.1.1 at least 30 calendar days before the commencement of construction.
- 4.11.2 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 for review. Permittees must contact the MS4 Operator for submittal deadlines. See http://dec.alaska.gov/water/wnp spc/stormwater/sw_municipal.htm for a list of MS4 Operators and their contact information

4.12 Winter Considerations

- 4.12.1 **Winter Shutdown.** A permittee who plans to cease construction during the winter and resume construction the next summer must plan for winter shutdown and prepare their site to manage storm water flows until construction activities resume. 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. **Frozen ground by itself is not considered an acceptable control measure for stabilization.**
 - 4.12.1.1 A permittee must ensure the following measures are complete prior to fall freeze-up until construction activities resume:
 - 4.12.1.1.1 Temporary or final stabilization for conveyance channels;
 - 4.12.1.1.2 Temporary or final stabilization for disturbed slopes, disturbed soils, and soil stockpiles; and
 - 4.12.1.1.3 Proper installation of erosion and sediment control measures in anticipation of spring thaw.
 - 4.12.1.2 Where temporary stabilization is precluded by snow cover or frozen ground conditions prior to the anticipated date of Fall Freeze-up, stabilization measures must be initiated as soon as practicable following the actual spring thaw.

- 4.12.2 **Winter Construction.** A permittee conducting winter construction activities that may extend beyond spring thaw must install appropriate control measures to minimize erosion and sediment runoff during spring thaw and summer rainfall⁵.

Permit authorization 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..

4.13 Maintenance of Control Measures

- 4.13.1 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.
- 4.13.2 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 the deadlines stated in Part 8.2.
- 4.13.3 A permittee must remove sediment from silt fences, check dams, berms or other controls before the accumulated sediment reaches:
- 4.13.3.1 One-third ($\frac{1}{3}$) the distance up the above-ground height (or it reaches a lower height based on manufacturer's specifications) for silt fences;
 - 4.13.3.2 One-half ($\frac{1}{2}$) the distance up the above-ground height (or it reaches a lower height based on manufacturer's specifications or BMP guidance manuals) for storm water inlets, check dams, berms, or other control measure; or
 - 4.13.3.3 For sediment traps or sediment ponds, the permittee must remove accumulated sediment when the design capacity has been reduced by fifty (50%) percent.

4.14 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 person for a site varies with the size of the project. 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.

4.15 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.

⁵ The Alaska Storm Water Guide, Chapters 3 and 4, provide guidance on the selection, design, and installation of winter construction practices and controls.

5.0 STORM WATER POLLUTION PREVENTION PLAN

5.1 Storm Water Pollution Prevention Plan (SWPPP)

- 5.1.1 A permittee must prepare a SWPPP for each site before submitting their NOI for permit coverage and document the control measures implemented at the site. The SWPPP is intended to document 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.
- 5.1.2 The SWPPP must, at a minimum:
 - 5.1.2.1 Include the information described in Part 5.3.
 - 5.1.2.2 Be implemented as written, including any modifications for changes in design or field conditions, until the submittal of the NOT.
 - 5.1.2.3 Be developed by a “qualified person” (as defined in Appendix C).
 - 5.1.2.4 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 authorization under this permit.
- 5.2.2 A permittee with an ongoing project with authorization 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 authorization under this permit (see Part 2.4.2.1.2).
- 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. 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 include the following:

- 5.3.1 **Permittee(s)**

Identify the permittee(s) 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 4.6.3.3.
- 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 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 including support activities described in Part 1.4.2.3 (in acres) and the total area expected to be disturbed by excavation, grading, or other construction activities (in acres);
 - 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 Location of all storm water conveyances including ditches, pipes, and swales;
 - 5.3.5.5 Locations of storm water inlets and outfalls, with a unique identification code for each outfall;
 - 5.3.5.6 Municipal separate storm sewer systems, if present;
 - 5.3.5.7 Direction(s) of storm water flow and approximate slopes anticipated after grading activities;
 - 5.3.5.8 Locations where control measures will be or have been installed;
 - 5.3.5.9 Locations where exposed soils will be stabilized or have been stabilized;
 - 5.3.5.10 Locations where post-construction storm water controls will be or have been installed;
 - 5.3.5.11 Locations of support activities described in Part 1.4.2.3;
 - 5.3.5.12 Locations where authorized non-storm water will be used, including the types that will be used on-site;
 - 5.3.5.13 Locations and sources of run-on to the site from adjacent property that may contain quantities of pollutants (e.g., sediment, fertilizers and/or pesticides, paints, solvents, fuels) which could be exposed to rainfall, or snowmelt, and could be discharged from your construction site;
 - 5.3.5.14 Locations of all waters of the U.S. (including significant wetland areas 10,000 square feet or greater) on the site and those located within 2,500 feet of the site boundary that may be affected by storm water discharges from the site;

- 5.3.5.15 Location of existing public water system (PWS) drinking water protection areas (DWPA) for PWS sources (e.g. springs, wells, or surface water intakes) that intersect the boundary of the proposed project/permit area. The DWPAs can be found using the interactive web map application, “*Alaska DEC Drinking Water Protection Areas*”, located at <http://dec.alaska.gov/das/GIS/apps.htm>.
- 5.3.5.16 Locations where storm water and/or authorized non-storm water discharges to waters of the U.S. (including wetlands) or an MS4;
- 5.3.5.17 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
- 5.3.5.18 Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.
- 5.3.6 **Control Measures.** The SWPPP must describe and document the location of 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 or BMP manual 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 4.5.
- 5.3.6.4 The type of treatment chemicals used on the site and a description of the general location of their use at the site, in accordance with in Part 4.6.
- 5.3.6.5 The information submitted to DEC for an active treatment system, in accordance with Part 4.6.3.3
- 5.3.6.6 The good housekeeping measures that will be used at the site, if any, in accordance with Part 4.8.
- 5.3.6.7 A description of spill prevention and response measures that will be used at the site, in accordance with Part 4.9. 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 that will be installed at the site, including their location, in accordance with Part 4.11.
- 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 (as defined in Appendix C); and
- 5.3.6.9.2 The methods the permittee will use to address winter considerations in accordance with Part 4.12.
- 5.3.6.10 A description of maintenance procedures for the control measures in accordance with Part 4.13.

