Naval Facilities Engineering Systems Command Northwest

Final

Quality Control, Waste Management, and Environmental Protection Plan

2024 PETROLEUM SHORELINE INVESTIGATION AT THE AIRSTRIP AND POWERHOUSE SITES

FORMER NAVAL ARCTIC RESEARCH LABORATORY

UTQIAĠVIK (FORMERLY BARROW), ALASKA

July 2024

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Final

Quality Control, Waste Management, and Environmental Protection Plan
2024 Petroleum Shoreline Investigation at the Airstrip and Powerhouse Sites
Former Naval Arctic Research Laboratory
Utqiaġvik (Formerly Barrow), Alaska

11 July 2024

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Sean Arnold, EA Scientist II — Date

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Acronyms and Abbreviations

µg/L ..... *microgram(s) per liter*

AAC ..... *Alaska Administrative Code*

ADEC ..... *Alaska Department of Environmental Conservation*

APP ..... *Accident Prevention Plan*

bgs ..... *below ground surface*

CFR ..... *Code of Federal Regulations*

CHMM ..... *Certified Hazardous Materials Manager*

CMP ..... *Comprehensive Monitoring Plan*

CMQ/OE ..... *Certified Manager of Quality/Operational Excellence*

CIH ..... *Certified Industrial Hygienist*

CP/QC ..... *Contractor Production/Quality Control*

CRREL ..... *Cold Regions Research and Engineering Laboratory*

CSP ..... *Certified Safety Professional*

CUL ..... *cleanup level*

DoD ..... *Department of Defense*

DON ..... *Department of the Navy*

DRO ..... *diesel range organics*

EA ..... *EA Engineering, Science, and Technology Inc., PBC*

EDD ..... *electronic data deliverable*

EE/CA ..... *Engineering Evaluation/Cost Analysis*

EPA ..... *U.S. Environmental Protection Agency*

ESD ..... *explanation of significant differences*

FCR ..... *Field Change Request*

ft ..... *foot (feet)*

FTL ..... *Field Team Lead*

GRO ..... *gasoline range organics*

HAZWOPER ..... *Hazardous Waste Operations and Emergency Response*

IDW ..... *investigation-derived waste*

JP-5 ..... *jet propellant No. 5*

LTM ..... *long-term monitoring*

NARL ..... *Naval Arctic Research Laboratory*

NAVFAC ..... *Naval Facilities Engineering Systems Command*

NCR ..... *Nonconformance Report*

No ..... *number*

NOAA ..... National Oceanic and Atmospheric Administration

NS ..... *not specified*

NTR ..... *Navy Technical Representative*

OSHA ..... *Occupational Safety and Health Administration*

P.E. ..... *Professional Engineer*

PFAS ..... *per- and polyfluoroalkyl substances*

P.G. ..... *Professional Geologist*

PhD ..... *Doctor of Philosophy*

PPE ..... *personal protective equipment*

PQAM ..... *Project Quality Assurance Manager*

PQCM ..... *Project Quality Control Manager*

QC ..... *quality control*

QCP ..... *Quality Control Plan*

QCPM ..... *Quality Control Program Manager*

QEP ..... *Qualified Environmental Professional*

RFI ..... *Request for Information*

RPM ..... *Remedial Project Manager*

SAP ..... *Sampling and Analysis Plan*

SOP ..... *standard operating procedure*

SSHO ..... *Site Safety Health Officer*

SSHP ..... *Site Safety and Health Plan*

TO ..... *Task Order*

TOCOR ..... *Task Order Contracting Officer's Representative*

TOM ..... *Task Order Manager*

USAF ..... *U.S. Air Force*

USC ..... *United States Code*

USGS ..... *U.S. Geological Survey*

1 Introduction

This Quality Control, Waste Management, and Environmental Protection Plan has been prepared by EA Engineering, Science, and Technology, Inc., PBC (EA) under Contract Number (No.) N44255-20-D-6006, Task Order (TO) No. N44255-24-F-4038 for activities to be conducted in 2024 at the Department of the Navy (DON) sites in Utqiaġvik (formerly Barrow), Alaska. The Quality Control, Waste Management, and Environmental Protection Plan (herein referred to as "this document") addresses the work practices that will be implemented by EA and procedures for contractor quality control (QC) and environmental protection necessary to conduct the shoreline investigation of petroleum compounds at the Airstrip and Powerhouse sites located at the former Naval Arctic Research Laboratory (NARL) (Figure 1-1).

This plan will be used in conjunction with the following documents:

- Tier I Uniform Federal Policy Sampling and Analysis Plan (SAP), which describes the field monitoring, sampling, analytical testing, and laboratory QC activities that will be performed (DON 2024a).
- Accident Prevention Plan (APP), which includes a Site Safety and Health Plan (SSHP) that addresses health and safety evaluations and controls (DON 2024b).
- Program QC Management Plan (EA 2020).
- *Field Sampling Guidance* (Alaska Department of Environmental Conservation [ADEC] 2022).

This document supplements the project descriptions, sampling and analysis, and work plan set forth in the SAP (DON 2024a).

1.1 Site Description and Background

1.1.1 Airstrip (Site 5) Site Background

The Airstrip, also known as Site 5, consists of approximately 150 acres bound by the Chukchi Sea to the north, North Salt Lagoon and U.S. Air Force (USAF) property to the south and east, and Imikpuk Lake to the southwest (Figure 1-2). The site has a 5,000 feet (ft) runway, a large hangar, an apron area, and other buildings including the NARL treatment plant. Several fuel spills occurred on the site between 1976 and 1987. Fuels reported to have been released at this site include gasoline and jet propellant No. 5 (JP-5).

In response to these spills, several investigations and remedial actions were completed, including the installation of a fuel recovery trench and a 1,720 ft long subsurface ice-barrier wall (containment berm/barrier) between 1996 and 2002. In addition, approximately 4,000 ft of underground fuel pipeline connecting the Airstrip to the Powerhouse sites were excavated and removed in 1997. In 2002, an investigation indicated that the free product remaining at the site exists in isolated pockets within the permafrost, and as a result, is relatively immobile.

As required in the Airstrip Decision Document (DON 2002a), approximately 2,268 cubic yards of fuel-contaminated soils were removed and treated between 2000 and 2002 via hot air vapor extraction. The treated soil was used to backfill the excavation areas and to cap the south depression in December 2002. The 1 ft thick soil cap was placed over ice, and it covers a portion of the northern half of the south depression.

During 2010, a soil investigation was conducted to determine the location and magnitude of petroleum compounds that may be contributing to the increasing trends and cleanup level (CUL) exceedances in the active zone water. The soil investigation was conducted at the former spill areas, some of which had been excavated (DON 1993, 2001), in relation to select wells that have shown increasing trends in concentrations of petroleum compounds and associated volatile organic compounds. Borings were conducted with hand-held and power augers to a depth of 2 to 3 ft. The results were reported in the 2010 Annual Monitoring Report (DON 2011). Although no soil concentrations exceeded CULs, the 2010 soil investigation identified two (of five) soil borings from the Airstrip Site with elevated fuel levels. In response to the findings of the 2010 soil investigation and continued increasing trends of contaminants of concern in the active zone water, a follow-up soil investigation was performed in 2012 for the Airstrip and Powerhouse sites. The 2012 investigation focused on the areas of concern that may be contributing to the increasing trends in the active zone water at these sites, as well as areas of historical petroleum spills, monitoring wells that exhibited contaminant exceedances, and excavation areas associated with the former NARL facility DON. The results of the 2012 investigation can be found in the Soil Investigation Report (DON 2013).

In September 2011, the USAF installed and developed four new monitoring wells at the Airstrip Site. The purpose of these wells is to better understand if the residual contamination on the DON's property is migrating via the active zone water to the USAF's property and the North Salt Lagoon. Beginning in 2012, these four new monitoring wells were included in the long-term monitoring (LTM) network.

In 2012, a soil investigation was conducted at the Airstrip and Powerhouse sites. The investigation focused on the areas of concern that may be contributing to the increasing

trends in the active zone water at these sites, as well as areas of historical petroleum spills, monitoring wells that exhibited contaminant exceedances, and excavation areas associated with the former DON NARL facility.

In 2014, Cold Regions Research and Engineering Laboratory (CRREL) conducted a subsurface containment berm investigation (DON 2015) to assess whether the berm was functioning as designed (i.e., decreasing the active zone thickness and raising the permafrost table). Although this study concluded that the berm was generally functioning as designed, it noted an area where potential active zone water flow could exist. The report suggested that the removal of a sump in the adjacent recovery trench was the reason a potential active zone water flow pathway could exist in this area. A subsequent hydrological study, which included the installation of 10 wells at the Airstrip Site, conducted by U.S. Army Corps of Engineers CRREL (DON 2016a) also noted a possible transport pathway. The study found that active zone water generally flows toward Imikpuk Lake, and the saturated areas to the east of the apron and Hangar 136. Additionally, the flow to the southwest is modified by the presence of a subsurface containment berm that was originally constructed to raise the permafrost layer and channel free product from past spills upstream of the berm into recovery trenches running parallel to and upstream of the berm.

In 2015, soil samples were collected from select locations within the upgradient and downgradient areas at the Airstrip and Powerhouse sites to better understand the soil properties of the site, current concentrations of discrete petroleum fractions, and the extent of microbial activity to develop a baseline index of biochemical properties (DON 2016b).

Two active zone water studies were performed outside the LTM program to evaluate aliphatic and aromatic diesel range organics (DRO). In 2016, select monitoring wells located near Imikpuk Lake were sampled for DRO aliphatic and aromatics (DON 2017). The 2016 analytical results for the shoreline wells sampled indicate that the aliphatic DRO concentrations no longer exceed risk-based levels associated with unacceptable non-cancer risks to construction workers. In 2021, select inland wells were sampled for aliphatic and aromatic fractions (DON 2022). For active zone water collected from inland monitoring wells, sample results were below the CUL of 8,200 micrograms per liter (µg/L) applicable to the DRO aliphatic fraction. The DRO aliphatic and aromatic fractions for these 2016 and 2021 sampling events were analyzed using a technique that utilizes silica gel cleanup during sample preparation in order to separate aliphatic hydrocarbons from aromatics.

In 2018, Buildings 133 and 134, and Facility Building 18 were demolished by DON at the Airstrip Site. Lead-based paint and asbestos containing material were abated prior

to demolition, and contaminated soil from beneath the buildings was excavated and sampled by DON per the approved work plan (DON 2018).

In 2019, an Engineering Evaluation/Cost Analysis (EE/CA) was completed (DON 2019). The EE/CA identified and evaluated removal action alternatives to address areas of residual petroleum hydrocarbon contamination in soil and active zone water at the Airstrip Site for a Non-Time Critical Removal Action. Based on the evaluation of the respective soil alternatives considered in the EE/CA, the recommended soil alternative for the Airstrip Site was Soil Alternative 4 – Ex Situ Thermal Treatment; however, this treatment was not pursued due to per- and polyfluoroalkyl substances (PFAS) considerations. In addition, based on the evaluation of the three active zone water alternatives considered in the EE/CA, the recommended removal action alternative for the Airstrip Site was Active Zone Water Alternative 1 – Monitored Natural Attenuation. The EE/CA has been put on hold until additional petroleum and PFAS investigation is conducted at the Airstrip Site.

Continued annual LTM efforts from 2018 through 2023 indicated limited progress towards achieving the active zone water CULs (DON 2024c). The geochemical parameters indicated that natural attenuation, predominantly anaerobic degradation, was occurring by various processes, and to varying degrees although degradation rates had yet to be established for the site. It is unclear when this site will achieve CULs via natural attenuation based on the absence of an established contaminant degradation rate, the fluctuation of the number of CUL exceedances between 2018 and 2023, and the minimal shift of trends.

1.1.2 Powerhouse (Site 12) Site Background

The Powerhouse Site, also known as Site 12, includes two structures historically used to supply power to NARL: Building 342, the former powerhouse (operated from 1950 through 1971), and Building 442, the inactive water pump house (Figure 1-3).

Four spills were reported at this site between 1952 and 2002. Fuels reported to have been released at this site include JP-5. In response to these spills, several investigations and remedial actions were completed, including the excavation and treatment of 590 cubic yards of petroleum-contaminated soil between 2000 and 2003. The soil excavation and subsequent treatment by hot air vapor extraction, completed the soil remedy as required in the Powerhouse Site Decision Document (DON 2002b).

The excavation of soil beneath the former powerhouse was completed in August 2003, as documented in the resulting Closure Report (DON 2003) and approved by the ADEC (ADEC 2003). Confirmation samples showed that soil containing residual range organics above the CUL of 22,000 milligrams per kilogram as established by the

Powerhouse Site Decision Document (DON 2002b) had been removed. ADEC approved the results presented in the Closure Report (ADEC 2003).

In 2010, a soil investigation was conducted to determine the location and magnitude of petroleum compounds that may be contributing to the increasing trends and CUL exceedances in the active zone water (DON 2011). Five soil borings were advanced at locations in proximity to selected wells that had shown consistent or increasing trends in petroleum compounds and related volatile organic compounds. Soil samples collected at three of the five borings (2 to 3 ft in depth) had elevated fuel concentrations, although no concentrations exceeded CULs.

In response to the findings of the 2010 soil investigation and continued increasing trends of contaminants of concern in the active zone water, a follow-up soil investigation was performed in 2012 for the Airstrip and Powerhouse sites. The results of the 2012 investigation can be found in the Soil Investigation Report (DON 2013).

Two studies were performed outside the LTM program to evaluate aliphatic and aromatic DRO. In 2016, select monitoring wells located near Imikpuk Lake were sampled for DRO aliphatic and aromatics (DON 2017). The 2016 analytical results for the shoreline wells sampled indicate that the aliphatic DRO concentrations no longer exceed risk-based levels associated with unacceptable non-cancer risks to construction workers. In 2021, select inland wells were sampled for aliphatic and aromatic fractions (DON 2022). For active zone water collected from inland monitoring wells, sample results were below the CUL of 8,200 µg/L applicable to the DRO aliphatic fraction. The DRO aliphatic and aromatic fractions for these 2016 and 2021 sampling events were analyzed using a technique that utilizes silica gel cleanup during sample preparation in order to separate aliphatic hydrocarbons from aromatics.

In 2019, an EE/CA was completed (DON 2019). The EE/CA identified and evaluated removal action alternatives to address areas of residual petroleum hydrocarbon contamination in soil and active zone water at the Powerhouse Site for a Non-Time Critical Removal Action. Based on the evaluation of the respective soil alternatives considered in the EE/CA, the recommended soil alternative for the Powerhouse Site was Soil Alternative 4 – Ex Situ Thermal Treatment; however, this treatment option was not pursued due to PFAS considerations. In addition, based on the evaluation of the three active zone water alternatives considered in the EE/CA, the recommended removal action alternative for the Airstrip Site was Active Zone Water Alternative 1 – Monitored Natural Attenuation. The EE/CA has been put on hold until additional petroleum and PFAS investigation is conducted at the Powerhouse Site.

Continued annual LTM efforts from 2018 through 2023 indicated limited progress towards achieving the active zone water CULs (DON 2024c). The geochemical parameters indicated that natural attenuation, predominantly anaerobic degradation, was occurring by various processes, and to varying degrees although degradations rates had yet to be established for the site. It is unclear when this site will achieve CULs via natural attenuation based on the absence of an established contaminant degradation rate, the fluctuation of the number of CUL exceedances between 2018 and 2023, and the minimal shift of trends.

1.2 Scope of Work

Field activities to be performed in 2024 for the Airstrip and Powerhouse sites will include sediment and surface and subsurface soil sampling along the shoreline of Imikpuk Lake to evaluate whether removal of soil is beneficial to mitigate risk, as recommended in the Fourth Five-Year Review (DON 2023). Subsurface soil sampling will include advancement of soil borings in areas that have been cleared of utility presence.

1.3 Objectives

The overall goal of the shoreline investigation is to ensure the protection of human health and the environment. The objectives include the following:

- Develop all work plans associated with the petroleum shoreline investigations at Airstrip and Powerhouse sites
- Conduct summer surface soil, subsurface soil, and sediment sampling for petroleum compounds at Airstrip and Powerhouse sites in accordance with state and federal regulations and policies
- Conduct all necessary investigative waste management
- Develop a report summarizing the results of the field work

AIRSTRIP

Airstrip Site

Powerhouse Site

Chukchi Sea

Imikpuk Lake

Point Barrow Long Range Radar Site

Elson Lagoon

North Salt Lagoon

ANTENNA FIELD

Middle Salt Lagoon

South Salt Lagoon

Utqiaġvik

Esatkuat Lagoon

Wiley Post - Will Rogers Memorial Airport

Navy Property Boundary

NORTH

0 1,000 2,000 4,000

Feet

Task Order: N44255-24-F-4038
Date: 4/30/2024
Coordinate System: WGS 1984 UTM Zone 4 North
Projection: Transverse Mercator
Datum: World Geodetic System 1984
Units: Meter

Quality Control, Waste Management, Environmental Protection Plan
2024 Petroleum Shoreline Investigation
at the Airstrip and Powerhouse Sites
Former Naval Arctic Research Laboratory
Utqiaġvik (Formerly Barrow), Alaska

Figure 1.
Vicinity Map

Former Naval Arctic Research Laboratory

NAVFAC
Naval Facilities Engineering Systems Command

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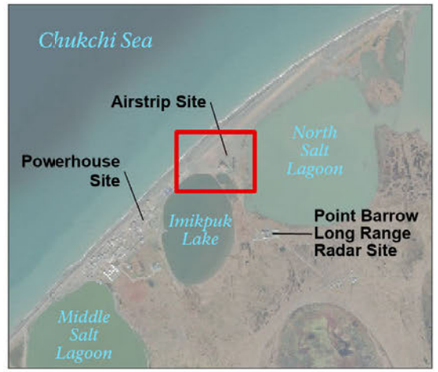

- Approximate Sediment Soil Location
- Approximate Soil Boring Location
- Background Soil Sample Location
- Monitoring Well
- Monitoring Well (Installed by Air Force)
- Former Pipeline
- Recovery Trench
- Containment Berm
- Culvert
- Utility - Gas
- Utility - Power
- Utility - Telecom
- Demolished Building
- Former AST
- Former Excavation Area
- Saturated Area
- Former Spill (Estimated year of spill)
- DRO Soil Source Area (DON 2013)
- GRO Soil Source Area (DON 2013)

AST - Aboveground Storage Tank
DON - Department of the Navy
DRO - Diesel Range Organics
NARL - Naval Arctic Research Laboratory

NORTH

0 100 200 400
Feet

Task Order: N44255-24-F-4038
Date: 5/16/2024
Coordinate System: WGS 1984 UTM Zone 4 North
Projection: Transverse Mercator
Datum: World Geodetic System 1984
Units: Meter

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Figure 2.
Airstrip Site Map and Proposed Sampling Locations

NARL Airstrip

NAVFAC Naval Facilities Engineering Systems Command

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- Monitoring Well
- Former Pipeline
- Utility - Gas
- Utility - Telecom
- Former AST
- Former Excavation Area
- Approximate Sediment Soil Location
- Approximate Soil Boring Location
- DRO Soil Source Area (DON 2013)

AST - Aboveground Storage Tank
DON - Department of the Navy
DRO - Diesel Range Organics
NARL - Naval Arctic Research Laboratory

NORTH

0 100 200 400
Feet

Task Order: N44255-24-F-4038
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Coordinate System: WGS 1984 UTM Zone 4 North
Projection: Transverse Mercator
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Units: Meter

Quality Control, Waste Management, Environmental Protection Plan
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Former Naval Arctic Research Laboratory
Utqiaġvik (Formerly Barrow), Alaska

Figure 3.
Powerhouse Site Map and Proposed Sampling Locations

NARL Powerhouse

NAVFAC Naval Facilities Engineering Systems Command

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2 Field Activities

Field activities to be performed in 2024 at the Airstrip and Powerhouse sites will include:

- Media (sediment and soil) sampling
- Waste management
- Field documentation

Activities will be conducted as described below. Field data and findings will be presented in the 2024 annual monitoring report.

2.1 Media Sampling and Analysis

2.1.1 Sample Types, Frequencies, Designations, and Analyses

Samples of sediment and soil will be collected and submitted for laboratory analysis. Sample types, collection methods, frequencies, designations, and planned analyses are discussed in detail in the SAP (DON 2024a).

2.1.2 Sampling and Field Measurement Procedures and Protocols

Sample collection will be conducted in a manner that ensures representativeness and maintains the integrity of the results. Procedures for sampling and collecting field measurement data for this project are provided in the SAP (DON 2024a) and are in accordance with the *Field Sampling Guidance* (ADEC 2022).

2.1.3 Field Quality Control Samples

Field QC samples will be collected for this project as specified in the SAP (DON 2024a). Field QC samples associated with the sediment and soil samples include equipment blanks, trip blanks, and field duplicates.

2.2 Waste Management

Field activities are anticipated to produce investigation-derived waste (IDW). The management of these wastes is detailed in Section 4 of this document.

2.3 Field Documentation

Field activities will be documented in field logbooks and field forms to ensure that adequate records are compiled during the sampling process. The forms of documentation are described in Worksheet #14 of the SAP and Field Procedure 9 (Appendix B of the SAP) (DON 2024a). Blank copies of field forms for sediment and soil sampling are located in Appendix C of the SAP (DON 2024a).

The subcontracted driller, GeoTek Alaska, will use a direct-push method to collect continuous soil cores. Each core will be evaluated and logged by a professional geologist, using a soil boring log (Appendix C of the SAP) (DON 2024a). Soil core samples will be continuous from ground surface to total depth using a 5 ft long Macro-Core® sampler lines with acetate sleeves. Three soil samples will be collected from each boring. At each borehole, one surface soil sample (0 to 2 feet bgs) and at least one subsurface sample (collected at the top of the capillary fringe in the unsaturated soil [near the permafrost interface]) will be collected. Additionally, a second subsurface sample collected at 2 to 3 feet bgs will be collected when the depth to permafrost is 4 feet bgs or greater. Sampling will be conducted in accordance with current Naval Facilities Engineering Systems Command (NAVFAC) Northwest Standard Operating Procedures (SOPs) (Appendix C) and ADEC's *Field Sampling Guidance* (ADEC 2022).

Sample containers will be properly labeled and packaged prior to shipment to the laboratory. Sample handling and custody are discussed in Worksheet #14 of the SAP (DON 2024a) and Field Procedure 8 (Appendix D of the SAP) (DON 2024a).

3 Quality Control Plan

This section outlines the documentation required for the planned field activities to ensure that the work performed complies with the specific scope, schedule, budget, and level of quality required. In support of this project, EA will adhere to this project-specific Quality Control Plan (QCP), which is based on the Program QC Management Plan (EA 2020) developed for NAVFAC Northwest Contract No. N44255-20-D-6006.

Project-specific QC considerations are identified to provide the framework and criteria for planning, implementing, and assessing quality-related TO services provided for this project.

3.1 Definable Features of Work

A definable feature of work is a task that is separate and distinct from other tasks and has separate control requirements. The definable features of work for this TO include the following field activities.

- Utility locating
- Soil drilling
- Soil logging
- Sediment and soil sampling
- Waste disposal

3.2 Project Quality Control Organization

The structure of EA's project organization is designed to maintain control of the quality of contract elements and ensure the quality of its performance and that of its subcontractors. The QC organization will ensure compliance with the QC requirements of the project. The Project QC Manager (PQCM) is assigned the responsibility of fulfilling the site QC requirements. The PQCM assigned for this project is Ms. Eileen Maus. A copy of Ms. Maus' assignment letter from the QC Program Manager (QCPM) and resume showing her experience is included in Appendix A.

NAVFAC and EA individuals identified as the key personnel for this project are listed in Table 3-1 Point-of-Contact Information.

Table 3-1. Point-of-Contact Information

Role	Name	Telephone Number	E-mail Address
NAVFAC Northwest			
DON RPM/TOCOR	William Kaage	[redacted]	[redacted]
Contract Office Representative	Blaine Hardy		
Contract Officer	Bryanna Monfort		
NTR	Steve Skeehan		
EA Staff			
QCPM	Frank Barranco, PhD, P.E., P.G., CMQ/OE	[redacted]	[redacted]
PQCM	Eileen Maus	907-646-0201	[redacted]
TOM	Nicole Stoecklein	[redacted]	[redacted]
PQAM	Sherri Wunderlich		
Project Chemist	Eileen Maus	907-646-0201	
Director of Safety and Health/Safety and Health Manager	Robert Marcase, CIH, CSP, CHMM	410-329-5192	[redacted]
Field Team Leader/SSHO	Gilbert Manning	907-646-0217	[redacted]
Field Team Member	Natali Hoeg	[redacted]	[redacted]
Alternate Field Team Leader/SSHO	Hallie Peterson	[redacted]	[redacted]
EA Subcontractors			
Bear Guard (Fairweather)	Sally Marinucci	[redacted]	[redacted]
Driller (Geotek Alaska)	Dumitru Radu		
Utility Locate (Logic Geophysics & Analytics LLC)	Esther Babcock	[redacted]	[redacted]
IDW Disposal (Republic Services)	Kim Curtiss	[redacted]	[redacted]

Notes:
CHMM = Certified Hazardous Materials Manager
CIH = Certified Industrial Hygienist
CMQ/OE = Certified Manager of Quality/Organizational Excellence
CSP = Certified Safety Professional
DON = Department of the Navy
EA = EA Engineering, Science, and Technology, Inc., PBC
IDW = investigation derived waste
NAVFAC = Naval Facilities Engineering Systems Command
NTR = Navy Technical Representative
P.E. = Professional Engineer
P.G. = Professional Geologist
PhD = Doctor of Philosophy
PQAM = Project Quality Assurance Manager
PQCM = Project Quality Control Manager
QCPM = Quality Control Program Manager
RPM = Remedial Project Manager
SSHO = Site Safety Health Officer
TOCOR = Task Order Contracting Officer's Representative
TOM = Task Order Manager

Subcontractors that will provide services associated with this TO are identified below:

- Bear Guard: Ukpeaġvik Iñupiat Corporation in Utqiaġvik, Alaska
- Utility locates: Logic Geophysics & Analytics LLC
- Driller: Geotek Alaska
- Analytical laboratory: Eurofins - Seattle in Seattle, Washington
- Third-party data validation: Environmental Data Services in Pittsburgh, Pennsylvania.

3.3 Operational Readiness Review

One or more Operational Readiness Review meetings will be conducted by the TOM to ensure that required resources and personnel will be available, and that associated plans are prepared and understood. Field logistics and personnel roles and responsibilities will be discussed in detail, and site hazards and QC requirements will be reviewed.

3.4 Pre-Construction/Mutual Understanding Meeting

A Pre-Construction/Mutual Understanding Meeting will be performed prior to beginning field work. The Contractor will schedule and conduct the Pre-Construction/Mutual Understanding Meeting. Typically, the attendees will include the TOM, PQCM, Field Team Lead (FTL), SSHO, and the RPM/TOCOR. The purpose of this meeting is:

- Review the Scope of Work, applicable specifications, and schedule
- Develop a mutual understanding of the QC that will be performed for the fieldwork
- Discuss the QC forms to be used
- Discuss safety aspects of the fieldwork
- Verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities

The following actions are performed by the PQCM prior to or during the Pre-Construction/Mutual Understanding Meeting:

- Verify appropriate plans and procedures have been developed, approved, and are available
- Verify personnel required for the field activities are identified and positions are filled
- Verify required training has been completed
- Verify preliminary work and coordination have been accomplished
- Verify QC issues (if any) have been addressed and agreed upon

- Verify that appropriate portions of the APP/SSHP have been reviewed with site personnel.

Meeting minutes will be prepared by EA and submitted to the RPM/TOCOR and Alternate RPM for approval.

Discrepancies identified during the meeting will be resolved prior to proceeding with the affected work. Correction of deficiencies will be verified by the PQCM before proceeding with field work.

3.5 Three Phases of Control

Three phases of control are required for construction-related activities. Construction-related activities are planned for this TO, specifically utilization of a drill rig to collect subsurface soil samples. The PQCM will be responsible for verifying compliance with project specifications by implementing the three-phase control system. These include a preparatory phase meeting, initial phase inspection, and potential follow-up phase inspection. inspection.

3.5.1 Preparatory Phase Meeting

A preparatory phase meeting will be performed prior to beginning any construction-related field activity. The RPM will be notified at least 48 hours (two working days) prior to each preparatory phase meeting. The PQCM, or designee, will conduct this meeting with field personnel including applicable subcontractors and the RPM, if available. The purpose of this meeting will be to review the specifications applicable to the field activity that will be performed, verify preliminary work and coordination have been accomplished, and assure that provisions have been made to perform the work satisfactorily.

The preparatory phase meeting will be documented on the Preparatory Phase Checklist and will be submitted with the Contractor Production (CP)/QC Report. These forms are provided in Appendix B. The Preparatory Phase Checklist may be expanded or modified, as necessary, to address unique aspects of a given feature of work.

Discrepancies identified during the preparatory phase meeting will be resolved prior to proceeding with the affected work. Correction of deficiencies will be verified by the PQCM before proceeding with field work.

3.5.2 Initial Phase Inspection

An initial phase inspection will be performed once a representative sample of the work has been completed. The purpose of the inspection will be to check the preliminary

work for compliance with procedures and contract specifications, verify inspection and testing, establish the acceptable level of workmanship, identify and update any action items listed on the Preparatory Inspection Checklist and CP/QC Report completed after the preparatory phase meeting, and check for omissions and resolve differences of interpretation. General guidance for performing an inspection is provided in Section 8.3.1 of the Program QC Management Plan (EA 2020). A copy of the QC Surveillance form is provided in Appendix B.

The initial phase inspection will be documented on the Initial Phase Inspection Checklist (Appendix B) and submitted with the CP/QC Report. The Initial Phase Inspection Checklist may be expanded or modified, as necessary, to address unique aspects of a given feature of work.

3.5.3 Follow-Up Phase Inspection

A follow-up phase inspection may be conducted at the discretion of the PQCM or RPM. Follow-up inspections are often unscheduled and may occur at any time, but are generally warranted under any of the following conditions:

- Unsatisfactory work, as determined by the Contractor or DON
- Changes in key personnel
- Changes to the project Scope of Work/specifications

The purpose of the inspection is to ensure continuous compliance and level of workmanship. The PQCM or designee will oversee and observe the same activities as under the initial inspection and ensure that discrepancies between site practices and approved specifications are identified and resolved. Corrective actions for unsatisfactory conditions or practices will be verified by the PQCM prior to continuing work on the affected feature.

Follow-up phase inspections (if conducted) will be documented in the CP/QC Report.

3.6 Inspection Process for Collecting Samples

At their discretion, the PQCM or designee may conduct an inspection of sample collection activities during planned field activities to ensure that samples are collected, sample data are recorded, and samples are packaged according to the SAP (DON 2024a). The sampling event inspection may cover field screening, sampling procedures, field documentation (field logbooks, chain-of-custody records, and sample labels), sample preservation, and sample management (handling).

The inspection can be documented on a Surveillance Checklist (Appendix B). The Surveillance Checklist may be expanded or modified, as necessary, to address unique aspects of a given feature of work. If an inspection occurs, the surveillance will be briefly summarized on the CP/QC Report (Section 3.9.3). The Surveillance Checklist will be attached to the CP/QC report.

The PQCM will ensure that potential discrepancies between site practices and approved specifications are identified and resolved. As discussed in Section 3.7, identified nonconformances will be documented on a Nonconformance Report (NCR) or Corrective Action Summary Form (Appendix B). Corrective actions for unsatisfactory conditions or practices will be verified by the PQCM prior to continuing work on the affected feature.

3.7 Nonconformance Management

Nonconformance will be managed by following the guidelines in this section and the Program QC Management Plan (EA 2020) developed for NAVFAC Northwest Contract No. N44255-20-D-6006 as well as the NAVFAC Northwest SOP IV-F, Nonconformance and Corrective Action (NAVFAC Northwest 2019) (provided in Appendix C). A primary objective of EA's quality program is to prevent nonconformance. If an item is considered nonconforming, it will be corrected in a timely and cost-effective manner and with the intent of preventing recurrence. This section includes provisions for preventing quality problems as well as identifying, documenting, and tracking nonconformance until corrective actions have been completed and verified.

3.7.1 Preventative Measures

EA's quality program focuses on problem prevention. The primary tools for problem prevention on this project include the following: thorough and effective planning; personnel screening and selection based on qualifications and training required for the given work; implementation of the inspection process (applicable to sample collection); and effective management of submittals. If these preventive measures fail, tracking and communicating nonconformance will provide a mechanism for appropriate corrective action and prevention of recurrence.

3.7.2 Identifying Nonconformances

A nonconformance is defined as a deficiency that renders the quality of an item, process, or product that has been defined in the procedures, specifications, or drawings as unacceptable or indeterminate. Nonconforming conditions will be documented on an NCR or Corrective Action Summary Form (Appendix B). If the nonconformance occurs at an off-site laboratory, the contract-required Laboratory Nonconformance Report

(Appendix B) will be completed instead of the standard NCR. Each NCR or Corrective Action Summary Form will be sent to the RPM/TOCOR and Alternate RPM when finalized. Nonconformance will be resolved prior to the completion of the project and in the timeliest manner possible.

The PQCM will provide an update of the status of the nonconformance when it changes. Before the work activities of the day begin, the PQCM will notify appropriate personnel of nonconforming conditions that require follow-up that day. A nonconformance that requires rework for resolution will be included on the Rework Items List (provided in Appendix B).

The PQCM will also summarize nonconformances and status in the CP/QC Report.

3.7.3 Root Cause Analysis

The NCR and Corrective Action Summary Form prompts the user to enter information regarding the cause of the problem. The determination of the root cause of a nonconformance is an integral part of the QC process. Root cause analysis will be made by the PQCM in conjunction with other appropriate personnel.

Examples of common factors considered in the analysis will include, but are not limited to, the following:

- Staff qualifications and training
- Adequacy of procedures and methods
- Adequacy of equipment
- Adequacy of QC measures

Input will be obtained, as necessary, from field staff and technical advisors to identify the factors that led to the problem.

3.7.4 Corrective Action

Following the root cause analysis, the PQCM will evaluate corrective actions to determine which of the following would be most effective in correcting the problem. This process will include the appropriate staff. Corrective action considered may include the following:

- Supplemental staff training
- Change of equipment or modification of equipment currently in use
- Acquisition of supplemental equipment
- Implementation of a new procedure or modification of an existing procedure
- Change in QC procedure

- Design change

The implementation of corrective action will be documented by the PQCM in the appropriate section of the NCR (both standard project and laboratory NCR forms) or Corrective Action Summary Form. This documentation will be supported by changes to the inspection procedures or schedule as warranted. As appropriate, the PQCM will verify that corrective action was successful in addressing the problem and that a relapse does not occur. The final approval of corrective actions will be the responsibility of the QCPM and documented in the NCR or Corrective Action Summary Form in Appendix B.

3.8 Change Management

During project activities, changes may need to be made to plans, specifications, or procedures. Change needs to be reviewed, approved, and documented to ensure it is properly implemented and recorded. It is the responsibility of the TOM, PQCM, and each member of the field team to identify potential change conditions; the PQCM will obtain the appropriate review and approval prior to implementation.

Technical or procedural change from plans, specifications, or procedures will be documented on a Request for Information (RFI) and/or a Field Change Request (FCR) form (Appendix B). The PQCM and/or PQAM will review and approve RFI and FCR forms prior to sending to NAVFAC Northwest. A list of RFIs and FCRs for this project will be maintained by the PQCM in the RFI log (Appendix B). After appropriate EA signatures are obtained, each RFI and FCR form will require approval by the RPM.

3.9 Submittals

Submittals will be prepared, reviewed, approved, and managed in accordance with Section 5 (Documents and Records) of the Program QC Management Plan developed for the NAVFAC Northwest Contract No. N44255-20-D-6006 (EA 2020). The submittals that are required for this project are summarized in this section.

3.9.1 Plans, Forms, and Reports

The following plans, forms, and reports are required for this TO and will be similar in content and format to previous versions. The plans, forms, and reports will be prepared by technical staff assigned by the TOM based on knowledge, experience, and availability. Documents will be reviewed by the TOM and/or a qualified Senior Technical Reviewer. The process to be followed for deliverable review is outlined in Section 9.2 of the Program QC Management Plan developed for the NAVFAC Northwest Contract No. N44255-20-D-6006 (EA 2020).

Documents to be reviewed and approved include:

- Planning documents, including:
  - This document
  - SAP (DON 2024a)
  - APP/SSHP (DON 2024b)
- A summary report for the 2024 Shoreline Investigation activities
- Laboratory data packages
- Data validation reports
- CP/QC reports
- Completion letter

3.9.2 Laboratory and Field Data

Required submittals for this project also include hardcopy and electronic laboratory and field data as discussed in the SAP (DON 2024a).

Data submittals will be performed in accordance with the most current NAVFAC guidance and SOPs, and the DON SOP for electronic data deliverables (EDD) available at https://niris.navfac.navy.mil/se/nirisportal. Electronic data will pass the DON's online data checker before submittal.

Data will be provided by the laboratory in hardcopy, Acrobat Adobe™ PDF, and a Naval EDD format. A data validation report will also be prepared by a third-party data validation firm. The data validation report will include a summary of the reviewed items and a list of qualified data as applicable for each sample. The data validation report will be included with the sampling report. A copy of the sampling report and the electronic laboratory reports will be maintained in the EA's project files. The EDD will be submitted for archiving in the DON's database. The hard copy data deliverable will be submitted directly to NAVFAC Northwest's document manager.

The protocol for these submittals is included in the Environmental Restoration Program SOPs (NAVFAC Northwest 2019) and the online DON SOP for EDDs is available (with an account) at the following website: https://niris.navfac.navy.mil/se/nirisportal.

3.9.3 Contractor Production/Quality Control Report

A CP/QC report (Appendix B) will be prepared weekly during field activities by the PQCM. The report will provide an overview of activities performed each day of the week when work was performed, including those relating to subcontractors and suppliers. This form will document both conforming and nonconforming conditions, and will be

precise, factual, legible, and objective. Copies of the supporting documentation, such as the field surveillance checklist and Daily Safety Briefing Sign-in Sheets, will be attached.

At a minimum, the CP/QC report will contain the following information that applies:

- A summary of the work elements/tasks performed during each day of the week.
- Indication of whether a tailgate/safety meeting was held, with the Daily Safety Briefing Sign-In Sheets included as attachments.
- A summary of preparation to perform field activities, including whether required materials and equipment are present on site and meet specifications in project plans.
- A summary of meetings or discussions, including a list of personnel present.
- A summary of field surveillance, with the Surveillance Checklist included as an attachment.
- A summary of deficiencies or corrective actions performed.
- A list of rework items identified (if any), but not corrected, by the close of business on the day they were identified.
- A "Remarks" section, which will contain pertinent information, including directions received, problem areas, deviations from the approved plans, nonconformances identified, corrective direction given by the PQCM, and corrective actions taken.

Each CP/QC report will contain the following statement signed by the TOM and PQCM.

> *On behalf of the contractor, I certify that this report is complete, accurate, and correct, and equipment and materials used, and work performed during this reporting period are in compliance with the contract plans and specifications to the best of my knowledge and belief, unless noted above.*

3.9.4 Completion Letter

Upon the completion of work for this TO, the PQCM will furnish a letter to the NAVFAC Northwest Contracting Officer (copied to the RPM and Contracting Specialist) attesting that "the work has been completed, inspected, and tested, and is in compliance with the contract."

