660.38.008

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July 18, 2007
1132-06B

Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
Federal Facilities Program
555 Cordova Street
Anchorage, Alaska 99501

Attention: **Jeff Brownlee**
Environmental Program Specialist III

Re: 2007 Gambell NALEMP Work Plan

Dear Mr. Brownlee:

Travis/Peterson Environmental Consulting, Inc. has enclosed one copy of the 2007 Gambell NALEMP Work Plan for your review. Please contact our office with any questions or comments that you may have.

Sincerely,

Noah Zogas
Staff Scientist

Enclosures: 2007 Gambell NALEMP Work Plan

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JUL 20 2007
DEPT. OF ENVIRONMENTAL CONSERVATION

660.38.009

2007 Gambell NALEMP Work Plan
Gambell, St. Lawrence Island, Alaska

Department of the Army
U.S. Army Engineer District, Alaska
P.O. Box 6898
Elmendorf Air Force Base, Alaska 99506-6898

Prepared by

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P.O. Box 90
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June 2007
1132-06B

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

° F	Degrees Fahrenheit
AAC	Alaska Administrative Code
ACM	Asbestos-Containing Materials
ADEC	Alaska Department of Environmental Conservation
AEPM	Assistant Environmental Program Manager
ATV	All-Terrain Vehicle
AVEC	Alaska Village Electric Cooperative
BLM	Bureau of Land Management
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
CA	Cooperative Agreement
CAA	Civil Aeronautics Administration
CDAP	Chemical Data Acquisition Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Chain of Custody
CRZ	Contamination Reduction Zone
DOD	Department of Defense
DRO	Diesel Range Organics
E&E	Ecology and Environment, Incorporated
EPA	Environmental Protection Agency
EPM	Environmental Program Manager
ERP	Emergency Response Plan
GPS	Global Positioning System
GRO	Gasoline Range Organics
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSO	Health and Safety Officer
HTSA	Historic Time Sequence Analysis
mg/kg	Milligrams Per Kilograms
MMPA	Marine Mammal Protection Act
MS	Method Spike
MSD	Method Spike Duplicate
MW	Montgomery Watson
MWH	Montgomery Watson Harza
NALEMP	Native American Lands Environmental Mitigation Program
Northland	Northland Services, Incorporated
NVG	Native Village of Gambell
OSCI	Oil Spill Consultants, Incorporated
PCB	Polychlorinated Biphenyl
PID	Photo-Ionization Detector
PPE	Personal Protection Equipment
ppm	Parts Per Million
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control

RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
Rinker	Rinker Materials, Incorporated
RPD	Relative Percent Difference
RRO	Residual Range Organics
SAP	Sampling and Analysis Plan
SHPO	State Historic Preservation Office
SOP	Standard Operating Procedures
SPIP	Strategic Project Implementation Plan
SVOC	Semi-volatile Organic Compound
TPECI	Travis/Peterson Environmental Consulting, Incorporated
USACE	US Army Corps of Engineers

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The Native Village of Gambell (NVG) is located on the northwest cape of St. Lawrence Island, 200 miles southwest of Nome in the Bering Sea (Figure 1). The village is 36 miles from the Chukotsk Peninsula, Siberia. It lies at approximately 63.78° North Latitude and 171.74° West Longitude and is located in the Cape Nome Recording District. The area encompasses 10.9 square miles of land and 19.5 sq. miles of water.

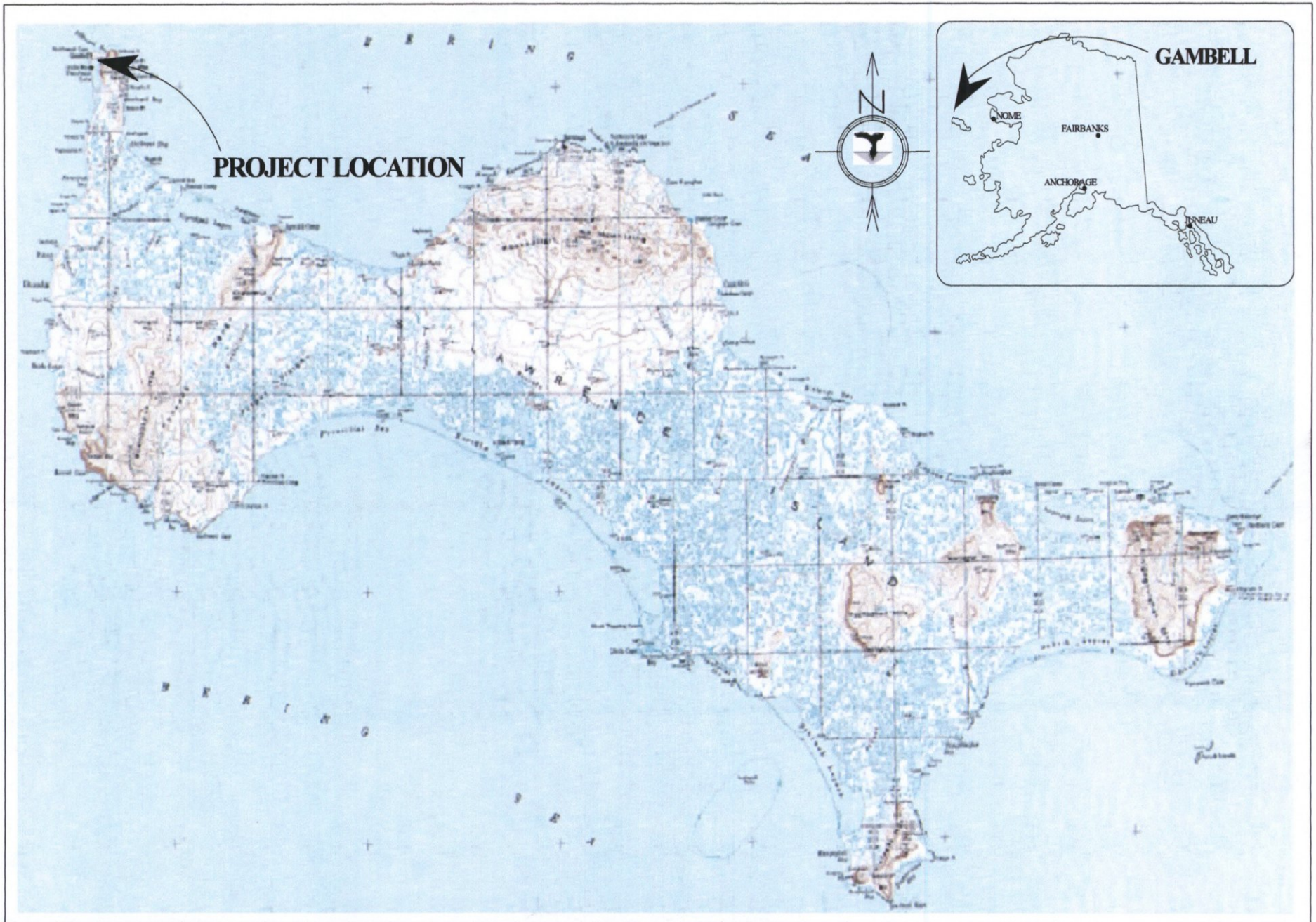
Gambell has a maritime climate with continental influences in the winter. Winds and fog are common, and precipitation occurs 300 days per year. Average annual precipitation is 15 inches, including 80 inches of snowfall. Average winter temperatures are usually between -2° and 10° Fahrenheit (° F) while summer temperatures average 34° to 48° F. Extremes from -30° to 65° F have been recorded (DCED, 2004).

The NVG is a federally recognized tribe organized pursuant to the Indian Reorganization Act and operates under a federally approved constitution. This Work Plan is being conducted under the Department of Defense (DOD) Native American Lands Environmental Mitigation Program (NALEMP). Under the NALEMP FY2006 Cooperative Agreement (CA) between the NVG and the DOD, the NVG will manage a remediation project within Gambell. This includes excavation and disposal of buried and submerged military debris and incidental contaminated soil at Sites 1C, 8C, 15, 17, 19, 20, and 23 (Figure 2). Several of these sites were scheduled for remediation in previous CAs, but work was not completed. The NVG contracted Travis/Peterson Environmental Consulting, Inc. (TPECI) to assist with this Work Plan.

1.2 PURPOSE OF ACTIVITIES

The purpose of activities described in this Work Plan is to remove and dispose of debris and incidental contaminated soils from past military activities in Gambell. The NVG will continue to identify, prioritize, and remediate remaining military impacts to land in Gambell as remediation proceeds. Military sites and associated impacts were initially identified in the 2000 Strategic Project Implementation Plan (SPIP) produced by Montgomery Watson. In the spring of 2007, the NVG will update the SPIP and give priority to Sites 1C, 8C, 15, 17, 19, 20, and 23. The NVG will update the SPIP in June of 2007. This Work Plan identifies the tasks associated with proposed environmental remediation at the sites listed above during the 2007 field season.

Buried debris at sites of concern is in close proximity to recreational and subsistence use areas and the community drinking water supply. Buried debris has become a hazard to all-terrain vehicles (ATV) and snowmobile traffic that travel these areas for recreation and subsistence activities. Boaters that launch and land their boats on the north beach have to travel over submerged debris. Tourists visiting Gambell also use this portion of the north beach.