5.3.6.11 A description of the training relevant to the construction activity and control measures used at the site in accordance with Part 4.14.

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 1.4.2.3. 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 1.4.3 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 Part 6.0 of this permit, and where necessary, procedures for taking corrective actions in accordance with Part 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 to collect and summarize data and observations; 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 years from the date that permit authorization 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.

5.5.1.5 A record of each monitoring event,

5.5.1.6 The annual report submitted to DEC in accordance with Part 9.1, and

5.5.1.7 Any corrective actions taken in accordance with Part 8.0.

5.5.2 A record of each monitoring event and of any corrective actions taken in accordance with Part 7.0 and 8.0 must be retained with the SWPPP for at least three years from the date permit authorization 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 (ESA), including:

- 5.7.1 Information on whether federally-listed endangered or threatened species or 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 between the U.S. Fish and Wildlife Service (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; and
- 5.8.1.3 Upon receipt, a copy of the letter from DEC authorizing permit coverage and providing the permit tracking number.

- 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 Grading and Stabilization Activities Log

- 5.8.2.1.1 Date(s) when grading activities occur;
- 5.8.2.1.2 Description of Grading Activity and Location
- 5.8.2.1.3 Date(s) when construction activities temporarily or permanently cease on a portion of the site;

- 5.8.2.1.4 Date(s) when stabilization measures are initiated;
- 5.8.2.1.5 Description of Stabilization Measure.
- 5.8.2.2 Date of beginning and ending period for winter shutdown;
- 5.8.2.3 Copies of inspection reports as required in Part 5.4.2;
- 5.8.2.4 Copies of monitoring reports or annual reports (if applicable) as required in Part 5.5.2 and 9.1.
- 5.8.2.5 Log of SWPPP modifications;
- 5.8.2.6 Documentation required in Part 4.6.2 (i.e. Material Safety Data Sheet, manufacturer and/or supplier test results, or employee training information)
- 5.8.2.7 Records of employee training, including the date(s) training was received;
- 5.8.2.8 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
- 5.8.2.9 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 SWPPP modifications (e.g., adding new control measures, changes in project design, or 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 days of the inspection that identified the need for a SWPPP modification or within seven 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

- 5.10.1.1 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. 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 (and NOI modification) as submitted to DEC; and
- 5.10.2.2 The location of the SWPPP or the name and telephone number of the contact person for scheduling SWPPP viewing times. 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 or other location easily accessible during normal business hours.
- 5.10.3.2 A permittee may move the location where the SWPPP is available during the winter shut down 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 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. An electronic or hard copy of the SWPPP must be made available in its entirety to DEC staff for review and copying upon request.
- 5.10.3.5 DEC may provide access to portions of the SWPPP to a member of the public upon request. Confidential Business Information (CBI) may be withheld from the public per Appendix A, Part 1.13, but may not be withheld from those staff cleared for CBI review within DEC, EPA, USFWS, or NMFS.

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-to-day activities; and
 - 5.11.2.3 The SWPPP indicates the name of the parties 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 common plan of development (e.g., one of four homebuilders in a subdivision), the permittee must ensure that:
 - 5.11.3.1 They comply 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, but not limited to: monitoring (if applicable), inspections, and protection of endangered species, and critical habitat.
 - 5.11.3.2 They implement a portion of a comprehensive SWPPP or develop and implement a separate SWPPP that covers only their portion of the project in compliance with Part 5.1.
 - 5.11.3.3 Activities on their portion of the site do not render another party's control measures ineffective.

6.0 INSPECTIONS

6.1 Inspection Frequency

- 6.1.1 A permittee must conduct inspections at one of the following schedule:
 - 6.1.1.1 Once every seven calendar days; or
 - 6.1.1.2 Once every 14 calendar days and within 24 hours of the end of a storm event that resulted in a discharge from the site; or
 - 6.1.1.3 For areas of the state where the mean annual precipitation is forty (40) inches or greater, or relatively continuous precipitation or sequential storm events, inspect at least once every seven (7) calendar days.
- 6.1.2 A permittee must specify in the SWPPP which schedule will be followed.

6.2 Case-by-Case Reductions in Inspection Frequency

A permittee may reduce inspection frequency in the following situations:

- 6.2.1 If the entire site is stabilized in accordance with Part 4.5, a permittee may reduce the frequency of inspections to at least once every month 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 4.5 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 must conduct subsequent inspections within two business days of the end of a storm event that results in 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), implemented control measures with Part 4.12 Winter Considerations, and is documented in accordance with Part 5.3.6.9, a permittee may stop inspections 14 calendar days after the anticipated fall freeze-up and must resume inspections in accordance with Part 6.1 at least 21 calendar days prior to the anticipated spring thaw; or
- 6.2.4 If the entire site has achieved final stabilization (as defined in Appendix C) 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 final stabilization measures have been initiated.
- 6.4.2 **Scope of Inspection.** At a minimum, the scope of the site inspection must 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 water 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

- 6.5.1 Representative inspections may be performed at linear projects if the areas described in Part 6.4 are inaccessible, unsafe for personnel, would compromise stabilized areas, or would cause additional disturbance of soils.
- 6.5.2 Representative inspections must be performed by a qualified person (as defined in Appendix C).
- 6.5.3 To conduct representative inspections, a qualified person 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.
- 6.5.4 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

- 6.6.1 A permittee must allow an authorized representative of DEC, EPA, or the MS4 operator at any reasonable time to:
- 6.6.1.1 Enter onto the site where a regulated construction activity is conducted or where records are kept under the conditions of this permit;
 - 6.6.1.2 Access and copy any records that must be kept under the conditions of this permit;
 - 6.6.1.3 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
 - 6.6.1.4 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 if the permittee does not properly maintain a rain gauge on site and is representative of the actual site location);
 - 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.