3.9.5 Project Files

Project files will be maintained in EA's office in Seattle, Washington. The PQCM is responsible for verifying that the appropriate documentation is incorporated into the project files in a timely manner. Copies of plans and QC forms necessary to carry out fieldwork will be maintained on site during field work.

3.10 Laboratory Quality Control

The QC requirements for sampling and analysis are presented in the SAP (DON 2024a).

Each laboratory performing analysis for this project will hold current accreditation by ADEC and the Department of Defense (DoD) Environmental Laboratory Accreditation Program for each analytical method, matrix, and analyte, as applicable. Analyses will be performed according to requirements specified in the applicable analytical methods and the DoD Quality Systems Manual for Environmental Laboratories (DoD 2021) by the primary laboratory Eurofins-Seattle in Seattle, Washington, or a backup laboratory if identified in the SAP (DON 2024a), or via FCR. Updated or equivalent method versions may be used for analysis as long as the laboratory performing the analysis has the required accreditations.

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4 Waste Management Plan

4.1 Purpose

This Waste Management Plan addresses the procedures and controls that will be implemented during the fieldwork at the Former NARL in Utqiaġvik, Alaska. IDW generated during the sampling event will be handled as stated in this Waste Management Plan and in general accordance with 2019 NAVFAC Northwest SOP I-A-7, IDW Management (Appendix C). Several waste streams will be managed during the course of the field event as described in the following subsections. It is important to note that anticipated waste streams at the Airstrip and Powerhouse sites include PFAS-contaminated media, which require separate handling procedures for IDW. IDW management for PFAS-impacted media associated with the 2024 Shoreline Investigation sampling activities will be transported for off-site disposal, in accordance with ADEC rules and regulations for transport, treatment, and disposal of contaminated media as described in Alaska Administrative Code (AAC) Title 18, Chapter 75, Sections 75.325 and 75.370 (AAC 2023) and using the approval form presented in Appendix D. Previous sampling event results will be submitted to ADEC for review before disposing of IDW.

4.2 Anticipated Waste Streams

Anticipated waste streams to be managed during the planned field activities include:

- **Decontamination Water**—Most equipment that will be used during the field event is disposable and will not require decontamination. However, decontamination will be performed in general accordance with NAVFAC Northwest SOP III-I, Equipment Decontamination (Appendix C). Non-dedicated equipment (including drill rig equipment) will be decontaminated by scrubbing with a stiff brush in a solution of water and Liquinox™, rinsed twice with clean water, then thoroughly rinsing with deionized or distilled water. Decontamination water generated for the project (containing Liquinox™ or other detergent) will be collected in 5-gallon buckets. Non-dedicated equipment or materials will be decontaminated prior to leaving each area.
- **Soil**—Boring drill cuttings shall be containerized, stored, transported, and disposed of off-site.
- **Solid Wastes**—Solid wastes include, but are not limited to, nitrile gloves, disposable sampling spoons, and common trash. Common trash consists of paper, paper towels, and packaging. Food waste will be managed in accordance with the Polar Bear – Human Interaction Plan (Attachment C of the SSHP [Appendix E – DON 2024b]).

No reusable personal protective equipment (PPE) is anticipated during the field event. PPE is anticipated to be only lightly contaminated with petroleum from site contaminants, and currently, no PFAS meet the federal definition of hazardous waste (NAVFAC 2020). Therefore, disposable equipment, including PPE, is not considered hazardous waste. These wastes will be managed in garbage bags, comingled with common trash, and disposed of at the local incinerator or landfill.

Unused Laboratory Supplies—Unused preserved bottles containing *de minimis* and limited quantities will be packaged in coolers and shipped back to the laboratory for recycling or disposal.

4.3 Unanticipated Dangerous/Hazardous Waste

The following procedures apply to personnel when unanticipated potential dangerous/hazardous waste is encountered:

- Call 9-1-1 if waste is considered a threat to human health and the environment
- Notify the TOM and RPM/TOCOR, immediately
- Proceed as directed by the RPM/TOCOR and TOM (only after consultation and approval from the Director of Safety and Health)

5 Environmental Protection Plan

5.1 Purpose

The Environmental Protection Plan defines the environmental protection measures that will be implemented throughout the course of the fieldwork at the Former NARL in Utqiaġvik, Alaska. It describes procedures for compliance with environmental protection requirements, waste management, spill or release procedures and notification requirements for the project. Project personnel will be required to review and become familiar with these prior to commencement of field activities.

5.2 List of Applicable Laws and Regulations

Laws and regulations applicable to the performance of the activities planned in support of TO N44255-24-F-4038 are as follows:

- Oil Pollution Act Spill Prevention, Control, and Countermeasures Regulations, and Alaska Waste Water Disposal: 33 United States Code (USC) 1314; 33 Code of Federal Regulations (CFR) 320, 323; 40 CFR 230, 33 USC 1341(a), 40 CFR 112, and 18 AAC 72
- Federal Coastal Zone Management Act: 16 USC 1451-1464
- Clean Water Act: 40 CFR 122.26(b)(15)
- Hazardous Waste Operations and Emergency Response (HAZWOPER): 29 CFR 1910.120
- Resource Conservation and Recovery Act and Alaska Hazardous Waste Regulations: 40 CFR 260-268, 279; 18 AAC 62
- Alaska Solid Waste Management: 18 AAC 62
- Alaska Oil and Hazardous Substances Pollution Control: 18 AAC 75
- Endangered Species Act of 1973: 16 USC 1531-1544, 87 Stat. 884, as amended
- National Historic Preservation Act of 1966: 16 USC 470 et seq., as amended.

5.3 Land Use

DON will submit an application to the North Slope Borough for approval to conduct environmental sampling at the Former NARL site prior to mobilization. The letter will provide formal administrative approval and stipulations to conduct work within the designated area.

Upon approval, the permit will be included in Appendix E.

5.4 Noise

Noise levels, associated with drilling activity, are anticipated to be a disturbance to the local environment. Noise levels and controls for worker health and safety are addressed in the APP/SSHP (DON 2024b).

5.5 Biological Resources

The DON will submit an application to the U.S. Fish and Wildlife Service for consideration of the planned field events in relation to Section 7 of the Endangered Species Act (National Oceanic and Atmospheric Administration [NOAA] 2023) and determination if these activities are not likely to adversely affect listed eiders, polar bears, or polar bear critical habitat. Upon issuance of the Letter of Authorization, it will be included in Appendix F.

While on site, field personnel will report observations of listed eiders at the Former NARL to the RPM/TOCOR, who will in turn report these observations to the U.S. Fish and Wildlife Service.

5.6 Cultural Resources

The permit provided by the North Slope Borough (Section 5.3) includes cultural resource management stipulations. While there are gravesites within the general area, there are no known cultural resource sites located within the Former NARL Shoreline Investigation locations. If cultural resources are discovered while sampling, field personnel will immediately stop work, cordon off the area, and contact the RPM/TOCOR. Sampling may then proceed at another location.

5.7 Spill and Release Procedures

Project personnel will be familiarized with the response and reporting requirements contained herein. Table 5-1 lists the information for DON and EA contacts. Care will be exercised at all times to prevent oil and hazardous substances from entering the ground, drainage areas, or local bodies of water. A copy of ADEC's Oil & Hazardous Substance Spill Notification Form can be found in Appendix E.

The following oil and hazardous substances procedures will be followed to minimize the impact of a spill event to the environment during site work:

- The work area will be inspected daily for debris and potential water pollutants.
- A temporary drip pan will be placed under leaking equipment until the component can be isolated, repaired, or replaced.

- Leaked material will be cleaned up immediately in accordance with the spill response measures.
- Inspections will be documented, as well as mitigation measures taken for faulty equipment.

5.7.1 Emergency Spill Event

Table 5-1 presents the contacts and numbers for notification of an emergency spill. These numbers and procedures will be posted on site.

Table 5-1. Emergency Contact

Contact	Title	Affiliation	Telephone Number
Gilbert Manning	SSHO	EA	907-646-0217
Nicole Stoecklein	TOM	EA	[redacted]
David Nelson	EA Program Manager	EA	206-452-5348
William Kaage	RPM/TOCOR	NAVFAC Northwest	[redacted]
Steve Skeehan	NAVFAC NTR	NAVFAC Northwest	[redacted]
Anthony Neakok	Director	North Slope Borough Fire Department	[redacted]

Notes:
Alternate SSHO: Hallie Peterson; [redacted]
EA = EA Engineering, Science, and Technology, Inc., PBC
NAVFAC = Naval Facilities Engineering Systems Command Northwest
NTR = Navy Technical Representative
RPM = Remedial Project Manager
SSHO = Site Safety Health Officer
TOM = Task Order Manager
TOCOR = Task Order Contracting Officer's Representative

The telephone numbers for the regulatory agencies are listed below:

- ADEC 907-451-2121 or 800-478-9300 outside normal business hours.

5.7.2 Non-Emergency Spill Event

A non-emergency spill is defined as a discharge of a known material or hazardous substance that can be cleaned up by field personnel without posing an immediate threat to human health or the environment.

For a non-emergency spill:

- Stop the source of the spill if safe to do so.
- Contain the spill by keeping it away from drains or waterways and blocking off drains located near the spill if there is a chance the spill will reach them.
- Cleanup the spilled material while wearing the proper PPE.
- Handle the spill material and waste, such as the PPE or rags, in accordance with Section 4.2.

To report a non-emergency spill:

- Immediately notify the TOM and RPM/TOCOR.
- Prepare to complete an incident report, presented in Appendix D of the APP (DON 2024b). Notification of regulatory agencies may be required (be prepared to communicate the source of the spill, amount spilled, what was affected by the spill, etc. to the TOM and RPM/TOCOR).

5.8 Agency Inspections

In the event of unannounced visits by regulatory agencies or other outside parties, the Field Team Lead (FTL) will contact the RPM/TOCOR and the TOM. Corporate procedures will be followed for external inspections by regulatory agencies.

In the event an external party such as a client or regulator requests access to a project site for an inspection, the TOM should be notified in advance if possible. Clients may require an escort, depending on the project and site location. If a regulator arrives at a project site and requests an inspection, field personnel will request identification. Compliance officers must carry a photographic identification. Once the inspector's identification has been provided, the TOM should be immediately notified.

The inspector should be asked to wait until the NAVFAC Northwest RPM/TOCOR, Alternate RPM and/or NTR can arrive at the project site, if feasible. Regardless, an EA employee shall remain with the regulatory inspector at all times while at the project site, and carefully note the actions, pictures taken, or information requests made by the regulator.

A regulatory inspection will begin with an entrance conference with EA personnel prior to initiation of the inspection. The inspector will explain the purpose and scope of the inspection, the procedures that will be employed, and the plan for the site walk and records review. The inspector will also summarize the nature of the information to be obtained during the inspection and ask questions regarding issues related to the project.

The regulator will be briefed on the site-specific health and safety hazards associated with the field activities by either the RPM/TOCOR or the SSHO.

5.9 Training

The TOM, PQCM, FTL, and SSHO will collaborate to review the documentation that demonstrates project personnel have received the appropriate training prior to the start of site activities. The records of employee training will be available at the project site, the EA Anchorage office, or via electronic submission upon request.

General Awareness—Field personnel will participate in a project kickoff meeting prior to commencing field activities, which will include an overview of site-specific objectives and potential concerns. Project personnel must also read and understand the project plans (this document, APP/SSHP [DON 2024b], and SAP [DON 2024a]).

Hazard Communication Training—Under Occupational Safety and Health Administration (OSHA), field personnel must complete hazard communication training. Field personnel will receive this training upon mobilization.

Polar Bear Awareness—Personnel will read the *Polar Bear Human Interaction Plan and Safety Guidelines* (Attachment C of the SSHP [DON 2024b]) prior to the start of field activities.

40-Hour HAZWOPER Training—Field personnel will have current HAZWOPER training (including 8-hour HAZWOPER Refresher training if applicable), in accordance with OSHA.

8-Hour HAZWOPER Supervisor Training—The FTL and SSHO will have current 8-hour HAZWOPER Supervisor training, in accordance with OSHA.

Other training, such as first aid, is discussed in the APP/SSHP (DON 2024b).

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6 Project Organization

The following individuals will provide the designated support functions for this project:

- Program Manager: David Nelson
- TOM: Nicole Stoecklein
- Director of Safety and Health: Robert Marcase, CIH, CSP, CHMM
- QCPM: Frank Barranco, PhD, P.E., P.G., CMQ/OE
- PQCM: Eileen Maus
- PQAM: Sherri Wunderlich
- FTL: Gilbert Manning
- SSHO: Gilbert Manning (Alternate: Hallie Peterson)
- Project Chemist: Eileen Maus
- Database Manager: Denise Yee

The roles, responsibilities, organizational chart, and lines-of-authority for the majority of key professional staff positions are described in Section 1.4 of the QC Management Plan (EA 2020) and SAP Worksheets #5, #6, and #7 (DON 2024a). Qualified persons, subcontractors, and key QC personnel are discussed below.

This project will be managed by Qualified Environmental Professionals (QEPs) and Qualified Environmental Samplers as defined in Title 18 AAC 75.333 (AAC 2023). Alaska regulations in Title 18 AAC 75 (AAC 2023) require “QEP” status for those who have direct responsibility for the investigation and cleanup of a contaminated site. Specifically for this project, a QEP must prepare plans and reports, supervise sampling activities, make interpretations regarding data, and prepare corrective action reports.

In Title 18 AAC 75 (AAC 2023), a QEP actively practices in the field of environmental science or a related field and meets at least one of the following minimum education and experience requirements:

- Has a 4-year undergraduate or a graduate degree from a nationally or internationally accredited postsecondary institution in environmental science or another related scientific field and has completed at least 1 year of professional experience in contaminated site characterization and cleanup activities under the direct supervision of a QEP after the described degree was obtained.

- Has a 4-year degree from a nationally or internationally accredited post-secondary institution in any field or a 2-year associate degree from a nationally or internationally accredited postsecondary institution in environmental science, or another related scientific field, and has at least 3 years of professional experience in contaminated site characterization and cleanup activities under the direct supervision of a QEP.
- Is certified as an environmental technician under an apprenticeship program with a registration under 29 CFR Part 29 and has completed at least 3 years of professional experience in contaminated site characterization and cleanup activities under the direct supervision of a QEP completed after the described certification was obtained.

QEPs for this project include Nicole Stoecklein, Sherri Wunderlich, Eileen Maus, Gilbert Manning and Natali Hoeg. Their resumes are included in Appendix A.

7 Schedule

The field work for the 2024 Shoreline Investigation activities is planned to occur in August and/or September 2024. A detailed schedule will be discussed during the Operational Readiness Review and the Pre-Construction/Mutual Understanding Meeting(s). The proposed preliminary schedule is presented in Appendix G.

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Appendix A

Project Quality Control Manager Assignment Letter and Resumes of Qualified Environmental Professionals

- Eileen Maus
- Nicole Stoecklein
- Sherri Wunderlich
- Gilbert Manning
- Natali Hoeg
- Hallie Peterson

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EA Engineering, Science, and Technology, Inc., PBC

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Hunt Valley, MD 21031
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4 April 2024

Ms. Eileen Maus
EA Engineering, Science, and Technology, Inc., PBC
2200 6th Avenue, Suite 707
Seattle, Washington 98121

RE: Project Quality Control Manager Appointment
Contract No. N44255-20-D-6006
Task Order No. N44255-24-F-4038
Quality Control, Waste Management, and Environmental Protection Plan
for 2024 Shoreline Investigation
Former Naval Arctic Research Laboratory Airstrip and Powerhouse Sites
Utqiaġvik (Formerly Barrow), Alaska

Dear Ms. Maus:

This letter provides notification that you have been appointed as the Project Quality Control Manager (PQCM) for Task Order No. N44255-24-F-4038 of the referenced contract. You will be responsible for the quality of work on the job and for implementing the project-specific quality control requirements in accordance with the contract and approved plans. As the PQCM, you will have the authority and responsibility for suspending work if conditions adverse to quality are identified and for directing the correction of any nonconforming work.

As the PQCM, you have a direct reporting relationship to me for QC and issue resolution. You also have an indirect reporting relationship to the Project Manager to facilitate project/program execution.

If you have any questions, or need additional information, please contact me at 410-584-7000.

Sincerely yours,

EA Engineering, Science,
and Technology, Inc., PBC

F. J. Barranco, Jr. Ph.D., P.G.

Frank Barranco, PhD, PE, PG, CMQ/OE
Quality Control Program Manager

Eileen M. Maus
Chemist

Education
B.S./Chemistry/1991 (University of Alaska Fairbanks)

Specialized Training
OSHA 40-Hour Hazardous Waste Operations and Emergency Response Training; 1998
OSHA 8-Hour Hazardous Waste Operations and Emergency Response Refresher; 2024
Microsoft Access 2016 Training; 2019
UXO Awareness Training; 2023
USACE/Naval Facilities Engineering Systems Command Construction Quality Management Training; 2023
CPR and First Aid Training; 2023

Experience
Years with EA: 6 Total Years: 24

Mrs. Maus is a qualified chemist with over 24 years of experience in environmental engineering, laboratory analysis, research, and fieldwork.

Professional Experience

Chemistry—Managed environmental samples prior to shipping, during shipping, and through arrival at laboratory. Resolved any problems with samples associated with shipping. Reviewed, evaluated, and qualified laboratory data for various federal clients (U.S. Army Corps of Engineers, Air Force Civil Engineer Center, Federal Aviation Administration), and other non-federal clients (SWS and Federal Express). Much of the contracted laboratory data review was for Formerly Used Defense Sites, Defense Environmental Response Program, or Underground Storage Tanks. Wrote and prepared quality assurance and quality control reports. Wrote and prepared Sampling Analysis Plans, Work Plans, Quality Assurance Project Plans, summary reports, Remedial Investigation Reports, Remedial Acton Reports, Chemical Data Quality Review Reports, and Site Closure Reports. Evaluated third party laboratory data against primary laboratory data. Conferred with laboratory managers and project leaders to improve data quality.

Environmental Sampling—Collected groundwater, surface water, and surface and subsurface soil samples for analysis and characterization. Screened samples using field screening tests kits immunoassay test kits.

Field Quality Assurance Audit—Conducted field audits, which included observation of field team routines and sampling, to ensure project requirements and quality assurance project plan objectives were met. Implemented correction actions as well as presented audit findings.

Laboratory Audit—Conducted laboratory audits to ensure legally defensible data, meeting state and federal analytical requirements and all project objectives.

Laboratory Chemical Analysis—As an Inorganic Analyst, operated and maintained the ICP, ensuring that all inorganic U.S. Environmental Protection Agency drinking water methods, soil methods, and client requirements were met and maintained. Extracted soil and water samples for inorganic analysis for fuel samples. Developed a method and wrote a Standard Operating Procedure for testing total organic carbon in soil and was approved by the U.S. Environmental Protection Agency.

EA Project Experience

Supplemental Remedial Investigation & Supplemental Remedial Action Formerly Used Defense Site Lake Lousie Recreation Camp, Alaska Project Code: AFC095; Chemist—Responsible for assisting in the Supplemental Remedial Investigation Report for Site OT001, Tank Trailers Area at the Lake Louise Recreation Camp, Alaska, including the Data Usability Assessment Report, Alaska District Environmental Conservation checklists, database management, manual for electronic deliverable deliverables, and Environmental Resources Program Information Management deliverables. The goals of the Supplemental Remedial Investigation were to gain further understanding of the project site conditions and to determine the nature and extent of the diesel range organics and polycyclic aromatic hydrocarbons in subsurface soil in the vicinity of the Tank Trailers Area and Lake Louise Recreation Camp.
Project Date: September 2022 – Present

Project Value – $104,144; Contract Type – Firm Fixed Price; EA Project No. – 6359605; EA Project Manager – Nicole Stoecklein

Adak Long-Term Monitoring and Free Product Recovery, Former Adak Naval Air Facility, Adak, Alaska; U.S. Navy, Naval Facilities Engineering Systems Command; Northwest Division; Project Chemist/Quality Control Manager (2023)—Responsible for quality planning documents and reports; provides technical support to field crews to ensure sampling is performed appropriately; selects, procures, and oversees laboratory and data validation subcontractors; reviews subcontractor deliverables to evaluate if project objectives were met; identifies deviations and develops corrective actions to resolve issues and prevent reoccurrences; and manages data.
Project Date: 2021 – Present
Project Value – $278,256 (2021) ;$577,022 (2022); $295,202 (2023); Contract Type – LS; EA Project No. – 6354428; 6354435;6354465; EA Project Manager –Nicole Stoecklein

Annual Long-Term Monitoring and Operation and Maintenance at the Former Naval Arctic Research Laboratory, Utqiagvik (Barrow), Alaska; Naval Facilities Engineering Systems Command Northwest; Project Chemist/Quality Control Manager (2023)—Responsible for quality planning documents and reports; provides technical support to field crews to ensure sampling is performed appropriately; selects, procures, and oversees laboratory and data validation subcontractors; reviews subcontractor deliverables to evaluate if project objectives were met; identifies deviations and develops corrective actions to resolve issues and prevent reoccurrences; and manages data..
Project Dates: April 2020 – Present
Project Value – $144,506 (2021), $222,461 (2022); $171,641 (2023); Contract Type – LS; EA Project No. – 6354429; 6354444; 6354468; EA Project Manager – Nicole Stoecklein

Annual Long-Term Monitoring and Operation and Maintenance at the Former Distant Early Warning Line Station, Point McIntyre, Alaska; Naval Facilities Engineering Systems Command Northwest; Project Chemist—Responsible for quality planning documents and reports; provides technical support to field crews to ensure sampling is performed appropriately; selects, procures, and oversees laboratory and data validation subcontractors; reviews subcontractor deliverables to evaluate if project objectives were met; identifies deviations and develops corrective actions to resolve issues and prevent reoccurrences; and manages data.
Project Date: March 2020 – Present
Project Value – $197,150 (2020); $229, 351 (2021); $219,935(2022); $212,228 (2023);Contract Type – Lump Sum; EA Project No. – 6354411, 6354423, 6354441 and 6354467; EA Project Manager – Nicole Stoecklein

Haskell Corporation; Repair of Central Heat and Power Plant Turbine Generators, Eielson AFB, Alaska; Project Chemist—Responsible for reports; provides technical support to field crews to ensure sampling is performed appropriately; selects, procures, and oversees laboratory and data validation subcontractors; reviews subcontractor deliverables to evaluate if project objectives were met; identifies deviations and develops corrective actions to resolve issues and prevent reoccurrences; and manages data.
Project Dates: February 2022 – Present
Project Value – $250,000; Contract Type – Fixed Price; EA Project No. – 6379401; EA Project Manager – Travis Hines

Nome Tank Site "E" Petroleum, Oil, and Lubricants Contamination Nome Area Defense Region, Nome Alaska; U.S. Army Corps of Engineers–Alaska District; Project Chemist—Responsible for quality planning documents and reports; provides technical support to field crews to ensure sampling is performed appropriately; selects, procures, and oversees laboratory and data validation subcontractors; reviews subcontractor deliverables to evaluate if project objectives were met; identifies deviations and develops corrective actions to resolve issues and prevent reoccurrences; and manages data.
Project Date: July 2022 – Present
Project Value – $98,825; Contract Type – Lump Sum; EA Project No. – 6359605; EA Project Manager – Travis Hines

U.S. Army Corps of Engineers–Alaska District; Groundwater Well Survey and Sampling Plan – Salcha Gravel Pits Release; Chemist—Responsible for planning documents, Sampling and Analysis report including the Chemical Data Quality Review report, Alaska District Environmental Conservation checklists, database

management, and manual for electronic deliverable deliverables. The task objectives include a survey of residential drinking water wells, planning and performing groundwater sampling, and reporting in response to the Alaska Department of Environmental Conservation investigation of a release at Rolling Stone Gravel Pits, Salcha, Alaska.
Project Date: May 2020 – 2021
Project Value – $193,748; Contract Type – Firm Fixed Price; EA Project No. – 6333702; EA Project Manager – Travis Hines

611th Environmental Long-Term Monitoring, Institutional Control Inspections, and Maintenance at Multiple Bases, Southern Alaska; Chemist—Responsible for planning documents, including Alaska District Environmental Conservation checklists, database management, and manual for electronic deliverable deliverables. This included field planning, field execution and reporting for the following installations: Bethel Radio Relay Site (RRS), Cape Newenham Long Range Radar Station (LRRS), Cape Romanzof LRRS, Driftwood Bay RRS, Nikolski RRS, Port Heiden RRS. The overall project effort included long-term monitoring/maintenance and/or land use control and institutional control inspections at a total of 27 sites across the 6 Installations. Fieldwork included collection of soils, surface water, and/or groundwater samples, and site conditions as required by the Pacific Air Forces Regional Support Center Land Use Control Management Plan.
Project Date: May 2020 – 2021
Project Value – $266,347; Contract Type – FP; EA Project No. – 6333701; EA Project Manager – Mark Wilkinson

611th Environmental Long-Term Monitoring, Institutional Control Inspections, and Maintenance at Multiple Bases, Northern Alaska; Chemist—Provided support for the implementation of this project from planning to field execution and reporting for the following installations: Oliktok RRS, Campion RRS, Indian Mountain LRRS, Kalakaket RRS, Kotzebue RRS, North River RRS, Point Barrow RRS, West Nome RRS, Sparrevohn LRRS, and Tatalina LRRS. The overall project effort included long-term monitoring/maintenance and/or land use control and institutional control inspections at a total of 27 sites across the 6 Installations. Fieldwork included collection of soils, surface water, and/or groundwater samples, and site conditions as required by the Pacific air Forces Regional Support Center Land Use Control Management Plan.
Project Date: 2020–2021
Project Value – $658,149; Contract Type – FP; EA Project No. – 6333703; EA Project Manager – Mark Wilkinson

Annual Long-Term Monitoring and Operation and Maintenance at the Former Naval Arctic Research Laboratory, Utqiagvik (Barrow), Alaska; Naval Facilities Engineering Systems Command Northwest; Chemist—Responsible for supporting planning and reporting of long-term monitoring, sediment, surface water, and groundwater sampling at a remote location. The project also includes sampling of shallow wells influenced by local winds and tides as well replacements, covering three areas of concern on the Navy and Air Force property.
Project Dates: June 2020 –2021
Project Value – $145,843; Contract Type – LS; EA Project No. – 6354405; EA Project Manager – Melissa Becker

U.S. Army Corps of Engineers–Alaska District; Alaska Air Force Fence to Fence; Chemist—Responsible for supporting field sampling and providing data review. The objectives of this contract are to provide environmental compliance support activities necessary to support U.S. Air Force and Air Force Civil Engineer Center environmental requirements. Activities include but are not limited to: Environmental Compliance Support; Air Emissions Inventory Data Management; Recordkeeping, Title V; Recordkeeping, Minor and Minor General; Reporting, Emergency Planning and Community Right-to-Know Act (EPCRA); Installation Hazardous Materials Management Program Manager Support; Hazardous Waste Management Support; Hazardous Waste Management Plan Update; Hazardous Waste; Recycling, Integrated Solid Waste; Other Regulated Waste; Pollution Prevention; Sampling, Analysis and Monitoring (SAM); Plan Updates; Environmental Media Inspections; Spill Prevention Control and Countermeasure Recertification/Facility Response Plan Resubmission; Oil Discharge Prevention and Contingency Plan (C-Plan); Oil Discharge Prevention and Contingency Plans; Stormwater Reports. Examples of specific services include tasks such as operating, maintaining, and optimizing pollution control; characterizing waste streams; performing environmental monitoring, sampling, and analysis; operating a hazardous waste accumulation site; inspections, and updating existing environmental plans.

Specifically, EA will execute tasks in the following media areas: EPCRA and Air Quality Support at all installations and Water Quality Support at Joint Base Elmendorf-Richardson (JBER). EA is supporting the following tasks for FY21 (January 2021 – January 2022): FY21 Eielson Air Force Base Air Quality Air Emission Inventory Data Management, FY21 CAS Air Quality Title V Permit Renewal, FY21 Pacific Air Forces Regional Support Center EPCRA Reporting Tier2/TRI, National Pollutant Discharge Elimination System (NPDES) Reports FY21, NPDES Wastewater SAM FY21, Stormwater Municipal Separate Storm Sewer System (MS4) SAM FY21, Stormwater Multi-Sector General Permit SAM FY21, FY21 Pacific Air Forces Regional Support Center Air Quality Greenhouse Gas Recordkeeping EAS, SAM NPDES Other Wastewater per- and polyfluoroalkyl substances (PFAS) Testing, SAM Stormwater MS4 Stormwater Impacts and SAM Stormwater Multi-Sector General Permit Benchmark Sampling.
Project Dates: January 2021 – Present
Project Value – $422,058; Contract Type – Fixed Price; EA Project No. – 6360302; EA Project Manager – Travis Hines

Phase II Source Evaluations (FTQW20197103), Supplemental Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision for Various Sites (FTQW20197669) and a Background Study for Polycyclic Aromatic Hydrocarbons (FTQW20197105) at Eielson Air Force Base, Alaska; Air Force Civil Engineer Center; Project chemist for the Phase II Source Evaluations (FTQW20197103), Supplemental Remedial Investigation, Feasibility Study, and Decision Document for Various Sites (FTQW20197669) and conduct a background study for polycyclic aromatic hydrocarbons (FTQW20197105) at Eielson Air Force Base, Alaska. Responsibilities include preparation of Uniform Federal Policy-Quality Assurance Project Plans, data management, sample management, field audit, data validation, Chemical Data Quality Review report, Alaska District Environmental Conservation checklists, database management, and electronic data deliverables as well as evaluate results against state regulatory action levels.

Tasks associated with the supplemental remedial investigation include preparing planning documents, advancing soil borings, soil sampling, installing groundwater, groundwater sampling, evaluation of vapor intrusion pathways, vapor sampling, surface soil background polycyclic aromatic hydrocarbons sampling, soil polycyclic aromatic hydrocarbons fingerprinting, and reporting. Specifically, EA advanced over 150 soil borings, install/developed over 100 temporary and permanent monitoring wells, collect vapor intrusion samples at four different locations, as well as prepare a Remedial Investigation Report, prepare a Supplemental Site Characterization Report, and prepare a Feasibility Study based on information from the remedial investigation and perform a polycyclic aromatic hydrocarbons study on or near Eielson Air Force Base at 80 unique locations and then prepare an Informal Technical Information Report based on the polycyclic aromatic hydrocarbon findings.
Project Date: July 2019 – Present
Project Value – $2,222,320; Contract Type – Firm Fixed Price; EA Project No. –1535925; EA Project Manager – Travis Hines

Expanded Perfluorooctanoic Acid (PFOA) and/or Perfluorooctanesulfonic Acid (PFOS) Site Inspection, Eielson Air Force Base, Alaska; U.S. Army Corps of Engineers—Chemist for the Site Inspection to further delineate known PFOA/PFOS groundwater contamination migrating off Eielson Air Force Base to the community of Moose Creek. Tasks associated with the expanded site inspection include preparing planning documents, advancing soil borings and installing groundwater monitoring wells, groundwater sampling, and reporting. Includes installing five permanent nested well arrays with four sets of wells each array and depths to 210 ft below ground surface. Also includes installation of multiple shallow groundwater monitoring wells, SP16 samples, and soil borings. Results from more than 70 groundwater and soil samples analyzed using U.S. Environmental Protection Agency Method 537 modified compliant with Department of Defense Quality Systems Manual with no incidence of cross-contamination in the field or laboratory results. Evaluated results against state regulatory action levels. Responsibilities include preparation of Uniform Federal Policy-Quality Assurance Project Plans, data validation, Chemical Data Quality Review report, Alaska District Environmental Conservation checklists, database management, and manual for electronic deliverable deliverables.
Project Date: December 2018 – Present
Project Value – $1,421,908; Contract Type – Firm Fixed Price, EA Project No. – 6321403; EA Project Manager – Mark Wilkinson

Alaska Installations PFOA and/or PFOS Preliminary Assessments at 12 Radar Sites and Site Inspections at 6

Radar Sites and Eareckson Air Station, Alaska, and a Site Inspection at Wake Air Station; U.S. Army Corps of Engineers—Chemist for the site inspections at 6 radar sites and at Wake Island Air Station and Eareckson Air Station to evaluate the presence/absence of soil and/or groundwater for PFOA and PFOS contamination. Assisted with logistical coordination of shipping equipment and supplies to the site via commercial and charter aircraft and maintained compliance with holding times. Results from more than 50 soil and water samples, using U.S. Environmental Protection Agency Method 537 (modified) compliant with Department of Defense Quality Systems Manual with no incidence of cross-contamination in the field or laboratory results. Responsibilities include preparation of Uniform Federal Policy-Quality Assurance Project Plans, data validation, Chemical Data Quality Review report, Alaska District Environmental Conservation checklists, database management, and manual for electronic deliverable deliverables.
Project Date: December 2018 – Present
Project Value – $2,010,242; Contract Type – Firm Fixed Price, EA Project No. – 6321405; EA Project Manager – Mark Wilkinson

Site Characterization Orphan Drum Sites DA119 and DA122; Joint Base Elmendorf-Richardson, Alaska; U.S. Army Corps of Engineers—Chemist for a Site Characterization to delineate nature and extent of contamination associated with drums orphaned. Tasks associated include preparing planning documents, advancing soil borings, soil sampling, installing groundwater, groundwater sampling, and reporting. Responsibilities include preparation of Uniform Federal Policy-Quality Assurance Project Plans, Alaska District Environmental Conservation checklists, Chemical Data Quality Review report, database management, and manual for electronic deliverable deliverables as well as to conduct quality field audit and implement corrective actions as necessary.
Project Date: 2019 – July 2020
Project Value – $587,240; Contract Type – LS; EA Project No. – 6321404; EA Project Manager – Michael Jones

Investigation of Presence/Absence of PFAS Contamination in Soils at Federal Express Anchorage International Airport; Federal Express; Chemist—Supported the planning and reporting documents associated with determining the presence/absence of possible PFAS contamination in soils immediately under portions of the Federal Express aircraft ramp pavement at Ted Stevens Anchorage International Airport. The investigation supported a 3-year ramp pavement repair/replacement project that began in June 2020. Responsible for data management and Alaska District Environmental Conservation checklists.
Project Date: February–October 2020
Project Value – $55,993; Contract Type – CPM; EA Project No. – 1536308; EA Project Manager – Michael Jones

Site Investigation of PFAS and Diesel Range Organics/Residual Range Organics-Contaminated Soils and Groundwater; Anchorage, Alaska; Federal Express; Chemist—Supporting the Letter Work Plan and post-field effort Technical Memorandum related to site investigation activities at the Federal Express facility at Ted Stevens Anchorage International Airport. Responsible for planning, coordinating logistics for, and leading field effort to collect soil and groundwater samples to support Federal Express in decision making related to Federal Express facility expansion. Responsible for data management and Alaska District Environmental Conservation checklists.
Project Date: May 2021 – Present
Project Value – $25,000; Contract Type – T&M; EA Project Nos. – 1536312 and 1536313; EA Project Manager – John Jones

Vault Release Investigation of PFAS Contamination in Soils; Federal Express; Chemist—Supported the planning and reporting documents associated with investigating the extent of PFAS contamination in soils near Manhole MH1 of the underground wastewater collection vault system adjacent to the Federal Express Hangar at 5801 Lockheed Avenue at the Ted Stevens Anchorage International Airport Hangar in Anchorage, Alaska. Conducted field activities including drilling soil borings, logging soil lithologies, interpreting soil cores, and collecting soil samples. Responsible for data management and Alaska District Environmental Conservation checklists.
Project Date: May–October 2020
Project Value – $9,395; Contract Type – CPM; EA Project Nos. – 1536309, 1536310; EA Project Manager – Michael Jones

Finalize Draft Removal Action/Remedial Investigation Report Containerized Hazardous, Toxic, and Radioactive Waste Removal Action and Remedial Investigation, Tigalda Island, Alaska; U.S. Army Corps of Engineers–Alaska District; Chemist—Responsible supporting the Draft and Final versions of a removal action/remedial investigation report for a Formerly Used Defense Site on an island in remote Alaska. The project included federal and state agency stakeholders with contrasting priorities; comments from all stakeholders were resolved through meetings and addressed in the document. Project deliverables were Manual of Electronic Deliverable compliant. The project was delivered on time with no additional fee.
Project Dates: May–November 2020
Project Value – $59,000; Contract Type – LS; EA Project No. – 6321406; EA Project Manager – Melissa Becker

Formerly Used Defense Site Tigalda and Unalga Islands, Aleutians Island Alaska; U.S. Army Corps of Engineers–Alaska District—Chemist under subcontract to Kaktovik Environmental, LLC (formerly Marsh Creek, LLC) to support 2018 Removal Action and Remedial Action at Tigalda Island. Responsibilities include data validation, Chemical Data Quality Review report, Alaska District Environmental Conservation checklists, database management, manual for electronic deliverable deliverables. Site contains a mixture of petroleum, oil, and lubricants and polycyclic aromatic hydrocarbon-contaminated soils.
Project Date: November 2018 – October 2019
Contract Type – $465,260.31, EA Project No. – 1554701; EA Project Manager – Mike Jones

Formerly Used Defense Site Eielson Farm Road AAA Site 2018 Monitoring Well installation and Sampling; Eielson Air Force Base, Alaska; U.S. Army Corps of Engineers–Alaska District—Chemist under subcontract to Kaktovik Environmental, LLC to support the site investigation. Responsibilities include data validation, Chemical Data Quality Review report, Alaska District Environmental Conservation checklists, database management, manual for electronic deliverable deliverables.
Project Date: March–October 2019
Contract Type –$24,227; EA Project No. – 6332801; EA Project Manager – Sharon Richmond

Remedial Investigation, Celtor Chemical Works; Hoopa, California; U.S. Environmental Protection Agency Region 9—Chemist support for an investigation at former ore concentrating facility located within the Hoopa Valley Indian Reservation. The facility processed sulfide ore for copper, zinc, and completed precious metal extraction. Responsibilities included database management for creating ecological screening tables, and human health risk tables for risk assessors.
Project Date: March 2019 – Present
Project Value – $545,000; Contract Type – CPM; EA Project No. – 1518922; EA Project Manager – Sheena Styger

Supplemental Remedial Investigation/Feasibility Study/Proposed Plan/Record of Decision at Sites SS001 and SS007 Murphy Dome Long Range Radar Station, Alaska; U.S. Army Corps of Engineers–Alaska District; Chemist—Responsible for technical review of data reviews, Alaska Department of Environmental Conservation checklists, and writing Chemical Data Quality Review reports. Site investigation consists of advancing 75 direct-push borings, and collecting and analyzing 200 soil samples and 1 seep water sample to supplement existing site data and to allow for determining maximum extent of contamination. Contaminants of concern at this site are gasoline range organics, diesel range organics, residual range organics, benzene, polycyclic aromatic hydrocarbons, trichloroethene, tetrachloroethene, pesticides, ethylene dibromide, and total lead.
Project Date: November 2018 – July 2020
Project Value – $849,212; Contract Type – Fixed Price; EA Project No. – 63214087; EA Project Manager – Michael Jones

Employment History

Employer—EA Engineering, Science, and Technology, Inc., PBC (Anchorage, Alaska)
Dates of Employment—October 2018 – Present
Title—Chemist III

Employer—Argon, Inc. (Anchorage, Alaska)
Dates of Employment—June 2010 – December 2014

Title—Senior Chemist

Employer—EMM Technical Services, LLC (Chugiak, Alaska)
Dates of Employment—January/2007 – December 2010
Title—Partner, administrator

Employer—EMM Data Review (Chugiak, Alaska)
Dates of Employment—January 2005 – January 2007
Title—Owner, Chemist

Employer—MWH (formerly Montgomery Watson) (Anchorage, Alaska)
Dates of Employment—May 1998 – December 2004
Title—Senior Chemist

Employer—SGS (formerly CT&E) (Anchorage, Alaska)
Dates of Employment—May 1994 – May 1998
Title—ICP analyst

Employer—National Oceanic and Atmospheric Administration (Anchorage, Alaska)
Dates of Employment—May–August 1989
Title—Technician

List of Technical Skills and Specializations

- Data validation and assessment
- Electronic data management
- Environmental laboratory audits
- Manual of Electronic Deliverable for U.S. Army Corps of Engineers–Alaska District
- Proficient with Microsoft™ Excel, Word software
- Quantitative analysis of inorganic chemical constituents following U.S. Environmental Protection Agency, and Standard Methods guidelines

Nicole R. Stoecklein, P.G., CPG
Geologist

Ms. Stoecklein is a registered Professional Geologist at EA's Fairbanks, Alaska office. She has 18 years of experience primarily conducting site investigations, site characterizations, long-term monitoring, and remediation at private, commercial, and military locations. Ms. Stoecklein has worked interchangeably as a project manager, task manager, field team lead/coordinator, and trainer of alternative staff.