TRAVIS/PETERSON ENVIRONMENTAL CONSULTING, INC. 3305 ARCTIC BOULEVARD SUITE 102 ANCHORAGE, ALASKA 99503	NATIVE VILLAGE OF GAMBELL	FIGURE 1 LOCATION AND VICINITY	
PROJECT No: 1132-06B	FILE: 1132 - Gambell/06B - 2007 Field Season/Work Plan/Figures/Figure 1	DATE: 3-22-07	NO SCALE

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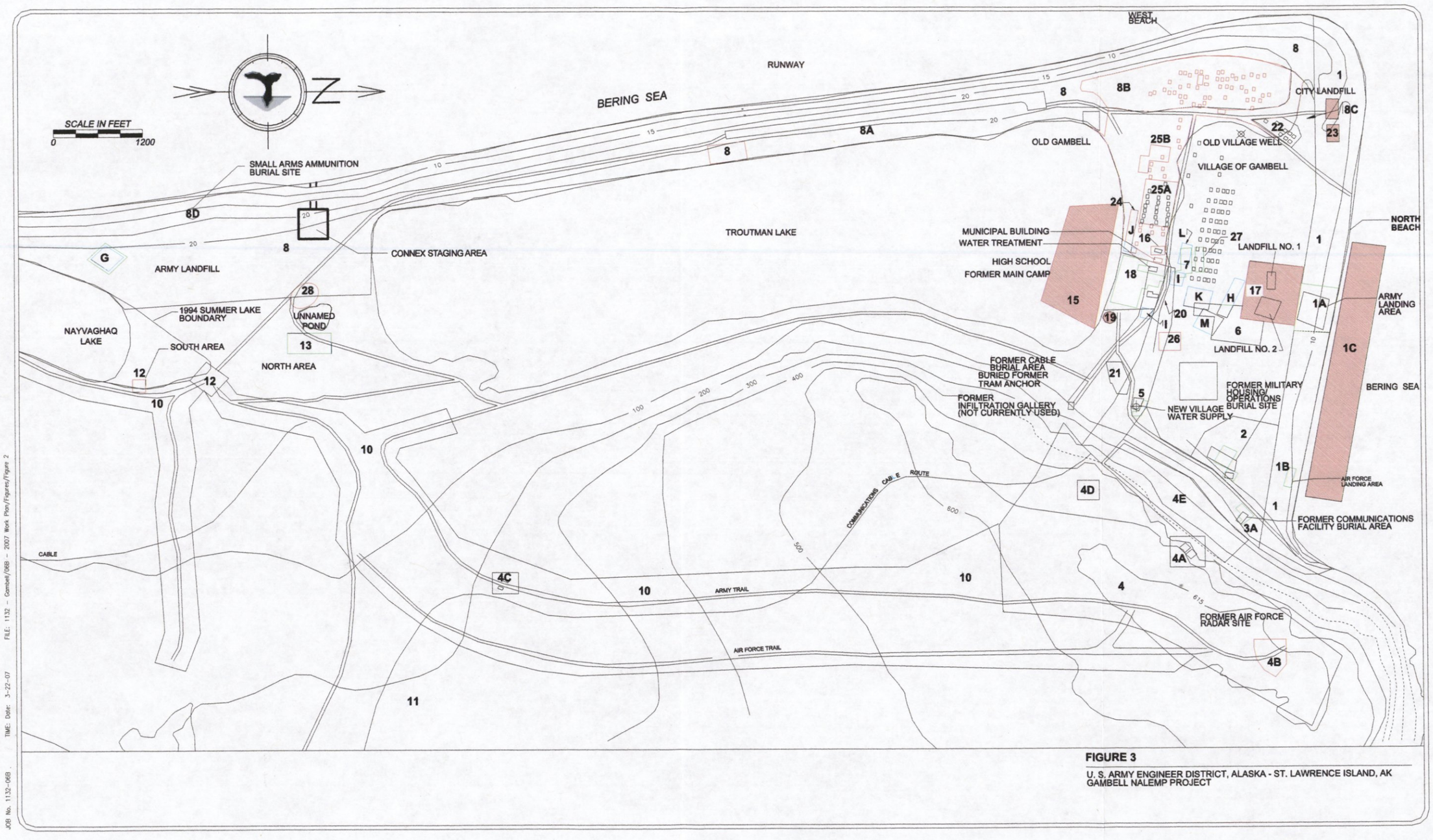


JOB No. 1132-06B TIME: Date: 3-22-07 FILE: 1132 - Gambell/06B - 2007 Work Plan/Figures/Figure 2

FIGURE 3

U. S. ARMY ENGINEER DISTRICT, ALASKA - ST. LAWRENCE ISLAND, AK
GAMBELL NALEMP PROJECT

TRAVIS/PETERSON ENVIRONMENTAL CONSULTING, INC.
3305 ARCTIC BOULEVARD SUITE 102
ANCHORAGE, ALASKA 99503

NATIVE VILLAGE OF GAMBELL

FIGURE 2
REMEDIATION SITE LOCATIONS

PROJECT No: 1132-06B	FILE: 1132 - Gambell/06B - 2007 Field Season/Work Plan/Figures/Figure 2	DATE: 5-9-07	NO SCALE

1.3 OBJECTIVES AND GOALS

The objective of environmental remediation is to remove the threat of physical injury by removing dangerous debris of DOD origin. The goal of this Work Plan is to enable the NVG to participate in the planning and restoration process, field work activities, and project management. The following objectives have been identified in this Work Plan:

- Remove and dispose of debris of DOD origin at Sites 1C, 8C, 15, 17, 19, 20, and 23;
- Remove incidental contaminated soils in areas where DOD debris occurs; and
- Collect soil confirmation samples to document post-excavation soil conditions.

2.0 SITE HISTORY

St. Lawrence Island has been inhabited intermittently for the past 2,000 years by both Alaskan and Siberian Yupik Eskimos. In the 18th and 19th centuries, over 4,000 people inhabited the island in 35 villages. Sivuqaq is the Yupik name for the village of Gambell and for the island. The City was renamed for Mr. and Mrs. Vene C. Gambell. A tragic famine between 1878 and 1880 decimated the population. In 1900, reindeer were introduced to the island for local use, and in 1903, President Roosevelt established a reindeer reservation. During the 1930s, some residents moved to Savoonga to establish another permanent settlement (DCED, 2004).

The U.S. Army, U.S. Navy, and the U.S. Air Force occupied the Gambell area from 1948 until the late 1950s. Various facilities around Gambell were constructed to provide housing, communications, and other functions. The U.S. Air Force operated an Aircraft Control and Warning Station as early as 1948, but the site was abandoned in 1956 when a similar facility was constructed on the northeast end of St. Lawrence Island. From 1950 to 1960, the Air Force withdrew approximately 1,700 acres of land and two right-of-way corridors. Afterwards, the Air Force retained no overriding interest in the area. The Army also operated a base in Gambell. Air Force land was transferred to the Bureau of Land Management (BLM) in 1962 and Army land was transferred to BLM in 1963. All DOD structures were demolished, burned, salvaged, or buried.

The City was incorporated in 1963. When the Alaska Native Claims Settlement Act was passed in 1971, Gambell and Savoonga decided not to participate, instead opting for title to the 1.136 million acres of land in the former St. Lawrence Island Reserve. The island is jointly owned by Savoonga Native Corporation and Sivuqaq Inc. (DCED, 2004).

2.1 PAST WORK SUMMARY

The following paragraphs summarize the past work that was completed at Gambell. Information concerning work performed prior to 2003 was obtained from the Montgomery Watson Harza (MWH) 2003 Work Plan.

1985

In 1985, URS Corporation conducted a site reconnaissance of the Gambell area. The site reconnaissance included an inventory of all materials left by the military and collection of a limited number of soil and water samples. The samples were analyzed for physical, biological, and chemical characteristics. The level of oil and grease in ground water samples exceeded groundwater standards.

1991-1992

In 1991 and 1992, Ecology and Environment, Inc. (E&E) conducted a site reconnaissance visit and interviewed individuals who lived in Gambell during the DOD occupation. E&E then prepared a Chemical Data Acquisition Plan (CDAP) for further investigation of the areas of concern, based on information gathered during the interviews and information reported in the URS document.

1994

In 1994, Montgomery Watson performed a Phase I Remedial Investigation (RI). During the RI, Montgomery Watson implemented the CDAP and detected elevated concentrations of priority pollutant metals, including lead concentrations of up to 3,249 milligrams per kilogram (mg/kg), in the soil. The maximum allowable lead concentration in soil at residential areas is 400 mg/kg. Polychlorinated biphenyls (PCBs), dioxins, furans, and fuel-related contaminants were also detected in soils throughout the investigation area. Fuel-related contaminants and solvents were also detected in groundwater.

1996

In 1996, a geophysical survey was performed at Site 5. The geophysical survey confirmed the presence of metallic debris. Further investigation in 1997 confirmed the geophysical anomaly was caused by non-hazardous metallic debris and not electrical transformers. The debris was removed from the island in 1997.

1998

A Phase II RI was conducted in 1998. Soil and groundwater samples were collected to delineate the extent of contamination at several sites. Results of the Phase II sampling indicated no significant surface soil or groundwater contamination at several of the investigated sites. However, cleanup and removal of contaminated media were recommended for other sites.

1999

In 1999, Oil Spill Consultants, Inc. (OSCI) performed remedial actions at several Gambell sites. Following removal of contaminated soils, confirmation samples were collected to demonstrate that contaminated soils had been removed. However, confirmation samples

showed that fuel-related contamination and metals were still present at some sites. Concentrations of many contaminants exceeded the levels permitted by Alaska Department of Environmental Conservation (ADEC) Method 2, Under 40-inch Zone, Migration-to-Groundwater regulations.

2000

Geophysical surveys were performed at several Gambell sites in 2000 to aid in developing the SPIP. The sites were identified during a community survey wherein local residents completed questionnaires regarding the whereabouts of remaining military debris. Based on the results of the geophysical surveys and questionnaires, several sites were targeted for further investigation. In 2000, Army Topographic Engineering identified potential impacted sites in a Historical Time Sequence Analysis (HTSA). The HTSA combined data from historic aerial photographs with current maps of Gambell to identify areas of possible former military use.

2001

In 2001, a supplemental RI was conducted by MWH that included the collection and analysis of soil samples from selected sites to determine the nature and extent of contamination. The locations of the sampling points were determined from new information provided in the HTSA, SPIP, and the remedial actions report by OSCI.

2003

In 2003 MWH partially remediated Sites 6 and 20 and completely remediated Site 7. Remediation at these sites included the removal of buried 55-gallon drums, building materials, automotive parts, two piles of concrete rubble and rebar, and miscellaneous debris. Incidental contaminated soil was excavated and transported to Alaska Soil Recycling for treatment and disposal.

2004

In 2004, the NVG removed approximately 20 tons of debris from Site 18. All confirmation samples collected from Site 18 were below ADEC cleanup levels. The NVG also removed approximately 60 tons of debris from Site 18B. However, the NVG was unable to complete debris removal from Site 18B by the departure of the barge. Confirmation samples collected from Site 18B also found concentrations of contaminants below the most stringent ADEC cleanup levels.

2005

In 2005, the NVG removed approximately 38 tons of debris, a 7.5-ton tractor, and a 7.5-ton crane body from Site 1A. All confirmation samples collected from Site 1A were below ADEC cleanup levels.