7.0 MONITORING

7.1 General Requirements

- 7.1.1 A permittee whose project is subject to Part 3.2 Discharge to Impaired Water Body is required to develop, implement, and modify a written site-specific plan for analytical monitoring that includes all the requirements of this Part and follows the applicable DEC Quality Assurance Guidance for a Water Quality Monitoring Plan⁶.
- 7.1.2 The DEC may notify the permittee of additional discharge monitoring requirements. Any such notice will briefly state the reasons for the monitoring, locations, and parameters to be monitored, frequency and period of monitoring, sample types, and reporting requirements.

⁶ Detailed requirements can be accessed at the following web page: http://dec.alaska.gov/water/wqapp/wqapp_index.htm

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 7.1.

7.3.2 Sampling Frequency

- 7.3.2.1 Sampling must be conducted during or immediately following 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 Locations

- 7.3.3.1 The permittee is required to conduct sampling at all discharge points where storm water or authorized non-storm water is discharged to an impaired water body or as per Part 7.1.2.
- 7.3.3.2 Linear projects are also subject to the visual monitoring requirements in Part 7.4.
- 7.3.3.3 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.
- 7.3.3.4 **Discharging to an Impaired Water body.** If the project is subject to Part 3.2, the permittee is required to conduct sampling at the following locations:
 - At a representative location upstream from the point of discharge into receiving water body or outside the area of influence of the discharge; and
 - At a representative location downstream from the point of discharge into the receiving water body, inside the area of influence of the discharge. Alternatively, the sample may be taken at the point it leaves the construction site, rather than when it is in the receiving water body.

- 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.
 - 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 §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 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, in accordance with Part 9.4.
- 7.3.9 **Recording Monitoring Data.** A permittee must retain records of all sampling information and reports as part of the SWPPP, in accordance with Part 9.4. 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 or Part 7.1 are also required to visually monitor drainage areas and discharge locations in portions of the site where temporary or final stabilization has been initiated 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 calendar days, and the permittee may choose to do it more frequently.
- 7.4.2 **Visual Monitoring Locations.** The inspector must visually observe discharge points in portions of the site where temporary or final stabilization has been initiated and 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 Requirements.** During conditions at the project in which a discharge is occurring, the permittee must:
 - 7.4.3.1 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
 - 7.4.3.2 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 9.4. 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.

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

- 8.1.1 A permittee must review and revise the selection, design, installation, and implementation of their control measures whenever any of the following conditions are identified, discovered, or made aware of at the site:
- 8.1.1.1 An unauthorized release or prohibited discharge (e.g., spill, leak, or discharge of non-storm water not authorized by this or another APDES permit);
 - 8.1.1.2 Control measures are not designed, installed, and/or maintained as required in Part 4.0;
 - 8.1.1.3 The permittee becomes aware, or DEC determines that the control measures are not operating as intended or are not effective enough to meet the requirements of Part 3.1.2;
 - 8.1.1.4 An inspection by DEC or EPA official determines that modification to the control measures are necessary to meet the requirements of this permit;
 - 8.1.1.5 The accumulation or tracking of sediment in or near any storm water conveyance channels, storm water inlet, 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; or
 - 8.1.1.6 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.

8.2 Deadlines for Corrective Actions

- 8.2.1 A permittee must review the design, installation, and maintenance of control measures upon detecting any condition in Part 8.1.1 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 24 hours from the time of discovery and correct the problem as soon as practicable; or
 - 8.2.1.2 If installation of a new control measure is needed or an existing control measure requires redesign and reconstruction or replacement, the permittee must install the new or modified measure and make it operational within seven calendar days from the time of discovery of the need for the corrective action, unless infeasible;
 - 8.2.1.3 If a discharge occurs during a local 2-year, 24-hour storm event, a corrective action must be initiated the day after the storm event ends as described in Part 8.1.1;
 - 8.2.1.4 Monitoring, if required, 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 calendar days of taking the corrective action.

- 8.2.3 Subcontractors must notify the permittee within 24 hours of becoming aware of any of conditions listed in Part 8.1.1.

8.3 Corrective Action Log

- 8.3.1 A permittee must document the following information in the corrective action log, within 24 hours of discovery of any condition listed in Part 8.1 or upon notification from a subcontractor:
- 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 9.4.

8.4 Corrective Action Report

If monitoring pursuant to Part 3.2 Discharge to Impaired Water Body exceeds a WQS, the permittee must submit a corrective action report consistent with Part 9.2; except 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.

8.5 Substantially Identical Outfalls

- 8.5.1 If the event triggering correction action is linked to an outfall that represents other substantially identical outfalls, the permittees review must assess the need for corrective action for each outfall represented by the outfall that triggered the review. Any necessary changes to control measures that affect these other outfalls must also be made before the next storm event if possible, or as soon as practicable following that storm event.