Ms. Stoecklein is experienced in conducting environmental site assessments, environmental investigations, site characterizations, environmental monitoring and remediation, environmental compliance, and community relations. In addition, she has experience with working with surface and subsurface mining impacts, watershed assessments, and watershed remediation projects. Ms. Stoecklein has authored numerous Phase I, Phase II environmental site assessments, work plans, and reports alike for private, commercial, and Department of Defense clients.

Education
B.S./Geology/2005 (University of Texas, San Antonio)

Registrations/Certifications
Registered Professional Geologist—AK (2016, No. 112894)
Certified Professional Geologist, AIPG—(2016, No. 11842)

Specialized Training
OSHA 40-Hour Hazardous Waste Operations and Emergency Response Training; 2013
OSHA 8-Hour Hazardous Waste Operations and Emergency Response Refresher; February 2023
OSHA 8-Hour Hazardous Waste Operations Supervisor Training; 2013
OSHA 30-Hour Construction Safety Training; March 2019
Certified Erosion and Sediment Control Lead—Alaska (AGC–21–0179); 2021
Department of Transportation Hazardous Materials Basic General Awareness Training; 2022
Department of Transportation Hazardous Materials Hazardous Materials Carrier Requirements—Air/IATA Training; 2022
EA Project Manager Training; 2023
Wildlife Awareness Training; 2020
UXO Awareness Training; 2023
CPR, First Aid, and AED Training; January 2023

Experience
Years with EA: 11 Total Years: 18

Professional Experience

Environmental Sampling—Experienced in characterization of soils, sampling of media including groundwater, soil (surface and subsurface), sediment, surface water, and vapor gas primarily at contaminated sites. Provided oversight and task management of multiple large scale groundwater monitoring programs, groundwater monitoring well installations, and soil excavation projects.

Per- and Polyfluoroalkyl Substances (PFAS)-Specific Sampling—Experienced in sampling, training, and implementing specific field and post-field protocols pertaining to collection and reporting of PFAS analysis.

Vapor Intrusion Investigation—Practiced in leading, installation, sampling, and reporting on vapor gas intrusion investigations relating to human inhalation/health impacts.

Underground Injection Controls Identification and Removal—Practiced in investigating the construction of underground injection controls, sampling material contained in underground injection controls, and decommissioning of such structures.

Monitoring Well Installation—Experienced in characterizing surface and subsurface lithology, logging soil cores, drilling oversight (hollow-stem auger, air rotary, and direct-push drilling technologies), oversight of well completion, installation, and construction activities, conducting well development, and monitoring groundwater quality parameters using professional instrumentation.

Phase I/Phase II Environmental Site Assessments—Performed Phase I environmental site assessments including site visits, historical research documents, and report writing. Assisted with Phase II site investigations and reporting.

Air Quality Monitoring/Sampling—Involved in collecting, monitoring, and evaluating air quality data in reference to hazardous material zones on land and water.

Hazardous Materials Removal—Assisted with removal of hazardous materials on seashores and in remote/sensitive ecological environments, as well as identifying hazardous wastes in open waters.

Watershed Observations/Surface Water Monitoring—Inspected surface water and stream bed conditions; collected data on stream conditions, water flow, and water quality relating to past, present, and future mining operations. Compiled data and reports; presented information to the client and state agencies.

Safety and Health—Experienced in implementation and compliance of site safety and health plans and oversight; served as the Site Safety and Health Officer (SSHO) on Department of Defense and commercial projects.

EA Project Experience

Adak Free Product Recovery, Operable Unit A, DVD Maintenance, and Long-Term Monitoring (as applicable), Former Adak Naval Air Facility, Adak, Alaska; U.S. Navy, Naval Facilities Engineering Systems Command; Northwest Division; Field Technical Lead, SSHO, and Task Order Manager—Responsible for coordinating logistics throughout the course of project execution for monthly on-island mobilizations, procurement of equipment, supplies, and subcontractors for on-island execution, coordination with stakeholders and on-island residents. Responsible for executing and training alternative staff and on-island subcontractors to satisfy contractual obligations, including free product recovery, boom maintenance, waste management, and sampling of various media. Lead author on various project plans and reports. Responsible for managing all aspects of the project including personnel, scope, schedule, and budget. Responsible for ensuring compliance with project plans.
Project Date: April 2021 – Present, numerous projects
Project Values – $278,256 (2021); $577,022 (2022); $295,202 (2023) Contract Type – Lump Sum (LS); EA Project Nos. – 6354428; 6354435; 6354465; EA Project Manager – Nicole Stoecklein (for 6354435 + 6354465)

Annual Long-Term Monitoring, Operation and Maintenance, and Treatment Plant Repair (as applicable) at the Former Naval Arctic Research Laboratory, Utqiagvik (Barrow), Alaska; Naval Facilities Engineering Systems Command Northwest; Field Lead, SSHO, and Task Order Manager—Responsible for the coordination, shipment, and storage of logistics, field lead on execution (long-term groundwater monitoring, installation of monitoring wells, sediment sampling, surface water sampling, supporting professional survey, maintenance, and inventory), coordination, procurement, and oversight of subcontractors including treatment building repairs, waste disposal, professional survey, and laboratory; authoring work plans and support on reporting. Additional efforts include securing local bear guards, land use permitting, dig permits, site access, lodging (where restricted), and access to on-site treatment plant. Managing all aspects of the project including personnel, scope, schedule, and budget.
Project Dates: April 2020 – Present, numerous projects
Project Value – $144,506 (2021), $222,461 (2022); $171,641 (2023); Contract Type – LS; EA Project Nos. – 6354429; 6354444; 6354468; EA Project Manager – Nicole Stoecklein (for 6354444 + 6354468)

Annual Long-Term Monitoring and Operation and Maintenance at the Former Distant Early Warning Line Station, Point McIntyre, Alaska; Naval Facilities Engineering Systems Command Northwest; Report Author and Task Order Manager—Responsible for concluding the 2022 annual post construction monitoring report and closeout of the 2022 project, task order manager for all aspects of the 2023 project including personnel, scope, schedule, budget, assignment of staff to authoring work plans and annual report tasks, procurement of subcontractors, land use permits, specialized equipment for access to the site, assistance on work plans and reporting; coordination and attendance of meetings with staff and client(s).
Project Date: July 2020 – Present, numerous projects
Project Value – $197,150.75 (2020); $229, 351.48 (2021); $219,935 (2022); $212,228 (2023); Contract Type – Lump Sum; EA Project Nos. – 6354411, 6354423, 6354441 and 6354467; EA Project Manager – Nicole Stoecklein (for 6354441 + 6354467)

Site Inspections for PFAS-Impacted Sites Army National Guard Installations, Nationwide—Project geologist, field lead, and report author responsible for completing a site inspection at 1 of 44 Army National Guard facilities in 1 of 24 states and territories (including West Virginia, Virginia, Delaware, New York, Rhode Island, New Hampshire, Wisconsin, Louisiana, Arkansas, Kansas, Kentucky, Indiana, Nebraska, Colorado, New Mexico, North Dakota, South Dakota, Oregon, Nevada, Alaska, Hawaii, Virgina Islands, Guam, and Puerto Rico) where aqueous

film-forming foam or other PFAS releases are suspected. Role included logistics, field coordination with international airport staff and Air National Guard staff for site access, field execution, sample management, and reporting for a site inspection at Juneau facility to determine whether a release of PFAS occurred as a result of previous Army National Guard operations posing an unacceptable risk to human health and the environment. The Army National Guard program under which the site inspections were performed follows the 2019 Memorandum from the Assistant Secretary of Defense Department of Defense, which adopted Screening Levels for soil and groundwater for three compounds: perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid **(**PFOA), and perfluorobutanesulfonic acid. Information from the site inspection field investigation including sampling results is used to refine the conceptual site model and determine if an area of interest/site requires, a time critical removal action (i.e., receptors consuming potentially contaminated groundwater), further study consisting of supplemental site inspection sampling or a remedial investigation or no further action. The refined conceptual site model is presented in the Site Inspection Report along with a recommendations on the path forward.
Project Date: August 2020 – Present
Project Value – $7,668,521; Contract Type – PBC with Options; EA Project No. – 634250383; EA Project Manager – Michael O'Neill

PFAS Mitigation and Miscellaneous Tasks at 8 Air Force Installations, Various Alaska locations; EA Field Lead and Logistical Coordinator—Provide time-sensitive actions for eight U.S. Air Force installations and the surrounding residential areas that may be contaminated with PFAS; surveying and identifying residents who potentially require drinking water mitigation services; then providing mitigation services for impacted residences, businesses, or other facilities. Current awarded tasks include providing public outreach, performing a drinking water well survey within a 4-mile radius, sample drinking water wells within a 1-mile radius, and off-base water sampling and analysis for Joint Base Elmendorf-Richardson, Cape Romanzof Long Range Radar Site (LRRS), Cape Newenham LRRS, Indian Mountain LRRS, Point Barrow LRRS, Sparrevohn LRRS, and Tatalina LRRS. Optional tasks include drinking water well survey, drinking water well sampling, and off-base water sampling and analysis for Clear Air Station, installation of Point of Entry Treatment Systems, Point of Use Treatment Systems, additional off-base water sampling, and bottled water delivery.
Project Date: 2020 – Present
Project Value – $877,111; Contract Type – FP; EA Project No. – 1575802; EA Project Manager – Mark Wilkinson

Conduct Phase II Source Evaluations (FTQW20197103), Supplemental Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision for Various Sites (FTQW20197669) and conduct a Background Study for Polycyclic Aromatic Hydrocarbons (FTQW20197105) at Eielson Air Force Base (AFB), Alaska; Air Force Civil Engineer Center (AFCEC); Project Geologist, Field Lead, Report Author—Conduct a Phase II Source Evaluation (FTQW20197103), Supplemental Site Characterization Remedial Investigation, Feasibility Study, and Decision Document for Various Sites (FTQW20197669) as well as conduct a background study for polycyclic aromatic hydrocarbons (FTQW20197105) at Eielson AFB, Alaska. Fieldwork included collection of 150+ soil borings, installation and sampling of 100+ temporary monitoring wells, vapor intrusion samples across three buildings; prepare a Remedial Investigation Report, a Supplemental Site Characterization Report with an inclusive Feasibility Study based on information from the remedial investigation; perform a polycyclic aromatic hydrocarbons study on or near Eielson AFB at 80 unique locations and prepare an Informal Technical Information Report based on the polycyclic aromatic hydrocarbon findings.
Project Date: July 2019 – Present
Project Value – $2,222,320; Contract Type – Firm Fixed Price; EA Project No. –1535925; EA Project Manager – Travis Hines

Diesel Range Organics Fractionation and PFAS Sampling at the Former Naval Arctic Research Laboratory, Utqiagvik (Barrow), Alaska; Naval Facilities Engineering Systems Command Northwest; Geologist, Field Lead—Responsible for logistics, field execution (including groundwater monitoring from 16 wells and soil sampling from 6 locations) for analysis of diesel range organics and PFAS in accordance with project decision documents and reporting of analytical findings at a remote site. The project includes conducting soil sampling for PFAS at two areas of concern, groundwater sampling for PFAS at one area of concern, and diesel range organics sampling at two areas of concern.
Project Dates: October 2020 – August 2022
Project Value – $102,000; Contract Type – LS; EA Project No. – 6354413; EA Project Manager – Melissa Becker

U.S. Army Corps of Engineers (USACE)–Alaska District; Groundwater Well Survey and Sampling Plan – Salcha Gravel Pits Release; Geologist—The objective of this project was to identify private drinking water wells within a 0.25-mile vicinity of a potential contamination release and sample raw water from the identified residential wells**.** Performed domestic water well sampling at residential homes, sample management, and reporting in response to the Alaska Department of Environmental Conservation investigation of a contamination release at Rolling Stone Gravel Pits, Salcha, Alaska.
Project Date: May 2020 – 2021
Project Value – $193,748; Contract Type – Firm Fixed Price; EA Project No. – 6333702; EA Project Manager – Travis Hines

611th Environmental Long-Term Monitoring, Institutional Control Inspections, and Maintenance at Multiple Bases, Southern Alaska; Field Lead/Geologist and Logistical Support—Provided field leadership, direction and logistical support prior to and during implementation of this project. This included field planning, field execution and reporting for the following installations: Bethel Radio Relay Site (RRS), Cape Newenham Long LRRS, Cape Romanzof LRRS, Driftwood Bay RRS, Nikolski RRS, Port Heiden RRS. The overall project effort included long-term monitoring/maintenance and/or Land Use Control and Institutional Control Inspections at a total of 27 sites across the 6 Installations. Fieldwork included collection of soils, surface water, and/or groundwater samples, and site conditions as required by the Pacific Air Forces Regional Support Center Land Use Control Management Plan.
Project Date: May 2020 – Present
Project Value – $266,347; Contract Type – FP; EA Project No. – 6333701; EA Project Manager – Mark Wilkinson

611th Environmental Long-Term Monitoring, Institutional Control Inspections, and Maintenance at Multiple Bases, Northern Alaska; Task Manager, Logistical Coordinator—Provide comprehensive support for the implementation of this project from planning to field execution and reporting for the following installations: Cape Lisburne LRRS, Oliktok RRS, Bear Creek RRS, Campion RRS, Indian Mountain LRRS, Kalakaket RRS, Kotzebue RRS, Murphy Dome RRS, North River RRS, Point Barrow RRS, West Nome RRS, Clear Air Station, Sparrevohn LRRS, and Tatalina LRRS. The overall project effort included long-term monitoring/maintenance and/or Land Use Control and Institutional Control Inspections at a total of 27 sites across the 6 Installations. Fieldwork included collection of soils, surface water, and/or groundwater samples, and site conditions as required by the Pacific air Forces Regional Support Center Land Use Control Management Plan.
Project Date: 2020 – Present
Project Value – $658,149; Contract Type – FP; EA Project No. – 6333703; EA Project Manager – Mark Wilkinson

Conduct Phase II Source Evaluations (FTQW20197103), Supplemental Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision for Various Sites (FTQW20197669) and Conduct a Background Study for Polycyclic Aromatic Hydrocarbons (FTQW20197105) at Eielson AFB, Alaska; AFCEC; Geologist—EA is under contract to perform a Phase II Source Evaluation (FTQW20197103), Supplemental Remedial Investigation, Feasibility Study, and Decision Document for Various Sites (FTQW20197669) and conduct a background study for polycyclic aromatic hydrocarbons (FTQW20197105) at Eielson AFB, Alaska. EA will advance soil borings, install/develop temporary and permanent monitoring wells, collect vapor intrusion samples, prepare a Remedial Investigation Report, a Supplemental Site Characterization Report, and a Feasibility Study based on information from the remedial investigation. Performance of a polycyclic aromatic hydrocarbons study on and or in the vicinity of Eielson AFB at unique locations and prepare an Informal Technical Information Report based on the polycyclic aromatic hydrocarbon findings. Preparation of work plans, field task/QC manager, health and safety officer, and preparation of report findings.
Project Date: July 2019 – Present
Project Value – $2,222,320; Contract Type – Firm Fixed Price; EA Project No. – 1535925; EA Project Manager – Travis Hines

Operation of Soil Vapor Extraction and Soil Disposal at Joint Base Elmendorf-Richardson Remediation Sites; AFCEC; Anchorage, Alaska; Report Author—Authored monthly letter reports for the SS109 ventilated stockpile soil vapor extraction unit detailing the monthly soil mixing activities and the monthly soil and annual air

sampling results per the soil vapor extraction system at Joint Base Elmendorf-Richardson Site SS109.
Project Dates: June 2019 – December 2020
Project Value – $537,579; Contract Type – Fixed Price; EA Project No. – 6312611; EA Project Manager – Nic Peterson)

Alaska Installations PFOA/PFOS Preliminary Assessments at 12 Radar Sites and Site Inspections at 6 Radar Sites and Eareckson Air Station, Alaska and Site Inspection at Wake ASMs; Geologist/Field Team Lead—Served as one of the technical staff, logistical coordinator, and field team lead. Completed site inspections in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for aqueous film-forming foam-related PFOS/PFOA contamination. Developed recommendations in accordance with CERCLA and AFCEC policy and based on the ever-changing regulatory requirements for the PFAS emerging contaminants. Assisted with logistics, field execution, and post-investigation reporting for the site inspections (Site Inspection Reports) in accordance with CERCLA guidance.
Project Date: September 2018 – Present
Project Value – $2,129,000; Contract Type – Fixed Price; EA Project No. –6321405; EA Project Manager – Mark Wilkinson

Spill Prevention Control and Countermeasure Plan/Facility Response Plan Updates/Renewals; Eielson Air Pacific Air Forces, Alaska; Geologist/Field Support—Provide Plan Updates/Renewals for the Oil Discharge Prevention and Contingency Plan/Spill Prevention Control and Countermeasure Plans, Facility Response Plans, and Assessment and Repair of Underground Storage Tanks 1246-1 and 3229-1 at Eielson AFB, Fairbanks Alaska. Responsible for supporting team lead in Spill Prevention Control and Countermeasure-regulated tank inventory field mobilization and execution efforts, status reporting and project organization with support staff and Eielson AFB personnel. Assisted in report preparation for updating the C-plan with inventory pertaining to over 300 tanks.
Project Date: December 2019 – 2020
Project Value – $265, 321; Contract Type – LS; EA Project No. – 6312610; EA Project Manager – Travis Hines

Naknek II, Alaska and Explanation of Significant Differences, King Salmon Air Force Station, Alaska; Geologist—Gathered field information pertaining to domestic water users of the Naknek River and collected groundwater monitoring contours/gradient from various domestic and monitoring wells within U.S. Air Force known areas of contamination.
Project Date: June 2019 – 2020
Project Value – $210,970; Contract Type – Fixed Price; EA Project No. –1535924; EA Project Manager – Evana Newberry

Expanded PFOA and/or PFOS Site Inspection, Eielson AFB, Alaska; USACE; Geologist—Conduct a Site Inspection to further delineate known PFOA/PFOS groundwater contamination migrating off Eielson AFB to the community of Moose Creek. Tasks associated with the expanded site inspection include preparing planning documents, advancing soil borings and installing groundwater monitoring wells, groundwater sampling, and reporting. Includes installing five permanent nested well arrays with four sets of wells each array and depths to 210 ft below ground surface. Also includes installation of multiple shallow groundwater monitoring wells, SP16 samples, and soil borings. Assisting with planning documents, presumed the role of site safety health officer, lead the field operations for the cluster well installation, soil boring sampling, and permanent well installations.
Project Date: 2018–2021
Project Value – $1,421,908; Contract Type – Firm Fixed Price, EA Project No. – 6321403; EA Project Manager – Mark Wilkinson

Eielson Farm Road AAA 2018 Monitoring Well installation and Sampling Work Plan, Eielson Farm Road, Alaska; Kaktovik Environmental; Geologist—This project includes further investigation at the site by collecting soil samples, installing two monitoring wells, and sampling groundwater to defining a known underground plume's degradation. This project includes preparing planning documents, collecting subsurface soil samples, installing monitoring wells, collecting groundwater samples, decommissioning monitoring wells, and reporting for the Eielson Farm Road AAA Formerly Used Defense Site. Project responsibilities include preparing a work plan, overseeing drilling activities, developing monitoring wells, collecting environmental samples, and report findings.
Project Date: June 2018 – Present
Project Value – $25,000; Subcontracted through Kaktovik; EA Project No. – 6332801; EA Project Manager –

Sharon Richmond

Containerized (CON)/Hazardous, Toxic, and Radioactive Water (HTRW) Removal Action/Remedial Investigation at the Tigalda Island Formerly Used Defense Site, Tigalda Island, Alaska; Marsh Creek, LLC; USACE; Task Manager—This project includes performing a CON/HTRW removal action and remedial investigation with a risk assessment at the Tigalda Island Formerly Used Defense Site. The removal action/remedial investigation includes a review of historical documents, a pre-work planning site visit, fieldwork to remove and dispose of underground storage tanks, their contents, piping, and associated petroleum-contaminated soil, determination of nature and extent of contaminants of concern and contaminants of potential concern, and reporting. Additionally, a site visit for future CON/HTRW activities at Unalga Island Formerly Used Defense Site was conducted under this project. Project responsibilities included writing and reviewing site visit work plans, site visit reports, and removal action/remedial investigation work plan.
Project Date: April 2017 – Present
Project Value – $367,216; Contract Type – Firm Fixed Price, EA Project No. – 1557401; EA Project Manager – Mike Jones

Perfluorinated Compounds (PFCs) Eielson-Moose Creek; Eielson AFB, Alaska; North Wind Site Services, LLC (USACE); Project Geologist/Task Manager/Regional Safety and Health Coordinator—Remedial action at the Moose Creek Project area includes the design and installation of a drinking water system in a residential area to address PFCs in groundwater at a sub-arctic/interior Alaska location. Management of groundwater sampling at over 159 properties. Coordination with U.S. Environmental Protection Agency and Alaska Department of Environmental Conservation, with agencies actively engaged in the review of data quality. Management of installation of above ground, below ground water holding tanks and granular activated carbon residential drinking water treatment systems where PFC levels exceed the advisory level. Operation and maintenance of treatment systems/tanks previously installed. Project responsibilities include coordinating safety and health requirements, managing collection of samples, report preparation, work plan preparation, and managing installation and maintenance of treatment systems and tanks.
Project Date: July 2017 – Present
Project Value – $932,377; Contract Type – Firm Fixed Price, EA Project No. – 6318701 and 1575801; EA Project Manager – Mark Wilkinson

Moose Creek PFC Treatment, Alaska; Environmental Quality Services; Moose Creek, Alaska; USACE; Site Supervisor and Field Sampler—Off-site migration of PFCs impacted the community of Moose Creek directly downgradient of Eielson AFB, with 170 properties to date exceeding levels for PFOS. Each residence was a unique challenge as the homes were built with minimal to no code oversight, as is generally the case in rural Alaska. To provide drinking water/treatment solutions, EA inspected each home and provided recommendations, then coordinated approval of the recommendations with the homeowner, U.S. Air Force, and USACE contract oversight. Inspections consisted of a review of well data, inspecting the existing water system (well location, existing treatment, pressure tank and pump specifications, etc.), and evaluating the property for the installation of a whole home water treatment system or a tank for water delivery. Additionally, EA discussed owner preference for the location of the proposed treatment system or tank and discussed owner concerns with regards to the chemical of concern, sampling, and installation of the treatment system or tank. Homes required a combination of mechanical modifications (both plumbing and electrical to meet code), framing, drywall, excavation to install water storage tanks, construction of outbuildings for granular activated carbon storage along with trenching, construction of small enclosures to house pumps/pressure tanks when no other space was available, and then a cost-effective means to heat each system.

Conducted site surveys at the 182 properties for PFOA/PFOS sampling and preconstruction meetings. Inspections included evaluating mechanicals to determine whether to provide alternate water supply or install a water treatment system. The list of properties includes over 140 single family homes, 13 apartment complexes, 3 commercial-size apartment buildings, 4 commercial facilities, 3 churches, and one fire station. The majority of the installations occurred during winter conditions in interior Alaska with zero safety incidents. Managed multiple sampling teams and construction crews in order to meet the aggressive schedule.

Collected a total of over 1,500 PFC samples, and over 1100 samples for other analysis such as total coliforms and nitrates/nitrates. Sampling included initial sampling of each property, post treatment system installation sampling,

and quarterly sampling. In addition, EA collected a pilot study samples from a subset of properties to more closely monitor post-treatment system water quality and PFC concentrations. All data were validated (Alaska Department of Environmental Conservation checklist), with data validation performed in house and entered into the Environmental Restoration Program Information Management System.

Conducted a vertical aquifer profile by installing a sampling well to a depth of 285 ft below ground surface and using SP16 low flow incremental sampling to sample groundwater every 20 ft between 100 and 285 ft below ground surface. The vertical aquifer profile determined that PFOA/PFOS impacted groundwater, at a concentration above the U.S. Environmental Protection Agency Health Advisory, to approximately 180 ft below ground surface. Therefore, EA has found that it is feasible to install a drinking water well between 200 and 274 ft (drilling was halted at this depth due to refusal in bedrock) to meet the demand of approximately 7,000 gallons of water a day for the apartments or other potential commercial facilities. This is dependent upon further evaluation of water quality and production capability

Reporting includes quarterly reports, weekly data reporting, and monthly progress reporting. Additionally, multiple after action type reports for various activities have been prepared and approved by stakeholders. "The Contractor prepared numerous technical plans and reports during this evaluation period. These documents were submitted timely, often ahead of schedule, were of a high quality based on the minimal number of review comments received from the regulatory agencies, and could be used for decision-making purposes." – CPAR, October 2016.

Major Accomplishments—"The EA Project Management team works collaboratively with USACE and AFCEC to control costs and to achieve aggressive schedule demand for ensuring safe drinking water for the Moose Creek community. The Contractor performed and managed work effectively in order to increase productivity and allow more work to be completed in the short Alaskan field season. The Contractor provided flexible staffing to meet changing project requirements, site conditions, and project schedules. Effective upfront project planning allowed for a timely, high quality project that was within budget." – CPAR, October 2016.
Project Date: 2015–2017
Project Value – $7,693,639; Contract Type – Firm Fixed Price, EA Project No. – 6258004; EA Project Manager – Mark Wilkinson
Project Date: 2017 – Present (mostly operation and maintenance with residual construction)
Project Value – $$1,830,377; Contract Type – Firm Fixed Price, EA Project No. – 6318701; EA Project Manager – Mark Wilkinson

Pacific Air Force Environmental Services and Construction to Provide Incinerator Ash Sampling at Wake Island Airfield—Field Geologist involved with these five primary tasks: (1) Task 1 – Technical and Management Work Plan Development, (2) Task 2 – Health and Safety Plan Development, (3) Task 3 – Sampling and Analysis Plan Development, (4) Task 4 – Sampling and Analyses of Sampled Media (ash), and (5) Task 5 – Preparation of Final Report. The activities were performed in full compliance with applicable federal, state, installation, and local regulations and incorporated permitting for U.S. Department of Agriculture and Hawaii customs control. The objective of this project was to sample characterize legacy incinerator ash on Wake Island and utilize the data to determine proper disposal of the ash, on a future contract. Recommendations were made for the disposal of the ash in the final report. Final deliverable also included a Spatial Data Standards for Facilities, Infrastructure, and Environment compliant geographic information system deliverable.
Project Date: June 2017 – February 2018
Contract Value – $99,790; Contract Type –Fixed Price; EA Project No. – 6312602; EA Project Manager – Mike Jones

Moose Creek PFCs Treatment, Alaska; Environmental Quality Services; Moose Creek, Alaska; USACE; Project Geologist/Task Manager/Regional Safety and Health Coordinator—Remedial action at the Moose Creek Project area includes the design and installation of a drinking water system in a residential area to address PFCs in groundwater at a sub-arctic/interior Alaska location. Project was high profile and time-critical with sensitive community relations issues. Management of groundwater sampling at over 159 properties. Coordination with U.S. Environmental Protection Agency and Alaska Department of Environmental Conservation, with agencies actively engaged in the review of data quality. Management of the design and installation of granular activated carbon residential drinking water treatment systems at 24 households and the installation of aboveground and below-ground water storage tanks at 50 households where PFC levels exceed the advisory level. Worked with all stakeholders (Air

Force, community, and Regulatory Agencies) to implement a set of solutions, with options. Due to the time-critical aspect of the project, drinking water system installation continued throughout the winter in arctic conditions with atypical electrical and plumbing codes. Work was completed in a timely manner to the satisfaction of all stakeholders. Project responsibilities included implementing safety and health requirements, managing collection of samples, report preparation, and managing installation and maintenance of treatment systems and tanks.
Project Date: November 2015 – June 2017
Project Value – $7,693,639; Contract Type – Firm Fixed Price, EA Project No. – 6258004; EA Project Manager – Mark Wilkinson

Underground Injection Control Well Investigation; Eielson AFB, Alaska; USACE–Alaska District; Task/Field Geologist—Field geologist assisting with the investigation/delineation of multiple, inactive underground injection control wells located at Eielson AFB, which received stormwater from roof drainage systems and quantitative types of contamination. Specific tasks include creating a work plan/accident prevention plan/health and safety plan alike, providing field oversight of conveyance line configuration utilizing a remotely operated vehicle, and providing support in preparation of the investigative report of field activities/findings.
Project Date: September 2016 – October 2017
Project Value – $139,299; Contract Type – Firm Fixed Price; EA Project No. – 6285007; EA Project Manager – Travis Hines

Air Quality and Title V Support, Eielson AFB, Alaska; USACE–Alaska District; Data Collection/Reviewer—Assistant Project Manager for the Title V Update for Eielson AFB, updating operations or ONAN software for the Eielson coal-fired power plant and for evaluating Eielson's asbestos-containing material management and asbestos-containing material plan update.
Project Date: 2016–2017
Contract Type – Fixed Price, EA Project No. – 6285006; EA Project Manager – John Kumm

Middlefield-Ellis-Whisman Superfund Site Remedial Action Oversight, Mountain View, California; U.S. Environmental Protection Agency Region 9 Remedial Action Contract 3; Field Geologist—Field Geologist for a trichloroethene-contaminated groundwater and vapor intrusion site from former semiconductor facilities. Provided field oversight of vapor point installations and conducted characterization of soils/sampling during remedial action activities.
Project Date: September 2015 – Present
Project Value – $424,314; Contract Type – NTE; EA Project No. – 1518909; EA Project Manager — Laura Levine

Former Joint Base Elmendorf-Richardson Landfill; Groundwater and Landfill Gas Monitoring; Field Geologist—Assist with groundwater sampling and gas monitoring of an existing network of wells and probes to fulfill regulatory requirements of the U.S. Environmental Protection Agency and Alaska Department of Environmental Conservation. Monitoring activities included visual inspection, groundwater assessment and detection monitoring, and methane gas monitoring. Organized and performed groundwater sampling, gas monitoring, and maintenance. Assisted in coordination of meetings, reporting, and data review in support of regulatory requirements.
Project Date: August 2016 – 2018
Project Value – $829,203; Contract Type – Sampling and Monitoring Plan; EA Project No. – 6285002; EA Project Manager – Travis Hines

Moose Creek Apartments Drilling Effort; Moose Creek, Alaska; USACE; Field Geologist/Team Lead—Provided oversight during the production of a deep investigative vertical profile well by use of direct-push technique with a Geoprobe® Systems Screen Point 16 (SP16). Collected field data to generate a vertical profile of the Moose Creek area aquifer by collecting groundwater samples at 20-ft intervals, beginning at 100 ft below ground surface, until final tool refusal was reached at 275 ft below ground surface. Sampling was conducted using a peristaltic pump and dedicated tubing to locate the presences of PFCs at various depths within the local aquifer and identify suitable source water depths free from presences of PFCs.
Project Date: August 2016

Project Value – $3,222,830; Contract Type – Firm Fixed Price, EA Project No. – 6258004; EA Project Manager – Mark Wilkinson

U.S. Air Force 611th Long-Term Monitoring at Remote Long Range Radar Sites, Moose Creek, Alaska; U.S. Air Force; Project Manager—Field lead for the long-term monitoring at multiple U.S. Air Force active remote long range radar sites. Long-term monitoring included groundwater and surface water sampling and inspections in accordance with Records of Decision for each facility, including Eareckson Air Force Station; Cape Romanzof, Indian Mountain, Tatalina, and Murphy Dome.
Project Date: 2014–2016
Project Value – $611,572; Contract Type – Firm Fixed Price, EA Project No. – 62421101; EA Project Manager – Michael Jones

Remedial Investigation/Feasibility Study for Nine Compliance Restoration Program Sites at King Salmon Airport, Alaska; AFCEC; Quality Assurance Project Plan Composure/Field Lead—Responsible for development of quality assurance/quality control plan including field execution of a background study to evaluate metals results compared to naturally-occurring levels in soils and groundwater. Deliverables include a Uniform Federal Policy-Quality Assurance Project Plan (including a Work Plan, Health and Safety Plan, and Sampling and Analysis Plan) and a Remedial Investigation/Feasibility Study.
Project Date: 2014–2018
Project Value – $1,085,164; Contract Type – Fixed Price; EA Project No. – 1456039; EA Project Manager – Stephen Wrenn

Underground Injection Control Identification and Removal; Eielson AFB, Alaska; AFCEC; Project Manager—This project involves conducting further investigation to determine the former discharge location and complete closure of underground injection control wells at Building 1140, Eielson AFB. Specific work includes: (1) reviewing existing as-builts drawings of the former storm water conveyance system to confirm connectivity and ultimate disposal method and location; (2) collecting subsurface soil samples at the identified discharge location to determine if contamination of the disposal area is present; (3) demolishing former stormwater disposal system, which includes seal and abandon underground piping in place, demolish and remove concrete storm water conveyance vaults, and fill excavations with clean soil, compact, return to grade, and repave vault excavation areas; and (4) verify the presence or absence of any newly identified underground injection controls that are identified by Eielson AFB and determine compliance with relevant regulations.
Project Date: May 2014 – July 2016
Project Value – $149,683; Contract Type – Firm Fixed Price; EA Project No. – 62421102; EA Project Manager – Travis Hines

***Data Gap Investigations for Operable Units 1/1B/8, 2, 3/4/5, 6 and Source Evaluation Report Sites, Eielson Air* Force Base, Alaska; AFCEC; Task Manager and Quality Assurance Supervisor**—Long-term monitoring at 37 source areas, vapor intrusion investigation, monitoring well repair and inventory, background metal analysis, vertical and horizontal groundwater plume delineations, geophysical investigations, passive soil gas sampling, landfill location surveys and inspections, and regulatory support. Deliverables included a combined Uniform Federal Policy-Quality Assurance Project Plan, groundwater monitoring reports, vapor intrusion investigation report, well condition report, geophysical survey reports, landfill inspection reports, background metal reports, conceptual site model update reports, and a historic pipeline summary report. Personal responsibilities included schedule and provided supplies/equipment for all field staff; quality assurance through oversight and emphasizing of field/sampling methods per Quality Assurance Project Plan; sample management; and aid with vapor intrusion building characteristics, data collection and reporting.
Project Date: 2013–2015
Project Value – $5,998,534; Contract Type – Firm Fixed Price, EA Project No. – 1456033; EA Project Manager – Michael Jones

National Pollutant Discharge Elimination System/Other Waste Water Sampling; Eielson AFB, Alaska; AFCEC; Project Geologist/Site Health and Safety Supervisor—Provide support for sampling of groundwater and the facilities as required by the Pretreatment Plan and Wastewater Disposal Permit 2006DB0045 for the wastewater treatment plant; and sampling at Central Heat and Power Plant cooling water discharge ditch as required by National Pollutant Discharge Elimination System Permit AK-000134-1 at Eielson AFB, Alaska. Deliverables

include analytical, sampling and data reports, monthly discharge monitoring reports for the Central Heat and Power Plant, semi-annual discharge monitoring reports for the wastewater treatment plant and annual report for wastewater significant and non-significant domestic users. Sampled surface and groundwater, complete discharge monitoring reports, and complete health and safety plan.
Project Date: April 2013 – April 2014
Project Value – $134,997; Contract Type – Firm Fixed Price, EA Project No. – 6242179; EA Project Manager – Travis Hines

Multiple Environmental Services in Support of the Water Quality Program; Eielson AFB, Alaska; AFCEC; Field Geologist—This project included support for the following: (1) sampling of groundwater and the facilities as required by the Pretreatment Plan and Wastewater Disposal Permit 2006DB0045 for the Wastewater Treatment Plant; and (2) sampling at central heat and power plant cooling water discharge ditch as required by Alaska Pollutant Discharge Elimination System Permit AK-000134-1 in accordance with applicable regulations. Project work also includes sampling/analyses of industrial wastewater outfall, cooling water discharge, and wastewater from oil/water separators as required by Alaska Pollutant Discharge Elimination System and wastewater permits for Eielson AFB.
Project Date: May 2014 – May 2015
Project Value – $141,013; Contract Type – Firm Fixed Price; EA Project No. – 6242198; EA Project Manager – Travis Hines

Underground Injections Control Identification and Removal; Eielson AFB, Alaska; AFCEC; Project Manager—Ensured operation and closures of Class V underground injection control wells to protect underground aquifers and submit these results to the U.S. Environmental Protection Agency and Alaska Department of Environmental Conservation for approval. In 2009/2010, a complete inventory of underground injection control wells was conducted for Eielson AFB. This project provided further evaluation to classify all underground injection control wells on the Inventory Report and provide recommendations for further action, underground injection control decommissioning, and removal of underground injection control wells identified as recommended for removal from previous evaluations. Duties included assisting with photographic documentation of underground injection control wastes and reporting information associated with underground injection control waste removal.
Project Date: September 2012 – June 2014
Project Value – $149,678; Contract Type – Firm Fixed Price; EA Project No. – 6242119; EA Project Manager – Travis Hines

Sampling National Pollution Discharge Elimination System and Other Wastewater Eielson AFB, Alaska; AFCEC; Mid-Level Scientist—The purpose of this project was to provide support for specified facilities/locations required by the Pretreatment Plan, Wastewater Disposal Permit and the National Pollutant Discharge Elimination System Permit. Facilities sampled included the wastewater treatment plant; the central heat/power plant cooling water discharge ditch and facilities containing oil/water separators. Tasks included sampling of discharge/surface water, sampling of groundwater and sampling of oil/water separators; sample management; monthly and biannual report writing.
Project Date: March 2013 – July 2015
Project Value – $150,000; Contract Type – Fixed Firm Price; EA Project No. – 6242198; EA Project Manager – Travis Hines

Passive Soil Gas Survey for Follow-on Investigation for Site OT027; King Salmon Airport, Alaska; Mid-Level Scientist—Performed a passive soil gas survey and installation of 100 passive soil gas sample points to verify the source of trichloroethene contamination at designated known contamination locations. Assisted with groundwater monitoring to identify source area(s) and extent of trichloroethylene and petroleum hydrocarbons in groundwater.
Project Date: February 2013 – August 2014
Project Value – $683,954; Contract Type – Firm Fixed Price; EA Project No. – 1456032; EA Project Manager – Stephan Wrenn

***Stormwater Sampling and Multi-Sector General Permit Compliance Site Inspection and Reporting; Eielson Air* Force Base, Alaska; AFCEC; Mid-Level Scientist—**Measured, sampled, analyzed, tested, and monitored media including continuous and/or discrete measuring, sampling and analysis of groundwater, surface water, drinking water, influent, effluent, process streams, leak detection systems, air emissions, soils and any other environmental or process media. Sampled, analyzed, and tested environmental media; and monitored meteorological and process

conditions to conduct annual comprehensive evaluation/compliance inspection and annual reporting in accordance with the 2008 Multi-Sector General Permit and with applicable regulatory guidance. Duties included the setup and launch of the auto stormwater samplers, conductance of visuals of stormwater samples, and completion of visuals for reporting.
Project Date: July 2013 – July 2014
Project Value – $127,381; Contract Type – Firm Fixed Price; EA Project No. – 6242188; EA Project Manager – Kyle Waldron

Data Gap Investigations for Operable Units 1 through 6, Five-Year Review, and Restoration Advisory Board, and Community Relations Plan Support, Eielson AFB, Alaska; AFCEC; Task Manager and Quality Assurance Supervisor—Long-term monitoring at 37 source areas, vapor intrusion investigation, emerging technology evaluation, Base-wide groundwater and surface water gauging/modeling, passive soil gas sampling, sediment sampling, and Five-Year Review. Deliverables included a combined Uniform Federal Policy-Quality Assurance Project Plan, groundwater monitoring report, vapor intrusion investigation report, emerging technologies report, Five-Year Review, and Geographic Information System database updates. Project also includes Restoration Advisory Board and regulatory support. Responsibilities included development of monitoring wells and collection of groundwater samples.
Project Date: 2012
Project Value – $3,815,764; Contract Type – Firm Fixed Price, EA Project No. – 1456029; EA Project Manager – Mark Wilkinson

Wastewater Treatment Facility Sampling and Analyses; Eielson AFB, Alaska; AFCEC; Mid-Level Scientist—Provided support for sampling and analyses in accordance with Wastewater Treatment Facility Quality Assurance Project Plan (dated June 2011) and Wastewater Disposal Permit 2006DB0045 for the Wastewater Treatment Facility. Deliverables included Discharge Monitoring Reports, Data Validation Reports, and review/update of Data Quality Objectives. Responsible for sample collection, coordinating with laboratories for analysis, completing the discharge monitoring reports, and oversight of field staff for various rounds of sampling.
Project Date: September 2012 – June 2013
Project Value – $52,672; Contract Type – Firm Fixed Price, EA Project No. – 6242165; EA Project Manager – Chip Brown

Sampling National Pollution Discharge Elimination System and Other Wastewater Eielson AFB, Alaska; AFCEC; Mid-Level Scientist—The purpose of this project was to provide support for sampling of groundwater and the facilities as required by the Pretreatment Plan and Wastewater Disposal Permit for the wastewater treatment plant; and sampling at the central heat and power plant cooling water discharge ditch as required by the National Pollutant Discharge Elimination System Permit. The wastewater treatment plant personnel conducted the sampling of the influent and effluent at the wastewater treatment plant under separate contract. Tasks included sampling groundwater monitoring wells.
Project Date: 2012
Project Value – $149,869; Contract Type – FFP; EA Project No. – 6242152; EA Project Manager – Chip Brown

Eielson 2011 Multi-Sector General Permit, Comprehensive Site Compliance Evaluation and Storm Water Pollution Prevention Plan Update, Eielson AFB, Alaska; Air Force Center for Engineering and the Environment; Mid-Level Scientist—This project provided support for conducting a comprehensive site compliance evaluation; updating the existing Stormwater Pollution Prevention Plan as required; and monitoring, sampling, and analyses in accordance with the 2008 Multi-Sector General Permit at Eielson AFB, Alaska in accordance with applicable regulations. Assisted in the set up and launch of the auto stormwater samplers. Conducted visuals of stormwater samples and completed visuals for reporting.
Project Date: 2012
Project Value – $148,845; Contract Type – Firm Fixed Price; EA Project No. – 6242135; EA Project Manager – Kyle Waldron

Other Project Experience

Phase I/II Environmental Site Assessments, Texas; Various Clients; September 2009 – July 2012; Staff Geologist—Oversight of remedial excavations and environmental risk assessments; collected, evaluated, and

interpreted field data; composed risk assessment analytical reports; interfaced with landowners, state and federal agencies; completed all aspects of Phase I site assessments; and assisted with underground storage tank compliance operations.

Deepwater Horizon/British Petroleum Oil Spill, Louisiana; Center for Toxicology and Environmental Health/British Petroleum; June–December 2010; Air Monitor/Ergonomics Specialist—Collected, monitored, and evaluated air quality data in and on the perimeter of hazardous material zones; scouted potential hazardous material migrations in open waters; recovered hazardous material from wetland environments; analyzed and implemented safer, less risk work practices in relation to hazardous material extraction/decontamination operations.

Environmental Assessment Management Related to Long Wall Mining Operations, Southwestern Pennsylvania and Northern West Virginia; CONSOL; January 2008 – September 2009; Field Geologist—Examined, monitored, and plotted stream conditions in relation to underground coal mining operations; compiled and entered field data into a shared database; analyzed, interpreted, and presented field findings to client and state agencies; assisted in client/state compliance regulations; conducted entrance/exit audits including site visits and report preparation.

Phase I/II Environmental Site Assessments, North Central Texas; Various Clients; May–December 2007; Staff Geologist—Performed all aspects of Phase I environmental site assessments; assisted in Phase II site investigations including soil sampling, well installation, groundwater sampling, and report writing in accordance with state/federal regulations.

Yellow Creek Watershed Project, Eastern Ohio; Americorps Volunteer in Service to America; July 2005 – July 2006; Development Coordinator—Identified and characterized areas affected by post-mining water pollution with in a watershed; collected stream water flow, water samples, and Global Positioning System data; organized, mapped, and created a database of complied material; shared data with sponsoring state entities and discussing remedial methods; conducted monthly meetings with the local community and watershed coalition members; facilitated fundraising events to increase community education and outreach; and researched and applied for funding opportunities.

Employment History

Employer—EA Engineering, Science, and Technology, Inc., PBC (Fairbanks, Alaska)
Dates of Employment—September 2012 – Present
Title—Mid-Level Geologist

Employer—ATC Associates, Inc.
Dates of Employment—September 2009 – July 2012
Title—Staff Geologist

Employer—CTEH/BP
Dates of Employment—June–December 2010
Title—Air Monitor/Ergonomics Specialist

Employer—Hatch Mott MacDonald
Dates of Employment—January 2008 – September 2009
Title—Field Geologist

Employer—Terracon, Inc.
Dates of Employment—May–December 2007
Title—Staff Geologist

Employer—Americorps VISTA
Dates of Employment—July 2005 – July 2006
Title—Development Coordinator

List of Technical Skills and Specializations

- ArcGIS
- CAD LT
- Global Positioning System Pathfinder Office Software
- Hazardous waste remediation
- Microsoft Office Suite
- Transportation Worker Identification Credential

Sherri L. Wunderlich, CQA
Chemist

Ms. Wunderlich is an environmental chemist and Certified Quality Auditor with 35 years of experience managing quality assurance and quality control (QC) activities and providing chemistry expertise to support investigation, monitoring, and remediation projects. She has served for 10 years as program QC manager and 20 years as principal chemist for Department of Defense contracts. Her responsibilities have included management of quality-related tasks including developing and overseeing program QC activities, performance of program assessments and field surveillances, preparation of QC plans and sampling and analysis plans, development of data quality objectives and indicators, overseeing laboratory and data validation subcontractors, and assessment of analytical data.

Ms. Wunderlich has managed laboratory technicians, project chemists, database personnel, sampling crews, and subcontractors in support of environmental projects to ensure compliance with project and regulatory specifications. Her experience includes writing and reviewing project plans and reports, performing field sampling procedures, conducting analytical testing, performing data validation, and interpreting analytical data.

Ms. Wunderlich's career began with 10 years performing analysis and managing analytical laboratories followed by 4 years at a data validation firm, which provided a solid background when she transitioned to apply her skills at environmental consulting firms.

Education
B.A./Chemistry/1985 (Washington and Jefferson College)

Registrations/Certifications
American Society for Quality Certified Quality Auditor (CQA); 2012

Specialized Training
OSHA 40-Hour Hazardous Waste Operations and Emergency Response Training; 2002
OSHA 8-Hour Hazardous Waste Operations and Emergency Response Annual Refresher; February 2024
Construction Quality Management for Contractors; U.S. Army Corps of Engineers; 2010, 2016, 2022
Root Cause Analysis; 2014
Waste Management Training, Annual; 2009 – Present
Uniform Federal Policy for Quality Assurance Project Plans Course; Naval Civil Engineer Corps Officers School; 2007
Data Validation and Usability, 2001
Project Management, 2022
Bloodborne Pathogen Training, 2023
CPR, First Aid, and AED Training, 2023

Professional Affiliations/Appointments
American Chemical Society; 1988 – Present
American Society for Quality; 2012 – Present

Experience
Years with EA: 3 Total Years: 35

Professional Experience

Project QC Management and Field Audits—Reviews client's performance work statements to ascertain project requirements for a variety of Department of Defense project. Prepares and reviews proposals to verify strategy is in line with project requirements. Prepares and reviews QC plans, sampling and analysis plans, and work plans and field summary reports for content, applicability, and accuracy. Determines and documents key elements of project QC. Coordinates with team members and subcontractors (e.g., laboratories and data validation firms) to implement project QC and meet project requirements. Prepares and reviews design change notices and field change requests when warranted by changes in conditions. Performs field audits or surveillances to determine if project requirements are implemented during field events. Identifies and documents nonconformances, works with team members to develop corrective actions, and verifies that corrective actions resolve the issues and/or prevent reoccurrences. Interfaces with the client to discuss and resolve quality issues.

Project Chemistry—Reviews client's performance work statements to ascertain project requirements and strategy re. environmental chemistry for a variety of Department of Defense and commercial project. Prepares and reviews proposals to communicate intentions, expectations, and cost. Prepares and reviews work plans, sampling and analysis plans, statements of work for subcontracted laboratories and data validation firms, and chemical data summary reports. Coordinates with team members, laboratories, and data validation firms to meet project requirements and deadlines and resolve technical issues. Responsible for tracking, data management, and data presentation. Reviews data validation reports and chemical data for compliance with data quality objectives and measurement criteria.

Data Verification/Validation/Assessment—Conducts data verification and/or validation using Department of Defense, U.S. Environmental Protection Agency (EPA), state, or regional guidelines and requirements as applicable for various projects. Performs data assessment, summarizing any issues with the data and impact on usability.

EA Project Experience

Long-Term Monitoring, Operations, and Maintenance Contracts; U.S. Navy/Naval Facilities Engineering Systems Command Northwest—Under this 5-year, fixed-price contract, provides chemistry, QC, and technical support for a multitude of projects at Naval Base Kitsap (Bangor, Bremerton, Indian Island, Keyport, Jackson Park); Naval Air Station Whidbey Island, Washington; Former Naval Arctic Research Laboratory, Barrow, Alaska; Former Distant Early Warning Line Station, Point McIntyre, Alaska; and Former Naval Complex, Adak, Alaska. Prepares and reviews proposals and quality planning documents and reports; attends meeting with stakeholders and provides analytical chemistry consultation; provides technical support to field crews to ensure sampling is performed appropriately; selects, procures, and oversees laboratory and data validation subcontractors; reviews subcontractor deliverables to evaluate if project objectives were met; identifies deviations and develops corrective actions to resolve issues and prevent reoccurrences; discusses technical issues with the client's remedial project managers; provides oversight of project chemists; and manages data.
Project Date: 2021 – Present
Completion Date: 2024 (Estimated)
Project Value – $15 million (to date); Contract Type –Long-Term Monitoring, Operations, and Maintenance; EA Project No. – 6354401 through 6354474; EA Project Managers – Hannah Dennis, Halie Hajek, Garrett Lee, David Nelson, Dana Ramquist, Nicole Stoecklein, and Camille Warren

Solid Waste Management Units and Areas of Concern at Johnston Atoll, Johnston Atoll; Air Force Civil Engineer Center—Provided chemistry support to resolve analytical issues associated with metals analysis of a complex marine sample matrix. Reviewed third-party data validation reports. Coordinated with laboratory and data validation firms.
Project Date: January 2022 – Present
Project Value – $1.8 million; EA Project No. – 1535928; EA Project Manager – Teresa Quiniola

Eielson Phase 2 Source Evaluation; Air Force Civil Engineer Center; Eielson Air Force Base, Alaska—Reviewed numerous data validation reports and Alaska Department of Environmental Conservation checklists for a full suite of analytical parameters according to Department of Defense and Alaska Department of Environmental Conservation guidelines.
Project Date: November 2020 – Present
Project Value – $2.2 million; EA Project No. – 1535925; EA Project Manager – Travis Hines

Fairchild Air Force Base, Spokane County, Washington and Mountain Home Air Force Base, Elmore County, Idaho; U.S. Army Corps of Engineers–Kansas City District—Prepared a Quality Assurance Project Plan addendum to collect surface water and sediment samples for analysis of per- and polyfluoroalkyl substances (PFAS). Reviewed laboratory login information and analysis requests. Performed oversight of laboratory and third-party data validation firm. Reviewed third-party data validation reports and analyte summary tables.
Project Date: August 2021 – Present
Project Value – $6.5 million; EA Project No. – 6329605; EA Project Manager – Jonathan Reeve and Steven Morrissette

BNSF Glendive Railyard, Glendive, Montana—Performed senior chemistry support to ascertain if unexpected and immediate use of offsite backfill material complied with regulatory requirements. Sampling and analysis of metals was performed; analytical results were compared to background concentrations and applicable regulatory criteria, following appropriate decision-logic flowcharts.
Project Date: September–October 2022
EA Project No. – 1591353; EA Project Manager – Evana Newberry

Three Air Force Long-Range Radar Stations, Off-Base Drinking Water Site Inspections and Miscellaneous Tasks, Alaska—Performed senior technical review on-site inspection addendums for Sparrevohn Long Range Radar Station, Sparrevohn, Alaska, and Indian Mountain Long Range Radar Station, Indian Mountain, Alaska. Field

work and laboratory analysis was performed to determine if PFAS constituents were present in potential drinking water sources at concentrations above project action limits, which would initiate bottled water delivery to impacted residents.
Project Date: September 2022 – Present
EA Project No. – 1575802; EA Project Manager – Mark Wilkinson

U.S. Army Garrison Hawaii Schofield Barracks, Wahiawa, Oahu, Hawaii—Performed senior technical review on a work plan that details characterization of PFAS in influent, effluent, and biosolids at the Wheeler Army Airfield Wastewater Treatment Plant.
Project Date: November 2022 – Present
EA Project No. – 6372002; EA Project Manager – Teresa Quiniola

Cusick Survival School Fuel Release Investigation; Air Force Civil Engineer Center, Cusick, Washington— Provided chemistry support to review laboratory deliverables and third-party data validation reports for this investigation into a 500-gallon fuel release from former fueling facility at the Cusick Survival School, a remote geographically separated unit of Fairchild Air Force Base. Summarized data quality and reviewed data tables for reports for each field event.
Project Date: July 2021 – Present
Project Value – $1,430,486; EA Project No. – 1535932; EA Project Manager – Denise Pereira

Other Project Experience

Long-Term Monitoring, Operations, and Maintenance Contracts; U.S. Navy/Naval Facilities Engineering Systems Command Northwest; 2011–2020; Program QC Manager—Under two consecutive 5-year, fixed-price contracts, developed and implemented programmatic quality systems focused on preventing problems and continual improvement. Prepared and reviewed quality planning documents and reports; reviewed and tracked design change notices, field change requests, and nonconformances; and performed annual audits of the programs. Assigned and trained Project QC Managers to focus on quality-related activities pertaining to individual task orders. Performed 35 field audits for various task orders. Identified nonconformances, performed root cause analysis, developed corrective actions, and verified that corrective actions resolved the issues and/or prevented reoccurrences. Interfaced with the client to discuss and resolve quality issues.

Long-Term Monitoring at Former Naval Complex, Adak, Alaska; U.S. Navy/Naval Facilities Engineering Systems Command Northwest; 2009–2020; Project QC Manager—Developed quality planning documents and implemented onsite QC for annual sampling events, which typically consisting of an 8-member field team who were onsite for 3-4 weeks. Prepared or reviewed project plans, prepared concise summaries of key elements of a complex Comprehensive Monitoring Plan to condense information for the field teams, assisted in training and managing the field teams, performed daily briefings regarding quality, submitted production and QC forms to the client, performed field audits, and was responsible for overall project QC. Interfaced with the client to discuss and resolve quality issues.

Remedial Action and Long-Term Monitoring Contracts; U.S. Navy/Naval Facilities Engineering Systems Command Northwest; 1999–2020; Project Chemist—Authored, co-authored, or reviewed 400 field sampling and quality assurance plans and analytical data summary reports, with minimal comments from rigorous reviews by Navy, EPA, state, and other stakeholders. Wrote detailed scopes of work for procurement of laboratory and data validation services for 250 projects. Served as technical point of contact, communicating project needs to laboratories and validation firms and responding to technical inquiries. Summarized data quality for 300 Navy reports. Prepared and submitted 350 electronic data submittals for input into the Navy's database. Managed chemistry tasks from proposals and contract reviews through delivery of final reports.

Lower Willamette River Dredge Material Management; Portland, Oregon; 2005; Data Validation Chemist—Validated data associated with analysis of 160 sediment and 28 worm and clam samples in an effort to characterize sediment and tissue within the Lower Williamette River Federal Navigational Channel and areas adjacent to the channel. Analytical parameters included dioxin/furans, tributyltins, pesticides, herbicides, polychlorinated biphenyls, semivolatile organics, volatile organics, total petroleum hydrocarbons (gasoline and diesel extended ranges), metals, and conventionals.

Former Rayonier Pulp Mill, Risk-Based Remedial Investigation under the Model Toxics Control Act; Port Angeles, Washington; 1999–2003; Chemical QC Manager—Was responsible for management of laboratory deliverables for a multi-media investigation, which involved many state agencies and special interest groups. As Chemical QC Manager for the remedial investigation, managed the subcontractor laboratories, reviewed the analytical data, worked closely with the database manager to perform complex queries on the dataset, and prepared a comprehensive report to summarize the data and present recommendations.

Various Commercial and Federal Projects; 1995–2009; Data Validation Chemist—Validated 500 laboratory data packages in accordance with EPA National Function Guidelines, Department of Defense protocols, analytical methodologies, and project requirements. Primary focus was on validation of data for organic compounds including dioxins/furans, ordnance, herbicides, pesticides, polycyclic biphenyls, semivolatile organic compounds, and volatile organic compounds.

Various Commercial and Federal Projects; 1985–1995; Laboratory Chemist—Analyzed samples for organic compounds and inorganic constituents according to EPA Contract Laboratory Protocol, drinking water, SW-846 methods; processed and reviewed data; and supervised and trained technicians and chemists. Installed, operated, maintained, and repaired high performance liquid chromatographs, gas chromatograph/mass spectrometers, and other analytical instruments. Researched, planned, and set up new methods and technical capabilities, documenting aspects in standard operating procedures. Acquired an extensive knowledge and experience with four major EPA programs consisting of the Superfund and the Contract Laboratory Program, Safe Drinking Water Act, Clean Water Act, and Resource Conservation Recovery Act. Additionally, achieved expertise with the regulations and methodologies for more than 15 states including Alaska, California, New York, Oregon, Pennsylvania, and Washington.

Employment History

Employer—EA Engineering, Science, and Technology, Inc., PBC (Seattle, Washington)
Dates of Employment—May 2021 – Present
Title—Chemist IV

Employer—Sealaska Environmental Services, LLC and Sealaska Remediation Solutions, LLC
Dates of Employment—March 2009 – May 2021
Title—Chemist V

Employer—Tetra Tech EC, Inc. (formerly Foster Wheeler)
Dates of Employment—September 1999 – March 2009
Title—Chemist

Employer—EcoChem, Inc.
Dates of Employment—May 1995 – September 1999
Title—Chemist/Data Validator

Employer—AmTest, Inc.
Dates of Employment—April 1990 – May 1995
Title—GC/MS Department Manager

Employer—ECOVA Laboratory
Dates of Employment— February 1988 – April 1990
Title—GC/MS Chemist

Employer—International Technology, Inc.
Dates of Employment—January 1987 – February 1988
Title—GC/MS Chemist

Employer—Free-Col Laboratories

Dates of Employment—September 1985 – January 1987
Title—Extractions, HPLC & GC Chemist

List of Technical Skills and Specializations

- Data assessment and usability
- Data validation and verification
- Electronic data management
- Field sampling audits
- Laboratory analysis of organic chemical constituents following EPA, regional, and state analytical methods
- Laboratory and data validation interface
- Multimedia (air, sediment, soil, tissue, water) environmental sampling
- Preparation and review of QC Plans
- Preparation and review of Sampling and Analysis Plans
- Senior technical review of plans and reports
- Statistical analysis of chemical data

Gilbert P. Manning
Geologist

Mr. Manning has 23 years of experience in environmental investigation and remediation. He has extensive experience with conducting soil and groundwater investigations, site assessments, aquifer testing, waste management, and environmental remediation.

Mr. Manning's previous experience includes managing complex industrial projects for the state of Texas Resource Conservation and Recovery Act (RCRA) and leaking petroleum storage tank programs.

Education
B.S./Geology/1999 (University of Texas)

Specialized Training
OSHA 40-Hour Hazardous Waste Operations and Emergency Response Training; 2001
OSHA 8-Hour Hazardous Waste Operations and Emergency Response Refresher; 2022
OSHA 8-Hour Hazardous Waste Operations Supervisor Training; 2012
OSHA 30-Hour General Construction Training; 2023
Department of Transportation IATA Training; 2014
CPR and First Aid Training; 2023

Experience
Years with EA: 13 Total Years: 23

Professional Experience

Project Management—Managed U.S. Air Force compliance project and remediation optimization/site characterization project. Project responsibilities include client support, preparation of proposals and scopes of work, budgeting, status reporting, manpower allocation, coordination and scheduling of field and laboratory efforts, subcontractor management, and report preparation.

Environmental Investigation—Has conducted soil and groundwater sampling, soil vapor and ambient air sampling, monitoring well installation, aquifer hydraulic testing, and field surveys for Phase I Environmental Site Assessments at various federal and commercial/industrial facilities. Investigation activities have included those related to metals, chlorinated solvents, petroleum hydrocarbons, and non-chlorinated solvents. Has assisted with subcontractor negotiations, acquired bids, drafted proposals and scope of works, supervised subcontractors in the field, and ensured that waste was managed and labeled appropriately. Additionally, has interpreted data to ensure state and federal requirements were met and wrote reports to document all field activities.

Health and Safety—Has experience authoring accident prevention plans/site health and safety plans, in implementation and compliance with site health and safety plans, and has served as the Site Health and Safety Officer on several projects.

EA Project Experience

Orange County North Basin Superfund Site, Orange County, California; U.S. Environmental Protection Agency (EPA); Geologist—Supports EPA across three Task Orders ranging from oversight of work performed by the Potentially Responsible Parties in the source areas, technical review of the interim remedial investigation and feasibility study prepared by the Orange County Water District, and conductance of the comprehensive (i.e., site-wide) remedial investigation. Primary activities include placement, installation, and sampling of groundwater monitoring wells; preparation of a human health risk assessment; and completion of a complex, basin-wide groundwater model and conceptual site model to further characterization of this almost nine-mile long, over 8,000-acre groundwater site. The site is a comingled plume of chlorinated solvents underlying mixed residential, commercials, and industrial areas in the cities of Anaheim, Fullerton, Buena Park, and Placentia. As geologist, oversees completion of multi-tiered wells targeting discrete zones in the groundwater system using mud rotary and sonic drilling to depths over 700 ft below ground surface. Advises on the well screen interval based on field observations and a review of geophysical data. Conducted monitor well development. Coordinates with the local regulators regarding noise and activity permits, traffic control, and noise barriers. Provides support to EPA to notify public of ongoing activities and discusses site activities with interested parties.
Project Date: September 2020 – Present
Construction Completion Date (TO ends 27 July 2024)
Project Value – $3,759,653; Contract Type – Cost Plus Materials (CPM); EA Project No. – 1518945; EA Project Manager – Catherine LeCours

ABC One-Hour Cleaners Superfund Site OU3, Remedial Action for Soil Jacksonville, North Carolina; EPA—Project included in situ thermal remediation coupled with soil vapor extraction for the remediation of soils. Completed a predesign investigation to further delineate the soil source contamination to fill in data gaps. The predesign data was used to finalize the remedial design to meet the cleanup objectives. Responsible for construction oversight which included sonic drilling of vertical wells to treat contaminated soils on the neighboring property, installation of heaters, vapor sampling wells, and dual phase extraction wells.
Project Date: ***2022 – Present***
Project Value – $5,986,213; Contract Type –Combination of Firm Fixed Price/Cost Plus fixed fee; EA Project No. – 6347505; EA Project Manager – Joe Von Uderitz

Fort Greely Data Gaps; Fort Greely, Alaska; U.S. Army Corps of Engineers; EA Geologist—As part of a Joint Venture with North Wind, managing development of a feasibility study for four sites at Fort Greely. Evaluated existing data for each site and developed alternatives for treatment or closure of each site. Responsibilities included drafting an environmental summary report for a site.
Project Date: February 2022 – Present
Project Completion Date: Estimated February 2024

Out-of-Service Drinking Water Well Survey at King Salmon Long Range Radar Station (LRRS), Alaska; U.S. Army Corps of Engineers–Alaska District; Deputy Project Manager, Field Lead, Author, Logistics Support—The overall objective of this project is to perform a research and records review to determine the existing drinking water well network, determine the groundwater zone for each identified well, develop a list of drinking water wells, and conduct a physical evaluation of the condition of the wells to be recommended for decommissioning. Project responsibilities included technical review of reports and work plans.
Project Date: May 2023 – Present
Project Value – $122,518; Contract Type – LS; EA Project No. – 6333708; EA Project Manager – Mark Wilkinson

Nome Tank Site "E" Petroleum, Oil, and Lubricants Contamination Nome Area Defense Region, Nome Alaska; U.S. Army Corps of Engineers–Alaska District; Project Chemist—Responsible for technical review of .
Project Date: July 2022 – Present
Project Value – $98,825; Contract Type – Lump Sum; EA Project No. – 6359605; EA Project Manager – Travis Hines

Bandera Road Ground Water Plume, Superfund Site, Remedial Design and Remedial Action Oversight, Bexar County, Leon Valley Texas; EPA Region 6; Geologist—Performed Remedial Action oversight on behalf of EPA over contractors installing vertical amendment injection wells, horizontal segmented Vertebrae well systems, high-density polyethylene extraction lines, and the placement of two soil vapor extraction mobile systems. Additional duties included review of site specification documents, field documentation, and submission of Daily Field Activity summaries.
Project Date: March 2023
Project Value – $993,949; Contract Type – Cost Plus Fixed Fee (CPFF) ; EA Project No. – 1578524; Project Manager – Patrick Appel

Van der Horst Superfund Site, Terrell, Texas; EPA Region 6 Remedial Acquisition Framework, Design and Engineering Services, and Remedial Design and Remedial Action Oversight; Geologist—Remedial design and remedial action oversight at a former plating facility. Conducted groundwater sampling at the site.
Project Date: May 2022 – Present
Project Value – $1,388,616; Contract Type – Cost Reimbursement; EA Project No. – 1578520; EA Project Manager – Beth Liu

Lane Plating Works Superfund Site; Feasibility Study and Remedial Design; Dallas, Texas; EPA Superfund Project; Geologist—Feasibility study and remedial design at a chromium and per- and polyfluoroalkyl substances **(**PFAS)-contaminated former plating facility in south Dallas. Authored a Pilot Study Work Plan and conducted groundwater sampling at the site.
Project Date: August 2021 – Present
Project Value – $309,199; Contract Type – Time and Materials and Fixed Price; EA Project No. – 1578509; EA

Project Manager – Aaron Bugher

Fairchild Air Force Base Cusick Survival School Remedial Investigation/Feasibility Study, Cusick, Washington; Defense Logistics Agency; Geologist—Installed monitoring wells using sonic drilling to determine the vertical and horizontal extent of petroleum, oil, and lubricant contamination, developed monitoring wells, collected groundwater and surface water samples.
Project Date: 2021 – Present
Project Value – $1.4M; Contract Type – Fixed Price; EA Project No. 1535932; EA Project Manager –Mike O'Neill

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation at Former Galena Forward Operating Location; Galena, Alaska; U.S. Air Force; Geologist— Project included a remedial investigation for PFAS compounds at remote former Air Force base off the road system. Investigation will consist of installation of up to 10 new monitoring wells and 60 soil borings, sampling 70 wells, public involvement activities in the local community, and development of a Uniform Federal Policy-Quality Assurance Project Plan Work Plan and Remedial Investigation Report. Conducted soil boring, soil sampling, and groundwater sampling.
Project Date: September 2021 – Present
Project Value – $3,200,000; Contract Type – Cost Plus Fixed Fee; EA Project No. – 1535935; EA Project Manager – John Jones

Fairchild Air Force Base and Mountain Home Air Force Base PFAS Phase 1 Remedial Investigations; Airway Heights, Washington and Mountain Home, Idaho; U.S. Army Corps of Engineers; Geologist—The project included development of an initial conceptual site model of PFAS for the purposing of designing and executing a Phase 1 remedial investigation. This large PFAS release area is across a broad hydrogeologic open basin called the West Plains area that is a basalt basin incised by paleochannels backfilled with glacial outburst sediment by the Missoula Floods. Further alluvium and aeolian soils were deposited across the plain, leaving a multilayered hydrostratigraphy affecting PFAS distribution and mobility. Conducted monitoring well installation using sonic drilling and collected soil samples.
Project Date: 2020 – Present
Project Value – $6.5M; Contract Type – Fixed Price; EA Project No. – 6329605; EA Project Manager – Tim McCormack

Oklahoma-Arkansas Optimized Remediation Contract, Vance Air Force Base; Enid, Oklahoma; U.S. Army Corps of Engineers–Tulsa District; Geologist—The project goals are the remediation of groundwater in two transmissive zones and soil at six sites contaminated with fuel related constituents and chlorinated volatile organic compounds. Developed abbreviated Five Year Review per U.S. Air Force guidance.
Project Date: 2020 – Present
Project Value – $8.2 million; Contract Type – ORC Task Order; EA Project No. – 6362101; EA Project Manager – Sandra Staigerwald and Steven Yankay

Galena RPO Evaluation and Site CERCLA Petroleum, Oil, and Lubricants; Galena, Alaska, U.S. Air Force; Project Manager/Geologist—Provide assistant project management and subcontractor oversight for remedial process optimization activities at the former U.S. Air Force Galena Forward Operating Area and Air Force Base. Conducted groundwater sampling, soil sampling, and soil boring.
Project Date: 2020 – Present
Project Value – $3,049,357; Contract Type – FP; EA Project No. – 1535930; EA Project Manager – Michael Jones

Basewide Monitoring, Land Use Controls and Holding Cell Management; Eielson Air Force Base, Alaska; U.S. Air Force; Geologist/Task Manager—Conducted annual inspections of land use controls and developed annual report; managed investigation-derived waste holding cells and conducted daily or weekly inspections; developed work plan, conducted Installation-Wide Monitoring Program to sample 239 wells, and will develop report of Installation-Wide Monitoring Program results; updated Land Use Control Implementation Plan and Environmental Restoration Program Atlas, which document the location of all environmental sites and land use

controls at Eielson Air Force Base. Acted as Site Health and Safety Officer, Field Team Lead, conducted annual inspections, updated Land Use Control Implementation Plan, and authored reports.
Project Date: September 2019 – Present
Project Value – $1,084,000; Contract Type – Lump Sum; EA Project No. – 6312613; EA Project Manager – John Jones

5-Year Review Five-Year Review at Eight Environmental Restoration Program Sites; Joint Base Elmendorf-Richardson, Alaska; U.S. Air Force; Project Manager—Project consists of the five-year review of eight sites on the former Fort Richardson. Tasks include review of historical documents, site inspections, community involvement and interviews, and development of the Five-Year Review document. Provided technical support and review of document.
Project Date: August 2021 – Present
Project Value – $114,000; Contract Type – Lump Sum; EA Project No. – 6333704; EA Project Manager – John Jones

611th Environmental Long-Term Monitoring, Institutional Control Inspections, and Maintenance at Multiple Bases, Southern Alaska; Task Manager (Document Production), Geologist—Provide comprehensive support for the implementation of this project from planning to field execution and reporting for the following installations: Bethel Radio Relay Site (RRS), Cape Newenham LRRS, Cape Romanzof LRRS, Driftwood Bay RRS, Nikolski RRS, Port Heiden RRS. The overall project effort included long-term monitoring/maintenance and/or Land Use Control and Institutional Control Inspections at a total of 27 sites across the 6 Installations. Worked with a team of authors to write, and was coordinator for the approval of the Installation-specific field plans and reports in accordance with MED and Spatial Data Standards for Facilities, Infrastructure, and Environment requirements. Worked with field staff to collect soil, surface, and/or groundwater samples and aided them in technical field deviations, and in completing the inspections as required by the Pacific Air Force Regional Support Center Land Use Control Management Plan. Authored work plans and reports, and conducted field work at Nikolski and Driftwood Bay RRS.
Project Date: May 2020 – Present
Project Value – $266,347; Contract Type – FP; EA Project No. – 6333701; EA Project Manager – Mark Wilkinson

611th Environmental Long-Term Monitoring, Institutional Control Inspections, and Maintenance at Multiple Bases, Northern Alaska; Assistant Project Manager, Task Manager (Document Production), Geologist—Provide comprehensive support for the implementation of this project from planning to field execution and reporting for the following installations: Cape Lisburne LRRS, Oliktok RRS, Bear Creek RRS, Campion RRS, Indian Mountain LRRS, Kalakaket RRS, Kotzebue RRS, Murphy Dome RRS, North River RRS, Point Barrow RRS, West Nome RRS, Clear Air Station, Sparrevohn LRRS, and Tatalina LRRS. The overall project effort included long-term monitoring/maintenance and/or Land Use Control and Institutional Control Inspections at a total of 44 sites across the 14 Installations. Select Installations scope also required the development of a Five-Year Review Report. Worked with a team of authors to write, and was coordinator for the approval of the Installation-specific field plans and reports in accordance with MED and Spatial Data Standards for Facilities, Infrastructure, and Environment requirements. Worked with field staff to collect soil, surface, and/or groundwater samples and aided them in technical field deviations, and in completing the inspections as required by the Pacific Air Forces Regional Support Center Land Use Control Management Plan. Authored work plans and reports, and conducted field work at North River RRS and West Nome Tank Farm.
Project Date: 2020 – Present
Project Value – $658,149; Contract Type – FP; EA Project No. – 6333703; EA Project Manager – Mark Wilkinson

Basewide Monitoring, Well Rehabilitation and Decommissioning, Land Use Controls, and Holding Cell Management, Eielson Air Force Base, Alaska; Geologist—The goals of this project are to perform annual land use control/institutional control inspections on Eielson Air Force Base Installation Restoration Program and Military Munitions Response sites, annual review and update of site descriptions and inspection checklists, and prepare the 2020 Land Use Control/Institutional Control Final Annual Reports, update the Land Use Control Management Plan for Eielson Air Force Base, and provide operations and maintenance and sampling of the contaminated media holding cells and investigation-derived waste treatment system at Eielson Air Force Base. Includes maintenance of

fish gate LUC for Garrison Slough. Inspections and reporting to ensure compliance with the Eielson Air Force Base Federal Facilities Agreement between the U.S. Air Force, EPA, and Alaska Department of Environmental Conservation. Conducted Land Use Control/Institutional Control inspections, authored the 2020 Land Use Control/Institutional Control report, and provided oversight for work plans.
Project Date: May 2020 – Present
Project Value – $148,442

Supplemental Remedial Investigation, Phase II Source Evaluations, Feasibility Study, and Decision Document at Various Sites and Background Polycyclic Aromatic Hydrocarbon Study at Eielson Air Force Base, Alaska; Geologist—Conduct a Supplemental Remedial Investigation or Phase II Source Evaluation, complete a Feasibility Study and Decision Document, and conduct a Background Polycyclic Aromatic Hydrocarbon study. Tasks associated with this project include installing 55 soil borings, collecting 165 soil samples, installing 55 temporary wells and collecting 55 groundwater samples at 11 sites. Additionally, 55 soil borings, 165 soil samples, 10 temporary monitoring wells, 5 permanent monitoring wells, 15 groundwater samples, and 8 indoor air samples will be installed/collected at 5 sites. Additionally, the 5 sites will have a Feasibility Study and Decision Document. To determine the background concentrations of polycyclic aromatic hydrocarbons and characterize polycyclic aromatic hydrocarbons at select source areas 50 surface soil samples will be collected for background and 30 surface soil samples will be collected for source analysis using polycyclic aromatic hydrocarbons fingerprinting analysis. Project responsibilities include technical review of work plans and reports.
Project Date: July 2019 – Present
Project Value – $1,876,117; Contract Type – Firm Fixed Price, EA Project No. – 1535925; EA Project Manager – Travis Hines

Update Land Use Control Implementation Plan and Inspection Book and F-35 Stockpiles at Eielson Air Force Base, Alaska; U.S. Army Corps of Engineers-Alaska District; Technical Writing Support—Update Land Use Control Implementation Plan, prepare Site Specific Inspection Book, Update Generic Work Plan for Construction Activities, update the Fighter Wing Instruction, support the F-35 environmental activities, conduct soil stockpile inspection and maintenance activities, and sampling and analysis as necessary. Project responsibilities include technical review of Land Use Control Implementation Plan, conducting Stormwater Pollution Prevention Plan inspections of stockpiles, and writing annual report.
Project Date: April 2018 – Present
Project Value – $1,091,650; Contract Type – Firm Fixed Price; EA Project No. – 63214089; EA Project Manager – Travis Hines

Expanded Perfluorooctanoic Acid (PFOA) and/or Perfluorooctanesulfonic Acid (PFOS) Site Inspection, Eielson Air Force Base, Alaska; U.S. Army Corps of Engineers; Geologist and Site Safety and Health Officer—Conduct a Site Inspection to further delineate known PFOA/PFOS groundwater contamination migrating off Eielson Air Force Base to the community of Moose Creek. Tasks associated with the expanded site inspection include preparing planning documents, advancing soil borings and installing groundwater monitoring wells, groundwater sampling, and reporting. Includes installing five permanent nested well arrays with four sets of wells each array and depths to 210 ft below ground surface. Also includes installation of multiple shallow groundwater monitoring wells, SP16 samples, and soil borings. Project responsibilities include technical reviewer for the work plan, and Site Safety and Health Officer.
Project Date: 2018 – Present
Project Value – $1,421,908; Contract Type – Firm Fixed Price, EA Project No. – 6321403; EA Project Manager – Mark Wilkinson

Five-Year Review at Murphy Dome Long Range Radar Site, Alaska; U.S. Air Force; Geologist—This project includes preparing a Five-Year Review for Site LF003 at Murphy Dome Long Range Radar Site. Fieldwork included a site visit to inspect the subject sites. The site visit was conducted to visually confirm and document the effectiveness of the selected remedies.
Project Date: September 2018 – Present
Project Value – $39,830; Contract Type – Firm Fixed Price, EA Project No. – 6321607; EA Project Manager – Sharon Richmond

Alaska Installations PFOA/PFOS Preliminary Assessments at 12 Radar Sites and Site Inspections at 6 Radar Sites and Eareckson Air Station, Alaska and Site Inspection at Wake ASMs, Task Manager/Listed Key Technical Staff—This project includes conducting preliminary assessments and site inspections in accordance with CERCLA for aqueous film-forming foam-related PFOS/PFOA contamination. Developed recommendations in accordance with CERCLA and Air Force Civil Engineer Center policy, and based on the ever-changing regulatory requirements for the PFAS emerging contaminants. Project responsibilities include report preparation.
Project Date: September 2018 – Present
Project Value – $2,129,000; Contract Type – Fixed Price; EA Project No. –6321405; EA Project Manager – Mark Wilkinson

Base-Wide Monitoring, Well Rehabilitation and Decommissioning, Land Use Controls and Holding Cell Management, Eielson Air Force Base, Alaska; U.S. Air Force; Geologist—Decommission 75 wells and provide a report summarizing field activities. Conduct annual land use control/institutional control inspections and complete an annual land use control/institutional control report. Repair any minor problems noted during site inspections. Conduct operations and maintenance at the holding cells including inspections, inventory and map stockpiles, conduct surface water sampling, clean and repair rainwater sumps and fish gates, minor grading and sediment removal, and characterize and dispose of up to 50 tons of soil and 100 gallons of liquids. Project responsibilities include surveying and photographing stockpiles, conducting land use control inspections, repairing problems during inspections, and writing the annual land use control report.
Project Date: July 2018 – Present
Project Value – $165,915; Contract Type – Firm Fixed Price, EA Project No. – 6321607; EA Project Manager – Sharon Richmond

Supplemental Remedial Investigation/Feasibility Study/Proposed Plan/Record of Decision at the Murphy Dome Long Range Radar Station Waste Accumulation Area No. 2 (SS001), Waste Accumulation Area No. 1 and Bulk Fuel Storage Area (SS007), and Waste Accumulation Area No. 3 (SS002); Murphy Dome, Alaska; U.S. Army Corps of Engineers; Project Geologist—This project includes planning and completing a supplemental Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision for SS001 and SS007 at the Murphy Dome Long Range Radar Station. Under a contract modification the Feasibility Study, Proposed Plan and Record of Decision have been descoped. Additionally, a modification to the contract added supplemental Remedial Investigation at SS002. Investigation activities will include installation of soil borings and excavations, to determine the presence of groundwater and to collect soil, surface water, and groundwater samples to determine the extent of contaminated media. Project responsibilities include acting as project geologist during drilling activities, Site Health and Safety Officer, and writing planning documents.
Project Date: 2017 – Present
Project Value – $849,121; Contract Type – Firm Fixed Price, EA Project No. – 63214087; EA Project Manager – Stephen Wrenn

Perfluorinated Compounds Eielson-Moose Creek; Eielson Air Force Base, Alaska; North Wind Site Services, LLC (U.S. Army Corps of Engineers); Project Geologist/Task Manager/Regional Safety and Health Coordinator—Remedial action at the Moose Creek Project area includes the design and installation of a drinking water system in a residential area to address perfluorinated compounds in groundwater at a sub-arctic/interior Alaska location. Management of groundwater sampling at over 159 properties. Coordination with EPA and Alaska Department of Environmental Conservation, with agencies actively engaged in the review of data quality. Management of the design and installation of granular activated carbon residential drinking water treatment systems and the installation of aboveground and below ground water storage tanks where perfluorinated compound levels exceed the advisory level. Operation and maintenance of treatment systems/tanks previously installed. Project responsibilities include coordinating safety and health requirements, managing collection of samples, report preparation, work plan preparation, and managing installation and maintenance of treatment systems and tanks.
Project Date: July 2017 – Present
Project Value – $932,377; Contract Type – Firm Fixed Price, EA Project No. – 6318701 and 1575801; EA Project Manager – Mark Wilkinson

Containerized/Hazardous, Toxic, and Radioactive Waste (CON/HTRW) Removal Action/Remedial Investigation at the Tigalda Island Formerly Used Defense Site, Tigalda Island, Alaska; Marsh Creek, LLC (U.S. Army Corps of Engineers); Task Manager—This project includes performing a CON/HTRW removal

action and remedial investigation with a risk assessment at the Tigalda Island Formerly Used Defense Site. The removal action/remedial investigation includes a review of historical documents, a pre-work planning site visit, fieldwork to remove and dispose of underground storage tanks, their contents, piping, and associated petroleum-contaminated soil, determination of nature and extent of contaminants of concern and contaminants of potential concern, and reporting. Additionally, a site visit for future CON/HTRW activities at Unalga Island Formerly Used Defense Site was conducted under this project. Project responsibilities included writing and reviewing site visit work plans, site visit reports, and removal action/remedial investigation work plan.
Project Date: April 2017 – September 2019
Project Value – $367,216; Contract Type – Firm Fixed Price, EA Project No. – 1557401; EA Project Manager – Mike Jones

Moose Creek Perfluorinated Compounds Treatment, Alaska; Environmental Quality Services; Moose Creek, Alaska; U.S. Army Corps of Engineers; Project Geologist/Task Manager/Regional Safety and Health Coordinator—Remedial action at the Moose Creek Project area included the design and installation of a drinking water system in a residential area to address perfluorinated compounds in groundwater at a sub-arctic/interior Alaska location. Project was high profile and time-critical with sensitive community relations issues. Management of groundwater sampling at over 159 properties. Coordination with EPA and Alaska Department of Environmental Conservation, with agencies actively engaged in the review of data quality. Management of the design and installation of granular activated carbon residential drinking water treatment systems at 24 households and the installation of above-ground and belowground water storage tanks at 50 households where perfluorinated compound levels exceed the advisory level. Worked with all stakeholders (Air Force, community, and Regulatory Agencies) to implement a set of solutions, with options. Due to the time-critical aspect of the project, drinking water system installation continued throughout the winter in arctic conditions with atypical electrical and plumbing codes. Work was completed in a timely manner to the satisfaction of all stakeholders. Project responsibilities included coordinating safety and health requirements, managing collection of samples, report preparation, work plan preparation, and managing installation and maintenance of treatment systems and tanks.
Project Date: November 2015 – June 2017
Project Value – $7,693,639; Contract Type – Firm Fixed Price, EA Project No. – 6258004; EA Project Manager – Mark Wilkinson

Basewide Land Use Controls and Holding Cell Maintenance; and Restoration Advisory Board Support and Community Relations Plan Support, Eielson Air Force Base, Alaska; Air Force Civil Engineer Center; Project Manager—Cleaned and maintained containment cells; sampled and removed snow melt, sediment, and contaminated soils from containment cells; Global Positioning System and delineated polychlorinated biphenyl disposal cell; updated Geographic Information System map; conducted land use control sign inventory; conducted land use control site inspections; replaced and maintained signs; maintained and repaired Garrison slough fish gates; supported the installation community involvement program; and coordinated Restoration Advisory Board meetings. Deliverables included discharge permit for snow melt, land use control/institutional control report, and Restoration Advisory Board meeting minutes and newspaper notices.
Project Date: March 2013 – March 2014
Project Value – $147,906; Contract Type – FFP, EA Project No. – 6242174; EA Project Manager – G. Manning

Follow-On Investigation for Site OT027 at King Salmon Air Station, Alaska; Air Force Civil Engineer Center; Project Geologist—A follow-on site investigation that included passive soil gas surveys, aquifer pump testing, soil borings, and monitoring well installation to characterize the source and extent of trichloroethylene in that has migrated into the second aquifer. Conducted monitoring well installation for Phase 2 including soil sampling, monitoring well installation, and groundwater sampling.
Project Date: October 2013
Project Value – $680,000; Contract Type – Time and Materials; EA Project No. – 1456032; EA Project Manager – Stephen Wrenn

National Pollutant Discharge Elimination System/Other Waste Water Sampling; Eielson Air Force Base, Alaska; Air Force Civil Engineer Center; Project Geologist/Site Health and Safety Supervisor—Provided support for sampling of groundwater and the facilities as required by the Pretreatment Plan and Wastewater Disposal Permit 2006DB0045 for the wastewater treatment plant; and sampling at Central Heat and Power Plant cooling water discharge ditch as required by National Pollutant Discharge Elimination System Permit AK-000134-1 at

Eielson Air Force Base, Alaska. Deliverables included analytical, sampling and data reports, monthly discharge monitoring reports for the Central Heat and Power Plant, semi-annual discharge monitoring reports for the wastewater treatment plant and annual report for wastewater significant and non-significant domestic users. Sampled surface and groundwater, completed discharge monitoring reports, and completed health and safety plan.
Project Date: April 2013 – April 2014
Project Value – $134,997; Contract Type – Firm Fixed Price, EA Project No. – 6242179; EA Project Manager – Travis Hines

Data Gap Investigations for Operable Units 1/1B/8, 2, 3/4/5, 6 and Source Evaluation Report Sites, Eielson Air Force Base, Alaska; Air Force Civil Engineer Center; Project Geologist/Site Health and Safety Supervisor—Long-term monitoring at 37 source areas, vapor intrusion investigation, monitoring well repair and inventory, background metal analysis, vertical and horizontal groundwater plume delineations, geophysical investigations, passive soil gas sampling, landfill location surveys and inspections, and regulatory support. Deliverables included a combined Uniform Federal Policy-Quality Assurance Project Plan, groundwater monitoring reports, vapor intrusion investigation report, well condition report, geophysical survey reports, landfill inspection reports, background metal reports, conceptual site model update reports, and a historic pipeline summary report. Served as team lead for field activities, conducted soil gas surveys, completed dig permits/utility clearance, and supervised field teams for compliance with Health and Safety Plan.
Project Date: February 2013 – October 2015
Project Value – $5,998,534; Contract Type – Firm Fixed Price, EA Project No. – 1456033; EA Project Manager – Mark Wilkinson

Data Gap Investigations for Operable Units 1 through 6, Five-Year Review, and Restoration Advisory Board, and Community Relations Plan Support, Eielson Air Force Base, Alaska; Air Force Civil Engineering Center; Project Geologist/Site Health and Safety Supervisor—Long-term monitoring at 37 source areas, vapor intrusion investigation, emerging technology evaluation, Base-wide groundwater and surface water gauging/modeling, passive soil gas sampling, sediment sampling, and Five-Year Review. Deliverables included a combined Uniform Federal Policy-Quality Assurance Project Plan, groundwater monitoring report, vapor intrusion investigation report, emerging technologies report, Five-Year Review, and Geographic Information System database updates. Project also included Restoration Advisory Board and regulatory support. Served as team lead for field activities, conducted passive soil gas survey, authored Health and Safety Plan, authored portions of groundwater monitoring report, completed dig permits/utility clearance, and supervised field teams for compliance with Health and Safety Plan.
Project Date: July 2012 – July 2013
Project Value – $3,815,764; Contract Type – Firm Fixed Price, EA Project No. – 1456029; EA Project Manager – Mark Wilkinson

Stormwater Sampling and Multi-Sector General Permit Compliance Site Inspection and Reporting; Eielson Air Force Base, Alaska; Air Force Civil Engineer Center; Project Manager—Provided support for sampling, analyses, and monitoring of stormwater as required by the Alaska Pollutant Discharge Elimination System Multi-Sector General Permit, and Stormwater Pollution Prevention Plan. Eielson Air Force Base has six sectors: Sector J, Gravel Mining; Sector K, Hazardous Waste; Sector L, Landfills; Sector O, Power Plant; Sector S, Airfield Operations; and Sector T, Wastewater Treatment Plant. Specific tasks included: conduct monitoring, sampling, and analyses in accordance with the schedule and procedures of the six sectors addressed in the 2008 Multi-Sector General Permit and existing Stormwater Pollution Prevention Plan. Deliverables included preparation of analytical data reports and packages. Perform technical activities and provide support for monitoring and sampling/analyses of stormwater as required by the Alaska Pollutant Discharge Elimination System Multi-Sector General Permit, and Stormwater Pollution Prevention Plan; and for the annual comprehensive stormwater evaluation and preparation of annual reports detailing stormwater activities/inspections required to be provided to the Alaska Department of Environmental Conservation on the Annual Reporting Form as included in the Multi-Sector General Permit. Deliverables included the Multi-Sector General Permit Compliance Monitoring Report and the Annual Multi-Sector General Permit Compliance Report. Sampled stormwater and setup/maintained autosamplers.
Project Date: August 2012 – July 2013
Project Value – $128,217; Contract Type – Firm Fixed Price, EA Project No. – 6242151; EA Project Manager – Travis Hines

Sampling National Pollution Discharge Elimination System and Other Wastewater; Eielson Air Force Base, Alaska; Project Geologist—The purpose of this project was to provide support for sampling of groundwater and the facilities as required by the Pretreatment Plan and Wastewater Disposal Permit for the wastewater treatment plant; and sampling at the central heat and power plant cooling water discharge ditch as required by the National Pollutant Discharge Elimination System Permit. The wastewater treatment plant personnel conducted the sampling of the influent and effluent at the wastewater treatment plant under separate contract. Specific tasks included the following: conduct sampling at a cluster made of up-gradient and down-gradient groundwater monitoring wells, sampling all Significant Non-Domestic Users and Non-Domestic users, monitoring temperature and flow rate of discharge from the central heat and power plant as required by the National Pollutant Discharge Elimination System Permit, and preparing semi-annual (wastewater treatment plant) and monthly (central heat and power plant) discharge monitoring reports using the sampling/monitoring data.
Project Date: March 2012 – March 2013
Project Value – $100,000; Contract Type – Fixed Firm Price; EA Project No. – 6242152; EA Project Manager – Chip Brown

Multi-Site Investigation, Feasibility Study and Technical/Regulatory Support Contract, Eielson Air Force Base, Alaska; Air Force Center for Engineering and the Environment; Project Geologist—Investigation and evaluation of 20 Installation Restoration Program source areas on Eielson Air Force Base plus additional support for newly discovered source areas. Project includes soil delineations, vertical and horizontal groundwater plume delineations, indoor air quality investigations, soil gas investigations, investigations for contaminants in fish and micro invertebrate, and geophysical investigations. Deliverables included 18 Uniform Federal Policy-Quality Assurance Project Plans and reports, Conceptual Site Model Updates, Remedial Investigation/Feasibility Studies, Risk Assessments, Record of Decision Amendments, Preliminary Assessment/Site Inspections, and Geographic Information System database updates. Project also included Restoration Advisory Board and regulatory support. Served as team lead for field activities, conducted passive soil gas survey, collected samples from temporary SP16 monitoring wells and permanent wells, collected Global Positioning System location data, managed waste on-site, and coordinated site activities with base personnel.
Project Date: 2011–2012
Project Value – $5,343,114; Contract Type – Time and Materials; EA Project No. – 1456026; EA Project Manager – Mark Wilkinson

Water Quality, Permit Compliance Sampling at Eielson Air Force Base, Alaska, Eielson Air Force Base, Alaska; Air Force Center for Engineering and the Environment; Project Geologist—Conducted groundwater monitoring for wastewater treatment plant discharge permit compliance, two semiannual sampling events. Completed seven monthly discharge monitoring events to measure discharge for the Eielson Coastal Habitat Protection Plan, included flow, pH, and temperature. Project involved calculations and submittal of nine total discharge monitoring reports.
Project Date: 2011–2012
Project Value – $28,788; Contract Type – Time and Materials; EA Project No. – 6242123; EA Project Manager – Mark Wilkinson

Environmental Assessment of Defense Energy Support Center Spills at Eielson Air Force Base, Alaska, Eielson Air Force Base, Alaska; Air Force Center for Engineering and the Environment; Project Manager—Project included a site characterization of a JP-8 fuel spill at Eielson Air Force Base, Alaska in accordance with the Final Environmental Restoration Support Services Quality Program Plan and an interim remedial action by excavating impacted soils and restoring drainage. Installed, developed, and sampled three groundwater monitoring wells; collected three soil samples; and collected Global Positioning System location data.
Project Date: 2011–2013
Project Value – $380,162; Contract Type – Time and Materials; EA Project No. – 1456021; EA Project Manager – Mark Wilkinson

Remedial Action for Sites 6 and 13, Clear Air Force Station, Alaska; Air Force; Project Geologist—Project included dig and hauls at two locations at Clear Air Force Station. Site 6 involved removing approximately 50 cubic yards of pesticide-contaminated soil. Site 13 involved removing approximately 150 cubic yards of polychlorinated biphenyl-contaminated soil. All excavated soil was transported for off-site disposal at a RCRA landfill. Provided oversight for soil removal activities, collected soil samples, and analyzed samples using immunoassay kits.

Project Date: 2011–2012
Project Value – $532,150; Contract Type – Fixed Price; EA Project No. – 6236902; EA Project Manager – Stephen Wrenn

Wastewater Disposal Permit Renewal for Wastewater Treatment Plant, Building 2316 and Multi-Sector General Permit Comprehensive Site Inspections/Annual Reporting, Eielson Air Force Base, Alaska; Air Force Center for Engineering and the Environment Project Manager—Project included preparation and submittal of the permit application and consultation with base personnel and the Alaska Department of Environmental Conservation until Eielson Air Force Base receives permit renewal. Include preparation of a permit specific Quality Assurance Project Plan and purchase and installation of the 10 additional warning signs at the wastewater treatment plant discharge pond. This project also addressed Eielson Air Force Base coverage under the Multi-Sector General Permit annual comprehensive site inspections. Prepared permit application and consulted with base personnel regarding site specific conditions.
Project Date: 2011
Project Value – $88,981; Contract Type – Firm Fixed Price; EA Project No. – 6242104; EA Project Manager – Mark Wilkinson

Spill Prevention Control and Countermeasure Plan and Soil Sampling, Eielson Air Force Base, Alaska; Air Force Center for Engineering and the Environment; Project Manager—Project included updating the Eielson Ranges Spill Prevention Control and Countermeasure Plan for over 30 remote locations, site visits conducted via helicopter. In addition, the project included on-call soil sampling of up to six events with 2 hour' notice. Assisted with site walkthrough and photographed two Spill Prevention Control and Countermeasure Plan sites. Additionally, conducted photoionization detector screening of soils at a separate site.
Project Date: 2011
Project Value – $78,180; Contract Type – Firm Fixed Price; EA Project No. – 6242110; EA Project Manager – Mark Wilkinson

Other Project Experience

White Sands Missile Range, New Mexico; U.S. Army;2009; Project Geologist— Reviewed historic documents/reports, researched closure requirements, and recommended additional actions or completed required closure reports based on state and federal requirements.

Former Walker Air Force Base (Roswell International Air Center), Roswell, New Mexico; U.S. Army Corps of Engineers; 2009; Project Geologist—Installed numerous groundwater monitoring wells (mud rotary drilling) and coordinated activities with the U.S. Army Corps of Engineers and the City of Roswell (current land owner) at the active airport.

Groundwater Remediation System Installation, Former Pesticide Manufacturing Facility, Lubbock, Texas; 2009-2010; Project Geologist—Installed and logged groundwater extraction, injection wells for a groundwater pump and treat system, and conducted aquifer testing to calculate appropriate injection and extraction rates. Additionally, provided oversight for the installation of piping associated with the treatment system.

Ennis Paint, Ennis, Texas; 2007-2009; Geologist—Conducted groundwater sampling and aquifer testing at a small industrial site. Additionally, conducted injection of chemicals to treat groundwater *in situ*. Wrote the final investigation report, monthly groundwater reports, as well as remediation update reports.

COMCAST Sites, Various Texas, 2007-2009; Geologist —Conducted Phase I and Phase II site assessments of various properties as the result of a property ownership transfer. Activities included conducting site walkthrough, photographing site conditions, records searches, writing Phase I reports, soil, groundwater, surface water, and tap water sampling, aquifer testing, data analysis, report writing, labeling and managing investigation derived waste, and managing subcontractors in the field. Additionally, a generator and associated underground storage tank were decommissioned.

Spectra-Physics/Teledyne Semiconductors, Mountain View, California; 2008; Author—Drafted a Focused Feasibility Study for a large Superfund Site in Mountain View, California. The study focused on comparing pump and treat (the current remedy) with long-term monitoring to *in situ* treatment in the source area.

Indian Bend Wash Area, Scottsdale, Arizona; 2008-2009; Geologist—Conducted operation and maintenance for a groundwater treatment facility at Miller Road Treatment Facility. Operation and maintenance activities included daily effluent sampling, weekly influent and outfall sampling, monitoring of system parameters (pressure, voltage, temperature, pH), and light maintenance.

Laughlin Air Force Base, Del Rio, Texas; ***U.S. Air Force; 2000-2007; Corrective Action Specialist***—Responsible for regulatory oversight of RCRA Facility Investigation, Leaking Petroleum Storage Tanks, and environmental spills at the base, activities included investigation for unexploded ordinance, petroleum products, chlorinated solvents, and metals. Communicated state and federal requirements to base environmental personnel, subcontractors, and the Air Force Center for Environmental Excellence personnel, to include members of the public.

Goodfellow Air Force Base, San Angelo, Texas; U.S. Air Force; 2000-2007; Corrective Action Specialist—Responsible for regulatory oversight of RCRA Facility Investigation and environmental spills at the base, activities included investigation of small arms firing ranges, a site wide carbon tetrachloride spill, petroleum product releases and associated arsenic contamination. Communicated state and federal requirements to base environmental personnel and subcontractors, as well as members of the public.

DuPont, Orange, Texas; 2000-2007; Corrective Action Specialist—Responsible for regulatory oversight of a RCRA Facility Investigation of an active chemical plant investigating numerous waste management units and conducting remediation of chlorinated solvents in groundwater under RCRA Compliance Plan. Conducted review of RCRA Compliance Plan renewal.

Employment History

Employer—EA Engineering, Science, and Technology, Inc., PBC (Fairbanks, Alaska)
Dates of Employment—April 2011 – Present
Title—Geologist III

Employer—Goodwill Staffing Services (Texas Commission on Environmental Quality)
Dates of Employment—January–April 2011
Title—Natural Resource Specialist

Employer—ARCADIS (LFR an ARCADIS Company)
Dates of Employment—February 2007 – January 2010
Title—Scientist II (Project Geologist)

Employer—Texas Commission on Environmental Quality
Dates of Employment—September 2000 – February 2007
Title—Corrective Action Specialist

List of Technical Skills and Specializations

- Ambient air and soil vapor sampling
- Aquifer testing
- CERCLA/RCRA regulations
- Construction oversight
- Groundwater sampling
- Monitoring well installation
- Regulatory interaction
- Site assessments (Phase I and Phase II)
- Soil sampling
- Technical writing

Natali A. Hoeg
Geologist

Education
B.S./Geology/2023 (University of the Pacific)

Specialized Training
OSHA 40-Hour Hazardous Waste Operations and Emergency Response Training; 2023

Experience
Years with EA: <1 Total Years: 1

Ms. Hoeg is a geologist with experience in mapping groundwater contamination plumes, forecast monitoring, soil sampling, database management, and sample management. She has experience using hyperspectral and x-ray fluorescence analyses in the field. Additionally, she has experience with soil sampling and passive and low flow groundwater sampling. Routinely, she assists with field event planning and preparation, data collection, and sample management.

Ms. Hoeg has previously assisted with recommending cleanup strategies for contaminated sites for the State Water Board's Underground Storage Tank Cleanup Fund and authored reviews for individual sites within the fund. Additionally, she has taken courses in federal and California water and environmental policy, hydrogeology, ArcGIS Pro, and Critical Zone studies. She graduated from University of the Pacific Summa Cum Laude, with a Bachelor of Science degree in Geology with minors in French and Sustainability.

Professional Experience

Scientific Aide—Author reviews for cleanup sites within the fund, upload to the Geotracker database. Assist with appeals and reimbursement requests and tracking, and review groundwater monitoring reports.

EA Project Experience

Base Realignment and Closure Non-Aqueous Film-Forming Foam Per- and Polyfluoroalkyl Substances (PFAS) Preliminary Assessment; U.S. Army Corps of Engineers–Omaha District, U.S. Environmental Protection Agency Region 5; Junior Geologist—Researched, wrote, and edited six due diligence reports. Identified non-aqueous film-forming foam PFAS sources and potential receptors. Performed preliminary assessment interviews in addition reviewing historical documents.
Project Date: May 2023 – Present
Project Value – $1,485,319.08; Contract Type – LS; EA Project No. – 63321-08-0063-LS; EA Project Manager – Craig Johnson

Orange County North Basin Remedial, Orange County, California; U.S. Environmental Protection Agency Region 9; Junior Geologist—Assisted with administrative tasks, including waste manifest invoice monitoring, data visualization, and formatting of appendices and tables based on field forms. Provided quality control and digitized boring logs into Logplot.
Project Date: June 2023 – Present
Project Value – $4,863,058.85; Contract Type – CPM; EA Project No. – 15189-45-0075-TM; EA Project Manager – Catherine LeCours

Sulphur Bank Mercury Mine, Clearlake Oaks, California; U.S. Environmental Protection Agency Region 9; Junior Geologist—Performed drilling sampling, soil samples, and residential sampling. Gained proficiency with x-ray fluorescence and hyperspectral analysis of samples.
Project Date: August–October 2023
Project Value – $369,775.15; Contract Type – CPM; EA Project No. – 15189-48-0030-TM; EA Project Manager – Nate Jones

Residential Soil Sampling, Argonaut Mine Site; Jackson, California; U.S. Environmental Protection Agency Region 9; Junior Geologist—Performed residential yard soil sampling in Jackson, California. Collected samples using hand tools, processed samples through sieves, classified soils, and scanned samples with an x-ray fluorescence tool. Shipped samples following the field event.
Project Date: September–November 2023

Project Value – $300,000; Contract Type – CPM; EA Project No. – 15189-21-0021-TM; EA Project Manager – Sheena Styger

Dry Season Water Monitoring, Argonaut Mine Site; Jackson, California; U.S. Environmental Protection Agency Region 9; Junior Geologist—Developed Scribe file for the sampling event. Collected surface and groundwater samples. Managed and shipped samples weekly for the duration of the event. Following the end of the field effort, wrote the Field Activity Report summarizing sampling activities.
Project Date: October–January 2024
Project Value – $24976.34; Contract Type – CPM; EA Project No. – 15189-46-0076-TM; EA Project Manager – Richard Price

Klau/Buena Vista Mines, San Luis Opispo County, California; U.S. Environmental Protection Agency Region 9; Junior Geologist—Routine forecast monitoring and storm notification. Administrative preparation for sampling events. Sample management and sample shipment. Acted as sample manager for these stormwater sampling events.
Project Date: October 2023 – Present
Project Value – $2,741,653.01; Contract Type – CPM; EA Project No. – 15189-51-0063-TM; EA Project Manager – Mark Gardiner

Stormwater Runoff Monitoring, Argonaut Mine Site; Jackson, California; U.S. Environmental Protection Agency Region 9; Junior Geologist—Performed stormwater monitoring and sampling at Argonaut mine during the wet season. Mobilized independently to site and performed water monitoring, sampling, and stormwater compliance inspections of Dam 1 at the site.
Project Date: January 2024 – Present
Project Value – $24976.34; Contract Type – CPM; EA Project No. – 15189-46-0076-TM; EA Project Manager – Richard Price

Remedial Investigation/Feasibility Study, Lorentz Barrel and Drum Superfund Site; San Jose, California; EPA Region 9; Junior Geologist—Passive sampler planning and event preparation. Sampling responsibilities included deploying and sampling passive diffusion bags and rigid porous polyethylene samplers deployed in monitoring wells. Additionally, has performed surveying oversight and digitized boring and well construction logs into Logplot.
Project Date: November 2023 – Present
Project Value -- $1,395,952; Contract Type – CPM; EA Project No. – 15189-53-0056-TM; EA Project Manager – Kathy Monks

Employment History

Employer—EA Engineering, Science, and Technology, Inc. (Sacramento, California)
Dates of Employment—May 2023 – Present
Title—Geologist I

Employer—Redhorse Corporation
Dates of Employment—January 2022 – May 2023
Title—Scientific Aide for the Underground Storage Tank Cleanup Fund, California State Water Boards

List of Technical Skills and Specializations

- Database uploads and organization
- Experience in Microsoft Excel, Access, and Word
- Introductory experience of ArcGIS Pro
- Forecast monitoring and stormwater sampling techniques and event planning
- Logplot
- Low-flow groundwater sampling
- Sample management and shipping, EPA SCRIBE
- Soil sampling, residential sampling, and drilling sampling

- X-ray fluorescence and hyperspectral analysis

Hallie E. Peterson, GIT
Geologist

Ms. Peterson is a geologist in EA's Anchorage office. She has over 6 years of professional experience in disciplines such as environmental investigations and site characterization, environmental monitoring and remediation, environmental compliance, and preliminary assessment/site inspection/remedial investigation processes to investigate emerging contaminants such as per- and polyfluoroalkyl substances (PFAS).

Ms. Peterson's responsibilities include project and task order management, as well as technical tasks such as: developing planning documents and post-investigation reports to support a wide variety of field programs, and planning, coordinating, and leading both local and logistically complex remote environmental monitoring and sampling efforts throughout Alaska and beyond. She works on projects in the private sector as well as those managed under the Navy, the Air Force Civil Engineer Center, U.S. Army Corps of Engineers (USACE), and with associated federal and state regulator entities.

Professional Experience

Environmental Sampling—Experienced in collecting environmental media, including groundwater, surface water, porewater, surface and subsurface soil, sediment, and air samples using various collection methods.

Health and Safety—Experienced in creating health and safety documents, including writing Accident Prevention Plans, Site Safety and Health Plans, and Activity Hazard Analyses. Maintained role of Site Safety and Health Officer during Department of Defense site inspection field efforts in remote areas of Alaska as well as Wake Island Airfield. Experienced in implementing and complying with health and safety plans and protocols.

Surveying—Experienced in performing differential leveling and third order level loop surveys to a specified accuracy in various terrain, utilizing both digital and automatic leveling equipment, and performing misclosure calculations. Experienced in conducting real time kinematic surveying.

Education
B.S./Geosciences/2015 (Pacific Lutheran University)

Registrations/Certifications
Licensed Geologist-in-Training (GIT)—WA (2019, No. 21014013)
Alaska Certified Erosion and Sediment Control Lead (CESCL) No. CC-21-7688; 2021, 2024
Alaska Department of Environmental Conservation Qualified Environmental Sampler

Specialized Training
OSHA 40-Hour Hazardous Waste Operations and Emergency Response Training; 2017
OSHA 30-Hour Construction Safety Training; 2021
OSHA 8-Hour Hazardous Waste Operations and Emergency Response Refresher; 2023
OSHA 8-Hour Hazardous Waste Operations and Emergency Response Supervisor Training; 2019
Learn to Return Wildlife Awareness and Spray Defense Certificate; 2019, 2020
National Environmental Management Academy PFAS Transport, Fate, and Remediation Training; 2022
North Slope Training Certificate; 2020
Bloodborne Pathogen Training; 2021
EA Accident Prevention Plan Training; 2021
EA PFAS Training; 2021
EA Project Management Training; 2023
Indigenous Awareness Training; 2024
CPR, AED, and First Aid Training; 2023

Professional Affiliations
American Institute of Professional Geologists, 2022, 2023, 2024

Experience
Years with EA: 6 Total Years: 6

Monitoring Well Installation and Groundwater Monitoring—Experienced in characterizing subsurface lithology, logging soil cores, overseeing drilling (hollow-stem auger, air rotary, and direct push methods), overseeing well construction and installation activities, performing well development, and monitoring groundwater quality parameters using YSI® and Horiba® instrumentation.

Industrial Stormwater Compliance—Experienced in collecting stormwater samples and conducting industrial facility stormwater compliance inspections.

Vapor Intrusion Investigation—Practiced in installing and sampling vapor intrusion systems relating to human inhalation/health impact investigations.

***PFAS-Specific Sampling*—**Experienced in leading PFAS field events including preliminary assessment site visits, site inspections, and remedial investigations. Experienced in following and training personnel on specific field and post-field protocols and best practices for handling and collecting environmental samples for PFAS analysis.

Geologic Field Mapping—Performed fieldwork and geologic mapping in the Tobacco Root, Pioneer, and Beaverhead mountains in southwestern Montana. Utilized a handheld Global Positioning System unit, topographic maps, and aerial photographs to navigate and map efficiently while interpreting rock units and geologic structures in the area.

Selected Publications and Presentations

Peterson, H. 2015. *Potential geothermal energy production at oceanic ridges*. PowerPoint presentation.

EA Project Experience

Processes and Challenges of Nature-Based Solutions Implementation in Arctic Alaska; Point Lay, Alaska; USACE; Support Author—Exploring processes unique to the implementation of nature-based solutions for coastal resilience and habitat preservation in Arctic Alaska. Investigating how the barrier islands at Point Lay provide habitat for the Pacific walrus and protect Point Lay from coastal storm impacts. This project will expand on previously completed work and evaluate the engineering, scientific, societal, and permitting processes related to implementing nature-based solutions in the area around Point Lay.
Project Date: November 2023 – Present
Project Value – $196,000; Contract Type – Lump Sum; EA Project No. – 64047-01-0076-LS; EA Project Manager – John Jones

Fuel Farms Long-Term Monitoring, Naval Air Station Whidbey Island; Oak Harbor, Washington; Naval Facilities Engineering Systems Command Northwest; Project Quality Control Manager—EA was contracted to conduct groundwater monitoring activities at the Fuel Farms (1-4) at Naval Air Station Whidbey Island in Harbor, Washington under Naval Facilities Engineering Systems Command Northwest Contract N44255-20-D-6006. Contributions included preparation of annual technical reports and project plans and quality control management.
Project Date: October 2023 – Present
Project Value – $129,320; Contract Type – LS; EA Project No. – 6354472; EA Project Manager –Camille Warren

Pre-Design Investigation, Sulphur Bank Mercury Mine Superfund Site Operable Unit (OU)-1 – Clear Lake, California; U.S. Environmental Protection Agency Region 9; Geologist, Report Task Manager—Sulphur Bank Mercury Mine Superfund site is a historic open pit mercury mine on the shore of Clear Lake in Lake County, California, that was once the largest producers of mercury in California until 1957. Sulphur was also mined from the site in the late 1800s. The open pit is filled with water and is referred to as the Herman Impoundment. OU-1 includes the Herman Impoundment and approximately 2,500,000 cubic yards of mercury and arsenic containing mine waste, the 220-acre mine property, and residential lots located in the Elem Indian Colony and to the South of the mine. Provided geology support during pre-design investigation, which focused on collecting additional data to guide the remedial design of OU-1. Scope included advancing borings using sonic and air rotary methods for delineating the depths of mine waste using analytical analysis and hyperspectral field instrumentation to decipher naturally geothermally altered Andesite or Franciscan formations from mine altered formation materials; installing monitoring wells, well development, sampling monitoring; testing pitting to assess mine waste and to evaluate potential borrow source areas including geotechnical sampling, residential soil sampling, and soil sampling of areas between mine waste piles to refine soils impacted by the historic mining operations. In addition, a cultural resource assessment for Section 106 consultation, tribal monitoring, light detection and ranging and surveying activities were performed. Field work execution was logistically challenging in part due to geothermal activity beneath the site resulting in hydrogen sulfide gas and pressurized groundwater being encountered.
Project Date: October 2023 – Present
Project Value – $3,994,585; Contract Type – CPFF; EA Project No. – 15189-54-0060-TM; Project Manager Nathan Jones

Remedial Investigation, Sulphur Bank Mercury Mine Superfund Site OU-4, Clear Lake, California; U.S. Environmental Protection Agency Region 9; Geologist, Report Task Manager—Sulphur Bank Mercury Mine Superfund site is a historic open pit mercury mine on the shore of Clear Lake in Lake County, California, that was once the largest producers of mercury in California until 1957. Sulphur was also mined from the site in the late 1800s. The open pit is filled with water and is referred to as the Herman Impoundment. OU-4 includes an approximate 50-acre wetland located immediately north of the mine property on the edge of Clear Lake and uplands to the north and east of the mining site where mining operation impacts may have occurred. Provided geology support during the remedial investigation, which focused on collecting additional soil, groundwater, plant, and avian samples to further delineate contaminants of concern and to collect additional pre-mining and background samples for developing cleanup standards. In addition, a cultural resource assessment for Section 106 consultation, tribal monitoring, light detection and ranging, and surveying activities were performed. Fieldwork execution was logistically challenging in part due to geothermal activity beneath the site resulting in hydrogen sulfide gas and pressurized groundwater being encountered.
Project Date: October 2023 – Present
Project Value – $1,077,293; Contract Type – CPFF; EA Project No. – 15189-55-0047-TM; Project Manager Nathan Jones

Fort Greely Data Gaps; Fort Greely, Alaska; USACE; Author—As part of a Joint Venture with North Wind, EA is managing development of a feasibility study for four sites at Fort Greely by evaluating existing data for each site and developing alternatives for treatment or closure of each site. Authored Environmental Summary Report for one site at Fort Greely.
Project Date: August 2023 – Present
Project Value – $520,000 (EA tasks $62,000); Contract Type – Lump Sum; EA Project No. – 6359603; EA Project Manager – John Jones

Annual Long-Term Monitoring and Operation and Maintenance at the Former Distant Early Warning Line Station, Point McIntyre, Alaska; Naval Facilities Engineering Systems Command Northwest; Field Technical Lead, Site Safety and Health Officer, Report Author—Responsible for developing project work planning document and Accident Prevention Plan. Led field effort and was responsible for authoring annual PCMR document.
Project Date: July 2023 – Present
Project Value – $212,228; Contract Type – Lump Sum; EA Project No. – 6354467; EA Project Manager – Nicole Stoecklein

Annual Long-Term Monitoring, Operation and Maintenance, and Treatment Plant Repair (as applicable) at the Former Naval Arctic Research Laboratory, Utqiagvik (Barrow), Alaska; Naval Facilities Engineering Systems Command Northwest; Author—Responsible for the development of Accident Prevention Plan.
Project Dates: June–September 2023
Project Value – $171,641; Contract Type – LS; EA Project No. – 6354468; EA Project Manager – Nicole Stoecklein

Lake Louise Supplemental Remedial Investigation/Supplemental Remedial Action; Northwind; Field Lead, Report Author—Under the North Wind-EA JV LLC, EA is providing project management, field execution, and reporting for the Supplemental Remedial Investigation. Specifically, acted as field lead for delineation drilling event and lead author for the Supplemental Remedial Investigation Report.
Project Dates: May 2023 – January 2024
Project Value – $104,144; Contract Type – LS; EA Project No. – 63596052; EA Project Manager – Nicole Stoecklein

Adak Free Product Recovery, Operable Unit A, DVD Maintenance, and Long-Term Monitoring (as applicable), Former Adak Naval Air Facility, Adak, Alaska; U.S. Navy, Naval Facilities Engineering Systems Command; Northwest Division; Field Technical Lead, Site Safety and Health Officer, and Lead Author—Responsible for supporting coordination of logistics throughout the course of project execution for monthly on-island mobilizations. Responsible for executing and training alternative staff and on-island subcontractors to satisfy

contractual obligations, including free product recovery, boom maintenance, waste management, and sampling of various media. Lead author on various project plans and reports.
Project Date: May 2023 – Present
Project Value – $295,202 Contract Type – Lump Sum (LS); EA Project Nos. – 6354465; EA Project Manager – Nicole Stoecklein

PFAS Mitigation Alaska – Sparrevohn and Indian Mountain Long Range Radar Sites (LRRSs); Northwind; Report Author—Sampling for delineation of potential off-base perfluorooctanoic acid (PFOA)/ perfluorooctanesulfonic acid (PFOS) surface water contamination migrating off historical firefighting training locations at Sparrevohn and Indian Mountain LRRSs. Lead author on Indian Mountain LRRS Report Addendum.
Project Dates: December 2022 – August 2023
Project Value – $526,403; Contract Type – LS; EA Project No. – 1575802; EA Project Manager – Mark Wilkinson

Fort Learnard Magazines E2 and J Detonation Munitions Response Site Military Munitions Response Program Remedial Investigation/Feasibility Study/Proposed Plan/Decision Document, Unalaska Island, Alaska; USACE–Sacramento; Author—EA is performing a Military Munitions Response Program Remedial Investigation/Feasibility Study for the former detonated magazines E2 and J to determine whether further response actions pursuant to Comprehensive Environmental Response, Compensation, and Liability Act **(**CERCLA) and the National Contingency Plan is warranted. The scope of this contract is to conduct a remedial investigation and prepare a feasibility study; a Proposed Plan; and Decision Document in compliance with CERCLA, in accordance with current Department of Defense, Army, and USACE Regulations and Guidance and all applicable Data Item Descriptions. The Military Munitions Response Program remedial investigation/feasibility study is being conducted to define the nature and extent of munitions of explosive concern and munitions constituents and to assess the potential hazards posed to human health and the environment by munitions and explosives of concern and/or munitions constituents. The Project involves remote field work in the Aleutian Islands, and includes Quality Assurance Project Plan development, Systematic Planning Meetings, Community Relations Plans and support, Cultural Resources Monitoring Plans and support, and Biological Resource Monitoring Plans and support. Responsible for developing abbreviated Accident Prevention Plan.
Project Date: August 2022 – Present
Project Value –$4,263,939.00; Contract Type – LS; EA Project No. –* 6332107*; EA Project Manager – Levi Collins

Naval Facilities Engineering Systems Command Submerged Aquatic Vegetation Mapping, Navy Region Northwest; Puget Sound, Washington; Author—Developed Accident Prevention Plan/Site Safety and Health Plan.
Project Date: September 2022 – Present
Project Value – ~$225,729; Contract Type –LS; EA Project No. – 6354456; EA Project Manager – Leigh Ewbank

Nome Tank Site "E" Petroleum, Oil, and Lubricants Contamination, Nome Area Defense Region, Nome Alaska; USACE–Alaska District; Deputy Project Manager, Scientist, Author—Under the North Wind-EA JV LLC, EA is providing Project Management, Planning Documents, Groundwater Sampling, Well Decommissioning, Chemical Data Quality Review and Reporting for the Nome Tank Site "E" Formerly Used Defense Site. Specifically, EA will be providing a planning document annually, sampling five monitoring wells per year, decommissioning seven wells during the first year of the contract, Chemical Data Quality Review consisting of laboratory data package verification/review and Draft and Final Annual Groundwater Sampling Reports for USACE and ADEC review and acceptance.
Project Date: July 2022 – Present
Project Value – $147,887; Contract Type – Lump Sum; EA Project No. – 6359604; EA Project Manager – Travis Hines

Progressing Engineering with Nature at Point Hope, Alaska; Scientist—EA received a grant from the USACE–Engineer Research and Development Center Engineering with Nature program to conduct research focused on the placement of scientific instruments, and novel experiments, and the process of implementing natural infrastructure in with the goal of improving the implementation of these solutions and their operational efficiencies. Projects

involve close coordination with Engineer Research and Development Center as well as a wide group of collaborators and partners. This project is intended to progress and further explore and document processes unique to the implementation of natural infrastructure in cold regions, with a focus on better understanding the incorporation of indigenous knowledge into natural infrastructure and coordination with local tribal based entities. Project includes addressing data gaps identified as part of a separate grant project and coordination with that effort to develop designs for natural infrastructure at Point Hope to improve coastal resilience. The project effort included removing a shallow groundwater well, collecting sediment samples, conducting a topographic survey using a Real-Time Kinematic Global Positioning System/Global Navigation Satellite System survey equipment setup. Interviewed community members to gain knowledge about the effects of climate change and erosion in the community.
Project Date: October 2021 – January 2022
Project Value – $899,373; Contract Type – LS; EA Project No. – 637430700; EA Project Manager – Kathryn Cerny-Chipman

CERCLA Remedial Investigation at Former Galena Forward Operating Location; Galena, Alaska; U.S. Air Force; Geologist—Project included a remedial investigation for PFAS compounds at remote former Air Force base off the road system. Investigation consisted of installation of up to 10 new monitoring wells and 60 soil borings, sampling 70 wells, public involvement activities in the local community, and development of a Uniform Federal Policy-Quality Assurance Project Plan Work Plan and Remedial Investigation Report. Conducted soil boring, soil sampling, and groundwater sampling. Responsible for drilling oversight and well installation activities. Coordinated development of electronic boring logs for reporting phase.
Project Date: August 2022 – May 2023
Project Value – $5,030,270; Contract Type – Cost Plus Fixed Fee; EA Project No. – 1535935; EA Project Manager – John Jones

Galena Remedial Process Optimization Evaluation and Site CERCLA Petroleum, Oil, and Lubricants; Galena, Alaska, U.S. Air Force; Geologist—Provide subcontractor oversight for remedial process optimization activities at the former U.S. Air Force Galena Forward Operating Area and Air Force Base. Conducted groundwater sampling, soil sampling, and oversaw soil boring advancement. Coordinated development of electronic boring logs for reporting phase.
Project Date: August 2022 – December 2023
Project Value – $6,226,140; Contract Type – LS; EA Project No. – 1535930; EA Project Manager – John Jones

Abandoned Mine Land Inventory and Removal Actions; Dalton Highway, Alaska; Bureau of Land Management; Scientist—Completed site visits of 62 former mining claims along the Dalton Highway. Supported a review of aerial imagery of over 800 former mining claims to determine mining impacts and categorize sites for further investigation. Supported completion of site summaries for each mining claim.
Project Date: August 2021 – December 2023
Project Value – $251,804; Contract Type – LS; EA Project No. – 6359602; EA Project Manager – John Jones

Moose Creek – 80 Wells Sampling, Eielson Air Force Base, Alaska; USACE; Field Lead—Sampling for further delineation of known perfluorooctanesulfonic acid/perfluorooctanoic acid groundwater contamination migrating off Eielson Air Force Base. Lead team of 3 to collect samples at groundwater monitoring wells at Eielson Air Force Base and in the Moose Creek area and prepared samples for laboratory analysis.
Project Dates: July 2019 – September 2020
Project Value – $3,318,689; Contract Type – LS; EA Project No. – 1575801; EA Project Manager – Mark Wilkinson

2022 Barrow Long-Term Monitoring and Plant Repair at the Former Naval Arctic Research Laboratory, Utqiagvik (Barrow), Alaska; Naval Facilities Engineering Systems Command Northwest; Author— Responsible for authoring the Accident Prevention Plan for project activities associated with this field effort.
Project Dates: May 2022 – July 2023
Project Value – $222,461; Contract Type – LS; EA Project No. – 6354444; EA Project Manager – Melissa Becker/Nicole Stoecklein

Annual Long-Term Monitoring and Operation and Maintenance at the Former Distant Early Warning Line

Station, Point McIntyre, Alaska; Naval Facilities Engineering Systems Command Northwest; Scientist, Plan Author—Provide comprehensive support for the implementation of this project from planning to field execution. Authored Accident Prevention Plan.
Project Date: March 2022 – February 2023
Project Value – $219,935; Contract Type – LS; EA Project No. – 6354441; EA Project Manager – Melissa Becker/Nicole Stoecklein

Adak 2022 Long Term Monitoring and Free Product Recovery, Former Adak Naval Air Facility, Adak, Alaska; U.S. Navy, Naval Facilities Engineering Systems Command; Northwest Division, Field Technical Lead, Site Safety and Health Officer, Report Author—Responsible for coordinating logistics for various monthly on-island trips and coordinating with on-island residents. Responsible for carrying out various field tasks including free product recovery and boom inspection/maintenance activities. Responsible for ensuring compliance with the Operations and Maintenance Plan, Accident Prevention Plan and Work Plan. Lead Author of Annual FPR Report.
Project Date: February 2022 – Present
Project Value – $577,022; Contract Type – LS; EA Project No. – 6354435; EA Project Manager –William Kaage/Nicole Stoecklein

Adak Free Product Recovery, Operable Unit A and DVD Maintenance, Former Adak Naval Air Facility, Adak, Alaska; U.S. Navy, Naval Facilities Engineering Systems Command; Northwest Division; Field Technical Lead, Site Safety and Health Officer, Author—Responsible for coordinating logistics for various monthly on-island trips and coordinating with on-island citizens. Responsible for carrying out various field tasks including free product recovery and boom inspection/maintenance activities. Responsible for ensuring compliance with the Operations and Maintenance Plan, Accident Prevention Plan and Work Plan. Authored Accident Prevention Plan.
Project Date: October 2021 – October 2022
Project Value – $278,256; Contract Type – LS; EA Project No. – 6354428; EA Project Manager –Melissa Becker

Site Inspections for Per- and Polyfluoroalkyl Substances Impacted Sites Army National Guard Installations, Nationwide; Project Geologist, Field Lead, Site-Specific UFP QAPP and Report Author—Responsible for completing site inspections at 2 of 44 Army National Guard facilities in 1 of 24 states and territories (including West Virginia, Virginia, Delaware, New York, Rhode Island, New Hampshire, Wisconsin, Louisiana, Arkansas, Kansas, Kentucky, Indiana, Nebraska, Colorado, New Mexico, North Dakota, South Dakota, Oregon, Nevada, Alaska, Hawaii, Virgin Islands, Guam, and Puerto Rico) where aqueous film-forming foam or other PFAS releases are suspected. Responsible for site-specific planning documents, logistics, field execution, sample management, and reporting related to site inspection activities at Bethel Army Aviation Operating Facility and Armory and Nome Army Aviation Operating Facility to determine whether a release of PFAS occurred as a result of previous Army National Guard operations that would pose an unacceptable risk to human health and the environment. The Army National Guard program under which the site inspections were performed follows the 2019 Memorandum from the Assistant Secretary of Defense Department of Defense, which adopted Screening Levels for soil and groundwater for three compounds: PFOS, PFOA, and perfluorobutanesulfonic acid. Information from the site inspection field investigation including sampling results is used to refine the conceptual site model and determine if an area of interest/site requires, a time critical removal action (i.e., receptors consuming potentially contaminated groundwater), further study consisting of supplemental site inspection sampling or a remedial investigation or no further action. The refined conceptual site model is presented in the Site Inspection Report along with recommendations on the path forward.
Project Date: February 2021 – May 2023
Project Value – $10,377,690; Contract Type – LS; EA Project No. – 634250383; EA Project Manager – Michael O'Neill

Architect-Engineer Services to Support Resource Conservation and Recovery Act Monitored Natural Attenuation and Corrective Action for Johnston Atoll Airfield; Air Force Civil Engineer Center; Author, Geologist—Provided planning documents for compliance with required Resource Conservation and Recovery Act Permit U.S. Environmental Protection Agency Identification TT9 570 090002. Pursuant to the permit and 40 Code of Federal Regulations § 264.101, scope includes providing the assessment of solid waste management units that are present throughout the facility to determine if they would be subject to Corrective Action under the Permit. Lead author for Work Plan for Emerging Contaminant Investigation (PFAS) at Johnston Atoll Facility. Conducted records

search for a quasi-preliminary assessment on the historical aqueous film-forming foam usage on Johnston Atoll. Used records search findings to plan groundwater and soil sample locations on Johnston Island for collection during the October-November 2021 field effort. Responsible for planning and leading PFAS site inspection activities during remote field effort, which included drilling oversight, monitoring well installation, and collection of groundwater and surface soil samples for PFAS analysis. Lead Geologist for overall field effort, oversaw drilling and monitoring well installations for Emerging Contaminant Investigation as well as for CAMM monitoring well replacement activities. Conducted porewater sampling on outer islands (North Island, East Island, and Sand Island) with Solid Waste Management Unit Assessment team. Performed sample management and quality control activities throughout field effort. Responsible for writing Emerging Contaminants Site Inspection Report.
Project Date: May 2020 – July 2022
Project Value – $1,801,674; Contract Type – Fixed Price; EA Project No. – 1535928; EA Project Manager – Teresa Quiniola

Site Investigation of PFAS and Diesel Range Organics/Residual Range Organics-Contaminated Soils and Groundwater; Anchorage, Alaska; Federal Express; Technical Field Lead, Author—Responsible for writing Letter Work Plan and post-field effort Technical Memorandum related to site investigation activities at the Federal Express facility at Ted Stevens Anchorage International Airport. Responsible for planning, coordinating logistics for, and leading field effort to collect soil and groundwater samples to support Federal Express in decision making related to Federal Express facility expansion.
Project Date: May 2021 – January 2022
Project Value – $25,000; Contract Type – T&M; EA Project Nos. – 1536312 and 1536313; EA Project Manager – John Jones

Annual Long-Term Monitoring and Operation and Maintenance at the Former Distant Early Warning Line Station, Point McIntyre, Alaska; Naval Facilities Engineering Systems Command Northwest; Scientist, Field Lead—Provide comprehensive support for the implementation of this project from planning to field execution. The overall project effort included remote access of the site to conduct long-term monitoring/maintenance and land use control inspections including groundwater sampling at five groundwater monitoring locations, thermistor monitoring system maintenance, data logger download, land use visual inspection, level survey of site benchmarks and shoreline erosion monitoring as required by the project plans in accordance with project decision documents.
Project Date: February 2021 – March 2022
Project Value – $229,351; Contract Type – Lump Sum; EA Project No. – 6354423; EA Project Manager – Melissa Becker

Diesel Range Organics Fractionation and PFAS Sampling at the Former Naval Arctic Research Laboratory, Utqiagvik (Barrow), Alaska; Naval Facilities Engineering Systems Command Northwest; Author— Responsible for authoring the Accident Prevention Plan for project activities associated with this field effort, including conducting soil sampling for PFAS at two areas of concern, groundwater sampling for PFAS at one area of concern, and diesel range organics sampling at two areas of concern in accordance with project decision documents.
Project Dates: October 2020 – December 2020
Project Value – $102,000; Contract Type – LS; EA Project No. – 6354413; EA Project Manager – Melissa Becker

Conduct Phase II Source Evaluations (FTQW20197103), Supplemental Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision for Various Sites (FTQW20197669) and conduct a Background Study for Polycyclic Aromatic Hydrocarbons (FTQW20197105) at Eielson Air Force Base, Alaska; Air Force Civil Engineer Center; Scientist—Conduct a Phase II Source Evaluations (FTQW20197103), Supplemental Site Characterization Remedial Investigation, Feasibility Study, and Decision Document for Various Sites (FTQW20197669) and conduct a background study for polycyclic aromatic hydrocarbons (FTQW20197105) at Eielson Air Force Base, Alaska. Assisted in fieldwork activities, which included advancement of more than 150 soil borings, installation, development, and sampling of more than 100 temporary and permanent monitoring wells, collection of vapor intrusion samples at four different locations. Responsible for sample management.
Project Date: May 2020 – December 2020
Project Value – $2,222,320; Contract Type – Firm Fixed Price; EA Project No. –1535925; EA Project Manager – Travis Hines

Groundwater and Soil Vapor Monitoring at Four Legacy Shell Sites; Anchorage, Alaska; Groundwater & Environmental Services, Inc.; Scientist—Conducted long-term monitoring at four former Shell gas stations. Assisted in collection of groundwater samples from 25 wells and collection of soil vapor samples from three points.
Project Date: March – April 2021
Project Value – $26,000; Contract Type – T&M; EA Project No. – 1615201; EA Project Manager – John Jones

USACE–Alaska District; Alaska Air Force Fence to Fence; Scientist—Assist in planning and conducting industrial facility quarterly stormwater compliance inspections and conducting stormwater/outfall monitoring. The objectives of this contract are to provide environmental compliance support activities necessary to support U.S. Air Force and Air Force Civil Engineer Center environmental requirements. Activities include but are not limited to: Environmental Compliance Support; Air Emissions Inventory Data Management; Recordkeeping, Title V; Recordkeeping, Minor and Minor General; Reporting, Emergency Planning and Community Right-to-Know Act (EPCRA); Installation Hazardous Materials Management Program Manager Support; Hazardous Waste Management Support; Hazardous Waste Management Plan Update; Hazardous Waste; Recycling, Integrated Solid Waste; Other Regulated Waste; Pollution Prevention; SAM; Plan Updates; Environmental Media Inspections; Spill Prevention Control and Countermeasure Recertification/Facility Response Plan Resubmission; Oil Discharge Prevention and Contingency Plan (C-Plan); Oil Discharge Prevention and Contingency Plans; Stormwater Reports. Examples of specific services include tasks such as operating, maintaining, and optimizing pollution control; characterizing waste streams; performing environmental monitoring, sampling, and analysis; operating a hazardous waste accumulation site; inspections, and updating existing environmental plans. Specifically, EA will execute tasks in the following media areas: EPCRA and Air Quality Support at all installations and Water Quality Support at Joint Base Elmendorf-Richardson. EA is supporting the following tasks for FY21 (January 2021 – January 2022): FY21 Earickson Air Force Base Air Quality Air Emission Inventory Data Management, FY21 CAS Air Quality Title V Permit Renewal, FY21 Pacific Air Forces Regional Support Center EPCRA Reporting Tier2/Toxic Release Inventory, National Pollutant Discharge Elimination System (NPDES) Reports FY21, NPDES Wastewater SAM FY21, Stormwater Municipal Separate Storm Sewer System SAM FY21, Stormwater Multi-Sector General Permit SAM FY21, FY21 Pacific Air Forces Regional Support Center Air Quality Greenhouse Gas Recordkeeping Eareckson Air Station, SAM NPDES Other Wastewater PFAS Testing, SAM Stormwater Stormwater Municipal Separate Storm Sewer System Stormwater Impacts and SAM Stormwater Multi-Sector General Permit Benchmark Sampling.
Project Dates: January 2021 – January 2022
Project Value – $422,058; Contract Type – Fixed Price; EA Project No. – 6365001; EA Project Manager – Travis Hines

Remedial Action-Construction at Single Source Area SS007 at Cape Newenham LRRS, Alaska; Pacific Air Forces Installations Environmental Services and Construction; Author—Responsible for writing the Accident Prevention Plan and Site Safety and Health Plan for the planning document, which supports the long-term management and land use control/institutional control inspections at the Cape Newenham LRRS Upper Camp Site SS007. The Remedial Action-Construction activities to occur in 2021 and 2022 include soil removal; soil sampling; ecological monitoring; installation of land use control signs, silt fencing, surface creep/saltation samplers, and airborne dust samplers; and long term monitoring of downgradient soil creep and airborne dust.
Project Date: September 2020 – January 2021
Project Value – $685,674; Contract Type – Fixed Price; EA Project No. – 6312614; EA Project Manager – Melissa Becker

611th Environmental Long-Term Monitoring, Institutional Control Inspections, and Maintenance at Multiple Bases, Southern Alaska; USACE–Alaska; Scientist, Author—Provide support for the implementation of this project from writing planning documents to field execution and reporting for the following installations: Bethel RRS, Cape Newenham LRRS, Cape Romanzof LRRS, Driftwood Bay Radio Relay Station (RRS), Nikolski RRS, and Port Heiden RRS. The overall project effort included long-term monitoring/maintenance and/or land use control and institutional control inspections at a total of 27 sites across the 6 Installations. Worked with a team of authors to write the Installation-specific field plans in accordance with Manual for Electronic Deliverables and Spatial Data Standards for Facilities, Infrastructure, and Environment requirements. Part of the field team at Cape Romanzof LRRS to collect surface water, sediment, and groundwater samples and complete the inspections as required by the Pacific Air Forces Reserve Center Land Use Control Management Plan. Authored the Long-Term Monitoring Report for Cape Romanzof LRRS.

Project Date: May 2020 – September 2022
Project Value – $266,347; Contract Type – FP; EA Project No. – 6333701; EA Project Manager – Mark Wilkinson

611th Environmental Long-Term Monitoring, Institutional Control Inspections, and Maintenance at Multiple Bases, Northern Alaska; USACE–Alaska; Scientist, Author—Provide support for the implementation of this project from writing planning documents to field execution and reporting for the following installations: Cape Lisburne LRRS, Oliktok RRS, Bear Creek RRS, Campion RRS, Indian Mountain LRRS, Kalakaket RRS, Kotzebue RRS, Murphy Dome RRS, North River RRS, Point Barrow RRS, West Nome RRS, Clear Air Station, Sparrevohn LRRS, and Tatalina LRRS. The overall project effort included long-term monitoring/maintenance and/or land use control and institutional control inspections at a total of 44 sites across the 14 Installations. Worked with a team of authors to write the Installation-specific field plans in accordance with Manual for Electronic Deliverables and Spatial Data Standards for Facilities, Infrastructure, and Environment requirements. Part of the field team at Indian Mountain LRRS, Clear Air Station, Oliktok LRRS, and Campion Air Station to collect media samples, install monitoring wells, and complete the inspections as required by the Pacific Reserve Air Force Reserve Center Land Use Control Management Plan.
Project Date: May 2020 – December 2021
Project Value – $658,149; Contract Type – FP; EA Project No. – 6333703; EA Project Manager – Mark Wilkinson

Expanded PFOA and/or PFOS Site Inspection, Eielson Air Force Base, Alaska; USACE; Geologist—Site inspection for further delineation of known PFOS/PFOA groundwater contamination migrating off Eielson Air Force Base to the community of Moose Creek. Tasks associated with the expanded site inspection included: preparing planning documents; advancing soil borings and installing groundwater monitoring wells (five permanent nested well arrays with four sets of wells in each array and depths of up to 210 feet below ground surface, plus installation of multiple shallow groundwater monitoring wells, SP16 samples, and soil borings); groundwater sampling; and reporting. Responsible for assisting with field effort during permanent deep well cluster installations, well development, and groundwater monitoring/sampling activities.
Project Date: April – December 2020
Project Value – $1,421,908; Contract Type – Fixed Price, EA Project No. – 6321403; EA Project Manager – Mark Wilkinson

Investigation of Presence/Absence of PFAS Contamination in Soils at Federal Express Anchorage International Airport; Federal Express; Scientist, Technical Lead—Responsible for writing planning and reporting documents associated with determining the presence/absence of possible PFAS contamination in soils immediately under portions of the Federal Express aircraft ramp pavement at Ted Stevens Anchorage International Airport. The investigation supported a 3-year ramp pavement repair/replacement project that began in June 2020. Conducted field activities including coordinating underground utility locate clearances, drilling soil borings in areas through concrete aircraft ramp, logging soil lithologies, and collecting soil samples.
Project Date: February – October 2020
Project Value – $55,993; Contract Type – CPM; EA Project No. – 1536308; EA Project Manager – Michael Jones

Vault Release Investigation of PFAS Contamination in Soils; Federal Express; Scientist, Technical Lead—Responsible for writing planning and reporting documents associated with investigating the extent of PFAS contamination in soils near Manhole MH1 of the underground wastewater collection vault system adjacent to the Federal Express Hangar at 5801 Lockheed Avenue at the Ted Stevens Anchorage International Airport Hangar in Anchorage, Alaska. Conducted field activities including drilling soil borings, logging soil lithologies, interpreting soil cores, and collecting soil samples.
Project Date: May – October 2020
Project Value – $9,395; Contract Type – CPM; EA Project Nos. – 1536309, 1536310; EA Project Manager – Michael Jones

Joint Base Elmendorf-Richardson Drum Sites DA119/DA122 Site Characterization; U.S. Air Force, Alaska; Scientist—Responsible for the preparation of the Uniform Federal Policy-Quality Assurance Project Plan. Part of

field team that conducted surface soil sampling from test pits and subsurface soil sampling from soil borings (Phase I and II investigations of project) at drum sites DA119 and DA122.
Project Date: September 2018 – November 2020
Project Value – $587, 240; Contract Type – LS; EA Project No. – 6321404; EA Project Manager – Mike Jones

Spill Prevention Control and Countermeasure Plan/Facility Response Plan Updates/Renewals; Joint Base Elmendorf-Richardson; Eielson Air Force Base; Wake Island Airfield, Wake Atoll; Eareckson Air Station and King Salmon Airport, Alaska; and Koke'e Air Force Station, Hawaii.; Pacific Air Forces, Alaska; Scientist—This project consists of providing Plan Updates/Renewals for the Oil Discharge Prevention and Contingency Plan/Spill Prevention Control and Countermeasure Plans and Facility Response Plans and Assessment and Repair of Underground Storage Tanks 1246-1 and 3229-1 at Joint Base Elmendorf-Richardson; Eielson Air Force Base; Wake Island Airfield, Wake Atoll; Eareckson Air Station and King Salmon Airport, Alaska; and Koke'e Air Force Station, Hawaii. Responsible for assisting in completing a tank inventory at Eielson Air Force Base. Responsible for updating Spill Prevention Control and Countermeasure Plan and Facility Response Plan, creating spill reporting posters and a hangar guide for Joint Base Elmendorf-Richardson.
Project Date: February 2019 – November 2020
Project Value – $265, 321; Contract Type – LS; EA Project No. – 6312610; EA Project Manager – Travis Hines

Boomsnub/Airco Superfund Site; Hazel Dell, Washington; Linde North America, Inc.; Drilling Oversight/Scientist—The Boomsnub/Airco Superfund site consists of overlapping plumes of trichloroethene and hexavalent chromium, which previously extended more than 4,000 ft downgradient of the sources. The pump and treat system includes 20 extraction wells; pipelines and containment vaults; a treatment system including an air stripper and ion exchange system; and an infiltration gallery for treated water discharge. Operation of the treatment systems, including frequent optimization, has resulted in a significant reduction in plume size and groundwater concentrations while continually decreasing operating costs. The groundwater sampling schedule for this site with more than 125 wells was formalized in a Long-Term Monitoring Plan, which is optimized and updated annually based on statistical evaluations of groundwater data using the Monitoring and Remediation Optimization System. The treatment system efficiencies, combined with optimization of the monitoring plan, save Linde more than $50,000 a year. Contribution to this project included providing oversight during the pump and treat borehole injections for *in situ* remediation, while monitoring infection pressures and flow rates.
Project Date: October 2018
Project Value – $425,771; Contract Type – CPM; EA Project No. – 1524058; EA Project Manager – Jil Frain
Project Value – $11,081; Contract Type – CPM; EA Project No. – 1524059; EA Project Manager – Jil Frain

Naknek II, Alaska and Explanation of Significant Differences, King Salmon Air Force Station, Alaska; Scientist—Part of the field team responsible for gauging all groundwater monitoring wells/well points and drinking water wells in Naknek II and determining which recreational cabins have drinking water wells at Naknek II.
Project Date: June 2019 – 2020
Project Value – $210,970; Contract Type – Fixed Price; EA Project No. –1535924; EA Project Manager – Evana Newberry

Basewide Monitoring, Well Rehabilitation and Decommissioning, Land Use Controls, and Holding Cell Management, Eielson Air Force Base, Alaska; Technical Writing Support—The goals of this project are to perform annual land use control/institutional control inspections on Eielson Air Force Base Installation Restoration Program and Military Munitions Response sites, annual review and update of site descriptions and inspection checklists, and prepare the 2018 and 2019 land use control/institutional control Final Annual Reports, prepare a work plan and final report to decommission up to 75 groundwater monitoring wells, and provide operations and maintenance and sampling of the contaminated media holding cells and investigation-derived waste treatment system at Eielson Air Force Base. Includes maintenance of fish gate land use control for Garrison Slough. Inspections and reporting to ensure compliance with the Eielson Air Force Base Federal Facilities Agreement between the U.S. Air Force, U.S. Environmental Protection Agency, and Alaska Department of Environmental Conservation. Manage subcontractor field labor, environmental sampling, and operations and maintenance of engineered institutional controls (e.g., fish gates and contaminated media holding cells). Assisted in writing planning documents for well decommissioning activities and in post-field reporting efforts. Assisted in update of Land Use Control Implementation Plan, which, in part, documents the locations of all environmental sites and land use controls at Eielson Air Force Base.

Project Date: August 2018 – April 2020
Project Value – $313,434; Contract Type – Lump Sum; EA Project No. – 6312607; EA Project Manager – Sharon Richmond
Project Date: April 2020 – June 2022
Project Value – $1,084,000; Contract Type – Lump Sum; EA Project No. – 6312613; EA Project Manager – John Jones

Moose Creek Perfluorinated Compounds Treatment Sampling Support, Moose Creek, Alaska; USACE; Sample Collection and Management; Field Lead—Sampled drinking water treatment systems implemented at residential, commercial, and communal properties. Checked to ensure all systems are consistently operational to address reduction/removal of perfluorinated compounds in groundwater. Participated in operations and maintenance of granular activated carbon residential drinking water treatment systems at 65 properties. Performed logistical planning and led field team that conducted Spring and Fall groundwater sampling at 40 monitoring wells on and in the vicinity of Moose Creek, Chena Flood Channel, and Eielson Air Force Base.
Project Date: 2017–2019 (mostly operation and maintenance with residual construction).
Project Value – $1,830,377; Contract Type – Firm Fixed Price, EA Project No. – 6318701; EA Project Manager – Mark Wilkinson
Project Date: 2019 – 2021
Project Value – $7,148,085; Contract Type – Firm Fixed Price, EA Project No. – 1575801; Project Manager – Mark Wilkinson

Alaska Installations PFOA/PFOS Preliminary Assessments at 12 Radar Sites and Site Inspections at 6 Radar Sites at Eareckson Air Station, Alaska and Site Inspection at Wake Island Airfield; USACE; Scientist, Author---Responsible for preparation of Accident Prevention Plans for Wake Island Airfield and Eareckson Air Station Site Inspection field efforts. Responsible for preparation and development of preliminary assessments for several long range radar station installations in accordance with CERCLA for aqueous film-forming foam-related PFOA/PFOS contamination. Assisted in the preparation of post-investigation reporting for the site inspections and site assessments (Preliminary Assessment Reports, Site Inspection Reports), in accordance with CERCLA guidance. Provided assistance for logistical coordination and travel coordination to various remote installations for inspections, assessments, interviews, and records searches. Served as Site Safety and Health Coordinator while conducting the site inspection at Wake Island Airfield. Conducted surface soil sampling at multiple sites on Wake Island to be analyzed for per- and polyfluoroalkyl substances. Responsible for writing Site Inspection Report for Wake Island. Assisted in writing planning document for remote Site Inspections at Cape Newenham LRRS, Cape Romanzof LRRS, Point Barrow LRRS, Tatalina LRRS, Indian Mountain LRRS, and Sparrevohn LRRS. Conducted site inspection field work at 2 of the 6 remote radar stations, which included: groundwater monitoring well installation; groundwater monitoring; groundwater, surface water (including pretreatment drinking water), soil, and sediment sampling; and completion of third order level loop surveys of new monitoring wells to USACE Manual for Electronic Deliverables requirements. Lead author for the Cape Romanzof LRRS Site Inspection Report.
Project Date: September 2018 – December 2022
Project Value – $2,010,242; Contract Type – Fixed Price; EA Project No. – 6321405; EA Project Manager – Mark Wilkinson

Air Quality and EPCRA Support for Eielson Air Force Base, Joint Base Elmendorf-Richardson, and Pacific Air Forces Regional Support Center; Air Force Civil Engineer Center; Alaska; Scientist—Provide reporting support to various Air Force Installations in Alaska from FY18 through FY22. Includes supporting annual and semi-annual Title V, New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, greenhouse gas, and other air quality compliance reports as well as Title V Permit Renewal Applications for Joint Base Elmendorf-Richardson and Eareckson Air Station. Responsible for providing EPCRA reporting support to Eielson Air Force Base and Joint Base Elmendorf-Richardson for the annual Tier II and Toxic Release Inventory reports.
Project Dates: January 2020 – December 2022
Project Value – $664,052; Contract Type – Fixed Price; EA Project No. – 6312603; EA Project Manager – Travis Hines

611th Restoration Advisory Board Support, Alaska; Administrative/Logistical Lead—Assisted with providing support for each meeting including reserving meeting locations; providing meeting minutes; providing presentation

and multimedia materials; and preparing fact sheets, public notices, sign-in sheets, meeting agendas, meeting minutes, and public advertisements. Coordinated with Accu-Type Depositions personnel for their attendance at the Restoration Advisory Board meetings.
Project Date: August – November 2018
Project Value – $53,035; Contract Type – Fixed Price; EA Project No. – 6312609; EA Project Manager – Sharon Richmond

Eielson Farm Road AAA 2018 Monitoring Well Installation and Sampling Work Plan, Eielson Farm Road, Alaska; Kaktovik Environmental; Technical Writing Support—Assisted on preparing planning documents for the Eielson Farm Road AAA Formerly Used Defense Site.
Project Date: June – August 2018
Project Value – $25,000; Subcontracted through Kaktovik; EA Project No. – 6332801; EA Project Manager – Sharon Richmond

Update Land Use Control Implementation Plan at Eielson Air Force Base, Alaska; USACE-Alaska District; Technical Writing Support—Responsible for updating the site summaries and site-specific inspection books for the Land Use Control Implementation Plan.
Project Date: February 2018 – February 2019
Project Value – $93,668; Contract Type – Firm Fixed Price; EA Project No. – 63214089; EA Project Manager – Travis Hines

Landfill and Air Quality at Joint Base Elmendorf-Richardson, Anchorage, Alaska; Field Scientist, Technical Writing Support—Assisted in redevelopment attempts at monitoring well AP-3221. Assisted in writing and producing Monitoring Plan and Quality Assurance Project Plan.
Project Date: November 2017 – April 2018
Project Value – $93,668; Contract Type – Firm Fixed Price; EA Project No. – 63214089; EA Project Manager – Travis Hines

Architect-Engineer Services to Provide Corrective Measures Study and Resource Conservation and Recovery Act Hazardous Waste Permit Renewal at Johnston Atoll Airfield; Document Preparation/Writing Support— Performed background research for multiple contaminated sites on Johnston Atoll. Assisted with tasks related to renewal application for the current Resource Conservation and Recovery Act Hazardous Waste Corrective Action Permit. Helped with preparation of No Further Action Statement of Basis documentation for four units.
Project Date: January 2018 – December 2020
Contract Value – $244,670; Contract Type – Firm Fixed Price; EA Project No. – 1535912; EA Project Managers – Mike Jones and Evana Newberry

Proposed Plan/Decision Document for Site OT027 at King Salmon Divert; King Salmon, Alaska; Air Force Civil Engineer Center; Technical Writing Support—Provided support in writing and production of a Record of Decision and Proposed Plan for Site OT027.
Project Date: January 2018 – January 2019
Project Value – $1,364,096; Contract Type – Firm Fixed Price; EA Project No. – 1456043; EA Project Manager – Stephen Wrenn

Murphy Dome Long Range Radar Station; Fairbanks, Alaska; USACE; Technical Writing Support— Provided support during writing of the Quality Assurance Project Plan. Entered historical analyte sample data into new Excel spreadsheet. Assisted in production of the Uniform Federal Policy-Quality Assurance Project Plan deliverable.
Project Date: November 2017 – June 2020
Project Value – $525,482; Contract Type – Time and Materials; EA Project No. – 63214087; EA Project Manager – Steve Wrenn, Travis Hines

Environmental Compliance Support at Joint Base Elmendorf-Richardson, Anchorage, Alaska; USACE–Alaska District; Field Scientist, Technical Writing Support—Assisted with soil logging procedures during the drilling of two new groundwater monitoring wells. Supported drilling process as oversight and assisted in planning of well construction. Conducted well development and quarterly sampling of multiple groundwater wells and gas

points using a variety of sample collection techniques and instrumentation. Supported sample management team in packing and shipping processes. Assisted in the writing and production of quarterly technical memoranda and annual reports.
Project Date: November 2017 – May 2018
Project Value – $1,300,425; Contract Type – Time and Materials; EA Project No. – 6285002; EA Project Manager – Travis Hines

Other Relevant Experience

Pacific Lutheran University Geosciences Coursework and Field Techniques; 2011–2015—Identified rock and mineral classifications by physical properties and optical microscopy. Measured stream water discharge. Performed structural analyses of rock outcrops to determine formation and deformation conditions. Investigated geophysical properties including heat flow, gravity, seismology, and magnetism to explore plate tectonic processes and earth formation/structure.

Employment History

Employer—EA Engineering, Science, and Technology, Inc., PBC (Anchorage, Alaska)
Dates of Employment—March 2020 – Present
Title—Scientist II

Employer—EA Engineering, Science, and Technology, Inc., PBC (Anchorage, Alaska)
Dates of Employment—November 2017 – March 2020
Title—Scientist I

List of Technical Skills and Specializations

- Data entry
- Differential leveling survey (digital and automatic)
- Geologic field mapping
- Groundwater monitoring
- Groundwater, surface water, porewater, soil, sediment, and air sampling
- Handheld Global Positioning System unit and Real Time Kinematic surveying
- In situ injection oversight
- Logging soil lithologies
- Microsoft Office (Excel, Word, Outlook, PowerPoint, and Project)
- Open-ocean and wilderness/back-country navigation and safety
- PFAS sampling
- Remote site and field logistics/logistical coordination for remote sites
- Sample management and chain-of-custody procedures.

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Appendix B

Quality Control Forms

- Contractor Production/Quality Control Report
- Surveillance Checklist
- Non-Conformance Report
- Laboratory Non-Conformance Report
- Rework Items List
- Preparatory Phase Checklist
- Initial Phase Inspection Checklist
- Correction Action Summary Form
- Request for Information/Clarification Form
- Field Change Request
- Request for Information/Clarification Log

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EA Engineering, Science, and Technology, Inc., PBC
2200 Sixth Avenue, Suite 707
Seattle, WA 98121

CONTRACTOR PRODUCTION / QC REPORT

TASK ORDER	PROJECT NAME AND LOCATION	REPORT NO.

SITE SUPERINTENDENT:		DATE

WEATHER:

WORK PERFORMED (INCLUDE LOCATION AND DESCRIPTION OF WORK)

JOB SAFETY	WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☐ YES	☐ NO
	WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☐ NO
	WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☐ NO

LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED:

QUALITY CONTROL ACTIVITIES PERFORMED:

TESTS PERFORMED:

DEFICIENCIES OR CORRECTIVE ACTIONS NOTED:

SUMMARY OF MEETING AND DISCUSSION HELD:

FIELD CHANGE REQUESTS GENERATED:

REMARKS:

Contractor's Verification: On behalf of the contractor, I certify that this report is complete, accurate, and correct, and equipment and materials used, and work performed during this reporting period are in compliance with the contract plans and specifications to the best of my knowledge and belief, unless noted above.

NAME:	**TITLE:**
SIGNATURE:	**DATE:**
NAME:	**TITLE:**
SIGNATURE:	**DATE:**

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	EA Engineering, Science, and Technology, Inc., PBC 2200 6th Ave, Suite 707 Seattle, WA 98121	**Surveillance Checklist**

Contract Number: N44255-20-D-6006 Task Order: N44255-24-F-4038 Naval Installation: Former NARL Site Name: _____

Date: _____ Conducted by: _____ Report No.: _____

Work Plan Title: _____

Surveillance Item	Requirement Reference	Results Satisfactory			Remarks
		Yes	No	N/A	

Inspection Summary:

Preparer Name: _____ Signature: _____ Date: _____ Page: 1 of 1

Reviewer Name: _____ Signature: _____ Date: _____ Filename: 02_SurveillanceChecklist

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NONCONFORMANCE REPORT

TASK ORDER/ EA Project No. N44255-24-F-4038 **NCR #** _____ **DATE** _____

LOCATION _____ **NTR / RPM / COR** _____

Plan, Procedure, Specification, or Drawing (Clearly state the requirement)

Description of Nonconforming Item or Condition

Did nonconforming condition require suspension of work activities? **Yes** ☐ **No** ☐

If yes, explain requirement necessary restart work activities.

Root cause analysis

Corrective Action

☐ use-as-is ☐ Repair ☐ rework to specification

Other action - specify:	

Additional Comments

Preparer Name:	Preparer Signature:	Title:	Date:

NONCONFORMANCE REPORT

TASK ORDER	NCR #	DATE

EVALUATION OF CORRECTIVE ACTION

Description of Corrective Action Performed

Did corrective action sufficiently address nonconformance and prevent relapse?	Yes ☐	No ☐

Comments:

Evaluator Name:	Evaluator Signature:	Title:	Date:

APPROVAL

Comments

Approved by:	Signature:	Title:	Date:
		Program QC Manager	

Laboratory Non-Conformance Report		
Submitter Information		
Name:	***Organization***:	***Email Address:***
Date prepared:	***Address:***	***Phone:***
Laboratory Information		
Name:	***Address:***	***Phone:***
POC:	***POC Phone:***	***POC Email Address:***
Description of Non-conformance:		
Source of Laboratory Specifications (e.g. Title of QAPP)		***Contract No.:***
Requirement (include specific reference from requirements document):		
Description of Problem:		
Summary of discussion with the laboratory POC about this issue:		
Requested Resolution:		

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SUBMIT RESET

REWORK ITEMS LIST

Contract No. and Title: N4425520D6006 Title: 2024 Utqiaġvik Shoreline Investigation at the Airstrip and Powerhouse Sites

Contractor: EA Engineering, Science, and Technology

NUMBER	DATE IDENTIFIED	DESCRIPTION	CONTRACT REQUIREMENT (Spec. Section and Par. No., Drawing No. and Detail No., etc.)	ACTION TAKEN BY QC MANAGER	RESOLUTION	DATE COMPLETED

SHEET 1 of 1

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	EA Engineering, Science, and Technology, Inc., PBC 2200 6th Ave, Suite 707 Seattle, WA 98121	**Preparatory Phase Checklist**

Contract Number: N44255-20-D-6006 Task Order: _____ Naval Installation: Former NARL _____ Site Name: _____

Definable Feature of Work: _____

I. Personnel Present:

	Name	Position	Company/Government
1.			
2.			
3.			
4.			
5.			
6.			

(List additional personnel on reverse side)

II. Work Plans/Other Submittals

1. Identify applicable workplans and other submittals.

2. Review workplans and other submittals. Have all applicable submittals been approved? (check one) ___ Yes_____ No_____

   If No, what items have not been submitted or approved?

3. Are all materials/equipment on hand? If No, what items are missing? _____ Yes_____ No_____

4. Check approved submittals against delivered materials/equipment. (This should be done as items arrive)

   Comments: _____

III. Materials Storage

Are materials stored properly? If No, what action is taken? _____ Yes_____ No_____

Preparer Name: _____ Signature: _____ Date: _____ Page _____ of _____

PQCM Name: _____ Signature: _____ Date: _____ Filename: Prep Phase Chklst_Jun-20

	EA Engineering, Science, and Technology, Inc., PBC 2200 6th Ave, Suite 707 Seattle, WA 98121	**Preparatory Phase Checklist**

Contract Number: N44255-20-D-6006 Task Order: _____ Naval Installation: Former NARL _____ Site Name: _____

Definable Feature of Work: _____

IV. Specifications

1. Identify and review each specification section of workplan or submittal related to Definable Feature of Work.

2. Discuss procedure for accomplishing the work. _____

3. Clarify any differences or concerns. _____

V. Preliminary Work and Permits

1. Ensure preliminary work is correct and permits are on file. (check one) _____ Yes_____ No_____

   If No, what action is taken? _____

VI. Testing

1. Identify test to be performed and by whom. _____

2. Frequency and when required? _____

3. Where required? _____

4. Have test facilities been approved? (check one) _____ Yes_____ No_____

VII. Safety

1. Review/list applicable portions of the Site Safety and Health Plan. _____

2. Have Activity Hazard Analyses been approved? (check one) _____ Yes_____ No_____

VIII. Navy comments during meeting _____

XI. Other Items or Remarks _____

Preparer Name: _____ Signature: _____ Date: _____ Page _____ of _____

PQCM Name: _____ Signature: _____ Date: _____ Filename: Prep Phase Chklst_Jun-20

	EA Engineering, Science, and Technology, Inc. 2200 6th Ave, Suite 707 Seattle, WA 98121	**Initial Phase Inspection Checklist**

Contract Number: N44255-20-D-6006 Task Order: _____ Naval Installation: Former NARL Site Name: _____

Definable Feature of Work: _____

I. Personnel Present:

	Name	Position	Company/Government
1.			
2.			
3.			
4.			
5.			
6.			

(List additional personnel on reverse side)

II. Review plans, specifications, and submittals. Identify any follow-up items identified during preparatory inspection.

Comments: _____

III. Preliminary Work

Is the preliminary work complete, correct, and in compliance with specifications? (check one) _____ Yes_____ No_____

Comments: _____

IV. Establish Levels of Workmanship

1. Where is the work located? _____
2. Is a sample panel required? (check one) _____ Yes_____ No_____
3. Will the initial work be considered as a sample? (check one) _____ Yes_____ No_____

(If yes, maintain in present conditions as long as possible)

V. Resolve any differences or concerns

Comments: _____

VI. Check Safety

Review job conditions using Site Safety and Health Plan and activity hazard analysis.

Comments: _____

Inspector Name: _____ Signature: _____ Date: _____ Page _____ of _____

PQCM Name: _____ Signature: _____ Date: _____ Filename: Init Phase Insp Chklst_Jun-20

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Corrective Action Summary Form

Date: _____ **Tracking No:** _____

CA Title: _____

Department: _____ **Originator:** _____

Responsible Party: _____ **Date Completed:** _____

Description:
Issues illustrated below have been identified regarding the setup or execution of the project. A Correction Action Plan (CAP) is required for each of the issues described below. These items must have a root cause investigation performed, an immediate fix (if applicable), and a corrective action that will prevent a recurrence of the issues stated.

1.
2.
3.
4.

Root Cause:

1.
2.
3.
4.

Immediate Fix:

1.
2.
3.
4.

Corrective Action Summary Form

Date: _____ **Tracking No:** _____

CA Title: _____

Department: _____ **Originator:** _____

Responsible Party: _____ **Date Completed:** _____

Corrective Action:

1.
2.
3.
4.

Comments:

REQUEST FOR INFORMATION / CLARIFICATION

		DATE
CONTRACT NO	TITLE AND LOCATION	RFI NO
TASK ORDER NO	TITLE AND LOCATION	REFERENCE RFI NO

REQUEST RESPONSE BY DATE	PRIORITY		CRITICAL PATH		POTENTIAL COST / TIME	
	URGENT	NORMAL	YES	NO	YES	NO

SCHEDULE ACTIVITY NUMBER					

SPECIFICATION SECTION	SPECIFICATION PARAGRAPH	SPECIFICATION PAGE

DRAWING NUMBER	DRAWING DETAIL	DRAWING SHEET NUMBER

QUESTION / ISSUE (DESCRIPTION OF EXISTING CONDITION AND-OR DEFICIENCY)

CONTRACTOR PROPOSED SOLUTION

LIST OF ATTACHMENTS

SUPERINTENDENT / QC MANAGER DATE

CONSULTANT / ARCHITECT / ENGINEER / CUSTOMER RECOMMENDED SOLUTION (DISPOSITION)

LIST OF ATTACHMENTS

CONSULTANT / ARCHITECT / ENGINEER / CUSTOMER DATE

CME RESPONSE

REFERENCE
PURCHASE REQUEST
NUMBER

LIST OF ATTACHMENTS

The RFI system is intended to provide an efficient mechanism for responding to contractor's request for information ONLY. This system DOES NOT authorize the contractor to proceed with work – to do so, the contractor proceeds at his own risk. If the contractor considers the RFI response a changed condition, written notice to the Contracting Officer is required within 20 calendar days.

CONSTRUCTION MANAGEMENT ENGINEER DATE

REQUEST FOR INFORMATION / CLARIFICATION CONTINUATION SHEET		DATE
CONTRACT NO	TITLE AND LOCATION	RFI NO
TASK ORDER NO	TITLE AND LOCATION	REFERENCE RFI NO

SIGNATURE DATE

EA Engineering, Science, and Technology, Inc., PBC
2200 Sixth Avenue, Suite 707
Seattle, WA 98121

FIELD CHANGE REQUEST (FCR)

TASK ORDER	FCR #	DATE
CONTRACTOR	LOCATION	NTR/RPM

1. Document to be changed. (Identify version #, date, section, drawing, etc. to be changed)

2. Description of existing requirement and reason for the change (attach additional sheets/figures as needed)

3. Proposed change(s). (attach additional sheets/figures as needed)

4. Originator (Print)	Title	Signature	Date

5. Reviewed by (Print)	Title	Signature	Date
	Site Supervisor/Field Team Lead		
	Program QA Manager		
	NAVFAC NW RPM		
	NAVFAC NTR		

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REQUEST FOR INFORMATION / CLARIFICATION LOG

Contract Number
Contract Title
Contractor Name

Date

RFI #	CONTRACTOR	DESCRIPTION	DATE RECEIVED	DATE TO ROICC	DATE ANSWERED	DATE TO SUB.	COMMENTS

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Appendix C

NAVFAC Northwest Standard Operating Procedures

- Standard Operating Procedure Number: I-A-7 IDW Management
- Standard Operating Procedure Number: III-I Equipment Decontamination
- Standard Operating Procedure Number: IV-F: Nonconformances and Corrective Action

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IDW MANAGEMENT

1.0 PURPOSE

This standard operating procedure (SOP) describes the activities and responsibilities of the U.S. Naval Facilities Engineering Command Northwest (NAVFAC NW) and their subcontractors with regard to management of investigation-derived waste (IDW). The purpose of this procedure provides guidance for the minimization, handling, labeling, temporary storage, and inventory of IDW generated during site investigations and remediation projects conducted under the direction of NAVFAC NW. **Each base may have specific required procedures**. These procedures are made available to the contractor through the NAVFAC Naval Technical Representative (NTR) or other government point of contact. This SOP is also applicable to personal protective equipment (PPE), sampling equipment, decontamination fluids, non-IDW trash, non-indigenous IDW, and hazardous waste and other regulated wastes generated during implementation of site investigations and removal or remedial actions. The information presented will be used to prepare and implement Work Plans (WP), Field Sampling Plans (FSP), and Waste Management Plans (WMPs) for IDW-related field activities.

2.0 PROCEDURES

The procedures for IDW management in the field are described below in Sections 2.1 to 2.5. The implementation of these procedures requires Remedial Project Managers (RPMs), Field Managers, their designates and subcontractors to perform the following tasks:

- Minimize generation of IDW,
- Segregate IDW,
- Properly handle IDW containers,
- Properly label IDW containers,
- Apply good management practices in storing IDW drums and containers,
- Prepare IDW drum inventories,
- Update and Report changes to IDW drum inventories,
- Perform inspections of IDW containers and storage areas, as required,
- Prepare IDW containers for proper off-site transportation and disposition, as required.

2.1 IDW MINIMIZATION

Field Managers and their designates shall minimize the generation of onsite IDW to reduce the need for special storage or disposal requirements that may result in substantial additional costs and provide little or no reduction in site risks (EPA 1992). The volume of IDW shall be reduced, by applying minimization practices throughout the course of site investigation activities. These minimization strategies include: 1) material substitution; 2) using proper low-volume drilling techniques; 3) using disposable sampling and PPE; 4) using bucket and drum liners; and 5) segregating non-contaminated IDW and trash from contaminated IDW. Waste minimization strategies and types of IDW expected to be generated shall be documented in the appropriate project plans.

2.1.1 Material Substitution

Material substitution consists of selecting materials that degrade readily or have reduced potential for chemical impacts to the site and the environment. An example of this practice is the use of biodegradable detergents (e.g., Alconox® or non-phosphate detergents) for decontamination of non-consumable PPE and sampling equipment. In addition, field equipment decontamination can be conducted using isopropyl alcohol rather than hexane or other solvents (for most analytes of concern), to reduce the potential onsite chemical impacts of the decontamination solvent. Decontamination solvents shall be selected carefully so that solvents, and their known decomposition products, do not result in generation of RCRA hazardous waste.

2.1.2 Drilling Methods

Drilling methods that minimize potential IDW generation should be given priority. Sonic, Hollow stem auger and air rotary methods should be selected, where feasible, over mud rotary methods. Mud rotary drilling produces waste drilling mud, while hollow stem and air rotary drilling methods produce relatively low volumes of soil waste. Sonic drilling produces the least amount of waste. Small diameter borings and cores shall be used when soil is the only matrix to be sampled at the boring location; the installation of monitoring wells requires the use of larger diameter borings.

Soil, sludge, or sediment removed from borings, containment areas, and shallow test trenches shall not be returned to the source, unless allowed by regulation and included in the approved WP, FSP, or WMP.

2.1.3 Decontamination Fluids

The use of disposable sampling equipment, such as plastic bailers, trowels, and drum thieves (which do not require decontamination) minimizes the quantity of decontamination fluids generated. In general, decontamination fluids, and well development and purge water, should not be minimized because the integrity of the associated analytical data may be affected.

2.1.4 PPE and Disposable Sampling Equipment

Visibly soiled PPE and disposable sampling equipment shall be segregated from non-visibly soiled PPE and sampling equipment. Where investigation involves potentially hazardous waste or other regulated wastes, visibly soiled PPE and disposable sampling equipment may require decontamination. The Field

Manager shall use best professional judgment to determine if decontamination is appropriate. This determination should be included in the approved WP, FSP, or WMP. If decontamination is performed, PPE and disposable sampling equipment generated in the decontamination process may be double-bagged and disposed of as non-hazardous waste.

2.1.5 Liners

Bucket liners can be used in the decontamination process to reduce the volume of solid IDW-generated and reduce costs on larger projects. The plastic bucket liners can be crushed into a smaller volume than the buckets, and only a small number of plastic decontamination buckets are required for the entire project. Larger, heavy-duty, 55-gallon drum liners can be used for heavily contaminated IDW to provide secondary containment, and reduce the costs of disposal and drum recycling. Drum liners may extend the containment life of the drums in severe climates and will reduce the costs of cleaning out the drums prior to recycling.

2.1.6 Segregation of non-IDW

All waste materials generated in the support zone are considered non-IDW trash. To minimize the total volume of IDW, all trash shall be separated from IDW, sealed in garbage bags, and properly disposed of offsite as municipal waste.

2.1.7 Monitoring Well Construction

Excess cement, sand, and bentonite grout prepared for monitoring well construction shall be kept to a minimum. Well construction shall be observed by Field Managers to ensure that a sufficient, but not excessive, volume of grout is prepared. Some excess grout may be produced. Unused grout that has not come in contact with potentially contaminated soil or ground water shall be considered non-hazardous trash and shall be disposed of offsite by the drilling subcontractor. Surplus materials from monitoring well installation, such as scrap PVC sections, used bentonite buckets, and cement/sand bags that do not come in contact with potentially contaminated soil, shall be considered non-IDW trash and shall be disposed of offsite by the drilling subcontractor.

2.1.8 Field Analytical Test Kits

IDW generated from the use of field analytical test kits consists of those parts of the kit that have been used and/or come into contact with potentially contaminated site media, or excess extracting solvents and other reagents. Potentially contaminated solid test kit IDW shall be contained in plastic bags and stored with PPE or disposable sampling equipment IDW from the same source area as soil material used for the analyses. The small volumes of waste solvents, reagents, and water samples used in field test kits should be segregated, and disposed of accordingly (based upon the characteristics of the materials, MSDS sheets, and as described in the WMP). Most other test kit materials should be considered non-IDW trash, and be disposed of as municipal waste.

2.2 SEGREGATION OF IDW BY MATRIX AND LOCATION

To facilitate subsequent IDW screening, sampling, classification and/or disposal, IDW shall generally be segregated by matrix and source location at the time it is generated. Each drum of solid IDW shall be completely filled, when possible. For liquid IDW, drums should be left with headspace of approximately 5% by volume to allow for expansion of the liquid and potential volatile contaminants. IDW from each distinct matrix shall be stored in a single drum (e.g., soil, water or PPE shall not be mixed in one drum). In general, IDW from separate sources should not be combined in a single drum.

It is possible that monitoring well development and purge water will contain suspended solids, which will settle to the bottom of the storage drum as sediment. Significant observations on the turbidity or sediment load of the development or purge water shall be included in the logbook and reported in attachments to the quarterly drum inventory report (see SOP III-D, *Logbooks* and Section 2.5). To avoid having mixed matrices in a single drum (i.e., sediment and water), it may be necessary to decant the liquids into a separate drum, after the sediments have settled out. This segregation may be accomplished during subsequent IDW sampling activities or during consolidation in a holding tank prior to disposal. Disposal of liquid IDW into the sanitary sewer shall only occur if approved by the appropriate regulatory agencies, municipal entities, and Naval installation. Appropriate precautions per the approved Health and Safety Plan (HASP) shall be implemented to ensure worker protection during these activities.

Potentially contaminated well construction material shall be placed in separate containers. Soil, sediment, sludge, or liquid IDW shall be segregated from potentially contaminated waste well construction materials. Potentially contaminated well construction materials from different monitoring wells shall not be commingled.

Potentially hazardous PPE and disposable sampling equipment shall be segregated from other IDW. PPE from generally clean field activities, such as water sampling, shall be segregated from visibly soiled PPE, double-bagged and disposed of offsite as municipal waste. Disposable sampling equipment from activities such as soil, sediment, and sludge sampling includes plastic sheeting used as liner material in containment areas around drilling rigs and waste storage areas; disposable sampling equipment; and soiled decontamination equipment. Where investigation involves potentially hazardous waste, visibly soiled PPE and disposable sampling equipment may require decontamination. The Field Manager shall use best professional judgment to determine if decontamination is appropriate. If decontamination is performed, PPE and disposable sampling equipment generated in the decontamination process may be double-bagged and disposed of as non-hazardous waste. PPE and disposable sampling equipment generated on separate days may be commingled.

Decontamination fluids shall be stored in drums separate from other IDW. If practical, decontamination fluids generated from different sources should not be stored in the same drum. If decontamination fluids generated over several days or from different sources are stored in a single container, information regarding dates of generation and sources shall be recorded in the field notebook, on the drum label (Section 2.3.2), and in the drum inventory (Section 2.5).

Liquid and sediment portions of the equipment decontamination fluid in the containment unit used by the drilling or excavation field crew should be separated. The contents of this unit normally consist of turbid

decontamination fluid above a layer of predominantly coarse-grained sediment. When the contents of the containment unit are to be stored in IDW containers, the Field Manager shall direct the placement of as much liquid into drums as possible and transfer the remaining solids into separate drums. Observations of the turbidity and sediment load of the liquid IDW should be noted in the field notebook, on the drum label (Section 2.3.2), and in attachments to the drum inventory (see Section 2.5). It is likely that decontamination fluids will contain minor amounts of suspended solids that will settle out of suspension to become sediment at the bottom of IDW storage drums. As noted above, it may be necessary to segregate the drummed water from sediment during subsequent IDW sampling or disposal activities.

2.3 DRUM HANDLING AND LABELING

Drum handling consists of those actions necessary to prepare an IDW drum for labeling. Drum labeling consists of those actions required to legibly and permanently identify the contents of an IDW drum. Specific handling, storage, and labeling requirements may differ with the Naval installation or oversight entity. Specific requirements should be determined at the planning stage and documented in the WMP. General requirements are provided in the following sections.

2.3.1 Drum Handling

The drums used for containing IDW shall be approved by the United States Department of Transportation (DOT, 49 CFR 172). The drums shall be made of steel or plastic, have a 55-gallon capacity, be completely painted or opaque, and have removable lids (i.e., 1A1 or 1A2). New steel drums are preferred over recycled drums. For short-term storage of liquid IDW prior to discharge, double-walled bulk steel or plastic storage tanks may be used. Consideration must be given to scheduling and cost-effectiveness of bulk storage, treatment, and discharge system versus longer-term drum storage.

For long-term IDW storage, the DOT-approved drums with removable lids are recommended. The integrity of the foam or rubber sealing ring located on the underside of some drum lids shall be verified prior to sealing drums containing IDW liquids. If the ring is only partially attached to the drum lid, or if a portion of the ring is missing, a drum lid with sealing ring that is in good condition must be used. At some facilities, drums containing liquid IDW will be required to be stored in protective overpacks.

To prepare IDW drums for labeling, the outer wall surfaces and drum lids shall be wiped clean of all material that may prevent legible and permanent labeling. If potentially contaminated material adheres to the outer surface of a drum, that material shall be wiped from the drum, and the paper towel or rag used to remove the material shall be segregated with visibly soiled PPE and disposable sampling equipment.

2.3.2 Drum Labeling

Proper labeling of IDW drums is essential to the success and cost-effectiveness of subsequent waste screening and disposal activities. Labels shall be permanent and descriptive to facilitate correlation of field analytical data with the contents of individual IDW drums.

2.3.2.1 Preprinted Labels

A preprinted drum label as required by the appropriate Naval installation and/or regulatory agency shall be completed. The label will be affixed to the outside of the drum (or overpack if required) with the label easily readable for inspections and inventory. Label requirements may vary based on the site.

The requested information shall be printed legibly on the drum labels in black, indelible ink. Instructions for entering the required drum-specific information for each label field are provided by the Naval installation.

Painted Labels

An alternative method for labeling drums, if acceptable for the project, is to paint label information directly on the outer surface of the drum. At a minimum, the information placed on the drum shall include the contract/delivery order number, a drum number, the source identification type and number, the type of IDW, the generation date(s), and the government point of contact and telephone number. The drum surface shall be dry and free of material that could prevent legible labeling. Label information shall be confined to the upper two-thirds of the total drum height. The printing on the drum shall be large enough to be easily legible. Yellow, white, or red paint markers (oil-based enamel paint) that are non-photodegradable are recommended to provide maximum durability and contrast with the drum surface.

2.3.2.2 Regulatory Marking and Labeling

Federal and State regulations may require specific labeling for IDW generated (i.e., RCRA, TSCA, NESHAPs). Pre-printed labels shall be used as appropriate and completed in accordance with the specific regulatory requirement. These requirements will be identified in the approved project plans. Once determined to be hazardous, weekly inspections must also be conducted to ensure that labels and markings are in good conditions and to ensure the integrity of containers.

In addition, prior to off-site transportation USDOT requirements for marking and labeling of regulated DOT materials must be complied with. These requirements will be identified in the approved project plans or otherwise coordinated with the Field Manager after the IDW has been characterized and off-site disposition is being planned. Note that personnel (i.e., contractors or subcontractors) who perform USDOT functions must be properly trained in accordance with 49 CFR 172, Subpart G.

2.4 DRUM STORAGE

Drum storage procedures shall be implemented to minimize potential human contact with the stored IDW and prevent extreme weathering of the stored drums. Waste accumulation areas will be pre-designated by NAVFAC NW prior to the start of site work. IDW drums should be placed on pallets. Good management practices should be used in storing drums which include: containers shall be in good condition and closed during storage; wastes must be compatible with containers; where liquids are stored, storage areas should have secondary containment; and spill or leaks should be removed as soon as possible. These good management practices are mandatory requirements where RCRA hazardous wastes are stored.

Waste accumulation areas shall be maintained as prescribed by local regulatory entities and the appropriate Naval installation. In general, drums of IDW shall be stored within the Area of Concern (AOC) so that the site can utilize RCRA regulatory flexibility (i.e., administrative requirements, such as 90-day storage, may not be triggered; and LDRs will not be triggered if IDW is placed back in AOC). If IDW is determined to be RCRA hazardous waste, then RCRA storage, transportation and disposal requirements must be met.

Drums shall be stored at identified waste accumulation areas. All IDW drums generated during field activities at a single AOC shall be placed together, in a secure, fenced onsite area to prevent access to the drums by unauthorized personnel. When a secure area is not available, drums shall be placed in an area of the site with the least volume of human traffic. Plastic sheeting (or individual drum covers) and yellow caution tape shall be placed around the stored drums. Drums from projects involving multiple AOCs should remain at the respective source areas where the IDW was generated. IDW should not be transferred offsite for storage elsewhere, except under rare circumstances, such as the lack of a secure storage area onsite.

Proper drum storage practices shall be implemented to minimize damage to the drums from weathering and possible exposure to humans or the environment. When possible, drums shall be stored in dry, shaded areas and covered with impervious plastic sheeting or tarpaulin material. Every effort shall be made to protect the preprinted drum labels from direct exposure to sunlight, which causes ink on the labels to fade. In addition, drums shall be stored in areas that are not prone to flooding. The impervious drum covers shall be appropriately secured to prevent dislodging by the wind. It may be possible to obtain impervious plastic covers designed to fit over individual drums; however, the labeling information shall be repeated on the outside of these opaque covers.

Drums in storage shall be placed with sufficient space between rows of drum pallets and shall not be stacked, such that authorized personnel may access all drums for inspection. Proper placement will also render subsequent IDW screening, sampling, and disposal more efficient. It is recommended that IDW drums be segregated in separate rows/areas by matrix (i.e., soil, liquid or PPE/other).

If repeated visits are made to the project site, the IDW drums shall be inspected to clear encroaching vegetation, check the condition and integrity of each drum, check and replace labels as necessary, and replace or restore protective covers.

2.5 DRUM INVENTORY

Accurate preparation of an IDW drum inventory is essential to all subsequent activities associated with IDW drum tracking and disposal. An inventory shall be prepared for each project in which IDW is generated, stored, and disposed of. Naval installations and local regulatory authorities may have specific requirements associated with waste inventory and these requirements should be included in the planning process and documented in the WP, FSP, and WMP.

The drum inventory information shall include 11 elements that identify drum contents and indicate their fate.

2.5.1 Navy Activity (Generator)/Site Name

Inventory data shall include the Navy activity and the site name where the IDW was generated (e.g., NASWI, NBK Bangor, etc.).

2.5.2 DO Number

Inventory data shall include the contract and delivery order number associated with each drum (e.g., 0089).

2.5.3 Drum Number

The drum number assigned to each drum shall be included in the inventory database.

2.5.4 Storage Location Prior to Disposal

The storage location of each drum prior to disposal shall be included in the inventory (e.g., Building 394 Battery Disassembly Area, or Adjacent to West end of Building 54).

2.5.5 Origin of Contents

The source identification of the contents of each IDW drum shall be specified in the inventory (e.g., soil boring number, monitoring well number, sediment sampling location, or the multiple sources for PPE- or rinse water-generating activities).

2.5.6 IDW Type

Inventory data shall include the type of IDW in each drum (e.g., soil, PPE, disposable sampling equipment, sludge, sediment, development water, steam cleaning water, decontamination rinse water).

2.5.7 Waste Volume

The amount of waste in each drum shall be specified in the inventory as a percentage of the total drum volume or an estimated percentage-filled level (e.g., 95% maximum for liquid IDW).

2.5.8 Recommended Analytical Methods and Test Results Compared with Applicable Regulatory Standards

The recommended EPA analytical methods that adequately characterize IDW contained in each drum will be summarized in a tabular format and attached to the quarterly IDW drum inventory report (see Attachment I-A-7-1). The methodology for sampling and characterizing IDW shall be specified in the appropriate project plans.

2.5.9 Recommended or Actual Disposition of IDW Drum Contents

The recommended means of IDW disposal for each drum shall be summarized in a tabular format (e.g., Offsite, Encapsulated Onsite, Treatment/Sewer, Offsite Incinerator) and attached to the quarterly IDW

drum inventory report (see Attachment I-A-7-1). Additional narrative discussion of the rationale for the recommended disposal option shall be attached to the quarterly IDW drum inventory report as data become available.

2.5.10 Generation Date

Inventory data shall include the date IDW was placed in each drum. If a drum contains IDW-generated over more than one day, the start date for the period shall be specified in dd-month-yy format. This date is not to be confused with an RCRA hazardous waste accumulation date (40 CFR 262). The accumulation start date, if required for RCRA wastes, shall be included on the hazardous waste drum label (Section 2.3.2.2).

2.5.11 Expected Disposal Date

The expected date each drum is to be disposed of shall be specified as part of the inventory in month-yy format. This date is for informational purposes only for the Navy, and shall not be considered contractually binding.

2.5.12 Actual Disposal Date

The actual drum disposal date occurs at the time of onsite disposal, or acceptance by the offsite treatment or disposal facility. It shall only be entered in the drum inventory database when such a date is available in dd-month-yy format.

In order to provide information for all 11 of the inventory elements of the quarterly inventory report described above, the main source of information will be provided by RPMs, or their designees, and summarized in Attachment I-A-7-1.

The recommended analytical test methods and actual test results (compared to applicable regulatory standards) will be provided to the appropriate Navy groups, by the RPM, or their designees, when such data are available. Testing methods shall be documented in the associated project plans. Recommended disposal options or actual disposition of the IDW drum contents will also be provided by RPMs as data become available. The NAVFAC Northwest RPM will forward all IDW data to the appropriate Navy authority as attachments to the quarterly IDW drum inventory report. This information constitutes the results of preparing and implementing an IDW screening, sampling, classification, and disposal program for each site.

3.0 DOCUMENTATION

The RPM or designee is responsible for completing and updating the site-specific IDW drum inventory spreadsheet and submitting it as needed. The RPM is also responsible for submitting backup documentation to the U.S. Navy Program Management Office (PMO) about the analytical methods recommended to adequately characterize the IDW in each drum (Section 2.5.8). In addition, actual site or drum sampling results shall be forwarded to the PMO, along with a comparison to the applicable regulatory standards, for inclusion as attachments to the quarterly IDW drum inventory. As necessary,

the backup documentation to the quarterly IDW drum inventory report shall also include the recommended means for IDW disposal for each drum (Section 2.5.9). After disposal, the actual means and/or location of disposal shall be indicated in tabular format with supporting narrative.

Field Managers and designates are responsible for documenting all IDW-related field activities in the field notebook, including most elements of the IDW drum inventory spreadsheet. The correct methods for developing and maintaining a field notebook are presented in SOP III-D, *Logbooks*.

Upon receipt of analytical data from the investigation, the information will be forwarded to the appropriate Naval authority for comparison to regulatory waste criteria. The Navy will designate the IDW and disposal options will be assessed based on the waste designation, approved transport/disposal facilities, and schedule for disposal. Naval installations may have additional requirements for reviewing analytical data, characterizing waste materials, transporting and off-site disposal. The RPM shall coordinate with the Naval installation early in the planning process to ensure that these requirements are properly identified, incorporated into the approved project plans, as available, and implemented in the field.

The disposal of IDW must be approved by the Navy and, in some cases, pertinent regulatory agencies. The disposal must be documented.

4.0 REFERENCES

Department of Transportation (DOT), Hazardous Materials Transportation Regulations, 49 CFR Parts 171 – 179.

EPA. 1998. EPA530-F-98-026, Management of Remediation Waste Under RCRA

EPA. 1991. Management of Investigative-Derived Wastes During Site Inspections. U.S. Environmental Protection Agency/540/G-91/009. May.

EPA. 1992. Guide to Management of Investigative-Derived Wastes. Quick Reference Guide. U.S. Environmental Protection Agency: 9345.3-03FS. January.

5.0 ATTACHMENTS

Attachment I-A-7-1 Example Format – Quarterly IDW Drum Inventory Updates

Attachment I-A-7-1
Quarterly IDW Drum Inventory Updates

Navy Activity / Site Name (Generator Site)	DO Number (0bbb)	Drum Number (xxxx-AA-Dzzz)	Drum Storage Location	Origin of Contents (Source ID #)	IDW Type	Waste Volume (Fill level %)	Waste Generation Date (dd-mm-yy)	Expected Disposal Date (mm-yy)	Actual Disposal Date (dd-mm-yy)
NSC Pearl Harbor/ Landfill	0068	0068-LF-D001	NSC, Bldg 7	SB-1	Soil Cuttings	100	16-Dec-92	Dec-93	Na
		0068-LF-D002	NA	MW-1	Purge Water	75	20-Dec-92	Jul 93	26-Jul-93
				MW-2					
				MW-3					
		0068-LF-D003	NA	MW-1	Decon Water	95	20-Dec-92	Jul-93	26-Jul-93
				MW-2					
				MW-3					
		0068-LF-D004	NSC, Bldg.16	SB-1	PPE	50	16-Dec-92	Oct-93	NA
				SB-2					
				SB-3					
				SB-4					
				MW-1					
				MW-2					
				MW-3					
NAVSTA Guam/ Drum Storage	0047	0047-DS-001	Hazmat Storage Area	SB-1	Soil Cuttings	100	18-Feb-93	Sep-93	NA
				SB-2					

NA = Not Applicable

EQUIPMENT DECONTAMINATION

1.0 PURPOSE

The standard operating procedure (SOP) describes general methods of equipment decontamination (decon) for use by U.S. Naval Facilities Engineering Command Northwest (NAVFAC NW) field personnel and their contractors during field sampling activities. Some sites may require additional steps (e.g. nitric rinses for metals, hexane for chlorinated pesticides) to insure equipment is properly deconned. These should be identified and addressed in the Work Plans and/or the Quality Assurance Project Plans (QAPPs)

2.0 PROCEDURES

Decontamination of equipment is necessary to prevent cross-contamination and to maintain the highest integrity possible in collected samples. Planning a decontamination program should include consideration of the following factors:

- The location where the decon procedures will be conducted
- The types of equipment requiring decon
- The frequency of equipment decontamination
- The cleaning technique and types of cleaning solutions appropriate to the contaminants of concern
- The method for containing the residual contaminants and wash water from the deconning process
- The use of a quality control measure to determine the effectiveness of the decontamination procedure (e.g. equipment rinsate samples)

This subsection describes standards for decontamination, including the techniques to be used, frequency of decontamination, cleaning solutions, and effectiveness.

2.1 DECONTAMINATION AREA

An appropriate location for the decontamination area at a site shall be selected on the basis of the ability to control access to the area, control residual material removed from equipment, the need to store dirty and clean equipment, and the ability to restrict access to the area being investigated. The decontamination area shall be located an adequate distance away and upwind from potential contaminant sources to avoid contamination of clean equipment.

2.2 TYPES OF EQUIPMENT

Examples of drilling equipment that must be deconned includes drill bits, auger sections, split spoon samplers, and hand tools. Decontamination of monitoring well development and ground-water sampling equipment includes submersible pumps, non-disposable bailers, interface probes, water level meters, bladder pumps, airlift pumps, and lysimeters. Other sampling equipment that may require decontamination includes, but is not limited to, hand trowels, hand augers, slide hammer samplers, shovels, stainless steel spoons and bowls, soil sample liners and caps, wipe sampling templates, COLIWASA samplers, and dippers. Equipment with a porous surface, such as rope, cloth hoses, and wooden blocks, cannot be thoroughly decontaminated and should be properly disposed of after one use.

2.3 FREQUENCY OF EQUIPMENT DECONTAMINATION

Down-hole drilling equipment and equipment used in monitoring well development and purging shall be decontaminated prior to initial use and between each borehole or well. However, down hole drilling equipment may require more frequent cleaning to prevent cross-contamination between vertical zones within a single borehole. When drilling through a shallow contaminated zone and installing a surface casing to seal off the contaminated zone, the drilling tools shall be decontaminated prior to drilling deeper. Groundwater sampling should be initiated by sampling ground water from the monitoring well where the least contamination is suspected. This is more important when not using disposable equipment. All groundwater, surface water, and soil sampling devices shall be decontaminated prior to initial use and between collection of each sample to prevent the possible introduction of contaminants into successive samples.

2.4 CLEANING SOLUTIONS AND TECHNIQUES

Decontamination can be accomplished using a variety of techniques and fluids. The preferred method of decontaminating major equipment such as drill bits, augers, drill string, pump drop-pipe, etc., is steam cleaning. Steam cleaning is accomplished using a portable, high-pressure steam cleaner equipped with a pressure hose and fittings. For this method, equipment shall be thoroughly steam washed and rinsed with potable tap water to remove particulates and contaminants.

A rinse decontamination procedure is acceptable for equipment such as bailers, water level meters, new and re-used soil sample liners, and hand tools. The decontamination procedure shall consist of the following: (1) wash with a non-phosphate detergent (Citrinox®, Liquinox®, or other suitable phosphate free detergent) and potable water solution, (2) rinse with potable water, and (3) rinses with deionized or distilled water. Equipment shall be disassembled as much as is practical, prior to cleaning. An initial gross wash scrub down and quick rinse should be completed at the beginning of the process if equipment is heavily soiled. After decontamination, care needs to be taken that the cleaned equipment does not become contaminated. This may require wrapping items in foil or plastic and storing the equipment in a specified “clean” area.

Decontaminating submersible pumps requires additional effort because internal surfaces become contaminated during usage. The pumps shall be decontaminated by circulating fluids through the pump while it is operating. This circulation can be done using a clean 4-inch or greater diameter pipe equipped with an end cap. The pipe shall be filled with enough decon fluid to submerge the pump, the pump placed within the capped pipe, and the pump operated while circulating the fluids within the pipe. The

decontamination sequence shall include (1) detergent and potable water, (2) potable water rinse, and (3) deionized or distilled water rinse. The decontamination fluids shall be changed after each cycle. Changing of the fluids may include dumping of the detergent water, mixing detergent in the potable water rinse, using the deionized water as the potable rinse and renewing the distilled/deionized water. All decon water shall be disposed of as outlined in the field work plans.

Decontamination solvent(s) to be used during field activities will be specified in Project Work Plans or QAPPs. If solvents are used, sufficient time must be allowed to insure the solvent has evaporated from the equipment prior to reuse.

Equipment used for measuring field parameters such as pH, temperature, specific conductivity, and turbidity shall be rinsed with deionized or distilled water. New, unused soil sample liners and caps will be cleaned using the three step process, outlined above, to remove any dirt or cutting oils that may be on them prior to use.

2.5 CONTAINMENT OF RESIDUAL CONTAMINANTS AND CLEANING SOLUTIONS

Decontamination program for equipment exposed to potentially hazardous materials requires a provision for catchment and disposal of the contaminated material, cleaning solution, and wash water. This may require setting up a containment area with a system for pumping the water generated decontamination water into proper containers.

Clean equipment should be stored in a separate location to prevent recontamination. Decontamination fluids contained within the bermed area shall be collected and disposed of as outlined in the field sampling plan.

Containment of fluids from the decontamination of lighter-weight drilling equipment and hand-held sampling devices shall be accomplished using wash buckets or tubs. The decontamination fluids shall be collected and disposed of as outlined in the field sampling plan.

2.6 EFFECTIVENESS OF DECONTAMINATION PROCEDURES

A decontamination program must incorporate quality control measures to determine the effectiveness of cleaning methods. Quality control measures typically include collection of equipment rinsate samples or wipe testing. Equipment rinsates consist of analyte-free water that has been poured over or through the sample collection equipment after its final decontamination rinse. Wipe testing is performed by wiping a cloth over the surface of the equipment after cleaning. Further descriptions of these samples and their required frequency of collection are provided in SOP III-B, *Field QC Samples (Water, Soil)*. These quality control measures provide "after-the fact" information that may be useful in determining whether or not cleaning methods were effective in removing the contaminants of concern.

3.0 DOCUMENTATION

The decontamination process shall be recorded in the field logbook.

4.0 REFERENCES

SOP III-B, *Field QC Samples (Water, Soil).*

5.0 ATTACHMENTS

None.

NONCONFORMANCES AND CORRECTIVE ACTION

1.0 PURPOSE

This procedure outlines the mechanisms for identifying, documenting, segregating, dispositioning, and notifying affected organizations of non-conformances. Procedures are also presented for ensuring the appropriate actions are taken to identify the cause of all non-conformances and the implementation of corrective actions.

2.0 PROCEDURES

2.1 IDENTIFICATION OF A NON-CONFORMANCE

Program personnel engaged in project work that discover or suspect a non-conformance shall immediately mark or tag the non-conforming item(s) in an appropriate manner and initiate a Non-conformance and Corrective Action Report (NCAR) using Attachment IV-F-1. The staff member shall obtain a NCAR form and transmit the report to the PM for evaluation and confirmation of the existence of a non-conformance, with copies to the Quality Assurance Officer (QAO).

The PM or appropriate programmatic personnel shall ensure that no further work dependent on the non-conforming item or activity is performed until approval is obtained from the QAO and the NCAR is closed out. If the non-conformance is related to materials; the PM or Field Coordinator shall mark or identify the non-conforming item (if practical) with the NCAR number. Following closeout of the NCAR, the PM or Field Coordinator shall clear or dispose of the item, as appropriate.

2.2 EVALUATION OF NON-CONFORMANCES

The PM or designee shall confirm and evaluate the suspected non-conformance at the earliest time practicable, and determine its impact on the project as a whole. The PM shall document his evaluation on Attachment IV-F-1, NCAR, and transmit the NCAR to the QAO and NCAR originator, applicable project file, and other affected personnel. If it is determined that the non-conformance has significant impact on final results submitted to the NAVFAC NW RPM, immediate verbal notification shall be made followed by written documentation.

If the PM or designee determines that there is impact and the QAO judges that the non-conformance is significant and seriously jeopardizes project quality, the QAO shall, with the concurrence of the PM, issue a stop work order for the activity in question. If a stop work order has been issued, work cannot restart until corrective action has been taken to the satisfaction of the QAO and the PM. The stop work order shall be rescinded when the QAO has concluded that the non-conformance has been satisfactorily addressed.

2.3 IMPLEMENTATION OF CORRECTIVE ACTION

Within a reasonable time of identifying a non-conformance, the PM or designee shall confer with the QAO on the steps to be taken to correct the non-conformance. The cause shall be determined and those actions deemed necessary to correct the non-conforming item(s) as well as to prevent recurrence. The QAO shall ensure that the corrective actions(s) will prevent or reduce the likelihood of future non-conformances of a similar nature and are realistic in terms of the resources required for implementation. All selected corrective action measures shall be appropriate to the seriousness of the non-conformance. The corrective action instructions shall be transmitted to the project staff by the QAO via a corrective action meeting, training session, internal memorandum, or other appropriate means.

The PM shall assign qualified personnel to perform and check the corrective and preventive action(s) and document the actions taken on Attachment IV-F-1, NCAR. The response shall include scheduled dates for completion of all corrective actions if such action cannot reasonably be completed within 30 days. The completed NCAR shall then be transmitted to the QAO for review.

2.4 VERIFICATION

When a corrective action is completed, the QAO shall evaluate the adequacy of the response and confirm that corrective action has been accomplished as scheduled by signing the NCAR.

Copies of the completed report shall be transmitted to the QAO, PM, originator, and the QA program file. The original signed NCAR shall be placed in the project file.

3.0 DOCUMENTATION

An example non-conformance and corrective action report is provided in Attachment IV-F-1.

4.0 REFERENCES

None.

5.0 ATTACHMENTS

Attachment IV-F-1 Example Non-conformance and Corrective Action Report

Attachment IV-F-1
Example Non-conformance and Corrective Action Report

Non-conformance and Corrective Action Report

NCAR No. _____

Client/Project Name:_____

I. Identification (to be completed by the Originator)

Description of Non-conformance (attach additional pages as required.)

Reported by: _____Date:_____

Originator

II. Evaluation (to be completed by Project Manager or designee)

Evaluation Summary

Impact: Yes o No o

Confirmed by: _____Date:_____

Project Leader

III. Disposition (to be completed by Project Manager or designee)

Cause(s) of Non-conformance

Corrective/Preventative Action(s) Taken: Completion Date: _____

Approved by: _____ Date: _____

Project Manager

IV. Client Notification:

Oral to: _____By/Date: _____

In writing to: _____ By/Date: _____

V. Verification

All corrective action/preventative actions and reporting (as applicable are complete)

Verified by: _____Date:_____

QA Officer

Appendix D

ADEC Transport Form

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Instructions to Complete
Contaminated Media Transport and Treatment or Disposal Approval Form

The Alaska Department of Environmental Conservation (DEC) must approve the movement or disposal of contaminated soil and water from a site in accordance with 18 Alaska Administrative Code (AAC) 75.325(i), 18 AAC 75.370(b), and 18 AAC 78.274(b). The *Contaminated Media Transport and Treatment or Disposal Approval Form* should be used to document this approval. Soil treatment facilities regulated under 18 AAC 75.365 are required by their Operations Plans to only accept contaminated soil for which an approval form has been signed by a DEC project manager.

Site information can be found on the Contaminated Site Database (www.alaska.gov/Applications/SPAR/PublicMVC/CSP/Search/) or the Spills Database (http://dec.alaska.gov/Applications/SPAR/PublicMVC/PERP/SpillSearch).

Instructions to Complete:

1. **Hazard ID or Spill ID #:** For a contaminated site, the Hazard ID can be found on the Contaminated Sites Database. For a spill, the Spill ID can be found in the subject line of letters from DEC or the Spills Database. If the waste originates from multiple sites, all Hazard IDs or Spill IDs must be listed.

2. **Name of Contaminated Site or Spill:** For a contaminated site, the official site name can be found on the Contaminated Sites Database. For a spill, the official name of the spill is found in the subject line of letters from DEC or the Spills Database.

3. **Contaminated Site or Spill Location – Address or Other Appropriate Description:** This address or description captures the origin of the contaminated media or the location of the spill. For a contaminated site, the address or other appropriate description can be found on the Contaminated Sites Database. For a spill, this can be found on the Spill Report or the Spills Database.

4. **Current Physical Location of the Media:** Provide the physical location where the contaminated media (soil, water, etc.) is currently stored. This location may be the same as location provided in the "Contaminated Site or Spill Location", or it could be a hazardous waste facility or other location/staging area agreed upon in the DEC-approved work plan.

5. **Source of Contamination (Day Tank, Fire Training Pit, LUST, etc.):** List all sources which contributed to the contamination in the media being transported. Sources can include previous releases that have comingled. If the source is unknown, state "Unknown".

6. **Contaminants of Concern (CoCs):** List all contaminants detected above the most stringent Method 2 Tables B1 and B2 soil cleanup levels in 18 AAC 75.341(c) and (d), the Table C groundwater cleanup levels in 18 AAC 75.345, and other applicable action levels (e.g., TCLP results). Attach the laboratory data package for the contaminated media that is being disposed of and, if applicable, a data summary table or narrative to this form. Data gathered during site characterization activities may be sufficient to determine the CoCs. There are situations in which generator knowledge of the contaminant source may be accepted by a treatment or disposal facility in lieu of analytical sample results, such as, diesel-impacted media from a heating oil tank. If you are using generator knowledge in lieu of analytical sample results, include a statement which documents this knowledge in the Comments section.

7. **Estimated Volume:** Include the total volume of contaminated media to be transported; for instance, “Nine 55-gallon drums” or “”25 cubic yards of soil.”

8. **Date(s) Generated:** Provide the date the media was generated (e.g., excavated, pumped out of the ground, etc.). If the media was generated over multiple days, list the range of dates.

9. **Post Treatment Analysis Required (such as GRO, DRO, RRO, VOCs, PAHs, metals, PFAS, chlorinated solvents, etc.):** Provide the list of all contaminants that exceed the most stringent Method 2 cleanup levels. For DEC-approved soil treatment facilities in Alaska, specific post treatment analyses will be determined by the facility based upon the contaminants and requirements of their Operations Plan. If the media are being transported to a landfill or permitted liquid waste facility without off-site treatment, include “Not Applicable”.

10. **Comments or Other Important Information:** Provide any other information which needs to be conveyed.
    a. If generator knowledge of the CoCs is being used in lieu of sample analytical results, an explanation needs to be provided in this field.
    b. If the material is going to be placed in a landfill in Alaska, include a statement that the landfill has agreed to accept the material and provide the contact information for the landfill point of contact. If the material is going to be placed in a Class 2 or 3 landfill, attach the DEC Solid Waste Program’s approval letter to this form.
    c. If the media is going to an intermediate location or facility prior to its final destination, describe the complete transportation route with intermediate locations in this field.

11. **Treatment Facility, Landfill, and/or Final Destination of Media:** Include the name of the facility, landfill, or the final destination of the media. A list of DEC-approved Alaskan soil treatment facilities is available at www.dec.alaska.gov/spar/csp/offsite-remediation/. If multiple treatment facilities will be used, use separate forms to document what media will go to which facility. For material that will go to a waste transfer facility prior to disposal at another facility, the final destination should be listed.
    a. **Physical Address/Phone Number:** Provide the physical location and telephone number of the facility, landfill, or the final destination of the media.

12. **Responsible Party:** Provide the name of the party responsible for the contaminated site or spill.
    a. **Address/Phone Number:** Provide the mailing address and telephone number of the responsible party.

13. **Waste Management Co./Organizer:** Provide the name of company or person shipping and/or organizing the shipment of the media.
    a. **Address/Phone Number:** Provide the mailing address and telephone number of the waste management company or organizer.

Submit this completed form along with all necessary attachments to the assigned DEC project manager for approval, or contact the Contaminated Sites Program at (907) 269-7558 or the Prevention, Preparedness and Response Program at (907) 269-7557.

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs

Contaminated Media Transport and Treatment or Disposal Approval Form

HAZARD ID # or SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL

CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION

CURRENT PHYSICAL LOCATION OF MEDIA	SOURCE OF THE CONTAMINATION (DAY TANK, FIRE TRAINING PIT, LUST, ETC.)

CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED

POST TREATMENT ANALYSIS REQUIRED *(such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)*

COMMENTS OR OTHER IMPORTANT INFORMATION

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
RESPONSIBLE PARTY	**ADDRESS/PHONE NUMBER**
WASTE MANAGEMENT CO. / ORGANIZER	**ADDRESS/PHONE NUMBER**

***Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.**

Name of the Person Requesting Approval (printed) | Title/Association

Signature | Date | Phone Number

----------DEC USE ONLY----------

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

DEC Project Manager Name (printed) | Project Manager Title

Signature | Date | Phone Number

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Appendix E

Compliance Documents

- ADEC Oil & Hazardous Substances Spill Notification Form

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ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

OIL & HAZARDOUS SUBSTANCES SPILL NOTIFICATION FORM

ADEC USE ONLY

ADEC SPILL #:	ADEC FILE #:	ADEC LC:

PERSON REPORTING:	PHONE NUMBER:	REPORTED HOW? (ADEC USE ONLY) ☐ Phone ☐ Fax ☐ PERS ☐ E-mail
DATE/TIME OF SPILL:	DATE/TIME DISCOVERED:	DATE/TIME REPORTED TO ADEC:

INCIDENT LOCATION/ADDRESS:	DATUM: ☐ NAD27 ☐ NAD83 ☐ WGS84 ☐ Other _____	PRODUCT SPILLED:
	LAT.	
	LONG.	

QUANTITY SPILLED: ☐ gallons ☐ pounds	QUANTITY CONTAINED: ☐ gallons ☐ pounds	QUANTITY RECOVERED: ☐ gallons ☐ pounds	QUANTITY DISPOSED: ☐ gallons ☐ pounds

	POTENTIAL RESPONSIBLE PARTY:	OTHER PRP, IF ANY:	VESSEL NAME:
Name/Business:			
Mailing Address:			VESSEL NUMBER:
Contact Name:			> 400 GROSS TON VESSEL: ☐ Yes ☐ No
Contact Number:			

SOURCE OF SPILL:	CAUSE CLASSIFICATION:
CAUSE OF SPILL: ☐ Under Investigation	☐ Accident ☐ Human Factors ☐ Structural/Mechanical ☐ Other

CLEANUP ACTIONS:

DISPOSAL METHODS AND LOCATION:

AFFECTED AREA SIZE:	SURFACE TYPE: *(gravel, asphalt, name of river etc.)*	RESOURCES AFFECTED/THREATENED: *(Water sources, wildlife, wells, etc.)*

COMMENTS:

ADEC USE ONLY

SPILL NAME:	NAME OF DEC STAFF RESPONDING:	C-PLAN MGR NOTIFIED? ☐ Yes ☐ No

DEC RESPONSE: ☐ Phone follow-up ☐ Field visit ☐ Took Report	CASELOAD CODE: ☐ First and Final ☐ Open/No LC ☐ LC Assigned	CLEANUP CLOSURE ACTION: ☐ NFA ☐ Monitoring ☐ Transferred to CS or STP

COMMENTS:

Status of Case: ☐ Open ☐ Closed DATE CASE CLOSED:

REPORT PREPARED BY:	DATE:

IT'S THE LAW!

AS 46.03.755 and 18 AAC 75.300

REPORT OIL AND HAZARDOUS SUBSTANCE SPILLS

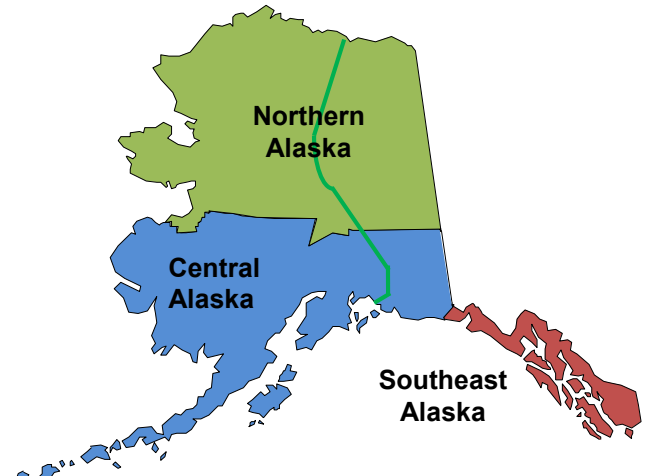
During Normal Business Hours

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) 465-5245
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

rev. Oct/2015

Appendix F

U.S. Fish and Wildlife Service Letter of Determination

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United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
1011 East Tudor Road
Anchorage, Alaska 99503

In Reply Refer to:
FWS/R7/AFES/MMM

June 17, 2024

Mr. William Kaage and Mr. Robert Boyd
Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, Washington 98315-1101

Dear Mr. Kaage and Mr. Boyd:

The U.S. Fish and Wildlife Service Marine Mammals Management Office has reviewed your request, dated May 22, 2024, for a Letter of Authorization (LOA) for intentional take by Level B non-lethal harassment (deterrence) of polar bears (*Ursus maritimus*). Polar bear deterrence will be conducted during three separate projects including: long-term monitoring (LTM) field work at the former Naval Arctic Research Laboratory (NARL) in Utqiaġvik, Alaska, LTM at Former Distant Early Warning (DEW) Line Station at Point McIntyre, Alaska, near Deadhorse, and petroleum shoreline investigation at the former NARL Airstrip and Former Powerhouse in Utqiaġvik, Alaska. Your planned activities will occur from July 1, 2024, to November 1, 2024. We have determined that your request is consistent with management activities to protect human life as well as polar bears.

Therefore, and in accordance with sections 101(a)(4)(A), 109(h), and 112(c) of the Marine Mammal Protection Act of 1972, as amended, enclosed is LOA 24-INT-08 authorizing deterrence of small numbers of polar bears for the protection of life, both human and polar bear, under specified terms and conditions.

Should you have any questions regarding this LOA or the required terms and conditions, please contact Wildlife Biologist, Dr. Steven Hein at [redacted] or via email at steven_hein@fws.gov, or Regulatory Program Lead, Dr. Stephanie Burgess, at [redacted] or via email at [redacted] You may also contact MMM at [redacted].

Sincerely,

Project Leader,
Marine Mammals Management

Enclosure

Email cc: Dr. Lori Quakenbush, Alaska Department of Fish and Game
Ms. Pauline Hope, Northern Alaska Fish and Wildlife Field Office, U.S. Fish and Wildlife Service
Office of Law Enforcement, U.S. Fish and Wildlife Service
Department of Law, North Slope Borough

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
1011 East Tudor Road
Anchorage, Alaska 99503

In Reply Refer to:
FWS/R7/AFES/MMM

LETTER OF AUTHORIZATION
Intentional Take
(24-INT-08)

VALID: July 1, 2024
EXPIRES: December 31, 2024

In accordance with sections 101(a)(4)(A), 109(h), and 112(c) of the Marine Mammal Protection Act of 1972, as amended (MMPA), the U.S. Fish and Wildlife Service (FWS) Marine Mammals Management Office (MMM) is hereby issuing this Letter of Authorization (LOA) to Naval Facilities Engineering Command Northwest (Navy) allowing intentional take of small numbers of polar bears (*Ursus maritimus*), by Level B non-lethal harassment (deterrence) during activities associated with three separate projects including: long-term monitoring (LTM) field work at the former Naval Arctic Research Laboratory (NARL) in Utqiaġvik, Alaska, LTM at Former Distant Early Warning (DEW) Line Station at Point McIntyre, Alaska, near Deadhorse, and petroleum shoreline investigation at the former NARL Airstrip and Former Powerhouse in Utqiaġvik, Alaska.

The project is expected to begin around July 1, 2024, and end on November 1, 2024. Full project details are provided in the following documents:

- A letter regarding *Letter of Authorization (LOA) for Intentional Take by Harassment of Polar Bears, Former Naval Arctic Research Laboratory (NARL), Utqiaġvik, Alaska and Point McIntyre, Alaska* (dated May 22, 2024);
- Navy's *Long-Term Monitoring Scope of Work at Utqiaġvik, Alaska* (dated May 22, 2024);
- Navy's *Petroleum Shoreline Investigation Scope of Work at Utqiaġvik, Alaska* (dated May 22, 2024);
- Navy's *LTMOM for Former DEW Line Station, Point McIntyre, Statement of Work* (dated May 22, 2024);
- Navy's *U.S. Fish and Wildlife Service ESA Effects Determination* (dated May 22, 2024);
- Navy's *Polar Bear – Human Interaction Plan* (dated May, 2024); and
- Navy's attached *certifications of Polar Bear Guards' Qualifications* (dated May 22, 2024).

Section 101(a)(4)(A) of the MMPA states that, "Except as provided in subparagraphs (B) and (C), the provisions of this chapter [prohibiting take] shall not apply to the use of measures:

i. by the owner of fishing gear or catch, or an employee or agent of such owner, to deter a marine mammal from damaging the gear or catch;
ii. by the owner of other private property, or an agent, bailee, or employee of such owner, to deter a marine mammal from damaging private property;
iii. by any person, to deter a marine mammal from endangering personal safety; or

iv. by a government employee, to deter a marine mammal from damaging public property, so long as such measures do not result in the death or serious injury of a marine mammal."

Section 109(h) states that, "nothing in this title [Conservation and Protection of Marine Mammals]… shall prevent a Federal, State, or local government official or employee or a person designated under section 112(c) from taking, in the course of his or her duties as an official, employee, or designee, a marine mammal in a humane manner (including euthanasia) if such taking is for: A) the protection or welfare of the mammal; B) the protection of the public health and welfare; or C) the non-lethal removal of nuisance animals."

Section 112(c) allows for the FWS to, "…enter into such contracts, leases, cooperative agreements, or other transactions as may be necessary to carry out the purposes of this title [Conservation and Protection of Marine Mammals]… and on such terms as he [the Secretary] deems appropriate with any Federal or State agency, public or private institution, or other person."

The purpose of authorizing take by Level B non-lethal harassment, or deterrence, is to maintain human safety in polar bear habitat and reduce the likelihood of a polar bear death or injury. The primary objectives are to:

- Prevent polar bears from associating food with humans and facilities;
- Condition polar bears to avoid people;
- Allow polar bears to use travel routes (natural and human made) to move along the coast; and
- Prevent polar bears from extended use of areas around facilities.

This LOA is subject to the following conditions:

1. Navy's *Polar Bear – Human Interaction Plan (dated May 2024), Long-Term Monitoring Scope of Work at Utqiaġvik, Alaska*, *Petroleum Shoreline Investigation Scope of Work at Utqiaġvik, Alaska, and LTMOM for Former DEW Line Station, Point McIntyre, Statement of Work* are approved and incorporated in this LOA by reference. Project activities must be conducted in accordance with these plans. A copy of the plans and this LOA must be kept on-site and available for reference by all personnel.

2. It is the responsibility of Navy to ensure that only trained and qualified personnel are assigned the task of polar bear deterrence. Prior to initiation of activities, a list of trained personnel responsible for deterrence and a description of their training shall be submitted to the FWS MMM. Certifications must be obtained by attending a course led either by the FWS's Marine Mammal Regulatory staff or an instructor trained and certified by the FWS's Marine Mammal Regulatory staff.

3. Should firearms be used for polar bear deterrence, it is the responsibility of Navy to ensure that personnel operating under this LOA comply with all laws and regulations regarding the carry and use of firearms.

4. Within 48 hours of occurrence, Navy, or its designated agent, is responsible for documenting and reporting to the FWS MMM all instances involving polar bear deterrence activities. A final report of all polar bear deterrence activities shall be submitted to the FWS MMM no later than 60 days from the expiration date of this LOA. Reports shall be submitted to the FWS MMM via email at [redacted]

5. Appropriate deterrence techniques may include, but are not limited to bear monitors; air horns; electric fences; bear spray; acoustic recordings; vehicles; and projectiles (e.g., beanbags, "cracker" shells, "bangers," and "screamers"). Deterrence techniques must not cause the injury or death of a polar bear. Any injury or death of a polar bear must be reported to the FWS MMM as soon as possible but not later than 48 hours after the incident.

6. Prior to conducting a deterrence activity, operators must:
   a. Make a reasonable effort to reduce or eliminate attractants;
   b. Secure the site, notify supervisor, and move personnel to safety;
   c. Ensure the polar bear has escape route(s); and
   d. Ensure communication with all personnel.

7. When conducting a deterrence activity, operators must:
   a. Never deter a polar bear for convenience or to aid project activities. The safety and welfare of the polar bear is second only to the safety and welfare of humans in a deterrence situation;
   b. Shout at the polar bear before using projectiles or other techniques; and
   c. Begin with the lowest level of force or intensity that is effective and increase the force or intensity of the technique, or use additional techniques, only as necessary to achieve the desired result; and
   d. Not haze sows with cubs using escalated hazing techniques (i.e., using any pyrotechnic round such as a screamer or cracker shell, or any direct-contact rounds such as beanbags or rubber projectiles).

8. After a deterrence event, operators must:
   a. Monitor polar bear's movement (to ensure no return);
   b. Notify supervisor and personnel when it is safe to resume work; and
   c. Submit a report to the FWS MMM within 48 hours.

The FWS is also requesting that the Navy field team contact:

Alaska Native Affairs Specialist, Mr. Ernest Nageak, Utqiaġvik U.S. Fish and Wildlife Service Field Office; contact number: [redacted], email [redacted]; and North Slope Borough Department of Wildlife Management Polar Bear Patrollers, Mr. Billy Adams, contact number: [redacted], email [redacted] in the event of an observed polar bear in the area. These contacts all have local field knowledge and polar bear deterrence response authorities in Utqiaġvik and should be able to directly assist in the event of a polar bear encounter. They may also have current day-to-day knowledge of any polar bears on shore in the area.

The FWS MMM must be notified of changes in the project, including changes to activities, locations, or methods, prior to their implementation. Such changes may invalidate this LOA unless approved in writing by the FWS MMM.

The FWS has completed intra-service consultation under the Endangered Species Act of 1973, as amended (ESA), on the issuance of this LOA under the *Biological Opinion for the USFWS Region 7 Polar Bear Deterrence Program* (November 23, 2020) and has determined its issuance is not likely to jeopardize the continued existence of polar bears so long as Navy follows the terms/conditions of this LOA. No additional authorization under the ESA is required.

Should you have any questions regarding this LOA or the required terms and conditions, please contact Wildlife Biologist, Dr. Steven Hein at [redacted] or via email at [redacted], or Regulatory Program Lead, Dr. Stephanie Burgess, at [redacted] or via email at [redacted] You may also contact MMM at [redacted]

_____ _____

Project Leader, Marine Mammals Management Date

Appendix G

Project Schedule

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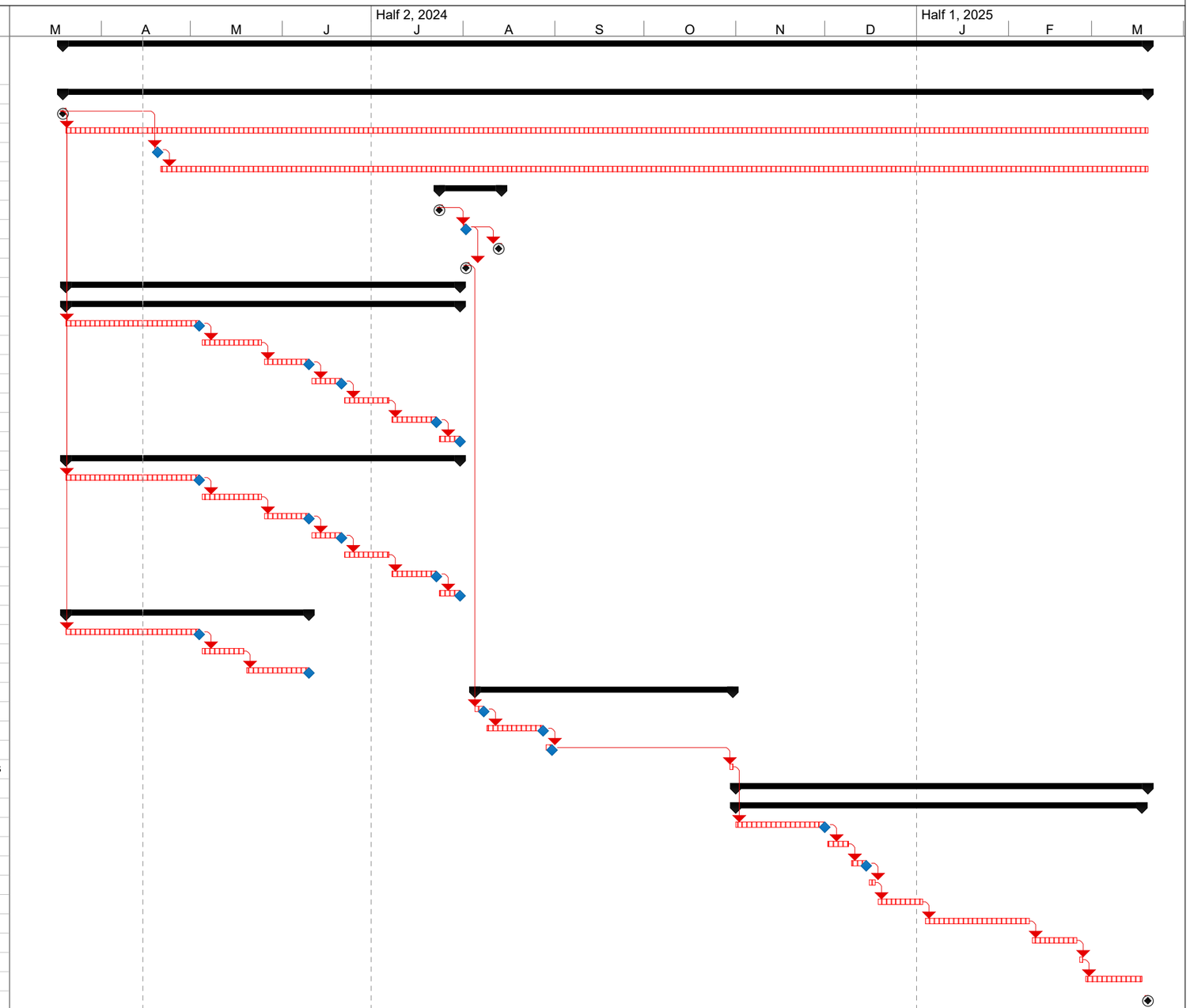
N44255-20-D-6006/N44255-24-F-4132 2024 LTM/O&M for Former Naval Arctic Research Laboratory, Barrow, Alaska

ID	Task Name	Duration	Start	Finish	Predecessors
1	**N44255-20-D-6006/N44255-24-F-4132 2024 LTM/O&M for Former Naval Arctic Research Laboratory, Barrow, Alaska**	**265 days**	**Tue 3/19/24**	**Wed 3/19/25**	
2	**Task 1: Project Management & Meetings**	**265 days**	**Tue 3/19/24**	**Wed 3/19/25**	
3	Award	1 day	Tue 3/19/24	Tue 3/19/24	
4	Monthly Project Management	365 edays	Tue 3/19/24	Wed 3/19/25	3
5	NIRIS RPM Tools: Setup Deliverables	1 day	Fri 4/19/24	Fri 4/19/24	3FS+30 edays
6	NIRIS RPM Tools: Monthly Tracking	333 edays	Sat 4/20/24	Wed 3/19/25	5FS+1 eday
7	**Kickoff Meeting**	**15 days**	**Wed 7/24/24**	**Tue 8/13/24**	
8	Draft Agenda	1 day	Wed 7/24/24	Wed 7/24/24	
9	Meeting	1 day	Thu 8/1/24	Thu 8/1/24	8FS+7 edays
10	Minutes	1 day	Tue 8/13/24	Tue 8/13/24	9FS+7 edays
11	Notice to Proceed	1 day	Fri 8/2/24	Fri 8/2/24	9
12	**Task 2: Planning Documents**	**95 days**	**Tue 3/19/24**	**Tue 7/30/24**	
13	**QAPP/SAP**	**95 days**	**Tue 3/19/24**	**Tue 7/30/24**	
14	Internal Draft	45 edays	Tue 3/19/24	Fri 5/3/24	3
15	Navy + LANT Review and Comments	20 edays	Sat 5/4/24	Fri 5/24/24	14FS+1 eday
16	Reponse to Comments	15 edays	Sat 5/25/24	Sun 6/9/24	15FS+1 eday
17	Draft	10 edays	Mon 6/10/24	Thu 6/20/24	16FS+1 eday
18	Navy + Stakeholder Review & RTCs	15 edays	Fri 6/21/24	Sat 7/6/24	17FS+1 eday
19	RTCs on Draft Final	15 edays	Sun 7/7/24	Mon 7/22/24	18FS+1 eday
20	Final	7 edays	Tue 7/23/24	Tue 7/30/24	19FS+1 eday
21	**QCP/WMP/EPP**	**95 days**	**Tue 3/19/24**	**Tue 7/30/24**	
22	Internal Draft	45 edays	Tue 3/19/24	Fri 5/3/24	3
23	Navy Review and Comments	20 edays	Sat 5/4/24	Fri 5/24/24	22FS+1 eday
24	Reponse to Comments	15 edays	Sat 5/25/24	Sun 6/9/24	23FS+1 eday
25	Draft	10 edays	Mon 6/10/24	Thu 6/20/24	24FS+1 eday
26	Navy + Stakeholder Review & RTCs	15 edays	Fri 6/21/24	Sat 7/6/24	25FS+1 eday
27	RTCs on Draft Final	15 edays	Sun 7/7/24	Mon 7/22/24	26FS+1 eday
28	Final	7 edays	Tue 7/23/24	Tue 7/30/24	27FS+1 eday
29	**Accident Prevention Plan**	**58 days**	**Tue 3/19/24**	**Sun 6/9/24**	
30	Draft	45 edays	Tue 3/19/24	Fri 5/3/24	3
31	Navy Review and Comments	14 edays	Sat 5/4/24	Sat 5/18/24	30FS+1 eday
32	Final	21 edays	Sun 5/19/24	Sun 6/9/24	31FS+1 eday
33	**Task 3: Field Work**	**63 days**	**Mon 8/5/24**	**Thu 10/31/24**	
34	Mobilization	3 edays	Mon 8/5/24	Thu 8/8/24	11FS+1 eday
35	Field Effort	19 edays	Fri 8/9/24	Wed 8/28/24	34FS+1 eday
36	Demobilization	2 edays	Thu 8/29/24	Sat 8/31/24	35FS+1 eday
37	Receive validated laboratory data	1 eday	Wed 10/30/24	Thu 10/31/24	36FS+60 edays
38	**Task 4: Reporting**	**102 days**	**Fri 11/1/24**	**Wed 3/19/25**	
39	**Annual LTM Report**	**100 days**	**Fri 11/1/24**	**Mon 3/17/25**	
40	Internal Draft (ID) LTM Monitoring Report	30 edays	Fri 11/1/24	Sun 12/1/24	37FS+1 eday
41	Navy Review of ID Report	7 edays	Mon 12/2/24	Mon 12/9/24	40FS+1 eday
42	ID Response to Comments	5 edays	Tue 12/10/24	Sun 12/15/24	41FS+1 eday
43	ID Comment Resolution Meeting	2 days	Mon 12/16/24	Tue 12/17/24	42FS+1 eday
44	Draft Monitoring Report	15 edays	Wed 12/18/24	Thu 1/2/25	43FS+1 eday
45	Stakeholder + Navy Review of Draft Report	35 edays	Fri 1/3/25	Fri 2/7/25	44FS+1 eday
46	Draft Monitoring Report RTCs	15 edays	Sat 2/8/25	Sun 2/23/25	45FS+1 eday
47	Comment Resolution Meeting	1 eday	Mon 2/24/25	Tue 2/25/25	46FS+1 eday
48	Final Monitoring Report	19 edays	Wed 2/26/25	Mon 3/17/25	47FS+1 eday
49	**Period of Performance End**	1 day	Wed 3/19/25	Wed 3/19/25	



Project: N44255-20-D-6006
Task Order: N44255-24-F-4132

Current Schedule Milestone Summary

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Appendix H

Regulatory Concurrance

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THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Environmental Conservation

SPILL PREVENTION & RESPONSE
Contaminated Sites Program

PO BOX 111800
Juneau, AK 99811
Main: 907.451.2185
Fax: 907-465-5245
www.dec.alaska.gov

File: 310.38.012
310.38.013

July 29, 2024

Electronic Delivery Only
William Kaage
NAVFAC NW
1101 Tautog Circle, Suite 203
Silverdale, WA 98315-1101

RE: ***Final Quality Control, Waste Management, and Environmental Protection Plan, 2024 Petroleum Shoreline Investigation at the Airstrip and Powerhouse Sites Former Naval Arctic Research Laboratory, Utqiagvik (Formerly Barrow), ALASKA, dated July 2024***

Dear Mr. Kaage:

The Alaska Department of Environmental Conservation (DEC) has completed review of the draft *Quality Control, Waste Management, and Environmental Protection Plan, 2024 Petroleum Shoreline Investigation at the Airstrip and Powerhouse Sites dated May 2024* for the Former Naval Arctic Research Laboratory (NARL), located in Utqiagvik, Alaska. This document details the quality control and environmental protection procedures to be followed during the 2024 Petroleum Shoreline Investigation at the Airstrip and Powerhouse sites.

DEC approves this Quality Control, Waste Management, and Environmental Protection Plan. Please attach this letter and the comments table to the final document. If there are any questions, please contact me by phone at (907) 451-2185, or by email at kathleen.iler-galau@alaska.gov.

Sincerely,

Kathleen Iler-Galau
Environmental Program Specialist

Cc: Sarah Bernhardt, ADEC

Enclosures: *DEC Comment Table*

REVIEW COMMENTS

PROJECT: Barrow NARL Sites 5 and 12

DOCUMENT: Draft *Quality Control, Waste Management, and Environmental Protection Plan, 2024 Petroleum Shoreline Investigation at the Airstrip and Powerhouse Sites Former Naval Arctic Research Laboratory, Utqiagvik (Formerly Barrow), ALASKA, dated May 2024*

ALASKA DEPT. OF ENVIRONMENTAL CONSERVATION	DRAFT REVIEW: 6/6/2024 REVIEWER: ADEC PHONE: 907-269-7527	Action taken on comment by: EA Engineering			
Item No.	**Drawing Sheet No., Spec. Para.**	**COMMENTS** 6/6/2024	**REVIEW CONFERENCE** **A - comment accepted** **W - comment withdrawn (if neither, explain)**	**NAVY RESPONSE**	**ADEC/EPA RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE) 7/8/2024**	**NAVY RESPONSE**
1	General	DEC has not reviewed the SAP or the Accident Prevention Plan/Site Safety and Health Plan as DON 2024a and DON 2024b throughout the document.	A	Noted. The requested documents will be submitted, as required, to ADEC with sufficient time for review and approval prior to the field event.	Noted	
2	Section 4.1, page 4-1, Lines 770-772	Please add a reference to the appropriate ADEC regulations referenced in this text.	A	Text in Section 4.1 was updated to state: "…contaminated media as described in Alaska Administrative Code (AAC) Title 18, Chapter 75, Sections 75.325 and 75.370 (AAC 2023) and using the approval form presented in Appendix D…" Section 8 was updated to reflect the additionally referenced sections of 18 AAC 75.	A	
3	5.2, page 5-1	Thank you for providing the regulations. It is always nice to also see these listed in the references.	A	Noted.		
4	NAVFAC SOPs, General	Some of the SOPs could benefit from State of Alaska references such as the Monitoring Well Decommissioning Guidance and Field Sampling Guidance documents.	A	A reference to the State of Alaska Field Sampling Guidance has been added to Sections 1 and 2.1.2. The original reference to this document remains in Section 2.3. Reference to the Monitoring Well Guidance is not applicable to the 2024 Petroleum Shoreline Investigation.	A	
--End of Comments--						