At Site 17, the NVG removed approximately 55 tons of debris before encountering a landfill containing human waste. At that point, the excavation was backfilled and work at the site ceased. Confirmation samples collected before encountering latrine wastes showed contamination was below ADEC cleanup levels. Remediation of Site 17 is scheduled to continue during the 2007 field season and is further described in Section 3.2.4.

The NVG also removed approximately 67 tons of debris and three tons of incidental contaminated soils from Sites 18A and 18B. Confirmation samples collected from the sites were below ADEC cleanup levels. Aboveground storage tanks beyond the southern limit of the excavation at Site 18B prevented the removal of more debris, which extends beneath and most likely beyond the tanks. Although the tonnage of debris remaining at Site 18B is unknown, delineation by Schonstedt magnetic locator indicated that approximately 2,300 cubic yards of debris remains in addition to the debris beneath the water tanks.

At Site 19, a small amount of inert diatomaceous earth was excavated by hand. A remaining pipe and associated electrical wire run from Site 19 to the Gambell washeteria and are scheduled for remediation during the 2007 field season.

2006

The NVG successfully remediated Sites 1A, 2, 3A, 4E, 5, 6, 8B, 8D, 13, and 24 during the 2006 field season. The NVG also removed debris from Sites 8C and 15, but some debris remains at each site.

Site 21 may have been encountered at the end of the 2006 field season during construction of the new Gambell power plant. Alaska Village Electric Cooperative (AVEC) personnel burying a fuel line encountered several crushed drums and soil emitting a diesel odor. The drums were removed and potentially contaminated excavated soil was stockpiled on site and replaced with clean fill. TPECI collected several soil samples from the excavation and soil stockpile. Sample analysis did not detect any contamination above ADEC cleanup levels. AVEC personnel reported that the area with the strongest diesel odor was located beneath the fuel line, which was reburied to protect the line before TPECI arrived on site. Although AVEC reported that more debris may be in the area, none was observed. If debris remains in the area, it may be located beneath the new power plant.

The NVG did not remediate Sites 1C or 23 during the 2006 field season. The grappling hook intended for use at Sites 1C and 15 was determined ineffective due to the heavy current that runs along the North Beach. A different remediation method will be necessary to reach underwater debris at Site 1C. Debris from Site 23 may be mixed with remaining debris from Site 8C, and may also be mixed with debris from the nearby civilian landfill.

3.0 ENVIRONMENTAL REMEDIATION

Environmental remediation is planned for Sites 1C, 8C, 15, 17, 19, 20, and 23 (Figure 2). Cleanup activities are scheduled to begin the first week of June, 2007 and end the first week of September, 2007 pending weather conditions.

metal debris screening w/ handheld detectors

The NVG will use a John Deere 310 SG backhoe/loader for debris and soil excavation. The NVG will use a John Deere 744H wheeled loader with forklift attachments to move connexes to and from each site. ATVs and hauling trailers will transport debris and soil when necessary. Additional heavy equipment such as a tracked excavator will be rented from the City of Gambell if necessary.

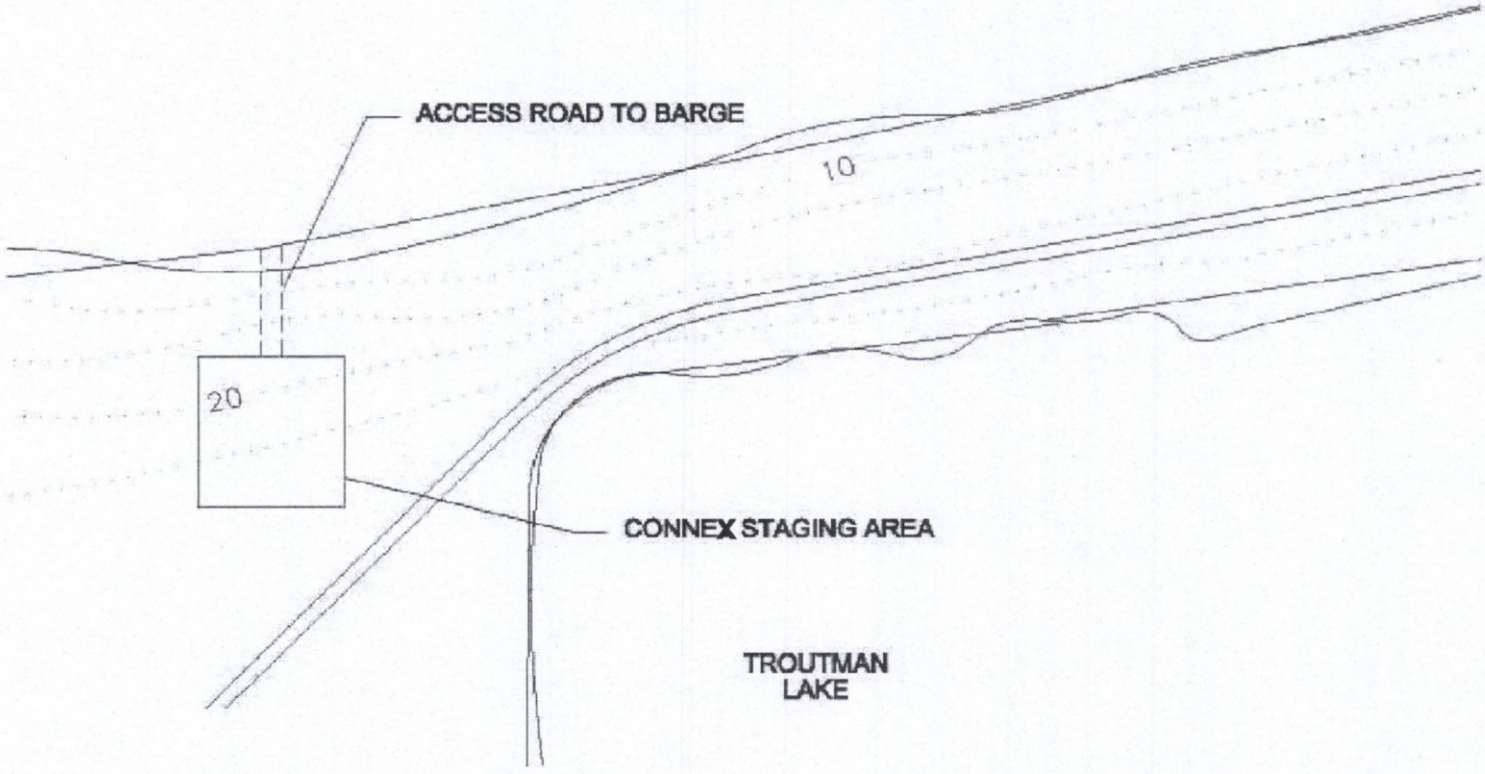
The NVG will use a chop saw to cut large debris into smaller pieces. Drums will be crushed on site using the loader. The debris and drums will then be loaded into connex containers and transported to the staging area located south of Troutman Lake (Figure 3). Drums and debris that are contaminated will be sprayed clean with a hose on a lined containment pad before being loaded into the connex containers. The water will be filtered through a Water Scrubber-55 and disposed on site.

The drum contents will be placed in super sacks and disposed with the contaminated soil. All debris and incidental contaminated soil will be removed and disposed according to ADEC procedures.

During excavation, soil will be screened using a photo-ionization detector (PID) at least three times every 225 square feet (15' x 15'). The PID will be calibrated with a 100 parts per million (ppm) isobutylene standard. Soil that exhibits PID readings above 20 ppm will be classified as potentially contaminated, stockpiled on a liner, and covered to prevent runoff during periods of rain. Characterization samples will be collected from the stockpile to determine contaminant levels. Confirmation soil samples will be collected according to the Sampling Analysis Plan (SAP). If soil is loaded directly into super sacks and not stockpiled, each super sack will be screened using a PID and sampled to assess potential contamination.

Characterization and confirmation soil samples will be collected and analyzed at SGS Global in Anchorage. SGS Global is an ADEC-approved laboratory. Method Two, Under 40-Inch Zone, Ingestion Pathway cleanup levels will be used for each site and are as follows:

- Diesel Range Organics - 10,250 ppm;
- Gasoline Range Organics - 1,400 ppm;
- Residual Range Organics - 10,000 ppm;
- Benzene - 150 ppm;
- Toluene - 20,300 ppm;
- Ethylbenzene - 10,000 ppm;
- Total Xylenes - 203,000 ppm;
- Arsenic - 5.5 ppm;
- Barium - 7,100 ppm;
- Cadmium - 100 ppm;
- Chromium - 300 ppm;
- Lead - 400 ppm;
- Nickel – 2,000 ppm;
- Vanadium - 710 ppm; and
- Polychlorinated Biphenyls - 1 ppm.



TRAVIS/PETERSON ENVIRONMENTAL CONSULTING, INC. 3305 ARCTIC BOULEVARD SUITE 102 ANCHORAGE, ALASKA 99503	NATIVE VILLAGE OF GAMBELL	FIGURE 3 CONNEX STAGING AREA AND ACCESS ROAD	
PROJECT No: 1132-06A	FILE: 1132 - Gambell/06A - 2007 Field Season/Work Plan/Figures/Figure 3	DATE: 3-30-07	NO SCALE

Debris will be transported in connex containers via barge from Gambell. Barge service will be provided by Northland Services, Inc. (Northland). Debris will be disposed in the Columbia Ridge Landfill in Arlington, Oregon. Once the barge arrives in Seattle, Washington, the connex containers will be transported to the landfill via railroad and unloaded. Transportation services will be provided by Waste Management, Inc. The connexes will then be transported back to the dock and returned to Northland.

Only incidental contaminated soil will be excavated. Field crews will not excavate contaminated soil that appears to exceed a few backhoe buckets (approximately five cubic yards). If such contamination is found, the area will be noted by global positioning system (GPS) survey and a characterization sample will be collected. The NVG will also notify the U.S. Army Corps of Engineers (USACE) project manager.

Contaminated soil which exceeds ADEC cleanup levels will be placed in one-cubic yard super sacks and loaded into connex containers. Connexes containing super sacks will be lined with 20-mil visqueen as an added precaution. Northland will transport the connexes to Seattle for disposal. Once in Seattle, the soil will be transported to Rinker Materials, Inc. (Rinker) for treatment and disposal. Rinker is an ADEC-approved soil treatment facility.

3.1 SITE RECONNAISSANCE AND SURVEY

A site reconnaissance will be conducted to confirm conditions at each site prior to implementing field activities. This activity will ensure that the proposed field activities correspond with current field conditions.

The following activities will be performed at each site prior to the planned remediation:

- Visual observation and documentation by field observer;
- Coordination with local utilities; and
- Historic aerial photograph review.

Prior to the field season, a field observer will inspect each site to confirm site conditions. Coordination with local utilities such as sewer, phone, water and electric will be conducted to avoid buried facilities during excavation. Historic and recent aerial photographs will be reviewed by the field team to assess possible site conditions. These activities will confirm that the proposed field activities are appropriate for current field conditions.

3.2 SITES SELECTED FOR REMEDIATION

The following sections discuss the selected sites, their location and characteristics, and the planned remediation. These sites are listed in order of their cleanup priority.

3.2.1 Site 1C, North Beach

Site 1C runs the majority of the length of North Beach and consists of underwater metallic debris located just offshore. The majority of the debris is thought to be Marsten matting

used to construct two landing areas, Sites 1A and 1B. Community survey information also noted that miscellaneous metallic debris such as wire and drums were disposed at the shoreline. The North Beach is the primary area used for launching boats in Gambell. Underwater debris presents a potential physical hazard to villagers launching and returning to shore.

The objective of environmental remediation at Site 1C is to remove and dispose submerged debris. The NVG will purchase a metal rake which can be pulled along the ocean bottom to hook and drag debris out of the water. The rake will be dropped into the water from a boat on the surface. Cable attached to the rake will be taken to shore by boat and attached to onshore heavy equipment. Heavy equipment will never enter salt water. The rake will be drug along the ocean bottom and onto the beach. Remediation will not be conducted at Site 1C on days when unfavorable weather and/or ocean conditions make remediation efforts unsafe. Debris will be disposed at the Columbia Ridge Landfill. Because Site 1C is located underwater, no incidental contaminated soils will be encountered. No soil screening or sampling will be performed.

3.2.2 Site 8C, Navy Landfill

Site 8C is located northwest of the former Civil Aeronautics Administration (CAA) housing and south of the village landfill. The landfill was thought to have been constructed by the Navy during activities in Gambell while utilizing the former CAA housing. It was inspected during the 2000 field visit and is suspected to contain some asbestos-containing materials (ACM). Buried debris at the site has the potential to become exposed and pose a threat to ATV and snowmobile traffic traveling on or near the North Beach and between Gambell village and the village landfill.

During the 2006 field season, excavation began at Site 8C before the NVG work crew discovered that buried debris at the site was mixed debris from nearby Site 23. Because the discovery was made late in the season, the site was backfilled and rescheduled for the 2007 field season. Approximately two tons of debris was removed from Site 8C before it was backfilled. No evidence of ACM was discovered during excavation.

The objective of environmental remediation at Site 8C is to remove and dispose buried debris and any ACM. ACM and other debris will be disposed at the Columbia Ridge Landfill. If suspected ACM are encountered during excavation, work will stop until samples can be taken and analyzed to characterize the debris. If the presence of ACM is confirmed by sample analysis, the ACM will be removed by certified asbestos abatement professionals.

During debris removal, potentially contaminated soils will be identified using a PID. If PID readings indicate the presence of contaminated soil incidental to debris removal, the soil will be excavated and stockpiled. Soil that exceeds ADEC cleanup levels will be transported to Rinker, where it will be treated and disposed. A certificate of destruction will be obtained from Rinker after the soil is treated.

If contaminated soil is discovered, based on PID screening results and/or visual evidence of

contamination, an environmental sampler will collect confirmation samples according to ADEC procedures. Confirmation samples will be collected after the excavation is complete. The location of all samples will be recorded by field technicians for future reference. Samples will be analyzed for diesel range organics (DRO), gasoline range organics (GRO, residual range organics (RRO), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and Resource Conservation and Recovery Act (RCRA) metals depending on the nature of the contamination evidence. If fuel or oil contamination is evident, DRO, GRO, RRO, BTEX, and metals will be analyzed. If no petroleum-based contaminants are suspected, only metals will be analyzed.

3.2.3 Site 15, Troutman Lake Debris Burial Site

Site 15 is located along the northern edge of Troutman Lake. Marsten matting, wire, 55-gallon drums, and other metallic debris can be seen from the shoreline of the lake on a calm day. It is estimated that less than one ton of metallic debris is present along the northern shore of Troutman Lake. The debris presents a physical hazard to those who recreate on and in the lake during the summer months.

During the 2006 field season approximately one ton of miscellaneous metal and wire was pulled from Troutman Lake using a grappling hook and chain attached to a loader. The objective of environmental remediation at Site 15 is to remove and dispose of 55-gallon drums which remain submerged at the site. The drums are located near the shore of Troutman Lake in shallow, clear water. Field technicians will wade into Troutman Lake, attach cable or rope to the debris, and drag the debris out of the lake with heavy equipment positioned onshore. Remediation will not be conducted at Site 15 on days when unfavorable weather conditions make remediation efforts unsafe. The buddy system and appropriate personal protection equipment (PPE) will be utilized whenever field technicians enter the water. Anyone working in or around the water will wear a personal floatation device at all times. Debris will be disposed at the Columbia Ridge Landfill. Because debris at Site 15 is located underwater, no incidental contaminated soils will be encountered. No soil screening or sampling will be conducted.

3.2.4 Site 17, Air Force Landfill

Site 17 is located immediately south of Site 1A. Two landfills located in this area were regularly burned and covered. A geophysical survey of the site indicated the presence of subsurface metallic debris and disturbed ground. Due to its proximity to the North Beach, this area is prone to severe weather events. Buried debris has the potential to become exposed and present a physical hazard to ATV and snowmobile traffic.

Approximately 55 tons of material was removed from Site 17 during the 2005 field season. Excavation ceased when human and other solid waste, steel mat dust, and other evidence of a landfill were discovered. The Site 17 excavation was backfilled and remediation ceased for the season. Confirmation sampling showed the excavation to be free of contamination.

The objective of environmental remediation at Site 17 is to remove and dispose remaining

buried debris and incidental contaminated soils. The work crew will wear Tyvek suits, rubber gloves, rubber boots, and protective eyewear while working around suspected human waste. Debris will be removed from around the landfill area and the work crew will not disturb the landfill unless necessary to reach debris. Excavation will focus on major debris to avoid overexposure to potential latrine wastes. After excavation is complete, the work crew will distribute calcium oxide (lime) over any exposed landfill areas to kill any pathogens present in human waste and backfill the excavation. During debris removal, potentially contaminated soils will be identified using a PID. If PID readings indicate the presence of contaminated soil incidental to debris removal, the soil will be excavated and stockpiled. Soil that exceeds ADEC cleanup levels will be transported to Rinker, where it will be treated and disposed. A certificate of destruction will be obtained from Rinker after the soil is treated.

If contaminated soil is discovered, based on PID screening results and/or visual evidence of contamination, an environmental sampler will collect confirmation samples according to ADEC procedures. Confirmation samples will be collected after the excavation is complete. The location of all samples will be recorded by field technicians for future reference. Samples will be analyzed for DRO, RRO, BTEX, and RCRA metals depending on the nature of the contamination evidence. If fuel or oil contamination is evident, DRO, GRO, RRO, BTEX, and metals will be analyzed. If no petroleum-based contaminants are suspected, only metals will be analyzed.

3.2.5 Site 19, Diatomaceous Earth

Site 19 is located south and east of Site 18, adjacent to the northern edge of Troutman Lake. Diatomaceous earth was left buried in-place from the former military water treatment facility. This area is subject to erosion from Troutman Lake. Exposed material along a well established trail on the northern edge of the lake presented an unsightly blemish to residents and tourists that travel this area. This unnatural soil also caused algal blooms along the edge of Troutman Lake.

During the 2005 field season, the NVG removed diatomaceous earth from Site 19. A remaining pipe and associated electrical wire run from Site 19 to the Gambell washeteria and are scheduled for remediation during the 2007 field season.

3.2.6 Site 20, Schoolyard

Site 20 is located just northeast of the former main camp and north of the Gambell School. The site originally contained two rubble piles and one partially exposed concrete slab. During the 2003 field season, MWH removed both rubble piles, but the concrete slab remains and poses a physical hazard to schoolchildren and local snowmobile and ATV traffic.

The objective of environmental remediation at Site 20 is to remove and dispose the remaining concrete slab and any other debris or incidental contaminated soils discovered during excavation. Debris will be disposed at the Columbia Ridge Landfill. During debris

removal, potentially contaminated soils will be identified using a PID. If PID readings suggest the presence of contaminated soil incidental to debris removal, the soil will be excavated and stockpiled. Soil that exceeds ADEC cleanup levels will be transported to Rinker, where it will be treated and disposed. A certificate of destruction will be obtained from Rinker after the soil is treated.

If contaminated soil is suspected, based on PID screening results and/or visual evidence of contamination, an environmental sampler will collect confirmation samples according to ADEC procedures. Confirmation samples will be collected after the excavation is complete. The location of all samples will be recorded by field technicians for future reference. Samples will be analyzed for DRO, RRO, BTEX, and RCRA metals depending on the nature of the contamination evidence. If fuel or oil contamination is evident, DRO, GRO, RRO, BTEX, and metals will be analyzed. If no petroleum-based contaminants are suspected, only metals will be analyzed.

3.2.7 Site 21, Toe of Sevuokuk Mountain

This site is located at the toe of Sevuokuk Mountain, just southwest of Site 5. It is believed to contain miscellaneous wire and metallic debris that was buried in this area during the construction and subsequent decommissioning of the tramway that served the Air Force radar site on top of Sevuokuk Mountain. Buried debris at this site poses a physical hazard to villagers who search for artifacts and subsequently encounter the debris.

The objective of environmental remediation at Site 21 is to remove and dispose buried wire and other metallic debris. Debris will be disposed at the Columbia Ridge Landfill. During debris removal, potentially contaminated soils will be identified using a PID. If PID readings suggest the presence of contaminated soil incidental to debris removal, the soil will be excavated and stockpiled. Soil that exceeds ADEC cleanup levels will be transported to Rinker, where it will be treated and disposed. A certificate of destruction will be obtained from Rinker after the soil is treated.

If contaminated soil is suspected, based on PID screening results and/or visual evidence of contamination, an environmental sampler will collect confirmation samples according to ADEC procedures. Confirmation samples will be collected after the excavation is complete. The location of all samples will be recorded by field technicians for future reference. Samples will be analyzed for DRO, RRO, BTEX, and RCRA metals depending on the nature of the contamination evidence. If fuel or oil contamination is evident, DRO, GRO, RRO, BTEX, and metals will be analyzed. If no petroleum-based contaminants are suspected, only metals will be analyzed.

3.2.8 Site 23, Debris from Gambell High School

Site 23 is located east of the Gambell Landfill and consists of metallic debris unearthed during the construction of the Gambell High School. The area is believed to be 150 feet long, 70 feet wide and 20 feet deep. Over time, a cost impact to the City of Gambell will arise from the reduction of space available in the city landfill, now occupied by the military

debris. Currently, this site does not present a physical hazard; however, the potential does exist for the debris to become exposed in the future and pose a collision hazard.

The objective of environmental remediation at Site 23 is to remove and dispose buried metallic debris. Debris at Site 23 may be mixed with civilian debris. If civilian debris is encountered, remediation in that area will cease. No segregation of military and civilian debris will occur. Debris will be disposed at the Columbia Ridge Landfill. During debris removal, potentially contaminated soils will be identified using a PID. If PID readings suggest the presence of contaminated soil incidental to debris removal, the soil will be excavated and stockpiled. If contaminated soil is discovered, an environmental sampler will collect characterization samples according to ADEC procedures. Soil that exceeds ADEC cleanup levels will be transported to Rinker, where it will be treated and disposed. A certificate of destruction will be obtained from Rinker after the soil is treated.

Confirmation samples will be collected after the excavation is complete. The location of all samples will be recorded by field technicians for future reference. Samples will be analyzed for DRO, RRO, BTEX, and RCRA metals depending on the nature of the contamination evidence. If fuel or oil contamination is evident, DRO, GRO, RRO, BTEX, and metals will be analyzed. If no petroleum-based contaminants are suspected, only metals will be analyzed.

3.3 GENERAL FIELD PRACTICES

The Environmental Program Manager (EPM) will conduct safety meetings before each work day. The EPM will brief all personnel on the potential hazards for that given day and provide safety instructions to help prevent accidents.

All excavation boundaries will be mapped using a GPS. Photographs will be taken periodically to document the progress of the excavation and the debris removed from each site. Additionally, all field activities will be documented in a daily progress report.

If hazardous substances are encountered during the field season, NVG will contact the USACE immediately. Hazards such as used batteries will be placed in super sacks or overpack drums and placed into a connex container. If full drums are encountered, the contents will be characterized before being disposed. All hazardous substances will be disposed according to state and federal regulations. Finally, if explosive materials are encountered the USACE will be notified immediately. All work will cease in that area until the USACE deems it to be safe to resume work.

Archaeological artifacts may be present at the Gambell sites. Field personnel will exercise extreme care and caution when performing any field activities with the potential to encounter archaeological artifacts. Field personnel will not disturb artifacts encountered during excavation. The EPM will monitor for artifacts during excavation. If artifacts are discovered, all work in that area will cease. The NVG will notify the USACE immediately, and the USACE will notify the State Historic Preservation Office (SHPO). The NVG will coordinate with the SHPO and USACE before work resumes. Biological items such as

bones, ivory, antlers, and baleen may be present in the Gambell area, particularly at the beach areas. Field personnel will comply with the Marine Mammal Protection Act (MMPA) and will not disturb biological items encountered on St. Lawrence Island. If human remains are encountered, the local authorities and the Alaska State Troopers will be notified.

3.4 STOCKPILING OF DEBRIS AND CONTAMINATED SOILS

Debris and potentially contaminated soil will be stored in super sacks or stockpiled on site to await shipment to the Columbia Ridge Landfill and Rinker, respectively. Debris that is contaminated will be segregated and triple washed on a containment pad. Contaminated debris will be determined by visual inspection and/or PID screening results. Suspected contaminated soil will be stockpiled on a 20-mil visqueen liner. Once characterization samples are collected from the stockpile, the soil will be loaded into one-cubic yard super sacks. Once the excavation is complete at each site, debris and soil will be loaded into connexes and transported to the staging area at the south end of Troutman Lake. If characterization samples do not exceed ADEC cleanup levels, the super sacks will be emptied on site.

3.5 CONTAINERIZATION

Debris will be compacted using the loader and loaded into connex containers. Debris will be compacted on a wooden platform. A demolition saw will be used if necessary.

Stockpiled contaminated soil will be placed in one-cubic yard super sacks and loaded into connexes for barge transport. Connexes containing super sacks of contaminated soil will be lined with 20-mil visqueen as an added precaution against cross-contamination.

A portable scale will be used to weigh debris and incidental contaminated soils in the field. The loader will be used to move the connexes to and from the scale. Some connexes are currently staged in Gambell for the 2007 field season. Remaining connexes will be delivered by Northland in June and will remain in Gambell for the duration of the project.

3.6 BACKFILLING OF EXCAVATION

Excavated sites will be backfilled and graded with clean gravel from the gravel borrow source south of Troutman Lake if necessary. The gravel will be purchased from Sivuqaq, Inc. at its standard rate. Each site will be backfilled after remediation is complete and analytical sampling results show no contamination above ADEC cleanup levels. Purchased fill material will be transported to each site using the loader and ATV with trailers.

3.7 TRANSPORTATION AND DISPOSAL

Barge service will be provided by Northland during their scheduled sailings to Gambell. The inbound barge delivering connexes is anticipated to arrive in Gambell in late June. Thirteen connexes containing approximately 78.3 tons of debris remain from the 2006 field season and will be shipped on the spring barge in June. The outbound barge is anticipated to depart

Gambell in late August or early September, arriving in Seattle in late September. The barge schedule is subject to variation depending on weather conditions.

Debris will be transported from Seattle to Arlington, Oregon for disposal in the Columbia Ridge Landfill. Land transportation from the barge to the landfill will be provided by Waste Management Inc. Each connex container will be transported to the landfill and offloaded.

3.8 SITE SECURITY

Site access is granted only to those individuals actively working on the project. Security will be maintained by field technicians during work hours and by a security guard at night. During excavation and removal efforts, the sites will be isolated from the surrounding area by staked orange safety fencing.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance and Quality Control (QA/QC) are two closely related concepts. Ultimately, QA/QC ensures that products are of the type and quality expected by the client. The Quality Assurance Project Plan (QAPP) outlines activities that promote the collection of data with the accuracy and precision required for the project. The QAPP is composed of the following elements:

- Staff organization and responsibilities;
- Standard Operating Procedures for sampling and analytical methods;
- Field and laboratory calibration methods;
- Routine and periodic quality control activities; and
- Data assessment, reduction, validation, and reporting procedures.

These elements are described in the following sections.

4.1 STAFF ORGANIZATION AND RESPONSIBILITIES

The primary personnel involved in the field investigations are: the EPM, the Assistant Environmental Program Manager (AEPM), the field technicians, the technical consultant, and the project chemist. The field team will perform the tasks described in this Work Plan by following a management approach with clear project organization and well-defined authority and responsibilities for all key personnel. The following sections summarize the personnel involved and their responsibilities.

4.1.1 Environmental Program Manager

The EPM will oversee removal and disposal of buried debris and incidental contaminated soils. The EPM will set and maintain performance standards for the execution of work including technical project performance, internal QA/QC, and adherence to schedule and budget. The EPM will coordinate and supervise the health and safety program for the project and will direct all personnel with respect to site health and safety. The EPM will

consult with the USACE prior to any deviation from this Work Plan.

4.1.2 Assistant Environmental Program Manager

The AEPM will assist the EPM in direction and management of the remediation program. The AEPM will serve as site superintendent during remediation work, coordinate all field activities, and be the primary field contact. The AEPM will coordinate all field activities with the EPM if clarification is necessary.

4.1.3 Field Technicians

Field technicians will conduct the environmental remediation at Gambell under the supervision of the EPM. Field technicians will remove debris and incidental contaminated soils using heavy equipment, picks, and shovels. They will be responsible for inspection, maintenance, repair, and decontamination of equipment during field operations.

4.1.4 Technical Consultant

The technical consultant will assist and support the EPM as necessary. The consultant will be responsible for technical project performance and will provide the EPM with technical and site-specific information necessary to maintain project performance standards. The consultant will oversee construction quality and ensure that established project QA/QC protocols are followed. The consultant will provide an environmental sampler, who will maintain a detailed field notebook, establish and maintain field records, and monitor compliance. The environmental sampler will ensure that the chain of custody record is completed for all samples, with appropriate information. The environmental sampler will preserve, pack, and ship samples in accordance with USACE Regulation No. 111 0-1-263. The environmental sampler will meet ADEC Qualified Person criteria. The NVG will hire the technical consultant on a contractual basis according to the requirements of each task.

4.2 STANDARD OPERATING PROCEDURES

The standard operating procedures (SOP) for this project fall into two categories, field SOP and laboratory SOP. Throughout the sampling effort, laboratory hold times and sample temperatures shall be maintained. The ADEC-approved laboratory will follow its own SOP.

Field personnel will keep detailed notes on weather conditions, sample collection date and time, sample identification number, and sampling methodology. Sampling locations will be documented with photographs and GPS coordinates. Samples will be prepared in accordance with laboratory instructions.

4.3 FIELD AND LABORATORY CALIBRATION METHODS

All field and laboratory procedures requiring instrument calibration will be conducted according to the applicable Environmental Protection Agency (EPA) methods and standard operating procedures. The manufacturer calibrates the equipment annually. EPA checks the

calibration's traceable quality control standards.

4.4 LABORATORY QUALITY CONTROL SAMPLES

The project laboratory will use matrix-spiked samples, spiked duplicates, surrogates, method blanks, duplicates, and laboratory control samples to measure data quality. Matrix spiked samples and laboratory control samples assess sample matrix interference and analytical errors and accuracy. Surrogates evaluate accuracy of an analytical measurement. Method blanks check for laboratory contamination and instrument bias. Duplicates measure the precision of the analysis.

The laboratory will use one method blank per sample period and one laboratory control sample. The laboratory will use a surrogate spike for every sample, standard, and blank. The laboratory will use one matrix spike per sample period.

4.5 DATA REDUCTION, VALIDATION AND REPORTING

Data reduction is conducted by the analyst. All calculations are made as specified by the analytical method. Units are reported as mg/kg or as otherwise called for in the method. Analytical data reports will include:

- Client name;
- Date and time of sample collection;
- Sample location;
- Date and time samples received at the laboratory;
- Date analysis completed;
- Laboratory sample ID number;
- A list of parameters analyzed;
- The analytical method number for each parameter; and
- Concentration of each parameter.

The laboratory will forward a copy of the completed analytical results to TPECI.

5.0 SAMPLING AND ANALYSIS PLAN

The purpose of the SAP is to describe the specific methods and protocols to be employed during the 2007 field season. The following sections describe the location of proposed sampling and sampling protocols that TPECI will follow during the excavation of the incidental contaminated soils.

5.1 ENVIRONMENTAL SAMPLING AND FIELD SCREENING

The general sampling protocol for the each site will be to field screen soils with a PID calibrated by TPECI with a 100-ppm isobutylene standard. At least three PID readings will be taken every 225 square feet (15 feet x 15 feet). PID readings will be taken by the headspace method. Soil for screening will be collected from at least six inches below ground

surface to avoid volatilization of potential contaminants prior to headspace analysis. If contaminated soil is suspected, an environmental sampler will collect confirmation samples after excavation is complete. The environmental sampler will collect confirmation samples for RCRA metals in all excavations regardless of field screening results.

A PID reading of 20 ppm will be used to segregate potentially contaminated soils from clean material. Soils with a PID reading less than 20 ppm will be considered clean, while those with a PID reading greater than 20 ppm will be considered contaminated and sampled.

When all debris has been removed and PID readings are below 20 ppm, the environmental sampler will collect soil samples once every 225 square feet. All samples will be collected from at least six inches below ground surface to avoid volatilization of potential contaminants prior to sampling. If samples are collected for multiple analytes, sample will be collected for the most volatile analytes first. If the given excavation area has a depth greater than six feet deep, one sample will be collected from each sidewall and at least two will be collected from the bottom of the excavation and/or where the highest PID readings occurred. One duplicate sample will be collected for every ten confirmation samples. The number of samples collected will depend on the size of the excavation area for each site. This sampling protocol will be implemented at each site. Sample labeling will correspond to the collection site and sample locations will be surveyed with a GPS.

Potentially contaminated soil identified by field screening will be stockpiled on site for sampling. Two soil samples are typically collected from the first 50 cubic yards of a stockpile and one from each 50 cubic yards thereafter. Samples that will be submitted for analysis will be collected from the highest PID screening locations. All potentially contaminated stockpile samples will be analyzed for DRO, GRO, RRO, and BTEX. Containers, preservation, and hold times will comply with method requirements. If unidentified contamination is encountered, PCB and semi-volatile organic compounds (SVOC) will be included in the analyses.

5.2 FIELD DUPLICATES

Field duplicates are samples collected simultaneously from the same sampling locations. TPECI will use identical sampling methods to retrieve one duplicate for every ten samples collected, no matter which excavation(s) the ten samples are taken from. TPECI will split one sample for duplicate analysis and will follow the same QA/QC methods for collecting, packaging, recording, and shipping the duplicate samples as applies to all other samples.

5.3 TRIP BLANKS

Trip blanks are samples prepared from sterile media at the laboratory and shipped with the sample containers. Trip blanks remain with the samples after collection and are analyzed for volatile compounds. This analysis determines if cross-contamination occurred during shipping. TPECI will never open the trip blank containers during the sampling process. TPECI will use one trip blank per cooler. If the laboratory finds contamination within the trip blank, TPECI will use the results to evaluate any possible impacts to associated samples.

5.4 LABORATORY ANALYSIS

Samples taken from sites with potential petroleum contamination will be analyzed at SGS Global for:

- GRO by method AK 101;
- DRO by method AK 102;
- RRO by method AK 103; and
- BTEX by method SW 8021B.

If unknown contamination or likely sources of PCBs or toxic metals are encountered, samples will also be tested for the following:

- PCBs by method SW 8082;
- RCRA metals by methods SW 6010 & SW 7470; and
- SVOCs by method SW 8270.

Detection limits for GRO and BTEX will be based on a sample size of 50 grams and 100 percent solids. Detection limits for DRO, RRO, SVOC, and PCBs will be based on a sample size of 30 grams and 100 percent solids. Detection limits for RCRA metals will be based on a sample size of 2 grams and 100 percent solids. If laboratory reporting limits do not meet ADEC cleanup levels, data anomalies will be noted in the case narrative.

The SGS Global criteria for measuring data include the following data quality objectives:

- Precision;
- Accuracy;
- Representativeness
- Comparability; and
- Completeness.

Precision

Precision will be evaluated by the relative percent difference (RPD) between matrix spike/matrix spike duplicate (MS/MSD) samples or between laboratory duplicate samples. The precision required varies with specific analyses, analytes, and matrices. If one or both of the duplicate results do not exceed the laboratory reporting limit than the RPD will be extremely high and not usable or the RPD can not be calculated. Precision is calculated using the following equation:

$$RPD = \frac{ABS(R1 - R2)}{((R1 + R2)/2)} \times 100$$

Where: **R1** is the recovery for the MS or duplicate 1.
R2 is the recovery for the MSD or duplicate 2.

Precision reflects sampling techniques and heterogeneity, preservation, analytical preparation, and analysis.

Accuracy

Accuracy will be evaluated by the use of percent recovery of the target analyte in spiked samples. Accuracy is calculated using the following equation:

$$\% \text{ Recovery} = \frac{SQ - NQ}{S} \times 100$$

Where: **SQ** is the quantity found in the spiked sample.
NQ is the quantity found in the native (unspiked) sample.
S is the quantity of spike added to native sample.

Representativeness

Representativeness is the degree to which data from the project accurately represents a particular characteristic of the environmental matrix which is being tested. The design of the sampling scheme and number of samples should provide a representativeness of 90% or greater of the matrix sampled. This project may not achieve a 90% or greater degree of representativeness due to the small number of samples that may be collected.

Comparability

Comparability is the measure of the confidence in comparing daily results in one experiment with results in different experiments. The comparability of these measurement results should be 85% or greater as compared to sampling results from previous sampling of the same matrices.

Completeness

Completeness is the percentage of valid results obtained compared to the total number of samples taken for a parameter.

$$\% \text{ Completeness} = \frac{\text{\# of valid results}}{\text{\# of samples taken}}$$

The QA objectives outlined above will be evaluated in conjunction with the data validation process.

5.5 DECONTAMINATION

Work areas will be maintained to prevent the spread of contamination and to provide for the

safety of the field team. When possible, disposable sampling equipment will be used. Non-disposable sampling equipment will be decontaminated at the sampling site whenever feasible. Decontamination by-products will be caught on a lined containment pad. Petroleum sheen will be removed using sorbent pads. The pad will be incinerated in a SmartAsh Burner. The remaining water will be filtered through a Water Scrubber-55.

5.6 CHAIN OF CUSTODY PROCEDURES

The COC will be used to document the samples and the requested analysis. The COC will be supplied by the laboratory and will follow lab procedures. TPECI will provide a copy of all COCs to the USACE project manager after each sampling event.

5.7 FIELD LOG BOOK AND DOCUMENTATION

All field activities, sample locations, and field screening will be documented and kept in a log book for future reference.

5.8 SAMPLE PACKAGING AND SHIPPING

Samples will be packaged and shipped the same day they are collected. The following items will be used for shipping samples to the laboratory:

- Ice cooler;
- Gel Ice or equivalent;
- Bubble wrap;
- Packing material;
- Address labels;
- Temperature blank; and
- Packaging tape.

Samples will be flown to Nome via Bering Air or Frontier Air and then expedited to Anchorage on Alaska Airlines Gold Streak or as luggage. The samples will arrive at the laboratory the day after they are collected, weather permitting.

6.0 WASTE MANAGEMENT PLAN

The anticipated wastes generated by the excavation are:

- Metallic debris;
- Mixed debris;
- 55-gallon drums; and
- Incidental contaminated soil.

6.1 METALLIC DEBRIS

Metallic debris will be thoroughly cleaned if contaminated, containerized in connexes, and

shipped to the Columbia Ridge Landfill. Debris contamination will be determined by PID screening and/or visual evidence of contamination.

6.2 CONTAMINATED SOILS

Characterization samples will be collected from incidental contaminated soils removed during excavation. Soils exceeding ADEC cleanup levels will be containerized on site in super sacks on pallets and shipped in connexes. The connexes will be lined with 20-mil visqueen as an added precaution. All incidental contaminated soil will be shipped to Seattle for thermal treatment and disposal at Rinker.

Analytical data from surface and subsurface soil samples will be provided to Rinker as characterization of the contaminated soils. In addition, Rinker standard protocol is to test the soil before and after treatment.

6.3 DECONTAMINATION WATER

Decontamination water will be captured on a 20-mil visqueen liner. Residual fuel sheen will be removed from the water using sorbent pads until no sheen is visible. All sorbent pads will be burned using a Smart Ash Burner.

Following the removal of free-product, the second treatment step will involve running the water through a Water Scrubber-55. TPECI personnel will visually monitor the effluent for oil sheen before the effluent water is contained in a clean tank. If oil sheen is detected, TPECI personnel will remove the sheen with sorbent pads and run the water through the Water Scrubber-55 a second time. The drummed water will be drummed, visually inspected for sheen, and discharged to the ground surface in accordance with ADEC discharge guidelines if no sheen is visible.

6.4 DISPOSABLE CLOTHING, SUPPLIES AND SAMPLING EQUIPMENT

Based on previous data collected at Gambell, disposable protective clothing, supplies, and sampling equipment that comes in contact with incidental contaminated soils are designated as non-hazardous and will be bagged and shipped to the Columbia Ridge Landfill for disposal as solid waste.

7.0 SPILL MINIMIZATION AND RESPONSE

Proper handling and storage of fuel will be maintained throughout the environmental remediation at Gambell. The greatest risk of a spill is likely to occur during equipment fueling. To minimize the risk of a spill during equipment fueling, the procedures described below will be followed.

All vehicles and equipment will be checked daily prior to operation to ensure that they have been properly maintained and there are no petroleum, oil, or lubricant leaks. Vehicles will be staged in a central location away from water bodies, tundra, and other sensitive areas.

Equipment will be positioned so that valves, piping, tanks, and other fuel-containing parts are protected from damage by other vehicles or equipment. Furthermore, adequate secondary containment and sorbent pads will be available on site.

All hoses, connections, and valves will be inspected before fueling operations. This will ensure that these items have been properly maintained and all connections are properly tightened. Secondary containment or sorbent pads will be used under all appropriate connections, vents, and any other likely sources of spillage. During fuel transfers, the operator will maintain a line of sight with all connections, other potential sources of spillage, and the equipment operator.

If a spill occurs, sorbent material will be used to clean up spilled material. Spilled material and affected soil will be collected and placed in appropriate drums and or containers. If the spill is too large to be handled safely by the field team, the area around the spill will be secured. The EPM, USACE, and ADEC will be notified if a spill occurs.

Alaska Administrative Code (AAC) 18 AAC 75.300 and federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations require immediate notification if a hazardous material is discharged or released. Consequently, field personnel will immediately record the following information for a spill of any volume and contact the USACE project manager:

- Date, time, and location of discharge;
- Name, mailing address, and telephone number of person(s) causing or responsible for the discharge;
- Cause of discharge;
- Environmental damage caused by the discharge, including volume of soil or water affected, to the extent that damage can be identified;
- Cleanup actions taken;
- If the material has been disposed, the date, location, and method of hazardous substance cleanup and cleanup materials;
- Estimated volume of cleanup materials used;
- Any actions taken to prevent recurrence of the discharge; and
- Other information the field team considers important to the discharge episode.

The NVG EPM will contact the applicable agencies, as appropriate. They include:

Alaska Spill Response Center	(800) 478-9300
Alaska State Troopers Statewide	(800) 478-9300
USACE Project Manager	(907) 753-2689
ADEC Spill Prevention & Response	(907) 451-2121
United States Coast Guard National Response Center	(800) 424-8802
United States Environmental Protection Agency	(206) 553-1263

8.0 HEALTH AND SAFETY PLAN

The Health and Safety Plan (HASP) describes lines of authority, responsibility, and communication as they pertain to health and safety functions at each site. The purpose of this section is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. The HASP is reviewed and updated as necessary to reflect the current organizational structure at Gambell.

8.1 ROLES AND RESPONSIBILITIES

All personnel and visitors at each site must comply with the requirements of the HASP. The specific responsibilities and authority of management, safety and health, and other personnel at each site are as follows:

Health and Safety Officer

- Has the responsibility to supervise all health and safety activities for the project; and
- Has the responsibility to ensure that all health and safety standards illustrated in the work plan are followed by field personnel.

Environmental Program Manager

- Has responsibility and authority to direct all work operations and coordinate safety and health functions with the HSO, has the authority to oversee and monitor the performance of the HSO, and bears ultimate responsibility for the proper implementation of the HASP;
- Has the responsibility of the Emergency Response Coordinator, who is responsible for assessing site conditions and directing and controlling emergency response activities in accordance with the Site Emergency Response Plan;
- Has the responsibility of Decontamination Manager, who is responsible for decontamination procedures, equipment, and supplies; and
- Has the responsibility to monitor each excavation site for historic remains.

Site Superintendent

- Has the responsibility for field operations and reports to the EPM;
- Ensures the implementation of the HASP requirements and procedures in the field;
- Executes the work plan and schedule as detailed by the EPM;
- Coordinates with the HSO on safety and health; and
- Ensures site work compliance with the requirements of the HASP.

Field Technicians

- Have the responsibility for complying with the HASP, using appropriate PPE, reporting unsafe acts and conditions, and following the work, safety, and health instructions of the EPM, HSO, and site superintendent.

Environmental Sampler

- Has the responsibility for complying with the HASP and using appropriate PPE while sampling.

8.2 SITE CONTROL

This site control program is designed to reduce the spread of hazardous substances from contaminated areas to clean areas, identify and isolate contaminated areas of the site, facilitate emergency evacuation and medical care, prevent unauthorized entry to the site, and deter vandalism and theft. The site control program includes the elements specified in 29 Code of Federal Regulations (CFR) 1910.120(d) and provides the following site-specific information:

8.2.1 Site Access

Access is restricted to reduce the potential for exposure to health hazards. During hours of site operation, site entry will be limited to authorized personnel only. The EPM and site superintendent will control access to the site. Visitors will be required to receive approval from the EPM prior to site visits. At night a security guard will control access to the site.

8.2.2 Site Security

Security is maintained both during work hours and after hours to prevent unauthorized entry, removal of contaminated material from the exclusion zone, exposure of unauthorized or unprotected people to site hazards, and increased hazards due to vandalism and theft. Each site will be isolated from the surrounding area by staked orange safety fencing and monitored by a security guard at night.

8.2.3 Site Work Zones

Zone boundaries will be clearly marked at all times. The site will be monitored for changing conditions that may warrant adjustment of zone boundaries. Zone boundaries will be adjusted as necessary to protect personnel and clean areas. When boundaries are adjusted, zone markings will also be changed and workers will immediately be notified. Each remediation site will feature the following zones:

8.2.3.1 Exclusion Zone

The exclusion zone is the area where hazardous substances are known or suspected to be present and pose the greatest potential for exposure. Exclusion zone boundaries will be marked with orange safety fencing and signs where appropriate.

8.2.3.2 Contamination Reduction Zone

The contamination reduction zone (CRZ) will be located between the exclusion zone and the

support zone (clean zone). Its primary purpose is for decontamination of workers and equipment. The CRZ also serves as a buffer between the exclusion zone and support zone to limit the potential for the spread of contamination to the support zone and outlying areas.

8.2.3.3 Support Zone

The support zone is the clean area beyond the outer boundary of the CRZ. There should be no contamination in this zone. Administrative, clerical, and other support functions are based in the support zone.

8.3 BUDDY SYSTEM

While working in the exclusion zone or entering any water body, site workers will use the buddy system. The buddy system dictates that personnel work in pairs and stay in close visual contact to observe one another and summon rapid assistance in case of an emergency. The responsibilities of workers using the buddy system include:

- Remaining in close visual contact with partner;
- Providing partner with assistance as needed or requested;
- Observing partner for signs of heat stress or other difficulties;
- Periodically checking the integrity of partner's PPE; and
- Notifying the site manager or other site personnel if emergency assistance is needed.

8.4 EMERGENCY MEDICAL ASSISTANCE

The nearest emergency medical assistance to support remediation activities is the Gambell Clinic, which is located northwest of Site 18. The Norton Sound Regional Hospital in Nome will be used as an alternative for medical assistance. Contact phone numbers for both facilities are listed in Section 9.6.

8.5 TRAINING PROGRAM

The site training program is designed to ensure that workers receive the training they need to work safely on this site. Site safety and health training requirements are based on job hazard assessments. Employees who have not been trained to a level required by their job function and responsibility are not permitted to participate in or supervise field activities. This training program is consistent with the requirements of 29 CFR 1910.120(e) and includes the following:

- Training for site workers;
- Site briefings for visitors and workers;
- Initial Hazardous Waste Operations and Emergency Response (HAZWOPER) training (24- or 40-hour) and 8-hour HAZWOPER refresher training as necessary;
- Supervised field experience;
- Management and supervisor training; and
- Heavy equipment operator certification.

Personnel at this site must successfully complete 40-hour initial HAZWOPER training consistent with the requirements of 29 CFR 1910.120(e)(3)(i) in order to work in contaminated areas. In addition, such personnel must provide documentation of having received three days of supervised field experience applicable to this site, or receive three days of supervised field experience at this site. Heavy equipment operators must have their certification before they can operate equipment.

Onsite managers and supervisors who are directly responsible for or who supervise workers engaged in hazardous waste operations must receive, in addition to the required level of HAZWOPER training described above, eight additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4). Training received by managers and supervisors must include management of hazardous waste site cleanup operations, an employer safety and health program, and a spill containment program.

Only instructors qualified in accordance with 29 CFR 1910.120(e)(5) may be used to train workers. Qualified instructors must have either completed a training program for teaching the subjects they are expected to teach or have the academic credentials and instructional experience necessary for teaching the subjects.

A written certificate will be given to each person after they have completed the necessary training. Any person who has not been certified or who does not meet the requirements of equivalent training is prohibited from engaging in field operations.

8.6 TRAINING RECORDS

The NVG will maintain written certification of the successful completion of applicable training requirements for each worker. Training records will be maintained and kept up-to-date. Written certificates will be given to each certified person.

8.7 PERSONAL PROTECTION EQUIPMENT

The purpose of this section of the HASP is to identify all PPE required on site and to describe the procedures that have been developed and implemented to ensure worker safety and personal protection. PPE for this site will be Level D unless otherwise required. PPE required for this project includes:

- Chemical-resistant clothing;
- Gloves;
- Coveralls (optional);
- Rain gear;
- Hardhat;
- Safety glasses;
- Personal floatation devices;
- Hip or chest waders;
- Hearing protection; and
- Steel-toed shoes/boots.

If circumstances are encountered that require additional PPE, the EPM will supply the necessary PPE before work continues.

8.8 DECONTAMINATION

Site decontamination procedures are designed to achieve an orderly, controlled removal or neutralization of contaminants that may accumulate on personnel or equipment. These procedures minimize worker contact with contaminants and protect against the transfer of contaminants to clean areas of the site and off site. They also extend the useful life of PPE by reducing the amount of time that contaminants contact and can permeate PPE surfaces. The decontamination procedures described below are designed to meet the requirements of 29 CFR 1910.120(k).

8.9 SITE DECONTAMINATION FACILITIES

Decontamination will be conducted in the CRZ. The CRZ will act as a buffer between the exclusion zone and the support zone. Separate facilities will be used for personnel and for equipment.

8.10 DECONTAMINATION PROCEDURES FOR PERSONNEL AND PPE

Specific procedures for personnel and PPE decontamination minimize the potential for hazardous skin or inhalation exposure and avoid cross-contamination and chemical incompatibilities. PPE that is contaminated during field operations will be drummed and disposed in the Nome Landfill as solid waste.

8.11 DECONTAMINATION PROCEDURES FOR EQUIPMENT

All tools, equipment, and machinery suspected of contacting contaminated soil or human waste will be washed using a scrub brush in an Alconox® or Liquinox® solution and rinsed with potable water. Equipment decontamination procedures are designed to minimize the potential for hazardous skin or inhalation exposure and to avoid cross-contamination and chemical incompatibilities. The following are general equipment decontamination procedures that will be established and implemented:

- Decontamination will be required for all equipment exiting a contaminated area;
- Vehicles will not travel regularly between contaminated and clean areas of a site; and
- Particular attention will be given to decontaminating tires, scoops, and other parts of heavy equipment that are directly exposed to contaminated soil when equipment ceases work in a contaminated area.

9.0 EMERGENCY RESPONSE PLAN

The Emergency Response Plan (ERP) describes potential emergencies, procedures for responding to emergencies, roles and responsibilities during emergency response, and training that workers must receive in order to follow emergency procedures. The ERP also describes the provisions made to coordinate emergency response planning with offsite emergency response organizations.

9.1 PRE-EMERGENCY PLANNING

Each site has been evaluated for potential emergencies based on site hazards, tasks within this Work Plan, site topography, and prevailing weather conditions. The results of that evaluation indicate the following are potential emergency situations:

- Heat and cold stress/worker collapse do to weather conditions; and
- Cave-in from excavation.

9.2 ON SITE EMERGENCY RESPONSE

Emergency procedures may require equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Special equipment includes:

- One first aid kit stored in each piece of heavy equipment on site; and
- One fire extinguisher stored in each piece of heavy equipment on site.

9.3 EMERGENCY ALERTING AND EVACUATION

Upon discovering an emergency situation, personnel must notify the EPM, HSO, or site superintendent. The EPM, HSO, and/or site superintendent will initiate a response. If evacuation notice is given, site workers must leave the worksite with their respective buddies, if possible.

Emergency evacuation routes and the assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Personnel exiting the site will gather at a designated assembly point. Personnel will be accounted for at the assembly site.

When outside assistance is required, applicable offsite organization will be contacted. The EPM, HSO, and site superintendent will provide relevant information to responding organizations, including hazards associated with the emergency incident, potential containment problems, and missing personnel.

9.4 EMERGENCY MEDICAL TREATMENT AND FIRST AID

To assist caregivers, personnel who require medical care and/or who are transferred to a

medical facility will be accompanied by material safety data sheets and other applicable hazard data for the chemicals and hazards to which the victim has potentially been exposed. The emergency medical care facility is the Gambell Clinic and is located northwest of Sites 18B and 18A.

9.5 EMERGENCY RESPONSE CRITIQUE AND PLAN

After every emergency incident or evacuation of this site, the EPM will evaluate the quality and safety of response activities. Any deficiencies in response actions will be included in a specific follow-up plan and corrected. This ERP will be evaluated periodically throughout site operations and updated for accuracy. Changes made to emergency response procedures as a result of rehearsals or actual response incidents will be documented.

9.6 EMERGENCY RESPONSE TRAINING

All persons who enter this worksite, including visitors, will receive a site-specific briefing about anticipated emergency situations and the emergency procedures. The emergency contact telephone numbers are provided below in Table 1. These emergency numbers are verified to be accurate, working numbers. Site personnel are trained and rehearsed in site-specific emergency calling procedures.

TABLE 1: Emergency Contacts

Ambulance/EMS	907-985-5031
Police	907-985-5333
Fire	907-985-5042
National Response Center	800-424-8802
State Police	800-478-9300
State Authority (ADEC)	907-451-2121
Chemtrec	800-424-9300
Gambell Health Clinic	907-985-5012
Norton Sound Regional Hospital	907-443-3311

10.0 ENVIRONMENTAL PROTECTION PLAN

10.1 APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS

Remediation activities in Gambell fall under certain federal, state, and local regulations. Regulatory requirements address the following issues and activities:

- Reporting and cleanup of newly discovered spills and contamination;
- Storage, labeling, transportation, and disposal of excavated materials, debris, and incidental contamination;
- Permitting of facilities and discharges;
- Cleanup criteria and technologies;

- Access restrictions; and
- Monitoring and closure.

10.1.1 Federal Authority

Relevant federal regulations and the regulatory agencies that govern them include:

- CERCLA – EPA;
- RCRA – EPA;
- Clean Air Act – EPA;
- Hazardous Materials Transportation Act - United States Department of Transportation;
- Occupational Safety and Health Act - United States Department of Labor;
- Endangered Species Act of 1973 - United States Department of the Interior; and
- National Historic Preservation Act of 1966 – Advisory Council on Historic Preservation.

10.1.2 State Authority

Several state offices with regulatory authority for the planned remediation in Gambell are described below.

10.1.2.1 Alaska Department of Environmental Conservation

The ADEC has the authority to enforce the Alaska Oil and Hazardous Substances Pollution Control regulations, described in 18 AAC 75. This includes overseeing investigation and cleanup at contaminated sites. In addition, the ADEC has the authority to specify soil, surface water, and groundwater cleanup levels at sites impacted by the discharge of oil or other hazardous substances. This authority is granted under Alaska Statute Title 46, Sections 3 and 9. The NVG is currently undertaking restoration activities at Gambell sites under the NALEMP program in cooperation with the ADEC.

10.1.2.2 Alaska Department of Natural Resources

The Gambell NALEMP project must comply with Section 106 of the National Historic Preservation Act. Involved federal agencies must consult with the SHPO to obtain concurrence for the planned remediation. The federal agency will make the necessary submittals to SHPO. The SHPO for Alaska is a part of the Alaska Department of Natural Resources, Division of Parks and Recreation, Office of History and Archaeology.

10.2 PERMITS

Relevant permit issues in the past included:

Wastewater Discharge Permits

No wastewater discharge permit is required for the release of treated decontamination water.

Contaminated Gravel Transportation and Handling

All transportation and disposal permits will be obtained by and are the responsibility of the NVG. Contaminated gravel will be properly containerized and transported to a thermal remediation facility located in Seattle, Washington. Prior to gravel transportation, the NVG will obtain a letter from the ADEC stating that the gravel is acceptable for thermal remediation. All activities will be coordinated with the ADEC to ensure compliance with applicable laws and regulations.

Solid Waste Permit

Solid waste generated by the project will be incinerated on site in a Smart Ash cyclonic burn barrel. The resulting ash will be disposed in the Columbia Ridge Landfill. Therefore, no solid waste permit is necessary.

Tidelands Permit

A tideland permit is necessary for the barge to land at Gambell. The landing is regularly scheduled and the permit will be obtained by Northland.

Air Permit

An air permit is not required for this project.

10.3 RESOURCE PROTECTION PROCEDURES

10.3.1 Surface and Groundwater Protection Methods

No construction-related wastewater (including that resulting from dewatering activities) will be discharged into any natural body of water. Heavy equipment will not be operated in Troutman Lake. Field technicians wading in the lake and the removal of debris from the lake will not adversely impact surface water quality. Any water discharges will be performed in accordance with ADEC guidelines.

10.3.2 Erosion and Runoff Control

All excavated debris and contaminated gravel will be either containerized immediately in super sacks or stockpiled. Clean material will be placed back into the excavation after debris

has been removed. Contaminated soil will placed into super sacks and then into a lined connex container. Connexes will be staged at each site if contaminated soils are discovered.

10.3.3 Archaeological Monitoring

The EPM will serve as the archaeological monitor during the 2007 field season and will be on site during excavation. If objects are found, Alaska District Project Manager Carey Cossaboom and Archaeologist Margan Grover will be notified. Field personnel will not remove or further disturb artifacts upon their discovery.

Biological items may be present in the Gambell area, particularly in areas near the beach. Field personnel will comply with the MMPA and will not disturb any bones, ivory, antlers, or other biological items encountered on St. Lawrence Island. If human remains are encountered, local authorities and the State Troopers will be notified.

10.3.4 Fish and Wildlife Protection

Impacts to fish and wildlife are not anticipated for this project. Access will be restricted by the use of fencing to prevent people and animals from coming into contact with the excavation areas.

10.3.5 Traffic Control Plan

Only appropriate vehicles will be allowed in designated work areas. All vehicles will be properly maintained in a good state of repair to ensure that no oil leaks or other discharges occur.

10.4 WASTE PREVENTION PLAN

An effort will be made to reduce the amount of other wastes generated.

11.0 POINT OF CONTACT

If any questions arise about the procedures presented in this document, please contact:

Gerald Soonagrook
Native Village of Gambell
P.O. Box 90
Gambell, Alaska 99742
(907) 985-5474

or

Michael D. Travis, P.E.
Travis/Peterson Environmental Consulting, Inc.
3305 Arctic Boulevard Suite 102
Anchorage, Alaska 99503
Tel: (907) 522-4337 Fax: (907) 522-4313
e-mail: *mtravis@tpeci.com*

12.0 SCHEDULE

The schedule reflects the remediation activities planned for the 2007 field season. Mobilization will begin in early May, and Northland will deliver the connexes and supplies

in June. Site activities will begin in late June or early July and continue through September. Demobilization is scheduled to begin the last week in August and last through the month of September. Dates for mobilization, field work, and demobilization may change due to weather.

Reporting will occur throughout the field season. A final report will be completed before December 31, 2007. The estimated schedule for this seasons activities are as follows:

- Mobilization - May 1st through May 30th;
- Field Work (including site confirmation, site inspections, debris and soil removal, sampling, equipment maintenance) - June 1st through August 31th;
- Sample Results/Reporting - by November 1st;
- Data Review - November 1st through November 30th; and
- Final Report - December 31st.

13.0 REFERENCES

DCED, 2004. Alaska Department of Community and Economic Development. Website Database. February, 2004.

Montgomery Watson, 2000. Strategic Project Implementation Plan. Montgomery Watson, December, 2000.

NVG, 2003. Strategic Project Implementation Plan. Native Village of Gambell, September 2003.

MWH, 2003. Work Plan, Environmental Remediation NALEMP Project Gambell, St. Lawrence Island, Alaska. Montgomery Watson Harza, March 2003.