9.0 REPORTING AND RECORDKEEPING

9.1 Annual Report

- 9.1.1 All water quality monitoring data collected by the permittee pursuant to Part 3.2 Discharge to Impaired Water Body or Part 7.0 Monitoring must be submitted to DEC in an annual report. The annual report form must be submitted to the appropriate address in Appendix A, Part 1.1.2 by December 31 of each year during construction and 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 1.1.12, Signature Requirement and Penalties. All signed and certified legible original annual reports and all other reports and documents must be submitted to DEC 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 DEC Compliance and Enforcement Program address in Appendix A, Part 1.1.2 no later than 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 WQS;
- 9.2.5 An explanation of the conditions that caused the excursion;
- 9.2.6 Steps taken or planned (should corrective actions not yet be complete) to correct the violation; and
- 9.2.7 An appropriate contact name, telephone number and e-mail address.

9.3 Spill of Hazardous Substances Report

- 9.3.1 A permittee is prohibited from discharging hazardous substances or oil from a spill or other release. Alaska state law (18 AAC 75.300) requires all oil and hazardous substance release be reported to DEC Spill Prevention and Response program. Spill reporting placards can be found at the following webpage: <http://dec.alaska.gov/spar/spillreport.htm>.
- 9.3.2 To report a spill, call the nearest DEC Area Response Team Office:
- Southeast (Juneau) – 465-5340
 - Central (Anchorage) – 269-3063
 - Northern (Fairbanks) – 451-2121
- 9.3.3 Outside of normal business hours, the permittee must call (800) 478-9300 to report the spill as soon as the permittee has knowledge of the discharge
- 9.3.4 Within seven 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 listed in Part 9.3.2. The permittee must also implement measures to prevent the reoccurrence of and to respond to such releases.

9.4 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 years from the date that authorization under this permit expires or is terminated. This period may be extended by request of DEC at any time.

- 9.4.1 Records of all data used to complete the NOI to be covered by this permit;
- 9.4.2 A copy of the SWPPP (including any modifications made during the term of this permit);
- 9.4.3 A copy of all monitoring information (if applicable) and reports required by this permit;
- 9.4.4 A copy of all inspection reports generated in accordance with Part 6.0;

- 9.4.5 Documentation related to noncompliance and corrective actions taken pursuant to Part 8.0; and
- 9.4.6 Any other reports and certifications required by this permit.

9.5 Request for Submittal of Records

The DEC 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 30 calendar days of receipt of a written request.

10.0 TERMINATION OF PERMIT AUTHORIZATION

10.1 Submitting a Notice of Termination (NOT)

- 10.1.1 To terminate permit coverage, a permittee must submit a complete and accurate NOT to DEC that certifies that one or more of the conditions in Part 10.2 have been met to terminate permit coverage. A permittee must comply with this permit until an NOT is submitted.

10.2 When to Submit a Notice of Termination

A permittee must submit an NOT within 30 calendar days after one or more of the following conditions have been met:

- 10.2.1 Final stabilization has been achieved on all portions of the site, in accordance with Part 4.5.2, for which a permittee is responsible, all ground disturbing construction activity or use of support activities has been completed, and all temporary BMP's have been removed;
- 10.2.2 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;
- 10.2.3 Authorization 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 authorization under this permit will automatically terminate;
- 10.2.4 For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner; or
- 10.2.5 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.

10.3 Submitting a Notice of Termination

- 10.3.1 A permittee must submit an NOT to terminate authorization under this permit. The complete and accurate NOT can be submitted either:
 - 10.3.1.1 Electronically (strongly encouraged): Go to DEC's Water Online Application System (OPA) web page at www.dec.state.ak.us/water/wnpssc/stormwater/stormwater.htm to prepare and submit electronic NOI (eNOI). Note: the eNOI will likely be processed more quickly.
 - 10.3.1.2 Paper NOT Form: Complete the form in Appendix E or access the form on DEC's APDES Storm Water Forms web page at <http://dec.alaska.gov/water/wnpssc/stormwater/2016CGPForms.htm>. Once the form is complete, scan and email the entire form to DEC OPA. Submit a paper copy to DEC at the address listed in Appendix A, Section 1.1.1.

- 10.3.2 A permittee's authorization to discharge terminates at midnight of the day the NOT is signed.
- 10.3.3 If a permittee submits a NOT without meeting one or more of the conditions identified in Part 10.2, then the NOT is invalid and a permittee remains responsible for meeting the requirements of this permit until authorization is terminated pursuant to Part 10.3.2.

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 WQS, 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.

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Appendix A Standard Permit Conditions
APDES PERMIT
NONDOMESTIC DISCHARGES

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TABLE OF CONTENTS

1.0 Standard Conditions Applicable to All Permits.....	A-3
1.1 Contact Information and Addresses	A-3
1.2 Duty to Comply.....	A-3
1.3 Duty to Reapply	A-4
1.4 Need to Halt or Reduce Activity Not a Defense.....	A-4
1.5 Duty to Mitigate.....	A-4
1.6 Proper Operation and Maintenance	A-4
1.7 Permit Actions	A-4
1.8 Property Rights	A-4
1.9 Duty to Provide Information.....	A-4
1.10 Inspection and Entry	A-5
1.11 Monitoring and Records	A-5
1.12 Signature Requirement and Penalties	A-6
1.13 Proprietary or Confidential Information	A-7
1.14 Oil and Hazardous Substance Liability.....	A-8
1.15 Cultural and Paleontological Resources	A-8
1.16 Fee.....	A-8
1.17 Other Legal Obligations.....	A-8
2.0 Special Reporting Obligations	A-8
2.1 Planned Changes.....	A-8
2.2 Anticipated Noncompliance.....	A-8
2.3 Transfers	A-9
2.4 Compliance Schedules.....	A-9
2.5 Corrective Information.....	A-9
2.6 Bypass of Treatment Facilities.....	A-9
2.7 Upset Conditions.....	A-10
2.8 Existing Manufacturing, Commercial, Mining, and Silvicultural Discharges.....	A-10
3.0 Monitoring, Recording, and Reporting Requirements	A-11
3.1 Representative Sampling	A-11
3.2 Reporting of Monitoring Results	A-11
3.3 Additional Monitoring by Permittee.....	A-11
3.4 Twenty-four Hour Reporting.....	A-11
3.5 Other Noncompliance Reporting.....	A-12
4.0 Penalties for Violations of Permit Conditions.....	A-12
4.1 Civil Action.....	A-12
4.2 Injunctive Relief.....	A-13
4.3 Criminal Action	A-13
4.4 Other Fines.....	A-13

Appendix A of the permit contains standard regulatory language that must be included in all APDES permits. These requirements are based on the regulations and cannot be challenged in the context of an individual APDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements. Appendix A, Standard Conditions is an integral and enforceable part of the permit. Failure to comply with a Standard 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

Documents, reports, and plans required under the permit and Appendix A are to be sent to the following address:

State of Alaska
Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, Alaska 99501
Telephone (907) 269-6285
Fax (907) 269-3487
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:

State of 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

A permittee shall comply with all conditions of the permittee's APDES permit. Any permit noncompliance constitutes a violation of 33 U.S.C 1251-1387 (Clean Water Act) and state law and is grounds for enforcement action including termination, revocation and reissuance, or modification of a permit, or denial of a permit renewal application. A 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 a 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), a 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, a permittee may 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.

1.5 Duty to Mitigate

A 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

- 1.6.1 A permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances that the permittee installs or uses to achieve compliance with the conditions of the permit. The permittee's duty to operate and maintain properly includes using adequate laboratory controls and appropriate quality assurance procedures. However, a permittee is not required to operate back-up or auxiliary facilities or similar systems that a permittee installs unless operation of those facilities is necessary to achieve compliance with the conditions of the permit.
- 1.6.2 Operation and maintenance records shall be retained and made available at the site.

1.7 Permit Actions

A permit may be modified, revoked and reissued, or terminated for cause as provided in 18 AAC 83.130. If a 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

A permit does not convey any property rights or exclusive privilege.

1.9 Duty to Provide Information

A 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 on presentation of credentials establishing authority and any other documents required by law, to:

- 1.10.1 Enter the premises where a 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 a 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 33 U.S.C. 1251-1387 (Clean Water Act).

1.11 Monitoring and Records

A 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 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 a permit,
 - 1.11.2.4 Records of all data used to complete the application for a 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 APDES 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 measurement(s);
 - 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 analysis.
- 1.11.4 Monitoring Procedures

Analyses of pollutants must be conducted 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 Requirement and Penalties

- 1.12.1 Any application, report, or information submitted to the Department in compliance with a permit requirement 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), AS 12.55.035(c)(1)(B), (c)(2) and (c)(3), and AS 46.03.790(g).
- 1.12.2 In accordance with 18 AAC 83.385, an APDES permit application must be signed as follows:
 - 1.12.2.1 For a corporation, a responsible corporate officer shall sign the application; 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 of 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, shall sign the application.
 - 1.12.2.3 For a municipality, state, federal, or other public agency, either a principal executive officer or ranking elected official shall sign the application; 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 Any report required by an APDES permit, and a submittal with any other information requested by the Department, must be signed by a person described in Appendix A, Part 1.12.2, or by a duly authorized representative of that person. 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.
- 1.12.4 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 facility, a new authorization satisfying the requirements of Appendix A, Part 1.12.3 must be submitted to the Department before 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 at 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 a permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject to under state laws addressing oil and hazardous substances.

1.15 Cultural and Paleontological Resources

If cultural or paleontological resources are discovered because of this disposal activity, 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

A permittee must pay the appropriate permit fee described in 18 AAC 72.

1.17 Other Legal Obligations

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 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.

2.2 Anticipated Noncompliance

2.2.1 A permittee shall give seven 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 A permittee may not transfer a permit for a facility or activity to any person except after notice to the Department in accordance with 18 AAC 83.150. The Department may modify or revoke and reissue the permit to change the name of the permittee and incorporate such other requirements under 33 U.S.C. 1251-1387 (Clean Water Act) or 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 A permittee must submit progress or compliance reports on interim and final requirements in any compliance schedule of a permit no later than 14 days following the scheduled date of each requirement.
- 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 a 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 of Treatment Facilities

2.6.1 Prohibition of Bypass

Bypass is prohibited. The Department may take enforcement action against a 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 notice at least 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 Conditions

- 2.7.1 In any enforcement action for noncompliance with technology-based permit effluent limitations, a permittee may claim upset as an affirmative defense. A permittee seeking to establish the occurrence of an upset 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 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 upset, before an action for noncompliance is commenced, is not final administrative action subject to judicial review.

2.8 Existing Manufacturing, Commercial, Mining, and Silvicultural Discharges

- 2.8.1 In addition to the reporting requirements under 18 AAC 83.410, an existing manufacturing, commercial, mining, and silvicultural discharger shall notify the Department as soon as that discharger knows or has reason to believe that any activity has occurred or will occur that would result in:
 - 2.8.1.1 The discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
 - 2.8.1.1.1 One hundred micrograms per liter (100 µg/L);
 - 2.8.1.1.2 Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile, 500 micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol, and one milligram per liter (1 mg/L) for antimony;
 - 2.8.1.1.3 Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 18 AAC 83.310(c)-(g); or
 - 2.8.1.1.4 The level established by the Department in accordance with 18 AAC 83.445.
 - 2.8.1.2 Any discharge, on a non-routine or infrequent basis, of a toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
 - 2.8.1.2.1 Five hundred micrograms per liter (500 µg/L);
 - 2.8.1.2.2 One milligram per liter (1 mg/L) for antimony;
 - 2.8.1.2.3 Ten times the maximum concentration value reported for that pollutant in the permit application in accordance with 18 AAC 83.310(c)-(g); or
 - 2.8.1.2.4 The level established by the Department in accordance with 18 AAC 83.445.

3.0 Monitoring, Recording, and Reporting Requirements

3.1 Representative Sampling

A 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

The permittee shall summarize monitoring results on the annual report form or approved equivalent. The permittee shall submit its annual report at the interval specified in the permit. The permittee shall sign and certify all annual reports and other reports in accordance with the requirements of Appendix A, Part 1.12, Signature Requirement and Penalties. The permittee shall submit the legible originals of these documents to the ADEC Compliance and Enforcement Program at the address in Appendix A, Part 1.1.2.

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 at 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 or annual report 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

A 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 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 estimated volume or weight and 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 of Treatment Facilities).
- 3.4.3.2 An upset that exceeds any effluent limitation in the permit (see Appendix A, Part 2.7, Upset Conditions).

- 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 by submitting the written report via e-mail, if the following conditions are met:
- 3.4.5.1 The Noncompliance Notification Form or equivalent form is used to report the noncompliance;
 - 3.4.5.2 The written report includes all the information required under Appendix A, Part 3.4.2;
 - 3.4.5.3 The written report is properly certified and signed in accordance with Appendix A, Parts 1.12.3 and 1.12.5.;
 - 3.4.5.4 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
 - 3.4.5.5 The permittee retains in the facility file the original signed and certified written report and a printed copy of the conveying email.
- 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 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 is: dec-wqreporting@alaska.gov

3.5 Other Noncompliance Reporting

A 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. The following is a summary of Alaska law. Permittees should read the applicable statutes for further substantive and procedural details.

4.1 Civil Action

Under AS 46.03.760(e), 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 Injunctive Relief

- 4.2.1 Under AS 46.03.820, the Department can order an activity presenting an imminent or present danger to public health or that would be likely to result in irreversible damage to the environment be discontinued. Upon receipt of such an order, the activity must be immediately discontinued.
- 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), a defendant who is not an organization may be sentenced to pay a fine of not more than \$10,000 for each separate violation (AS 46.03.790(g)). A defendant that is an organization may be sentenced to pay a fine not exceeding the greater of: (1) \$200,00; (2) three times the pecuniary gain realized by the defendant as a result of the offense; or (3) three times the pecuniary damage or loss caused by the defendant to another, or the property of another, as a result of the offense (AS 12.55.035(c)(B), (c)(2), and (c)(3)).

Appendix B Acronyms (for the purposes of this permit)

Abbreviations	
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
CESSWI	Certified Erosion, Sediment and Storm Water Inspector
CFR	Code of Federal Regulations
CGP	Construction General Permit
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
DWPA	Drinking Water Protection Areas
ELG	Effluent Limit Guideline
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
PWS	Public Water Systems
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).
Actively Staffed	Projects that employ a sufficient number of essential personnel to maintain day-to-day operations at a construction site. Examples of essential personnel usually include a project engineer, foreman, or inspectors.
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.

Business Day (or work day)	A day on which work is performed on site. For State offices, typically, Monday thru Friday with the exception of state holidays. For state holidays, see http://doa.alaska.gov/calendar .
Borrow Area	The areas where materials are dug for use as fill, either onsite or off-site.
Bypass	Defined in 40 CFR §122.41 and incorporated here by reference. Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
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 or Construction Activity	For the purposes of this permit, means the initial disturbance of soils associated with clearing that disturbs the vegetative map/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).
Common Plan of Development or Sale	<p>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:</p> <ol style="list-style-type: none"> 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. <p>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.</p>

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 U.S..
Construction and Development Rule (C&D Rule)	As published in 40 CFR §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 includes, but is not limited to, the occurrence or imminent threat of widespread or severe 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 or DEC	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 atop a soil surface).
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.
Effluent Limit Guideline	Defined in 40 CFR §122.a as a regulation published by the Administrator under section 304(b) of the Clean Water Act to adopt or review effluent limitations.
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
Excavation Dewatering	The practice of dewatering excavation areas through the use of pumps placed within the excavation or well pumps in adjacent dewatering wells which lower the water table to provide a relative dry working condition.
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 an Outstanding Natural Resource Water or Tier 3 water.
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 low-erodible fill material placed over an undisturbed vegetative mat. Typically, there is not soil disturbance that may be subject to erosion.
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. It 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.
Hazardous Materials or Hazardous Substances or Hazardous or Toxic Waste	For the purposes of this permit, any liquid, solid, or contained gas that contain properties that are dangerous or potentially harmful to human health or the environment. See also 40 CFR §261.2.
Immediately	No later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.
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 WQSs (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. For more information and current listing of impaired waters, see http://dec.alaska.gov/water/wqsar/waterbody/integratedreport.htm .
Indian Country	Defined at 40 CFR §122.2 to mean: <ol style="list-style-type: none"> 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.

Infeasible	Defined in 40 CFR §450.11 and incorporated here by reference. Infeasible means not technologically possible, or not economically practicable and achievable in light of best industry practices.
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	Activities performed to maintain the original line and grade, hydraulic capacity of conveyance channels, or original purpose of the site. For the purposes of this permit, means projects that repair, rehabilitate, or replace existing structures or facilities, provided that the maintenance activity does not change the original purpose of the structure or facility. Maintenance may include minor deviations in the configuration of the structure or facility due to changes in materials, construction methods, or current construction codes or safety standards.
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): <ol style="list-style-type: none"> 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 U.S.; 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	<p>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:</p> <ol style="list-style-type: none"> 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. <p>Subcontractors generally are not considered operators for the purposes of this permit.</p>
Owner	For the purposes of this permit, means the owner 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 U.S. 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 polyacrylamide (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 purposes of this permit, meant that <ol style="list-style-type: none">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 4. For projects that disturb 1 to less than 5 acres, 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.

Qualified Person
(continued)*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 4: Recommended Experience or Required Training for Specific Roles is located on the following page.)

Qualified Person
(continued)

Table 4: Recommended Experience or Required Training for Specific Roles

Storm Water Role	Total Project Disturbed Acreage		
	1 to < 5 acres	5 acres to <20 Acres	> 20 Acres
<i>Storm Water Lead</i>	Recommend AK-CESCL training, but not required	Be AK-CESCL certified	Be AK-CECSL certified
<i>SWPPP Preparer</i>	Be familiar with permit.	Recommend taking a course in SWPPP preparation.	Be AK-CECSL certified, visit the site prior to writing the SWPPP or soon after project start and revised the SWPPP based on site conditions. Recommend taking a course in SWPPP preparation.
<i>Storm Water Inspector</i>	Be familiar with permit and SWPPP.	Be AK-CESCL certified	Be AK-CECSL certified
<i>Monitoring Person</i>	Not Required	Not Required	Be AK-CECSL certified
<i>Active Treatment System Operator</i>	Be AK-CECSL certified and have general experience and knowledge of storm water control measures. Have operational experience with the specific equipment used on-site.	Be AK-CECSL certified and have general experience and knowledge of storm water control measures. Have operational experience with the specific equipment used on-site.	Be AK-CECSL certified and have general experience and knowledge of storm water control measures. Have operational experience with the specific equipment used on-site.

Note: The following training and certifications may substitute for AK-CECSL training and certification: CPESC, CESSWI, or CPSWQ by EnviroCert International, Inc (ECI, <http://envirocertintl.org>) or CISEC by CISEC, Inc. (<http://cisecinc.org>).

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 2 nd 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	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.
Stabilization	The use of vegetative and/or non-vegetative cover to prevent erosion and sediment loss in areas exposed by Construction Activities.

- Temporary Stabilization For the purposes of this permit, means protecting soils from erosion and sediment loss by rainfall, snow melt, runoff, or wind, with a temporary vegetative and/or non-vegetative protection cover. Temporary stabilization may include a combination of surface roughening (track walking), temporary seeding, geotextiles, mulches, surface tackifiers, rolled erosion control products, gravel or paving, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.
- 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), 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.

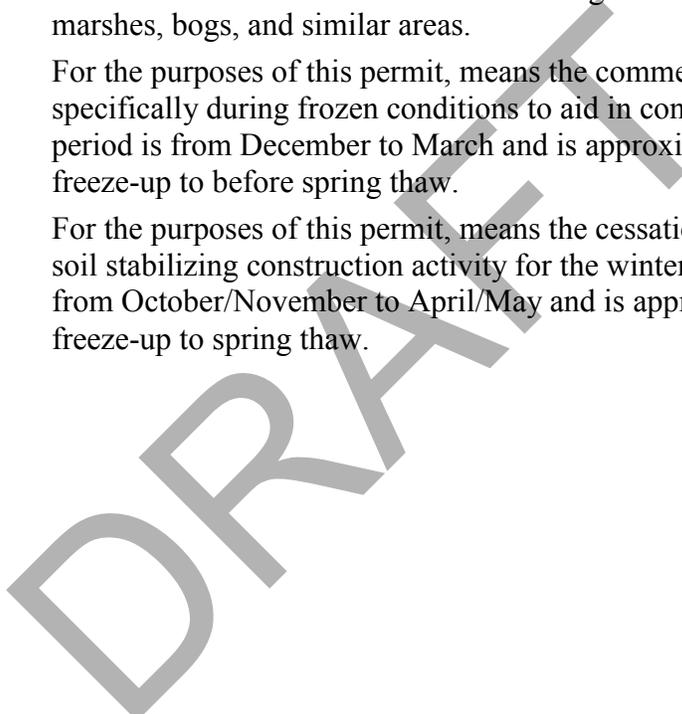
Steep Slope	For the purposes of this permit, mean any slope occurring on the construction site that is 20 percent or greater in grade for a length of the slope that exceeds 25 feet.
Storm Event	For the purposes of this permit, means a rainfall event that produces more than 0.5 inch of precipitation in 24 hours and that is separated from the previous storm event by at least 3 days of less than 0.1 inch of rain per day.
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 siting, construction and operation of BMPs to control, reduce or prevent storm water pollution.
Storm Water Inlet	A structure placed below grade to conduct water used to collect storm water runoff for conveyance purposes.
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: <ol style="list-style-type: none"> 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.

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.
Turbidimeter	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.
Upset	Defined in 40 CFR §122.41 and incorporated here by reference. Upset means an exceptional incident in which there is unintentional and temporary non-compliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
Water Quality Impaired	See ‘Impaired Water.’

- Water Quality Standard (WQS)** 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 U.S. 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 U.S. (WOUS)** Defined in 40 CFR §122.2 and incorporated here by reference.
- 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

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.

D.1 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 Appendix A, Part 1.1.1 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/wncspc/stormwater/index.htm). The form must be sent to the address listed in Appendix A, Part 1.1.1, Permitting Program of this permit.

Note: If the R factor is five 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, 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 or above, the applicant must submit an NOI, in accordance with Part 2.0 of the permit.

D.2 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 storm water 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://dec.alaska.gov/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.

D.3 Equivalent Analysis Waiver

This waiver is available for non-impaired waters only (see *2010 Approved Integrated Report*, or most current EPA-approved version: <http://dec.alaska.gov/water/wqsar/waterbody/integratedreport.htm> and <http://dec.alaska.gov/water/wqsar/Docs/Impairedwaters.pdf> 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.4 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 CWA. 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 Forms

The following forms can be accessed at <http://dec.alaska.gov/water/wnpspc/stormwater/Forms.htm>:

- Notice of Intent (NOI)
- Notice of Termination (NOT)
- Notice of Intent Modification
- Low Erosivity Waiver
- Annual Report

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APPENDIX F
GRADING AND STABILIZATION RECORDS

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APPENDIX G

TRAINING RECORDS

APPENDIX H
CORRECTIVE ACTION LOG

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Date Identified	Staff/ Affiliation	Corrective Action (Include what was done, reference to Inpsection Report [if applicable], and update SWPPP map)	Date Completed

DRAFT

Date Identified	Staff/ Affiliation	Corrective Action (Include what was done, reference to Inspection Report [if applicable], and update SWPPP map)	Date Completed

DRAFT

Date Identified	Staff/ Affiliation	Corrective Action (Include what was done, reference to Inspection Report [if applicable], and update SWPPP map)	Date Completed

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APPENDIX I
INSPECTION REPORTS

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APEDS Tracking No.:	
Project: Chena Marina Waterline Extension	Date:
Phase:	Inspector(s):
Weather Information:	
Storm Water Discharge since last inspection?	

	Yes	No	NA	Comment
Are areas in and around work area free of clutter, trash, debris, and/or oil spots?				
Do equipment parked onsite show signs of oil leaks or spots?				
Is there tracking of sediment off site?				
Are spill cleanup materials readily available?				
Is there a posted contact number to report spills and/or other emergencies?				
Are the following BMPs in use, installed correctly, and in good condition?				
Grass-lined Channels				
Mulching				
Preserving Natural Vegetation				
Silt Fence				
Straw Wattles				
Surface Roughening				
Seeding				
Are storm water conveyances near the active work areas free of trash, debris, sediment, and/or pollutants?				
Are discharge points near the active work areas free of trash, debris, sediment, and/or pollutants?				
Are areas with temporary or final stabilization in good condition?				
What corrective actions are recommended (if any)?				

File this report with the project SWPPP and Permit. Use the back of sheet for additional comments, if needed.

Inspector name and signature:
Corrective actions completed (date):

APPENDIX J
SPILL LOG AND
ADEC SPILL REPORTING PLACARD

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IT'S THE LAW!

AS 46.03.755 and 18 AAC 75.300

REPORT OIL AND HAZARDOUS SUBSTANCE SPILLS

During Normal Business Hours

call the nearest response team office:

Central Alaska:
Anchorage

(907) 269-3063
Fax: (907) 269-7648

Northern Alaska:
Fairbanks

(907) 451-2121
Fax: (907) 451-2362

Southeast Alaska:
Juneau

(907) 465-5340
Fax: (907) 465-2237

Alaska Pipeline:
Fairbanks

(907) 451-2121
Fax: (907) 451-2362

Outside Normal Business Hours

Toll Free

1-800-478-9300

International

1-907-269-0667



Alaska Department of
Environmental Conservation
Division of Spill Prevention and Response
www.dec.alaska.gov/spar/spillreport.htm

Hazardous Substance

Any hazardous substance spill, other than oil, must be reported immediately.

Oil - Petroleum Products

To Water

- ◆ Any amount spilled to water must be reported immediately.

To Land

- ◆ Spills in **excess of 55 gallons** must be reported immediately.
- ◆ Spills in **excess of 10 gallons, but 55 gallons or less**, must be reported within 48 hours after the person has knowledge of the spill.
- ◆ Spills of **1 to 10 gallons** must be recorded in a spill reporting log submitted to ADEC each month.

To Impermeable Secondary Containment Areas

- ◆ Any spills in **excess of 55 gallons** must be reported within 48 hours.

Additional Requirements for Regulated Underground Storage Tank Facilities

Regulated Underground Storage Tank (UST) facilities are defined at 18 AAC 78.005 and do not include heating oil tanks.

If your release detection system indicates a possible discharge, or if you notice unusual operating conditions that might indicate a release, you must notify the ADEC UST Program within 7 days.

UST Program: (907) 269-3055 or 269-7679



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
MONTHLY OIL SPILL REPORTING LOG**

Only for minor spills, solely to land, not to creeks, sewers or storm drains.
(see Discharge Reporting requirements, 18 AAC 75.300)

LARGE SPILLS, HAZARDOUS SUBSTANCE SPILLS OR SPILLS AFFECTING WATERWAYS MUST BE REPORTED IMMEDIATELY.

Call the nearest ADEC office for more information:

Anchorage: 269-3063 **Fairbanks:** 451-2121 **Juneau:** 465-5340 **After Hours:** 1-800-478-9300

FACILITY NAME AND ADDRESS:
REPORT MONTH/YEAR:
REPORTED BY:

DATE / TIME OF SPILL	LOCATION	PRODUCT SPILLED	QTY SPILLED (GALLONS)	CAUSE OF SPILL & AREA AFFECTED	WHO RESPONDED	CLEANUP & METHOD / PLACE OF DISPOSAL

APPENDIX K
RAIN GAUGE LOG

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Important Information

About Your Environmental Report

IMPORTANT INFORMATION

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGEMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland