St. George Island Operable Unit

Completion of Two-Party Agreement Activities

Volume 1

NOAA Technical Memo 21

National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Pribilof Islands Environmental Restoration Project

October 2008

U.S. DEPARTMENT OF COMMERCE
Carlos M. Guttierrez, Secretary

National Oceanic and Atmospheric Administration
Vice Admiral Conrad C. Lautenbacher, Jr., U.S. Navy (Ret.),
Under Secretary for Oceans and Atmosphere

National Ocean Service
John H. Dunnigan, Assistant Administrator
for Ocean Services and Coastal Zone Management

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Pribilof Project Office
7600 Sand Point Way N.E.
Seattle, Washington 98115

September 26, 2008

Jennifer Roberts
Federal Facilities Program Manager
Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501-2617

Subject: Closure of the St. George Island, Alaska Operable Unit.

Dear Ms. Roberts:

In accordance with paragraph 59 of the Pribilof Islands Environmental Restoration Agreement (Two-Party Agreement or TPA) signed in January 1996 by designated officials of the State of Alaska and the National Oceanic and Atmospheric Administration (NOAA), NOAA requests Alaska Department of Environmental Conservation (ADEC), as the duly authorized representative of the State of Alaska, certification of NOAA's completion of corrective action for the St. George Island Operable Unit (OU).

NOAA and the ADEC identified a total of thirty-six (36) sites at St. George Island (Table 1). This number (36) exceeded the twenty-five (25) source areas identified in the TPA (Attachment A, St. George Island) due to agreed upon changes in the manner of site designation and the finding of new sites during various phases of site investigation. NOAA notes that one site, TPA 11 Cottage C UST is not subject to the TPA, and will be evaluated under NOAA's environmental safety compliance program in coordination with ADEC. However, NOAA remediated contamination at Cottage C to the maximum extent practicable. NOAA also notes that Oceanfront Site 36 (Table 1) free-phase product (refer to: 18 AAC 75.990 (43)) expressed itself as a light sheen on the water table following removal of the

overlying vadose zone. In the *Corrective Action Report and Conditional Closure Request for St. George Island TPA Site 1/Former Diesel Tank Farm, and the Former Drum Storage Area, TPA Site 2*, NOAA determined that it (NOAA) had met its obligation to recover the free-phase product to the maximum extent practicable (refer to: 18 AAC 75.325 (f) (1)). Consequently, NOAA in its closure request for TPA 1 and 2 requested that the contaminated groundwater at the site be considered not to have recoverable free phase product. Subsequently, on November 2, 2007, ADEC approved NOAA's request and granted a no further action planned (NFRAP) determination for TPA Sites 1 and 2, which included a determination on the contaminated groundwater that NOAA designated as its Site 36. Also, in a letter dated August 8, 2005. ADEC approved NOAA's *Draft Long-term Groundwater Monitoring Plan, St. George Island, Alaska*, (Plan). NOAA issued its Plan on August 19, 2005. The Plan included NOAA's long-term commitment to monitor groundwater at the aforementioned sites in addition to other sites on the island.

NOAA asserts that it has completed in accordance with the TPA all investigations and corrective actions approved by ADEC to the maximum extent practicable by:

- removing drums and debris
- removing underground storage tanks (USTs) and above ground storage tanks (ASTs)
- removing fuel pipelines
- removing contaminated soil
- closing solid waste sites,
- characterizing surface water, and
- characterizing and monitoring groundwater.

Table 1 summarizes specific environmental quality parameters at each site. Parameters in Table 1 include type of contamination (drums, surface debris and solid wastes), media contaminated (soil, surface water, and groundwater), presence or absence of residual contamination with succinct comments regards land use (aka institutional) controls, as appropriate, the date ADEC signed the NFRAP determination per TPA paragraph 59, and the current property owner.

Appendix I includes copies of all deed notices recorded with the Alaska Recorder's Office, Aleutian District, for twenty-seven (27) properties affected by residual contamination, and/or buried debris remaining in-situ at three (3) sites listed in Table 1. In addition, notice of residual contamination and/or buried debris will be identified in quitclaim deeds NOAA is drafting as it continues to transfer real property to St. George Island entities in accordance with the Transfer of Property Agreement signed by NOAA and various Pribilof Islands' entities in 1984.

Appendix II includes photocopies of the following three document types. (1) NFRAPs including signatures of both the ADEC and NOAA project managers (TPA paragraphs 42-47) for each site listed in Table 1; the photocopies are sorted in the same order as the site listing in Table 1, excepting NOAA Sites 11 (Cottage C) and 36, which

do not have NFRAPs as discussed above. TPA paragraph 59 states: "ADEC shall not deny certification that corrective action is complete at any site(s) solely on the basis that post-remedial measures, such as monitoring, shall remain in place for a period of months or years." The NFRAP photocopies generally exclude report appendices containing items such as quantitative laboratory data and daily logs that are available to ADEC with NOAA's initial site submittals. (2) A St. George Village long-term groundwater monitoring plan. (3) A summary document describing in-situ residual soil and groundwater contamination.

In addition, pursuant to TPA paragraph 57, NOAA maintains an administrative record (AR) for the St. George Island OU at the following four locations: St. George Island Tribal Government Center; ARLIS, Anchorage, AK; NOAA Sand Point, Seattle, WA; and the National Archives and Records Administration, Seattle, WA. Currently, the AR is complete through fiscal year 2007. Fiscal year 2008 documents will be added to the AR by the end of November 2008.

Per this submission, including Appendices I and II, NOAA requests ADEC concurrence that all corrective actions pursuant to the TPA between ADEC and NOAA signed in 1996 for the St. George Island Operable Unit are complete. Enclosed are two copies of a signature page attesting to the fact that no further remedial action is planned ("conditional closure status") for the St. George Island Operable Unit. I have signed both copies as NOAA's project manager pursuant to TPA paragraph 42.

If you concur, please sign both copies on behalf of ADEC, returning one signed copy to me and retaining the other copy for ADEC's records.

If you have any questions, please do not hesitate to contact me either in writing, or at (206) 526-4560.

Sincerely,

John A. Lindsay, Manager
Pribilof Islands Environmental Restoration Project Office

Enclosures: Appendices I and II

cc: St. George RAB Members (DVD only)
David Kennedy, Pribilof Program Director
William Broglie, NOAA OCAO
James Barrows, NOAA OCAO
Nancy Briscoe, NOAA GCNR
Craig O'Connor, NOAA GCNR
Robert Taylor, NOAA GCNR
NOAA Administrative Record

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Manager, Pribilof Islands Environmental Restoration Project Office

Sept 26, 2008
Date

Approvals:

In accordance with Paragraph 59 of the Two Party Agreement (TPA), this is to confirm that all corrective action has been completed to the maximum extent practicable for all environmental media at NOAA's TPA and Non-TPA sites comprising the St. George Island Operable Unit, in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

For the Alaska Department of Environmental Conservation

Jennifer Roberts
Alaska Department of Environmental Conservation
Federal Facilities Program Manager

Sept 26 2008
Date

Table 1. Summary of Residual Soil Contamination and Buried Solid Wastes at NOAA Cleanup Sites on St. George Island, Alaska

NOAA Site No.	TPA Site No.	Site Name	Drums	Surface Debris	Solid Waste	Soil	Ground-water	Surface Water	UST/AST/ Pipeline	Clean Closure	Site Conditions as of August 6, 2008	Site Status as of September 26, 2008	Property Owner(s) as of August 2008
1	1	Former Diesel Tank Farm		X		X	X		X		Diesel range organics (DRO) contaminated soil remains in the following locations: just north of and parallel to the City sewer system at depths of 5 feet below ground surface (bgs) and deeper; in an unexcavated buffer zone along the Bering Sea from the beach line inland approximately 10 to 15 feet at depths of 3 feet bgs and deeper; in the western portion of the site, at equipment refusal (due to bed rock) at depths of 7 to 14 feet bgs; and in the eastern portion of the site at the bottom of the vadose zone at 14 to 15 feet bgs. DRO, gaso-line range organics (GRO), benzene, ethylbenzene and total xylene remain in one area in the western portion of the site at bed rock depth of 14 feet bgs. Groundwater is contaminated with DRO, GRO and benzene in this area; see Site 36 below for information. Deed notice.	NFRAP 11/2/07	City of St. George; St. George Tanaq Corporation (Tanaq)
2	2	Former Drum Storage Area	X	X		X	X		X		DRO contaminated soil remains in the western-most portion of the site only in the following locations: just north of and parallel to the City sewer system at depths of 8 feet bgs and deeper; at equipment refusal (due to bed rock) at a depth of 13 feet bgs; and at the bottom of the vadose zone (in areas of deeper bedrock) at 14 to 15 feet bgs.. Groundwater is contaminated with DRO, GRO and benzene in this area; see Site 36 below for information. Deed notice.	NFRAP 11/2/07	City of St. George; Tanaq
3	3	Inactive Gas Station				X	X		X		DRO contaminated soil remains just south of and parallel to the City sewer system at depths of 3.5 feet bgs and deeper. Perchloroethylene (PCE) remains in one location just south of the City sewer system from 2 to 4 feet bgs. DRO, GRO, benzene, toluene, ethylbenzene and total xylene remain in the area beneath the past location of the dispensing station at equipment refusal/bed rock depth of approximately 14 feet bgs. Groundwater is contaminated with DRO, GRO, and benzene in this area; see Site 36 below for information. Deed notice.	NFRAP 07/25/05	City of St. George; Tanaq

NOAA Site No.	TPA Site No.	Site Name	Drums	Surface Debris	Solid Waste	Soil	Ground-water	Surface Water	UST/AST/ Pipeline	Clean Closure	Site Conditions as of August 6, 2008	Site Status as of September 26, 2008	Property Owner(s) as of August 2008
4	4	Active Landfill	X	X	X	X					Municipal solid waste (MSW) capped with geosynthetic clay and scoria throughout most of the landfill footprint; MSW open burning was conducted post-closure in the southern portion of the footprint until 2006 when this area and much of the rest of the landfill footprint was capped with petroleum-contaminated soil (PCS) from various Two-Party Agreement sites. DRO, GRO, residual range organics (RRO), benzene, toluene, ethylbenzene, and total xylenes are potential PCS cap contaminants. City of St. George is respon-sible for post-closure monitoring. Deed notice.	NFRAP 01/13/04 (City bears liability for long-term monitoring and O&M)	City of St. George
5	5	Ocean Dump Site		X						X		NFRAP 03/11/03	Tanaq; The Aleut Corporation (TAC)
6	6	Open Pits Site	X	X	X	X					DRO contaminated soil remains beyond 15 feet bgs at the coal subsite, and at refusal depth at the crane and coal subsites. Deed notice.	NFRAP 08/08/05	City of St. George
7	7	Ballfield/ Former Landfill	X	X	X	X	X	X			MSW capped with scoria. Lead-contaminated soil remains at the north-northeast end of the landfill, beneath the 2 foot thick scoria cap, DRO contaminated soil can be found in areas at greater than 6 feet bgs; post-closure cap monitoring and maintenance until July 2010. Deed notice.	NFRAP 01/09/06	City of St. George
8	8	Active Power Plant				X			X		DRO contaminated soil remains adjacent to and beneath the City Municipal Building and at refusal to the south of the building; deed notice; groundwater at the site is contaminated with DRO; see Site 35 below for information. Deed Notice.	NFRAP 08/31/05	City of St. George
9	9	Old Power Plant				X			X		DRO contaminated soil remains near buried utili-ties, adjacent to and beneath the Old Power Plant building foundation, abutting a cliff to the north, and at equipment refusal encountered at between 1.5 and 4 feet bgs. RRO remains in an area next to the building foundation on the west side. Deed notice.	NFRAP 09/22/05	St. George Community Council
10	10	Former Drum/AST Storage Area	X						X	X		NFRAP 08/18/97	Tanaq/TAC

NOAA Site No.	TPA Site No.	Site Name	Drums	Surface Debris	Solid Waste	Soil	Ground-water	Surface Water	UST/AST/ Pipeline	Clean Closure	Site Conditions as of August 6, 2008	Site Status as of September 26, 2008	Property Owner(s) as of August 2008
11	11	Cottage C UST (Active Federal Facility)				X			X		DRO contaminated soil remains adjacent to the building and buried utilities at the south end of the building; this active NOAA facility was inadvertently included on the Two-Party Agreement list of sites in 1996. ADEC concurred that this site would be removed from the TPA, and would fall under NOAA NMFS responsibilities for complying with State of Alaska laws and regulations.	NFRAP 02/05/04	NOAA
12	12	Former Hangar Bldg.	X	X		X				X		NFRAP 03/11/03	City of St. George
13	13	Makushin Pit	X							X		NFRAP 08/18/97	Tanaq/TAC
14	14	Oil Drum Dump	X	X		X					DRO and RRO contaminated soil remains at refusal depths of 4 to 11 feet bgs. Deed notice.	NFRAP 11/17/04	Tanaq/TAC
15	15	Boneyard B	X	X		X			X	X		NFRAP 02/11/05	Tanaq/TAC
16	16	Boneyard C	X	X						X		NFRAP 09/14/04	Tanaq/TAC
17	17	Cross-Hill Dump	X							X		NFRAP 08/18/97	Tanaq/TAC
18	18	Former Fuel Storage Area	X			X					DRO contaminated soil remains adjacent to the roads, a buried electrical line, and at refusal depths of 10 to 11 feet bgs. Deed notice.	NFRAP 04/18/05	Tanaq/TAC
19	19	Old Carpenters Shop				X					Lead-contaminated soil remains in one location at the southeast corner of the buried foundation at a refusal depth of 8.5 feet bgs. Deed notice	NFRAP 01/25/06	Tanaq/TAC
20	20	Old Coal House		X		X				X		NFRAP 09/09/97	Tanaq
21	21	Abandoned City Diesel Tank Disposal Site							X	X		NFRAP 03/11/03	City of St. George
22	22-1	School UST				X			X		DRO contaminated soil remains adjacent to the southwest corner of the school at a refusal depth of approximately 9 feet bgs, and potentially beneath the school building. Deed restriction to future landowner (State of Alaska).	NFRAP 04/08/04; NFRAP 02/11/05	NOAA
23	22-2	Current Carpenter Shop USTs				X			X		DRO contaminated soil remains adjacent the east end of the Carpenter Shop building where further excavation could jeopardize foundation stability, and at depth exceeding 15 feet bgs. Deed notice.	NFRAP 08/19/03	Tanaq/TAC

NOAA Site No.	TPA Site No.	Site Name	Drums	Surface Debris	Solid Waste	Soil	Ground-water	Surface Water	UST/AST/ Pipeline	Clean Closure	Site Conditions as of August 6, 2008	Site Status as of September 26, 2008	Property Owner(s) as of August 2008
24	22-3	Shop/Store UST				X			X		DRO contaminated soil remains near northwest corner of the building's foundation, near a cliff edge and at refusal depths of 7 to 14 feet bgs. Deed notice.	NFRAP 10/08/04	Tanaq/TAC
25	22-4	Old Airport Hangar UST		X		X			X	X		NFRAP 03/10/03	City of St. George
26	22-5	Gas Station #1 UST				X			X	X		NFRAP 03/10/03	Tanaq
27	23	Abandoned Diesel Tank Farm				X			X		DRO contaminated soil remains at concentrations greater than ADEC's cleanup levels for the protec-tion of groundwater at refusal depths varying between 4.5 and 16 feet bgs and in some locations shallower than refusal at depths varying between 2.5 and 9.1 feet bgs. Results from six groundwater monitoring events indicated groundwater was not impacted by this soil contamination. Residual PCS concentrations are less than ADEC's cleanup levels for ingestion and inhalation. Deed notice.	NFRAP 02/28/05	Tanaq/TAC
28	24	Inactive Gas Tank Farm				X			X		DRO, GRO, Toluene, Ethylbenzene, and total xylenes contaminated soil remains at refusal depths varying between 9.6 and 16.5 feet bgs. Deed notice.	NFRAP 12/14/04	City of St. George; Tanaq
29	25-1	Port Fuel Supply Line E-W				X			X		DRO contaminated soil remains in one location at a refusal depth of 11 feet bgs, and in an unexca-vated buffer zone along the Bering Sea from the beach line inland approximately 10 to 15 feet at depths 6 feet bgs or greater. Deed notice.	NFRAP 12/18/07	City of St. George; Tanaq; TAC
30	25-2	Port Fuel Supply Line N-S				X			X		DRO contaminated soil remains at equipment refusal depths varying from 3 to 10 bgs. Deed notice.	NFRAP 05/05/05	Tanaq
31	NTPA	St. George Schoolyard/ landfill	X		X						PCE was detected in 1994 in one sample from 12 feet bgs at a concentration slightly above current ADEC Method Two criteria for migration to groundwater. Capped MSW may remain in areas not exposed after landfill operations ceased (date unknown); deed restriction to future landowner (State of Alaska).	NFRAP 11/21/95	NOAA
32	NTPA	Petroleum Contaminated Stockpile				X				X		NFRAP 01/08/08	NOAA

NOAA Site No.	TPA Site No.	Site Name	Drums	Surface Debris	Solid Waste	Soil	Ground-water	Surface Water	UST/AST/ Pipeline	Clean Closure	Site Conditions as of August 6, 2008	Site Status as of September 26, 2008	Property Owner(s) as of August 2008
33	NTPA	School AST				X			X	X		NFRAP 5/24/05, NFRAP 6/20/2005	NOAA
34	NTPA	Public Health Service PCS –Open Pits Site				X				X		NFRAP 2/11/05	City of St. George/TAC
35	8b	Active Power Plant Free Phase					X				Groundwater is contaminated with free-phase and dissolved-phase DRO. Long-term groundwater monitoring is in progress, and a free-phase extraction system started removing product in September 2007. Deed notice.	NFRAP 09/18/08	City of St. George
36	1b & 25-1b	Oceanfront Sites Free Phase					X				Petroleum sheen observed on the water table surface during excavation activities in 2006. Dissolved-phase contaminants include DRO, GRO, and benzene. Long-term groundwater monitoring is in progress.	NFRAP 11/2/07	City of St. George; Tanaq

Notes:
AST: Above ground storage tank
DRO: Diesel-range organics
FUDS: Formerly Used Defense Site
NFRAP: No Further Remedial Action Planned (received from State of Alaska Department of Environmental Conservation)
NMFS: National Marine Fisheries Service
NOAA: National Oceanic and Atmospheric Administration
NTPA: Non Two-Party Agreement site
PCS: Petroleum-contaminated soil
TAC: The Aleut Corporation (subsurface estate)
Tanaq: St. George Tanaq Corporation (surface estate)
TPA: Two-Party Agreement
UST: Underground storage tank

Appendix I

APPENDIX I TO THE SEPTEMBER 26, 2008 REQUEST FOR CLOSURE OF THE ST. GEORGE ISLAND, ALASKA, OPERABLE UNIT UNDER THE TWO-PARTY AGREEMENT BETWEEN THE ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION AND THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION SIGNED JANUARY 1996

In accordance with paragraph 59 of the Pribilof Islands Environmental Restoration Agreement (Two-Party Agreement or TPA) signed in January 1996 by designated officials of the State of Alaska and the National Oceanic and Atmospheric Administration (NOAA), NOAA requested Alaska Department of Environmental Conservation (ADEC), as the duly recognized representative of the State of Alaska, certification of NOAA's completion of corrective action for the St. George Island Operable Unit (OU). NOAA asserted in its September 26, 2008 cover letter to ADEC that it had completed in accordance with the TPA all investigations and corrective actions approved by ADEC, to the extent practicable by:

- removing drums and debris,
- removing underground storage tanks (USTs) and above ground, storage tanks (ASTs),
- removing fuel pipelines,
- removing contaminated soil,
- closing solid waste sites,
- characterizing surface water, and
- characterizing and monitoring groundwater.

Appendix I of two attachments to the request (cover letter) includes portable document format (PDF) versions of closure documents prepared in accordance with TPA paragraphs 42-47 for the thirty-six sites within the St. George Island OU. This number (36) exceeded the number (25) of source areas identified in TPA Attachment A concerning St. George Island, due to agreed upon changes in the manner of site designation and the discovery of new sites during various phases of site investigation. Appendix I herein does not include formal closure documents for Cottage C and Oceanfront Sites Free Phase (Sites, 11 and 36, respectively). Site 11 is a federally active facility and precluded from cleanup by NOAA under the TPA. Site 36 was eventually found not to have free phase and it was closed along with documentation for Sites 1 and 2. Conversion of the original documents to PDF resulted in a slight size reduction of the original document format (8.5 x 11 inches); this reduction was necessary to provide this bound printed copy created for archiving and future reference. The cleanup sites are presented in numerical order in accordance with Table 1 accompanying the cover letter. The documents herein generally exclude report appendices which include such items as final laboratory data deliverables, and contractor daily logs. These items are available to ADEC with NOAA's initial site submittals, such as corrective action plans and reports.

NOAA recorded twenty-seven deed notices with the Alaska Recorder's Office, Aleutian District located in Anchorage. Copies of these documents are included within Appendix I. Each deed notice accompanies the appropriate closure document for the applicable site. Notice of residual contamination or buried solid waste to be included with federal property transfer documents under a 1984 Transfer of Property Agreement between NOAA and St. George Island entities are not included herein as quitclaim deeds have not been issued at the time of this submission.

Appendix II includes copies of the St. George Island long-term groundwater monitoring plan, and a summary report of in-situ residual soil and groundwater contamination.

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St. George Island, Alaska

October 10, 2007

Prepared By:

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AST	Aboveground storage tank
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylene
City	City of St. George Island
cm	Centimeter
CQC	Contractor quality control
CSM	Conceptual site model
DGPS	Digital global positioning system
DQO	Data quality objective
DRO	Diesel range organics
EA	Environmental assessment
EPA	US Environmental Protection Agency
ft	Feet
ft^2	Square feet
GIS	Geographic information system
GPS	Global positioning system
GRO	Gasoline range organics
HASP	Master Health and Safety Plan
HAZWOPER	Hazardous waster operations and emergency response
HI	Health index
HVO	Halogenated volatile organics
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
LEL	Lower explosive limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MSL	Mean sea level
MS	Matrix spike
MSD	Matrix spike duplicate
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OSHA	Occupational Safety and Health Administration
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyls
PCE	Perchloroethylene
PCS	Petroleum-contaminated soil
PEL	Permissible exposure limit
PID	Photoionization detector
PQL	Practical quantitation limit
QA/QC	Quality assurance and quality control
QAP	Master Quality Assurance Plan
RPD	Relative percent difference
RRO	Residual range organics
Tanaq	St. George Tanaq Corporation
TDS	Total dissolved solids
TLC	Thin-layer chromatography
TPA	Two-Party Agreement
TPH	Total petroleum hydrocarbons
TSP	Trisodium phosphate
TWA	Time-weighted average
UST	Underground storage tank
VOC	Volatile organic compounds
yd^3	Cubic yards

EXECUTIVE SUMMARY

This report describes the cleanup of two contaminated sites on St. George Island, Alaska: the Former Diesel Tank Farm, designated National Oceanic and Atmospheric (NOAA) Site 1/Two Party Agreement Site 1; and the Former Drum Storage Area, designated NOAA Site 2/Two Party Agreement Site 2. The federal government stored fuel at these sites from the 1950s to the 1970s. Tank and drum leakage, and spillage during fuel transfers, resulted in soil and groundwater contamination at both locations.

Approximately 14,300 cubic yards of contaminated soil were excavated from NOAA Sites 1 and 2 during the fall of 2006. Contaminated soil removal resulted in one large excavation that spanned both sites, which are located adjacent to each other. Soils with contaminant concentrations above applicable cleanup standards were removed to the extent practicable; however, excavation efforts were constrained to the north by the Bering Sea and to the south and west by the City of St. George's sewer system. Excavation depth was mostly limited by the area's water table, which was encountered at about 15 feet below the ground surface; however, bed rock was encountered as shallow as 7.5 feet below the ground surface in one area. The excavated soil was stockpiled at the City of St. George's new landfill for use as municipal waste day-cover. The excavation was backfilled with clean material after collection of cleanup confirmation samples.

Past investigations found free-phase petroleum product in NOAA Site 1 monitoring wells; however, during contaminated soil removal, groundwater exposed at the bottom of the excavation did not have a free-phase product layer greater than sheen. Past investigations also found that groundwater in the vicinity of NOAA Sites 1 and 2 has total dissolved solids concentrations above the Alaska Department of Environmental Conservation (ADEC) drinking water standard. The high dissolved solids concentration is indicative of saltwater intrusion from the Bering Sea, and renders the groundwater in this area unusable for potable water.

This report proposes that NOAA has completed all appropriate actions related to cleanup of NOAA Sites 1 and 2, and includes requests for conditional closure determinations for these sites from ADEC. The requests are based on the fact that all contaminated soils have been removed to the extent practicable, and on the direct observation that groundwater under the sites does not have a free-phase product layer amenable to extraction. NOAA, with concurrence from ADEC, has begun long-term monitoring of groundwater contaminants in the vicinity of NOAA Site 1 and Site 2; this monitoring will continue as long as necessary to ensure protection of human health and the environment.

1.0 INTRODUCTION

The U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) is responsible for characterization and restoration of specific sites on St. George Island, Alaska under Public Law 104-91 of 1996 and Public Law 106-562 of 2000. A Two-Party Agreement (TPA), signed in 1996 by NOAA and the State of Alaska, provides the framework for corrective action on St. George Island (NOAA 1996). The State of Alaska provides TPA oversight through the Alaska Department of Environmental Conservation (ADEC).

Under the TPA, NOAA is required to comply with State of Alaska regulations that were in effect in 1991:

1) The interim soil guidance for non-underground storage tank (UST) soil cleanup levels, dated July 17, 1991 (ADEC 1991);
2) The guidance for storage, remediation and disposal of non-UST petroleum-contaminated soils (PCS), dated July 29, 1991;
3) For water, the applicable water standards set out in 18 Alaska Administrative Code (AAC) 70; the applicable state and federal regulatory requirements for maximum contaminant levels for drinking water; and the interim guidance for surface and groundwater cleanups, dated September 26, 1990; and
4) For releases from regulated underground storage tank systems, 18 AAC 78 (ADEC 2006b).

With ADEC agreement, however, NOAA has chosen to follow more current regulations whenever possible.

The Former Diesel Tank Farm (NOAA Site 1/TPA Site 1) and the Former Drum Storage Area (NOAA Site 2/TPA Site 2), hereafter referred to as "Site 1" and "Site 2", were contaminated with diesel range organics (DRO) and gasoline range organics (GRO) as a result of fuel storage and transfer operations conducted by the federal government from the 1950s to the 1970s. One soil sample location within Site 2 was also found to be contaminated with toluene, ethylbenzene, and total xylenes. The groundwater beneath these sites is contaminated with DRO, GRO, and benzene; free-phase petroleum product (free product) was observed in monitoring wells TPA1-MW-1 and TPA1-MW-4 (see Figure 6). The following sections provide site backgrounds and describe the contamination investigation and cleanup activities that NOAA has undertaken.

2.0 SITE BACKGROUND

2.1 OWNERSHIP

The City of St. George (the City) is the current owner of Site 1 and Site 2, having received the property from the federal government under a transfer of property agreement (NOAA 1984).

2.2 PROPERTY DESCRIPTION

Site 1 and Site 2 are located within Tract 43, Section 29, Township 41 south, Range 129 west of the Seward Meridian, Alaska, as shown on the Bureau of Land Management, File/Record No. ak2804100s12900w001, February 15, 1985, sheet 1 of 4 (Figures 1 and 2). Site 1 is centered on coordinates latitude 56º 36' 12.67" north and longitude 169º 32' 48.76" west; Site 2 is centered on coordinates latitude 56º 36' 12.81" north and longitude 169º 32' 45.83" west.

2.3 HISTORY

Site 1 – Former Diesel Tank Farm

Site 1 served as a fuel tank farm from the 1950s to the 1970s (E & E 1993). Figure 3 was developed from a 1967 aerial photo, and shows twenty 10,000 gallon above ground storage tanks (ASTs) located at the site, plus an additional AST in the adjacent Site 2. A 1964 Department of the Interior (DOI) drawing identifies two ASTs as being used for gasoline storage (DOI 1964). The DOI drawing also identifies one of the tanks as being damaged, making it a potential source of the GRO contamination found at the site. Site 1 tanks were filled from barges via 3-inch diameter transfer lines routed from the east boat launch and west landing (Figure 3). The tank farm was taken out of operation in the 1970s; the tanks were removed from the site in 1996 (Polarconsult 1997a).

Site 2 – Former Drum Storage Area

Site 2 was used for drum storage of diesel fuel and gasoline (Figure 3). DOI documents indicate that in 1964 there was a 20,000 gallon drum storage capacity for diesel fuel, and a 2,000 gallon drum storage capacity for gasoline. The drum storage area consisted of a soil platform behind a concrete-filled drum retaining wall. Most of the retaining wall was removed during 2006 cleanup activities. The drums were off-loaded full from barges and ships and/or filled from fuel barges via a 2-inch diameter manifold and hose system located on the north side of the site. In 2006, heavily contaminated soil was encountered along the north side of the site; this contamination may have been a result of leakage and spills from the drum filling operations. Site 2 was likely in use until the 1970s when it was taken out of operation along with TPA Site 1.

2.4 GEOLOGY

The geology of the Pribilof Islands consists of lava flows and sills, with lesser amounts of pyroclastic (explosive volcanic ejecta) and tuffaceous material (fine-grained volcanic fragments, particularly ash), as well as glacial deposits (Barth 1956). Bedrock on St. George Island consists of block-faulted, layered basaltic lava flows and minor amounts of pyroclastic material overlying peridotite basement rocks.

Site 1 and Site 2 were filled and leveled to create areas suitable for placement of tank saddles and a drum platform. Based on well installation logs (TTEMI 2005a) and what was encountered during petroleum-contaminated soil (PCS) excavation, vesicular basalt is encountered from 14 to 19 feet below the ground surface (bgs), and is overlain with silty gravel and fill material. The "ground surface", prior to excavation in 2006, varied considerably within Site 1 due to concrete rubble and dirt piles left there as a result of construction of the City's current sewer system and closure of the tank farm. Prior to excavation in 2006, Site 2's "ground surface" was level and elevated about 2 feet behind a concrete-filled drum retaining wall.

2.5 HYDROGEOLOGY

In general, oceanic islands consisting of uniform geology develop a groundwater lens formed by the radial movement of infiltrating freshwater toward the shore. The rate of freshwater recharge, the size of the island, and the permeability of the subsurface dictate the profile and the thickness of the lens. The occurrence of potable groundwater on St. George Island is inferred from known geologic and hydrologic conditions and by analogy to other oceanic volcanic islands. Because the island is relatively narrow, the rate of recharge is low, and the subsurface fairly permeable, the freshwater lens is most likely thin (Anderson 1976).

The City of St. George currently obtains drinking water from four municipal wells located about 1/2 mile southeast of the city, near Upper Lake (Figure 1). Two of these wells were completed in 1987, and two were completed in 1988. The wells are located at elevations between 222 and 227 ft above mean sea level (MSL), with intake screens installed between 228 and 244 ft bgs (TTEMI 2005b). Water is piped from the wells via an insulated aboveground line to a pump house and water tank located adjacent to Upper Lake. The water is normally not treated before being distributed to the community.

The water table in the vicinity of Site 1 and Site 2 is encountered at approximately 15 to 16 feet bgs. Groundwater monitoring found dissolved petroleum contaminants above ADEC cleanup level criteria at both sites, free product in Site 1 monitoring wells, and total dissolved solids (TDS) above ADEC water quality standards throughout the area (TTEMI 2005b). Hydrogeological characterization found that groundwater flow in the vicinity of Site 1 and Site 2 is toward the north and west (Figure 7), away from the City's drinking water supply wells (TTEMI 2005a). Hydogeological modeling determined that, even under maximum pumping conditions, groundwater in the vicinity of these sites could not be drawn into the drinking water well area of influence (TTEMI 2005a).

2.6 ENVIRONMENTAL HISTORY

This section provides a chronological summary of environmental investigations and other actions that formed the basis for the corrective actions taken at Site 1 and Site 2. A more detailed summary of past investigation analytical results and findings can be found in NOAA's corrective action plan (CAP) for Site 1 and Site 2 (NOAA 2004a).

Petroleum-Contaminated Soil Investigations and Actions

1993 Ecology & Environment, Inc. (E & E) conducted a preliminary assessment of St. George Island and found that there were two abandoned pipelines that supplied Site 1; one from the east boat launch and one from the west landing (Figure 3; E & E 1993). The report did not note indications of fuel leakage around these pipelines.

E &E Assessment Recommendation: Perform surface and subsurface soil sampling at TPA Site 1 to determine the level and extent of contamination.

1994 Woodward-Clyde performed an expanded site inspection on St. George that included Sites 1 and 2 (Woodward-Clyde 1995). Eleven test pits were excavated within these sites, from which soil samples and one water sample were collected and analyzed on-site in a field laboratory, and off-site at a fixed laboratory. At the field laboratory, soil samples were analyzed for DRO, GRO, toluene, ethylbenzene, total xylenes, volatile chlorinated solvents, polychlorinated biphenyls (PCBs), and total petroleum hydrocarbons (TPH). At the fixed laboratory, soil samples were analyzed for DRO, GRO, TPH, volatile organic compounds (VOCs), halogenated volatile organics (HVOs), PCBs, and metals (arsenic, cadmium, chromium and lead).

Both field and fixed laboratory results indicated that Site 1 and Site 2 soils were significantly contaminated with DRO and GRO. One soil sample location in Site 2 had toluene, ethylbenzene, and total xylene concentrations above applicable ADEC cleanup criteria. No other organic compounds or metals were found above ADEC cleanup levels for soil.

A water sample was drawn from a test pit located in the northwest corner of Site 2. The sample was collected at 8 feet bgs. The report (Woodward-Clyde 1995) stated the horizon was at a perched water table. The water sample was analyzed for DRO; GRO; TPH; benzene, toluene, ethylbenzene, total xylenes (BTEX); methylene chloride; perchloroethylene (PCE); PCB; arsenic; cadmium; chromium and lead. DRO exceeded the ADEC cleanup criterion; however, all other analytes were either not detected or found at concentrations well below applicable cleanup levels.

Woodward-Clyde Site Inspection Recommendation: Removal and/or in-situ treatment of an estimated 5,500 cubic yards (yd^3) of petroleum contaminated soil (PCS) at Sites 1 and 2.

1996 Polarconsult Alaska, Inc. (Polarconsult) removed two 1,000-gallon underground storage tanks (USTs) from NOAA Site 3/TPA Site 3 – Inactive Gas Station, which is located south of Site 1 (Figure 3). One UST was used for diesel fuel storage, the other for gasoline storage. During tank removal Polarconsult found that the various piping connections between the supply lines, tanks and dispensers were improperly joined and probably contributed to constant leakage of diesel fuel and gasoline when in use (Polarconsult 1997b). As a result, the fueling shack, dispensing station and approximately 1,624 yd^3 of contaminated soil were removed. The leaking fuels likely contributed to DRO, GRO, and BETX contamination of Site 1, which is down-gradient. The Site 3 excavation was constrained to the north by the City's sewer system, which is installed along the south side of Site 1 and Site 2.

Cleanup actions have been completed for Site 3. NOAA received a determination of conditional closure for NOAA Site 3 from ADEC in 2005 (NOAA 2005a).

2001 Tetra Tech Environmental Management Inc. (TTEMI) advanced 23 soil borings in and around Site 1 and Site 2 using a hand-driven boring tool. A total of 56 samples were collected from the borings and analyzed for DRO, GRO, residual range organics (RRO), VOC, semivolatile organic compounds (SVOC) and metals (TTEMI 2003).

TTEMI's analytical results confirmed widespread DRO and GRO contamination within Sites 1 and 2; RRO, VOC, SVOC and metal concentrations were found to be below ADEC cleanup criteria at both sites.

TTEMI Recommendation: Excavation of an estimated 5,165 yd^3 of PCS from Sites 1 and 2.

2004 NOAA prepared a Corrective Action Plan (CAP) that included Site 1 and Site 2 (NOAA 2004a); the CAP was subsequently approved by ADEC. The CAP estimate for the volume of PCS at these sites was 10,250 yd^3, nearly double the estimates provided by previous investigations. NOAA's estimate was derived from a geographical information system (GIS) spatial modeling tool, with previous sample data and assumed contaminant depths as inputs.

Pursuant to PCS disposal discussions with NOAA, ADEC conducted a risk evaluation of the potential effects to human health from land farming PCS on St. George Island, and determined that all associated risks were well below all risk management standards (ADEC 2004a). NOAA developed a contaminant fate and transport model for PCS placed at the City's new landfill site using Site 1 and Site 2 investigation analytical results and landfill specific data as model parameters (NOAA 2004b). The model indicated that Sites 1 and 2 PCS could be landspread at the new landfill site (Figure 4) with minimal impact to the environment as long as the following model parameters of average contaminant concentrations and PCS stockpile depth were met:

Table 2-1

Contaminant Fate and Transport Model Parameters		
Contaminant	**Maximum Average Concentration**	**Maximum Height of PCS Stockpile Over Native Surface**
DRO	3,478 mg/kg	5.26 feet
GRO	193 mg/kg	5.26 feet
Benzene	0.05 mg/kg	5.26 feet
Toluene	1.53 mg/kg	5.26 feet
Ethylbenzene	0.48 mg/kg	5.26 feet
Xylenes	1.06 mg/kg	5.26 feet

NOAA proposed that the PCS be used beneficially as landfill berm construction material and municipal waste daily cover material; ADEC approved the proposal (NOAA 2004b; ADEC 2004b).

2005 NOAA prepared an Environmental Assessment (EA) to disclose potentially significant impacts to the human environment associated with the treatment and/or disposal of PCS on St. George Island (NOAA 2005b). The EA concluded that the preferred disposal alternative for PCS was to reuse it beneficially in the construction and operations of the City's landfill and on-island bioremediation by landspreading. NOAA and the City came to an agreement regarding use of the City's new landfill for landspreading and other beneficial uses of 20,000 yd^3 of NOAA's PCS (NOAA 2005c).

2006 NOAA and ADEC held a public meeting on St. George in April that was attended by concerned island residents and representatives from the City Council and St. George Tribal Office. The purpose of the public meeting was to explain the modeling and associated parameters that led to the EA conclusion that landspreading at the City landfill sites was the preferable alternative for PCS disposal. NOAA and ADEC presented the data, and answered all questions to the satisfaction of those present.

In June 2006, Charles M. Mobley & Associates (Mobley) excavated five trenches within Site 2 (Figure 5) to investigate whether significant archaeological deposits might be disturbed during PCS excavation at Sites 1 and 2 (Mobley 2006). Archaeological trenches were not excavated within Site 1 due to that site being highly disturbed by the tank farm construction in the 1950's, and by mounds of concrete rubble and dirt left behind as a result of tank farm deconstruction and City sewer system installation. Trench locations in Site 2 were chosen based on what local topography suggested as areas where the least amount of site filling and leveling would have been required during the drum storage area construction (see Appendix A, photographs 5 through 7). Artifacts found in the Site 2 trenches included glass and ceramic shards, seal bones, a steel hatchet head, and scraps of leather. Mobley's "Determination of Effect" stated that the artifacts found in the proposed excavation area could not be tied to specific elements of historic villagers' family life or further the scientific knowledge of island conservation or industry, and therefore where not archaeologically significant or contributing to the National Landmark. Mobley judged that NOAA's intent on excavating contaminated soil from Site 1 and Site 2 would have no effect on cultural resources at St. George (Mobley 2006). Mobley encountered obviously contaminated soil between two and three feet bgs in the two westernmost trenches (Figure 5).

2007 NOAA and the City came to an agreement for use of 11,500 yd^3 of NOAA PCS, in addition to the 20,000 yd^3 of PCS covered by the 2005 agreement, as landfill cover material, and municipal day cover (NOAA 2007).

Groundwater Investigations

2001-2003 TTEMI conducted a hydrogeological investigation of groundwater flow in the vicinity of the City (TTEMI 2005a). The investigation included definition of hydrostratigraphic units, determination of aquifer hydraulic parameters, and tidal influence studies. Data collected from the investigation, plus information about the City's municipal well field's installation and operations, were used as inputs for modeling the expected static groundwater flow directions, and dynamic flow direction under differing municipal well pump rate scenarios. The investigation found that static groundwater flow in the vicinity of Site 1 and Site 2 is toward the Bering Sea to the

north, and to a lesser degree, to the west along the shoreline (Figure 7). The investigation also concluded that, even under maximum pump rates for the City's municipal well system, contaminants in the groundwater in Site 1 and Site 2 would never be drawn south into the well field capture zone.

2001-2004 TTEMI conducted groundwater contaminant characterization investigations at several St. George Island TPA Sites including Site 1 and Site 2. In 2001, monitoring wells TPA1-MW-1 and TPA2-MW-1 were installed at Sites 1 and 2 (Figure 6). In 2003, monitoring wells TPA1-MW-2, TPA1-MW-3, TPA1-MW-4, TPA1-PER-1, TPA1-PER-2, TPA1-PER-3, and TPA2-MW-2 were installed. Groundwater sampling was conducted in 2001, 2002, August 2003, November 2003, January 2004 and May 2004; samples were analyzed for DRO, GRO, VOC, SVOC, TDS and metals with the following results (TTEMI 2005b):

- Free product was observed in wells TPA1-MW-1 and TPA1-MW-4;
- Dissolved-phase DRO and GRO above ADEC Table C criteria (ADEC 2006a) were found in wells TPA1-MW-2, TPA1-MW-3, and TPA2-MW-1;
- Benzene above the Table C criterion was found in wells TPA1-MW-1 and TPA1-MW-3 for all sample events when benzene was an analyte;
- All analytes were below ADEC criteria in well TPA2-MW-2, with one exception being a benzene result slightly above the ADEC criterion in November 2003;
- Samples were not drawn from wells TPA1-PER-1, TPA1-PER-2, and TPA1-PER-3 because they were inadvertently installed in perched water tables not representative of the area's main groundwater aquifer.
- SVOC and metal concentrations were either non-detectable or at levels well below ADEC criteria with the exception of naphthalene which was detected in 2001 in monitoring well TPA1-MW-1. In their 2005 report, TTEMI did not include 2001 dissolved contaminant data from TPA1-MW-1 due to the presence of free product in this well.
- TDS concentrations in Site 1 and Site 2 were found above the ADEC water quality criterion. The likely cause of elevated TDS concentrations is the intrusion of Bering Sea salt water into the fresh water aquifer along the waterfront.

2003 TTEMI conducted an investigation of free product in the vicinity of Site 1. TTEMI attempted to use hydrocarbon bail-down testing coupled with empirical methods to calculate "actual" product thickness on the water table; however, tidal influences prevented this approach (TTEMI 2004). Therefore, the "apparent" (observed in-well) product thickness and assumed aquifer hydraulic parameters of porosity and hydrocarbon saturation were used to estimate free product volume. Studies have shown that observed product thickness in wells can be greater than the actual product thickness in the surrounding aquifer due to capillary action (Testa and Paczkowski 1989). TTEMI estimated the maximum volume of free product in the vicinity of Site 1 to be from 5,842 gallons to 16,754 gallons (TTEMI 2004); however, this is likely an overestimate due to the use of observed product thickness rather than empirically derived "actual" product thickness in the volume calculations.

2004 SLR Alaska (SLR) investigated free product in the vicinity of Site 1. SLR employed a different methodology than TTEMI for calculating actual product thickness, i.e. removing free product and measuring product recovery in test wells over a period of several hours (SLR 2005). SLR also employed well inflow testing to determine aquifer hydraulic parameters. SLR estimated that, based on calculated "actual" product thickness and measured hydraulic parameters, the volume of free product in the vicinity of Site 1 to be 814 gallons.

2005 NOAA produced a long-term groundwater monitoring plan, concurred in by ADEC, that designated four wells in the vicinity of Site 1 and Site 2 that would be monitored semi-annually for contaminant concentration trends and the presence of free product (NOAA 2005d). Monitoring wells TPA1-MW-2, TPA1-MW-3, TPA2-MW-1 and TPA2-MW-2, labeled "plume monitoring wells" in Figure 6, were chosen because previous groundwater investigations had not found free product in these wells. Also, their locations are down-gradient from the estimated location of the potential free product plume (TTEMI 2005b), and presumably would be in the path of any plume movement should it occur. Per the plan, groundwater monitoring will continue for five years after commencement. At the end of the five year period, NOAA and ADEC will evaluate whether continued monitoring is warranted.

2006 In May, NOAA with SLR consulting, excavated two trenches in the northwest area of Site 1 to measure depth to the water table bgs; measure the thickness of free product floating on the water table; measure and sample the "smear zone" at the soil interface between the free product and water table; and determine if any safety and/or health related problems, related to free product, would be encountered during contaminated soil removal throughout the site. SLR planned on using direct observation of the free product for refining product extraction system designs (SLR 2007).

In both trenches (Figure 5), the water table was encountered approximately 15 feet bgs; this depth to water table matched the water table depth indicated on logs from past well installations in this area (TTEMI 2005b). However, a discernable free product layer and corresponding smear zone were not observed in either trench (see Appendix A, photographs 1 through 4). A dark layer of odorous contaminated soil was observed in both trenches starting at about 1 foot bgs and continuing to the bottom of the trenches. Petroleum sheen was observed on the groundwater; however, the sheen may have been attributable to surface water from melting snow running over the contaminated sidewalls of the trenches. Photoionization detector (PID) readings at the top of the excavation indicated very low VOC levels; lower explosive limit (LEL) readings indicated explosive gas and vapor concentrations of 0 percent.

In June 2006, NOAA decommissioned monitoring wells TPA1-PER-1, TPA1-PER-2, TPA1-PER-3, and TPA1-MW-1 in preparation for PCS excavation later in the year. These wells were not being used for long-term groundwater monitoring (NOAA 2005d), and were located in the path of PCS removal.

In October and December 2006, Tanaq Services, Inc. (TSI) sampled four plume sentinel monitoring wells in the vicinity of Sites 1 and 2 (Figure 6) per the requirements of NOAA's long-term groundwater monitoring plan (NOAA 2005d). Samples from wells TPA1-MW-2, TPA1-MW-3, TPA2-MW-1 and TPA2-MW-2 were analyzed for GRO, DRO, benzene, the contaminants found in concentrations above ADEC cleanup criteria in previous Sites 1 and 2 groundwater investigations. PCE was also analyzed for because it had been found in previous investigations in groundwater in the vicinity of TPA Site 8 – Active Power Plant. TPA Site 8 is located south of Sites 1 and 2. Unfortunately, due to sample container freezing and breakage during transport, DRO analytical results from this sampling round were rejected (TSI 2007a). GRO, benzene and PCE concentration trends did not appear to change significantly (see Table 2.2 below). Free product was not observed in any of the wells.

2007 In May, TSI again sampled four plume monitoring wells in the vicinity of Sites 1 and 2. As in 2006, wells TPA1-MW-2, TPA1-MW-3, TPA2-MW-1 and TPA2-MW-2 were analyzed for GRO, DRO, benzene, and PCE. Analytical results indicate relatively no concentration trend changes for benzene and PCE (TSI 2007b). GRO concentration trends did not change for wells TPA1-MW-2, TPA2-MW-1, and TPA2-MW-2, but indicate an upswing for well TPA1-MW-3. DRO concentrations indicate an upswing for all four wells. Sites 1 and 2 PCS excavation conducted in Fall 2006 in areas near or adjacent to the wells sampled likely influenced groundwater contaminant concentrations. Groundwater monitoring will continue through spring 2011, at a minimum, with contaminant concentration trends monitored and evaluated throughout this time period. Table 2-2 provides a summary of analytical results for the oceanfront sites sentinel wells from August 2003 through May 2007.

Table 2-2 Sentinel Well Monitoring Results

Analyte	ADEC Cleanup Level[a,b]	Sample Identification and Sample Date											
		TPA1-MW-2						TPA1-MW-3					
		Aug-03	Nov-03	Jan-04	May-04	Oct-06	May-07	Aug-03	Nov-03	Jan-04	May-04	Oct-06	May-07
GRO	1,300	100	250U	230	200	510	290	1,200	710	2,300	2,100	3,100	4,800
DRO	1,500	2,100	1,900	2,400	2,700	R	5,400	3,700	4,200	6,800	5,700	R	7,400
Benzene	5	1U	1U	1U	1U	1U	1U	50	220	260	220	94	59
PCE	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U

Analyte	ADEC Cleanup Level[a,b]	Sample Identification and Sample Date											
		TPA2-MW-1						TPA2-MW-2					
		Aug-03	Nov-03	Jan-04	May-04	Oct-06	May-07	Aug-03	Nov-03	Jan-04	May-04	Oct-06	May-07
GRO	1,300	50U	50 U	160	50 U	100U	51	110	110	79	92	120	180
DRO	1,500	360J	5,600	1,800	200	R	990	800	640	630	670	R	1,600
Benzene	5	1U	8	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
PCE	5	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U

Notes:

a Cleanup levels shown are from Title 18 of the Alaska Administrative Code, Section 75.345, Table C (Table C).
b Cleanup levels and analytical results expressed as micrograms/liter.
Shaded Indicates a result that exceeds the Table C cleanup level.
ADEC State of Alaska Department of Environmental Conservation
GRO Gasoline Range Organics
DRO Diesel Range Organics
PCE Perchloroethylene
J The quantitation is an estimate
R Analytical result rejected due to sample container freezing and breaking during transport.
U The analyte was analyzed for but was not detected; the associated number is the reporting limit.

3.0 REMOVAL METHODOLOGY

The cleanup objective for Site 1 and Site 2 is the removal of all PCS, to the extent practicable. The CAP (NOAA 2004a) specifies that ADEC Method Two (ADEC 2006a) will be used to establish the cleanup criteria for these sites. Past investigations identified DRO, GRO, and to a lesser extent, toluene, ethylbenzene, and xylenes as the soil contaminants at these sites. DRO, GRO and benzene are known groundwater contaminants in this area. Use of ADEC Method Two requires ensuring that select polynuclear aromatic hydrocarbon (PAH) concentrations meet cleanup criteria; although, these contaminants were not found at the sites. Table 3-1 presents the most stringent cleanup levels for the contaminants of concern at Sites 1 and 2, based on Method Two tables B1 and B2 "Under 40 Inch Zone" criteria.

Table 3-1 ADEC Method Two Cleanup Levels for Soil at Site 1 and Site 2

Analysis Type	Laboratory Method	Cleanup Level, mg/kg
GRO[a]	AK-101	300
DRO[a]	AK-102	250
RRO[a]	AK-103	10,000
Acenaphthene[a]	EPA 8270C	210
Anthracene[a]	EPA 8270C	4,300
Benzo(a)anthracene[a]	EPA 8270C	6
Benzo(b)fluoranthene[b]	EPA 8270C	11
Benzo(k)fluoranthene[b]	EPA 8270C	110
Benzo(a)pyrene[b]	EPA 8270C	1
Chrysene[a]	EPA 8270C	620
Dibenzo(a,h)anthracene[b]	EPA 8270C	1
Fluorene[a]	EPA 8270C	270
Indeno(1,2,3-c,d)pyrene[b]	EPA 8270C	11
Naphthalene[a]	EPA 8270C	43
Pyrene[a]	EPA 8270C	1,500

Analysis Type	Laboratory Method	Cleanup Level, mg/kg
Benzene[a]	AK-101	0.5c
Toluene[a]	AK-101	5.4
Ethylbenzene[a]	AK-101	5.5
Total Xylenes[a]	AK-101	78

a Cleanup level based on Under 40 Inch Zone, Migration to Groundwater Maximum Allowable Concentration.
b Cleanup level based on Under 40 Inch Zone, Ingestion Maximum Allowable Concentration.
c 1991 cleanup level for benzene which NOAA is allowed to use per Two Party Agreement requirements (see Section 1.0).

The presence of the City's sewer system limited PCS removal on the south sides of Sites 1 and 2, and on the west end of Site 1. The system includes sewer collection piping, settling tanks, and discharge piping that leads to a Bering Sea outfall (Figure 8). To prevent damage by heavy equipment, a five foot set-back was established on the north side of the system within which equipment was excluded as much as possible. From the edge of the five foot set-back, PCS removal was conducted at an approximate 1 to 1 slope from the excavation surface to its bottom to prevent undercutting the system during excavation (see Appendix A, photograph 24).

Sites 1 and 2 abut the Bering Sea along their north sides. To address the danger of storm surge causing site flooding and subsequent release of contaminants, an approximate ten-foot buffer zone was established between the excavation and the beach line.

PCS removal (1) did not continue deeper than 15 ft bgs (depth of hazardous substance ingestion and inhalation protection), (2) was stopped approximately one foot above the water table, and (3) was stopped if equipment refusal was encountered. Equipment refusal is defined as the presence of consolidated soil and rock which causes the excavator bucket to release water vapor or smoke due to friction. Refusal was encountered from 7.5 to 13 feet bgs in the western corner of the Site 1 excavation (Figure 10); however, throughout most of the excavation, PCS removal depth was determined by either reaching the CAP cleanup goals, or encountering the water table at about 15 feet bgs.

Contaminated soil within the sites was generally discernable visually and by odor. PCS excavation started in the southwest corner of Site 1, and continued east through Site 1 and Site 2 until excavation limits (City sewer system, Bering Sea buffer, or depth restrictions) were reached or the cleanup goal obtained. At the start of the excavation, NOAA attempted to use Thin Layer Chromatography (TLC) for field screening. However, the TLC's results indicated low DRO concentrations which were not consistent with the obviously contaminated soil samples. Additionally, the DRO dye patterns present on the TLC development plates did not resemble dye patterns observed in previous, successful TLC projects. Fixed laboratory analytical results confirmed that the TLC results were indicating falsely low DRO concentrations. The cause of the false low results was not positively identified. TLC analysis is based on the soil DRO concentration, and one plausible explanation is that the presence of weathered gasoline and/or BTEX interfered with the TLC analysis. Throughout the excavation work, NOAA's contractor used PID head-space analysis for field screening, as allowed for by the CAP. Due to the presence of gasoline and BTEX, the PID head-space analysis proved reliable for providing a relative measure of soil contamination levels. Therefore, site excavation was guided by visual and olfactory indications, backed up by field screening using PID head-space analysis. TLC was dropped as a field screening method for Sites 1 and 2.

4.0 FIELD ACTIVITIES

In August 2006 NOAA awarded contract number AB133C-06-NC-1723 to ChemTrack LLC (ChemTrack) for the excavation of PCS from Sites 1 and 2. On September 5, 2006 ChemTrack and NOAA mobilized to St. George Island to start the project; the project was completed November 18, 2006. The following sections summarize project field activities. Appendix B contains copies of the contract daily quality control reports which provide details on the daily progress, problems encountered and decisions made during the course of the project. Appendix C contains copies of contractor field logs which document day to day decision making, field conditions, sample information, etc.

4.1 CONTRACTORS AND EQUIPMENT

NOAA provided three Kenworth 14-cubic yard dump trucks, a Caterpillar D5 bulldozer, a John Deere 624J loader, and a Caterpillar 320B excavator. NOAA also provided survey support using real-time kinematic global positioning system (GPS) instruments. ChemTrack, the prime contractor, provided the project manager, crew superintendent, heavy equipment operator/mechanic, and an environmental technician. ChemTrack also hired local labor as equipment operators, truck drivers, and flaggers. Subcontractors to ChemTrack included the St. George Tanaq Corporation, which supplied a field office, a Caterpillar 325 excavator, a crew pickup truck and the source for excavation backfill; the City, which supplied a crew break area within the Public Safety Building, road grading/maintenance services for the PCS haul route, and two dump trucks with drivers; and the island's Traditional Council, which provided a second pickup. Laboratory analytical services were subcontracted to Test America - Analytical Testing Corporation (Beaverton, Oregon) for all confirmation and characterization samples; and Analytica International, Inc. (Anchorage, AK) for quick turnaround analysis for evaluating TLC results.

4.2 PCS EXCAVATION

September 5 through September 12, 2006. Preparations were made for the excavation of PCS and moving it to the new City landfill for use as municipal waste day-cover. ChemTrack's project manager, a certified trainer, provided 8-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) refresher training to island residents who had already completed the 40-hour HAZWOPER course and were interested in working on the project. Ten island residents attended the training; eight were subsequently hired by ChemTrack. Concrete AST saddles and large rocks were removed from rubble piles in Site 1 and placed as riprap along the Bering Sea waterfront (Appendix A, photographs 8 through 16). A temporary access road was constructed with 720 yd^3 of clean material from the east end of Site 2 to the west end of Site 1. The access road allowed dump trucks to be loaded with PCS without having to drive across contaminated soil, and was removed with the PCS as the excavation progressed from west to east (Appendix A, photographs 18 and 19). Two access ramps were constructed with 660 yd^3 of clean material for dump truck access into the new City landfill's interior for building PCS day-cover stockpiles per the agreement between NOAA and the City (NOAA 2005c). The access ramps (Appendix A, Photograph 53) will be left in place after completion of all island PCS excavation for use by the City when moving day cover over municipal waste. Fencing was installed around the excavation site. Equipment maintenance and repair was performed during the preparation period, and was continued throughout the project.

September 12 through October 18, 2006. Approximately 14,280 yd^3 of PCS and 720 yd^3 of temporary access road material were excavated from Sites 1 and 2. Excavated soil was transported to the City's new landfill (Figure 4) where it was stockpiled for use as municipal waste day-cover (Appendix A, photograph 54). PCS characterization samples were collected daily, and day-cover stockpile heights were kept at 5 feet or less to ensure adherence to contaminant fate and transport model parameters (NOAA 2004b). Characterization samples were also collected from NOAA's clean backfill stockpile which was mined in 2005 from the island's red scoria borrow pit (Figure 1). Scrap metal and debris collected during excavation were either disposed of at the new City landfill, or placed at the City scrap metal collection area near the old City landfill.

PCS removal generally proceeded from the west end of Site 1 to the east end of Site 2 in one continuous excavation. Soil contamination was easily discernable by sight and odor. PCS was removed laterally to the south until the City sewer system set-back was reached; to the north until the Bering Sea buffer was reached; and to the west until excavation was no longer practicable due to the convergence of the City sewer system, the Bering Sea buffer, and beach area slopes which limited excavator access (Figure 9). Excavation to the east proceeded until field screening indicated that cleanup goals had likely been met. Vertically, PCS removal was limited by reaching refusal from 7.5 to 13 feet bgs in the western end of Site 1, and reaching the water table at approximately 15 feet bgs in the remainder of the excavation. The excavation bottom was maintained about one foot above the water table by periodically digging test pits to track the water table elevation. The Bering Sea buffer was erroneously breached in one location due to miscommunication between the ChemTrack project manager and excavator operator (Appendix A, photograph 31). The breach was backfilled immediately with concrete rubble as a temporary breakwater in the event of storm surge. On October 14, the excavator was moved from the east end of Site 2 to the west end of Site 1 to complete excavation in an area where the City sewer system, Bering Sea buffer and

increasingly shallow hard basalt converged (Figure 10; Appendix A, photograph 45). The final excavation bottom for Sites 1 and 2 had an area of approximately 24,468 square feet.

ChemTrack used PID head-space analysis for field screening throughout the PCS removal project. The PID proved valuable in qualitative assessment of soil contaminant levels with readings varying between 0 and over 500 parts per million (ppm). Soil samples were collected for fixed laboratory confirmation analysis based on highest PID readings. At the beginning of the Site 1 excavation, NOAA's TLC results indicated DRO concentrations that were often below 250 milligrams/kilogram (mg/kg). The project team considered these TLC results suspiciously low judging by the odorous and discolored soil samples. The higher PID readings were indicative of volatile compounds such as gasoline and BTEX, known contaminants at the sites. NOAA's field TLC measures only DRO concentration; therefore, the team thought it possible that the site was primarily contaminated with gasoline and BTEX rather than diesel fuel as past investigations had indicated. Soil samples were sent to a fixed-laboratory with a quick analysis turn-around requested; the resulting analyses confirmed DRO concentrations that were much higher than what TLC had indicated for the same sample locations. Also, site PCS samples were spiked with known concentrations of diesel fuel (1,000 and 5,000 mg/kg) and analyzed by TLC. The spiked TLC analysis results returned DRO concentrations that were falsely low. In August 2006, at another St. George Island site contaminated with DRO, TLC had provided results with good fixed-laboratory analysis correlation (PSD 2007). The project team concluded that matrix or contaminant interference specific to Sites 1 and 2 was the cause for the consistently low TLC results for DRO. The project team consulted with commercial laboratory and NOAA chemists, who reviewed confirmation sample chromatograms for indications of the presence of chemicals that could interfere with the TLC process. Ultimately, the reason for the poor TLC performance was not positively identified. Weathered gasoline, BTEX, or possibly overflows and leakage from the adjacent City sewer system may have interfered with the process of TLC plate development. TLC analysis was dropped as the primary field screening method for the Sites 1 and 2. PID head-space analysis, olfactory and visual indications were satisfactorily used to direct excavation activity and determine confirmation sampling locations.

The PCS was odorous during excavation from Sites 1 and 2, and when stockpiling it at the City landfill for use as day cover. The odor strength varied from day to day depending on where it was excavated from. BTEX are known contaminants at the sites; of these, benzene has the most stringent Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL). The project team used a Draeger air sampler and a Gas Alert Micro 5 PID to measure the air concentration of BTEX in the work zones, conservatively assuming any reading was due solely to benzene. The OSHA action level for benzene is 0.5 ppm; concentrations above 0.5 ppm necessitate worksite air monitoring. The OSHA PEL for benzene is 1.0 ppm, time-weighted average (TWA) over an eight hour work day. Air readings at the excavation sites never exceeded the OSHA action level of 0.5 ppm. On September 23, 2007, the BTEX concentration at the landfill measured 0.5 to 0.7 ppm. As a result, for the remainder of the Sites 1 and 2 excavations, air sampling was performed four times per day at the landfill to ensure the benzene PEL was not exceeded. The ChemTrack project manager, project superintendent, and heavy equipment operator/mechanic were qualified to wear respirators in the event the PEL was exceeded; however, no local operators were qualified. Subsequently, a local hire was flown to Anchorage for medical clearance and fit testing for respirator use. Fortunately, all air readings after September 23, 2007 were at background concentrations and did not exceed the OSHA action level.

The excavation bottom was maintained approximately one foot above the area water table to avoid water saturated soils and potentially highly contaminated "smear zone" PCS. Depth to groundwater was checked periodically during excavation by digging test pits into the water table. Direct observation of soil and groundwater conditions in these test pits matched those seen during exploratory trenching in May 2006 (see Section 2.6). The observations support the absence of a discernable "smear zone" and petroleum on the groundwater as a sheen (Appendix A, photographs 25, 32 through 34) with no free-phase product layer amendable to extraction.

On the west end of Site 1, a 4-inch diameter clay pipe running through the excavation was uncovered (Appendix A, photograph 41) about four feet bgs. The ends of the pipe were not found; however, judging by the angle of the of the pipe run, it is possible the pipe originated from a sump in the floor of a vehicle maintenance pit within the old machine shop located just south of the Site 1. As a precautionary measure, and with permission by the City, the sump was sealed with concrete.

October 19 through October 23, 2006. Approximately 1,200 yd^3 of PCS were removed from NOAA Site 29, the Port Fuel Supply Line – East (Figure 3). PCS characterization and confirmation samples were taken. Field screening was accomplished utilizing PID head-space analysis. Deteriorating weather conditions raised project concerns about the ability to backfill excavations prior to haul routes becoming unusable due to snow and freezing conditions. Consequently, PCS removal was suspended at Site 29, and was resumed during the 2007 field season. NOAA will provide a separate Corrective Action Report (CAR) for Site 29.

October 24 through November 9, 2006. Sites 1, 2, and 29 were backfilled with clean scoria. A ramp was built into the bottom of the Site 1/2 excavation with clean material to allow dump truck access (Appendix A, photographs 46 and 47). Two additional dump trucks were leased from the City to expedite backfilling the excavations. Backfill was placed in lifts and compacted with NOAA's D5 bulldozer. Approximately 10,910 yd^3 of clean backfill was placed into Sites 1 and 2. The discrepancy between the volume of PCS removed (14,280 yd^3) and the backfill that replaced it (10,910 yd^3) is mainly due to the fact that the original ground surface included dirt mounds in Site 1 and an elevated dirt "bench" behind a retaining wall around 3 sides of Site 2 (Appendix A, photographs 10 and 17). These features were removed and the final surface contours left flat.

June 22 through June 26, 2007. Final site contouring and old debris removal from around the perimeter of the excavation were completed. Approximately 450 pounds of fertilizer and 40 lbs of native grass seed mix were applied to the site; fertilizer and seed were then tilled in using a fence section towed behind an ATV (Appendix A, photographs 51 and 52).

4.3 INVESTIGATION-DERIVED WASTE MANAGEMENT

IDW generated during this corrective action included:

- Used nitrile sampling gloves, disposable sampling tools and plastic bags; disposed of at the local municipal landfill.
- Soil not extracted during TLC screening analysis was placed on the day-cover stockpile at the City's new landfill.
- Spent methylene chloride and small vials of soil that had been extracted using methylene chloride for TLC screening analyses were containerized and stored for future off-island disposal.
- Silica gel plates that had been spotted with methylene chloride during TLC screening sample analyses were containerized and stored for future off-island disposal.

4.4 SITE SURVEYING

Sample point locations, excavation extents and other site features were surveyed by NOAA using a survey-grade Trimble Total Station 5700® differential GPS. The Trimble Total Station 5700® is a GPS and GIS data collection and mapping system that combines a high performance, dual-channel GPS receiver and antenna with a local base station and real-time differential correction system to provide survey-grade accuracy in real time. Horizontal positions of surveyed locations were determined to within plus or minus 1 centimeter (cm), and elevations were measured within plus or minus 2 cm. GPS data were collected in latitude and longitude referenced to the World Geodetic System (WGS) 84 Datum, Universal Transverse Mercator Zone 2 coordinate system in meters.

5.0 SAMPLING METHODS

PID head-space analysis, TLC field screening and sample collection for fixed laboratory analysis were conducted consistent with NOAA's Master Quality Assurance Plan (QAP; NOAA 2006). PID head-space analysis, performed by ChemTrack, was the primary field screening method used during excavation of Sites 1 and 2. Confirmation samples were collected from locations with the highest PID readings and submitted for fixed laboratory analyses. Characterization samples of the excavated PCS and backfill materials were also collected and submitted for fixed laboratory analysis.

The following subsections provide an overview of sampling methods.

5.1 PID HEAD-SPACE ANALYIS

Photoionizing detectors respond to organic vapors in air and provide a measurement of vapor concentration relative to a calibration standard. The following PID procedure, combined with visual, olfactory, and knowledge of the site's contamination history, were used for excavation decisions and determination of confirmation sample locations:

- Collect a soil sample from a freshly uncovered location.
- Fill a clean sealable plastic bag 1/3 full with the sample to be analyzed, quickly seal the bag.
- Allow headspace vapors to develop for about 10 minutes, agitate bag contents.
- Take a PID reading by opening the bag minimally and inserting the instrument probe midway into the bag headspace while avoiding uptake of soil particles and moisture. Record the PID reading in the field notebook.
- If the PID reading is 100 ppm or greater and olfactory/visual clues indicate PCS, then the sample location is considered contaminated for decision making purposes. Contamination is likely gasoline or other volatile substance as this reading was taken with a "cold" sample.
- If the PID reading is under 100 ppm, warm the bag up by taking indoors or placing in a vehicle with defrost on; repeat taking and recording the PID reading. If the PID reading increased for the warmed sample, the sample location is considered potentially contaminated with DRO. If the PID reading remains low, then the sample location is considered likely uncontaminated.
- The locations with the highest PID readings were selected for confirmation sample collection within an excavated area.

5.2 CONFIRMATION SAMPLES

ChemTrack collected confirmation samples for off-site laboratory analysis to document the DRO, GRO, RRO, BTEX and PAH concentrations remaining in the site's soil after completion of remedial activities. Per the CAP, the number of PAH sample analyses was 10% that of DRO/GRO. Confirmation samples were collected according to the following procedure. First, a minimum of six inches of soil was removed from the sampling location just prior to sample collection. Soil was placed directly from the sampling location into 4-ounce glass jars. For BTEX and GRO analyses, the samples were field preserved with methanol. For DRO, RRO, and PAH analyses, samples were homogenized prior to being place in the jars. Soil samples were then placed in coolers with gel ice packs. Confirmation samples were packaged and shipped to off-site laboratories for the following analyses:

- GRO/BTEX by ADEC Method AK101/EPA Method 8021B
- DRO by ADEC Method AK102
- RRO by ADEC Method AK103
- PAHs by EPA SW-846 Method 8270C Selected Ion Monitoring

Seventy-five confirmation samples plus quality assurance samples, i.e. matrix spike/matrix spike duplicates (MS/MSD) and field duplicates, were submitted for fixed laboratory analyses from the Site 1 and 2 excavation (Figure 10). Analytical results are summarized in Section 6.0; quality assurance results are discussed in Section 7.0.

5.3 PCS CHARACTERIZATION

A grab sample was taken daily, at random, from a PCS load being hauled to the City landfill site. These samples were analyzed for DRO, GRO, RRO, BTEX and PAH (at rate of 10% DRO/GRO analyses) at a fixed laboratory to characterize the PCS placed at the landfill, and to document that contaminant concentrations did not exceed fate and transport model parameters for the use of PCS as day cover (see Section 2.6, Table 2.1).

Thirty-two characterization samples, plus quality assurance samples, were submitted for analyses. Analytical results, summarized in Section 6.0, indicate that model parameters were met. Quality assurance results are discussed in Section 7.0.

5.4 BACKFILL CHARACTERIZATION

In 2005, NOAA mined and stockpiled approximately 15,500 yd^3 of scoria at the island borrow pit (Figure 1). To confirm the scoria backfill material was uncontaminated, Chemtrack gathered three samples from random locations, 18 inch below the stockpile surface. The samples were sent to a fixed laboratory and analyzed for DRO, GRO, RRO, BTEX and total lead. Analytical results, summarized in Section 6.0, indicate analyte concentrations were either non-detect or well below ADEC cleanup standards. 670 yd^3 of backfill was also obtained from decommissioned groundwater monitoring well access pads located at various TPA sites around the City. Monitoring well pad material was screened by PID head-space analysis, and one sample was sent to a fixed laboratory. Table 6.3 provides backfill characterization analytical results.

5.5 THIN-LAYER CHROMATOGRAPHY SCREENING SAMPLES

Due to unexplained false-negative results, TLC was not used as a field screening method for directing excavation activity and determining the location of confirmation samples. However, the following summarizes the TLC methodology used for those field samples on which TLC was attempted.

TLC consists of solid-liquid chromatography for the semi-quantitative analysis of DRO in soil. Chemtrack collected TLC screening samples from the excavation, placing the soil into a clean, sealable plastic bag. Each sample was homogenized and kept cool until it could be processed at the NOAA field laboratory.

The TLC procedure involves solvent extraction of DRO from soil samples. Measured portions of the extracts are deposited onto a glass plate that is coated with a porous medium. Commercially prepared diesel standards of varying concentrations are also spotted on the plate. By using standards of diesel concentrations equal to, above, and below the ADEC DRO cleanup criterion of 250 mg/kg, the analyst is able to determine whether the excavation soil sample contains concentrations above or below the cleanup level; in addition, the analyst is able to determine the approximate concentration of DRO in each sample.

6.0 ANALYTICAL RESULTS

The following subsections summarize the fixed-laboratory analytical results for samples collected to document contaminant levels remaining at the excavation site, contaminant levels in excavation backfill material and contaminant levels in PCS stockpiled for day cover at the City landfill. Appendix D provides the analytical data packages for the fixed-laboratory analyses.

6.1 EXCAVATION CONFIRMATION SAMPLES

Analytical results for confirmation samples taken from the Site 1 and 2 excavation indicate that PCS remains only in areas precluded from further excavation. These areas include the south excavation wall near the City sewer system; in the western half of the bottom of the excavation, between 11.5 and 14 feet bgs; and in the west/northwest end of the excavation along the Bearing Sea buffer and near monitoring well TPA1-MW-3. Figure 10 provides the final excavation extents, confirmation sample locations, and color coding indicating whether analytical results for each sample location were above or below ADEC cleanup criteria. Table 6.1 provides a summary of analytical results for DRO, GRO, RRO, and BTEX. Table 6.1 also provides the PID reading for each sample location. Per the CAP, samples were analyzed for PAH at 10% of the number of DRO/GRO analyses.

With the exception of one sample location, remaining PCS is contaminated only with DRO above the ADEC cleanup criterion. Sample location SG01-CS-006-140 is contaminated with DRO, GRO, benzene, ethylbenzene, and total xylenes above applicable ADEC cleanup criteria (Figure 10 and Table 6-1). All PAH analytical results were non-detect or well below cleanup criteria (see Table 3.1 and Appendix D).

Table 6-1 Confirmation Samples Analytical Results

Sample ID	**Depth** ft bgs	**DRO** mg/kg	**GRO** mg/kg	**PID** ppm	**Benzene** mg/kg	**Toluene** mg/kg	**Ethylben-zene** mg/kg	**Xylenes** mg/kg	**RRO** mg/kg
Cleanup Level	**-**	**250**	**300**	**-**	**0.5**	**5.4**	**5.5**	**78**	**10,000**
SG01-CS-001-075	7.5	2050	241	111	ND<0.0573	0.197	1.73	2.49	ND<27.4
SG01-CS-002-065	6.5	3190	229	176	0.0513	0.233	2.46	4.38	ND<56.4
CS-002-Field Dup	6.5	2770	244	176	ND<0.0528	0.206	2.32	4.05	ND<56.9
SG01-CS-003-095	9.5	1750	126	71	0.0673	0.227	1.60	2.08	ND<27.4
SG01-CS-004-080	8	ND<13.5	ND<1.79	18	ND<0.0112	ND<0.0223	ND<0.0223	ND<0.0447	ND<27.1
SG01-CS-005-050	5	2770	209	179	ND<0.0459	0.175	2.61	5.80	56.5
SG01-CS-006-140	14	3420	398	513	0.522	1.33	20.6	78.8	ND<55.8
SG01-CS-007-130	13	1180	232	149	0.206	0.892	3.20	4.17	ND<27.8
SG01-CS-008-120	12	889	157	171	0.0616	0.244	1.58	2.36	ND<27.0
SG01-CS-009-130	13	483	29.2	113	ND<0.0106	0.0347	0.315	0.479	ND<28.5
SG01-CS-010-135	13.5	ND<13.4	ND<1.19	9	ND<0.00744	ND<0.0149	ND<0.0149	ND<0.0297	ND<26.8
SG01-CS-011-085	8.5	ND<13.3	ND<1.39	7	ND<0.00869	ND<0.0174	ND<0.0174	ND<0.0348	ND<26.6
SG01-CS-012-080	8	2900	198	141	ND<0.103	2.00	ND<0.205	4.12	ND<27.4
CS-012- Field Dup	8	3030	205	141	ND<0.102	2.10	ND<0.204	4.49	ND<26.8
SG01-CS-013-100	10	ND<13.8	ND<1.69	6	ND<0.0105	ND<0.0211	ND<0.0211	ND<0.0421	ND<27.6
SG01-CS-014-120	12	3020	235	208	ND<0.110	2.36	0.923	3.12	ND<27.2
SG01-CS-015-085	8.5	2580	15.3	40	ND<0.0125	ND<0.0250	ND<0.0250	0.169	ND<27.9
SG01-CS-016-050	5	15.0	ND<1.82	11	ND<0.0114	ND<0.0227	ND<0.0227	ND<0.0454	ND<29.1
SG01-CS-017-140	14	211	9.89	80	ND<0.00718	0.0932	ND<0.0144	0.115	ND<26.8
SG01-CS-018-140	14	ND<13.6	ND<1.05	17	ND<0.00659	ND<0.0132	ND<0.0132	ND<0.0264	ND<27.3
SG01-CS-019-140	14	1290	21.3	280	ND<0.00764	0.266	0.0193	0.412	ND<28.7
CS-019-MS/MSD	14	1380	18.0	280	ND<0.00665	0.244	0.0178	0.374	ND<28.2
SG01-CS-020-140	14	576	24.8	255	0.00945	0.260	0.0225	0.833	ND<28.8
SG01-CS-021-085	8.5	2340	57.6	77	ND<0.0115	0.256	0.0244	0.750	36.2
SG01-CS-022-100	10	ND<14.2	ND<2.30	8	ND<0.0144	ND<0.0288	ND<0.0288	ND<0.0576	ND<28.3
SG01-CS-023-065	6.5	127	2.36	33	ND<0.0135	ND<0.0270	ND<0.0270	ND<0.0539	ND<27.8
CS-023- Field Dup	6.5	49.6	3.52	33	ND<0.0114	ND<0.0228	ND<0.0228	ND<0.0455	ND<28.3
SG01-CS-024-100	10	106	10.4	52	ND<0.0130	0.0814	ND<0.0259	0.136	40.3
SG01-CS-025-055	5.5	ND<14.2	ND<1.80	12	ND<0.0113	ND<0.0225	ND<0.0225	ND<0.0450	ND<28.4
SG01-CS-026-095	9.5	ND<14.3	ND<1.61	9	ND<0.0101	ND<0.0202	ND<0.0202	ND<0.0403	ND<28.6
SG01-CS-027-140	14	ND<14.0	ND<1.44	18	ND<0.00899	ND<0.0180	ND<0.0180	ND<0.0360	ND<27.9
SG01-CS-028-130	13	2410	10.1	102	ND<0.00959	0.0916	ND<0.0192	0.225	62.7
SG01-CS-029-140	14	37.6	3.32	14	ND<0.00924	0.0230	ND<0.0185	0.0462	ND<27.0
SG01-CS-030-140	14	91.4	3.00	15	ND<0.00912	0.0205	ND<0.0182	0.0459	ND<28.2
SG01-CS-031-020	2	62.5	ND<2.25	6	ND<0.0140	ND<0.0281	ND<0.0281	ND<0.0562	ND<32.8
SG01-CS-032-015	1.5	ND<15.7	ND<2.50	5	ND<0.0157	ND<0.0313	ND<0.0313	ND<0.0626	ND<31.4
CS-032- Field Dup	1.5	ND<16.2	ND<3.74	5	ND<0.0234	ND<0.0468	ND<0.0468	ND<0.0935	ND<32.3
SG01-CS-033-025	2.5	ND<16.1	ND<2.41	8	ND<0.0151	ND<0.0301	ND<0.0301	ND<0.0602	ND<32.2
SG01-CS-034-070	7	ND<15.6	ND<2.18	5	ND<0.0136	ND<0.0272	ND<0.0272	ND<0.0545	ND<31.2
SG01-CS-035-040	4	ND<15.7	ND<2.05	4	ND<0.0128	ND<0.0256	ND<0.0256	ND<0.0512	ND<31.4
SG01-CS-036-080	8	ND<18.1	ND<2.64	5	ND<0.0165	ND<0.0330	ND<0.0330	ND<0.0660	ND<36.3

Sample ID	Depth ft bgs	DRO mg/kg	GRO mg/kg	PID ppm	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	RRO mg/kg
Cleanup Level	**-**	**250**	**300**	**-**	**0.5**	**5.4**	**5.5**	**78**	**10,000**
SG01-CS-037-050	5	ND<14.7	ND<1.93	5	ND<0.0121	ND<0.0242	ND<0.0242	ND<0.0484	ND<29.4
SG01-CS-038-065	6.5	ND<14.7	ND<1.81	4	ND<0.0113	ND<0.0226	ND<0.0226	ND<0.0452	ND<29.4
CS-038-MS/MSD	6.5	ND<15.0	ND<2.02	4	ND<0.0126	ND<0.0252	ND<0.0252	ND<0.0505	ND<30.1
SG01-CS-039-065	6.5	ND<14.9	ND<1.74	4	ND<0.0109	ND<0.0218	ND<0.0218	ND<0.0435	ND<29.8
SG01-CS-040-070	7	ND<14.6	ND<2.05	4	ND<0.0128	ND<0.0256	ND<0.0256	ND<0.0513	ND<29.3
SG01-CS-041-0651	6.5	407	6.32	54	ND<0.0111	0.0448	ND<0.0223	0.173	ND<29.4
SG01-CS-042-070	7	ND<14.3	ND<1.82	12	ND<0.0113	ND<0.0227	ND<0.0227	ND<0.0454	ND<28.6
SG01-CS-043-080	8	ND<13.9	ND<2.17	10	ND<0.0136	ND<0.0272	ND<0.0272	ND<0.0544	ND<27.7
SG01-CS-044-075	7.5	ND<15.0	ND<2.00	9	ND<0.0125	ND<0.0250	ND<0.0250	ND<0.0500	ND<30.0
SG01-CS-045-105	10.5	ND<14.1	ND<1.93	9	0.0333	ND<0.0241	ND<0.0241	ND<0.0482	ND<28.2
CS-045- Field Dup	10.5	ND<14.4	ND<2.27	9	ND<0.0142	ND<0.0284	ND<0.0284	ND<0.0567	ND<28.9
SG01-CS-046-100	10	ND<15.4	ND<1.95	7	ND<0.0122	ND<0.0244	ND<0.0244	ND<0.0488	ND<30.8
SG01-CS-047-090	9	ND<14.4	ND<1.96	7	ND<0.0123	ND<0.0245	ND<0.0245	ND<0.0490	ND<28.9
SG01-CS-048-070	7	ND<14.5	ND<1.79	6	ND<0.0112	ND<0.0223	ND<0.0223	ND<0.0446	ND<29.1
SG01-CS-049-110	11	ND<14.3	ND<1.85	6	ND<0.0116	ND<0.0231	ND<0.0231	ND<0.0462	ND<28.7
SG01-CS-050-100	10	ND<14.2	ND<1.67	6	ND<0.0104	ND<0.0209	ND<0.0209	ND<0.0417	ND<28.5
SG01-CS-051-030	3	ND<17.6	ND<2.08	4	ND<0.0130	ND<0.0261	ND<0.0261	ND<0.0521	ND<35.1
CS-051- Field Dup	3	ND<15.3	ND<1.92	4	ND<0.0120	ND<0.0240	ND<0.0240	ND<0.0479	ND<30.6
SG01-CS-052-065	6.5	ND<14.3	ND<1.82	8	ND<0.0114	ND<0.0227	ND<0.0227	ND<0.0454	ND<28.6
CS-052-MS/MSD	6.5	ND<13.9	ND<1.91	8	ND<0.0119	ND<0.0238	ND<0.0238	ND<0.0476	ND<27.8
SG01-CS-053-105	10.5	1970	2.73	49	ND<0.0117	ND<0.0233	0.0687	0.113	56.8
SG01-CS-054-125	12.5	1550	42.6	137	0.0324	0.0865	0.558	0.868	ND<27.3
SG01-CS-055-100	10.0	ND<13.9	ND<1.75	14	ND<0.0109	ND<0.0219	ND<0.0219	ND<0.0438	ND<27.8
SG01-CS-056-080	8.0	1380	52.1	145	ND<0.00836	0.0395	0.716	0.940	ND<27.2
SG01-CS-057-035	3.5	ND<14.0	ND<1.73	8	ND<0.0108	ND<0.0216	ND<0.0216	ND<0.0433	ND<28.0
CS-057-MS/MSD	3.5	ND<14.4	ND<1.77	8	ND<0.0111	ND<0.0221	ND<0.0221	ND<0.0442	ND<28.7
SG01-CS-058-070	7.0	137	2.32	41	ND<0.0109	ND<0.0218	ND<0.0218	ND<0.0436	ND<27.4
SG01-CS-059-040	4.0	4640	266	302	ND<0.0622	0.364	2.69	4.57	ND<58.8
SG01-CS-060-030	3.0	4310	21.9	126	ND<0.0232	ND<0.0464	0.0905	0.474	459
SG01-CS-061-060	6.0	2540	123	331	0.0585	0.257	1.58	2.02	ND<27.9
SG01-CS-062-050	5.0	5810	132	377	0.169	0.312	2.82	11.3	ND<56.3
CS-062- Field Dup	5.0	5980	190	377	0.269	0.532	3.63	14.1	ND<55.9
SG01-CS-063-115	11.5	4160	181	407	0.261	0.548	3.03	6.13	ND<54.9
SG01-CS-064-095	9.5	ND<13.5	ND<1.45	24	ND<0.00906	ND<0.0181	ND<0.0181	ND<0.0362	ND<27.0
SG01-CS-065-025	2.5	ND<14.3	ND<2.13	19	ND<0.0133	ND<0.0266	ND<0.0266	ND<0.0533	ND<28.6
SG01-CS-066-045	4.5	ND<13.7	ND<1.72	2	ND<0.0108	ND<0.0215	ND<0.0215	ND<0.0431	ND<27.5
SG01-CS-067-030	3.0	ND<14.6	ND<1.90	3	ND<0.0119	ND<0.0238	ND<0.0238	ND<0.0475	ND<29.3
SG01-CS-068-105	10.5	ND<13.9	ND<1.90	2	ND<0.0119	ND<0.0237	ND<0.0237	ND<0.0474	ND<27.8
SG01-CS-069-080	8.0	ND<14.9	ND<1.85	0	ND<0.0116	ND<0.0231	ND<0.0231	ND<0.0462	ND<29.7
SG01-CS-070-050	5.0	ND<14.6	ND<2.08	3	ND<0.0130	ND<0.0259	ND<0.0259	ND<0.0519	ND<29.2
CS-070- Field Dup	5.0	ND<14.6	ND<2.19	3	ND<0.0137	ND<0.0273	ND<0.0273	ND<0.0547	ND<29.3
SG01-CS-071-100	10.0	ND<14.7	ND<1.67	1	ND<0.0104	ND<0.0208	ND<0.0208	ND<0.0417	ND<29.4

Sample ID	Depth ft bgs	DRO mg/kg	GRO mg/kg	PID ppm	Benzene mg/kg	Toluene mg/kg	Ethylben-zene mg/kg	Xylenes mg/kg	RRO mg/kg
Cleanup Level	**-**	**250**	**300**	**-**	**0.5**	**5.4**	**5.5**	**78**	**10,000**
SG01-CS-072-135	13.5	36.1	ND<1.02	4	ND<0.00634	ND<0.0127	ND<0.0127	ND<0.0254	ND<28.7
SG01-CS-073-140	14.0	206	ND<1.11	3	ND<0.00693	ND<0.0139	ND<0.0139	ND<0.0277	ND<28.4
SG01-CS-074-120	12.0	ND<14.3	ND<1.54	3	ND<0.00960	ND<0.0192	ND<0.0192	ND<0.0384	ND<28.5
CS-074-MS/MSD	12.0	ND<15.0	ND<1.62	3	ND<0.0101	ND<0.0203	ND<0.0203	ND<0.0405	ND<30.0
SG01-CS-075-095	9.5	ND<14.2	ND<1.75	2	ND<0.0109	ND<0.0218	ND<0.0218	ND<0.0437	ND<28.5

Note 1- Sample location SG01-CS-041-065 excavated out after laboratory results received, area subsequently sampled clean (SG01-CS-074-120).
MS/MSD- Matrix spike/matrix spike duplicate sample
PID – Photoionization detector; GRO – gasoline-range organics; DRO - diesel range organics; RRO – residual-range organics
mg/kg – milligrams/kilogram; ppm – parts per million; ft bgs – feet below ground surface
ND – Non-detect
Shaded analytical results indicate contaminant concentrations above cleanup criteria shown in Table 3-1.

6.2 EXCAVATED PCS CHARACTERIZATION SAMPLES

Table 6.2 presents the analytical results for the daily characterization samples that were taken to determine the average contaminant concentrations of the PCS stockpiled at the City landfill for use as municipal waste day cover. Comparisons of Table 6.2 concentration averages with Table 2-1, Contaminant Fate and Transport Parameters, shows the model parameters were not exceeded. For non-detect analytical results, one-half of the detection level was used for averaging. Quality assurance samples, i.e. matrix spike/matrix spike duplicate (MS/MSD) and field duplicates, were not included in the average. All PAH analytical results were non-detect or well below Table 3.1 cleanup criteria (see Appendix D).

Table 6-2 PCS Characterization Samples Analytical Results

Sample ID	DRO mg/kg	GRO mg/kg	PID ppm	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	RRO mg/kg
Cleanup Level	**250**	**300**	**-**	**0.5**	**5.4**	**5.5**	**78**	**10,000**
SG01-DC-001-080	1580	68.8	NM	ND<0.0840	0.0325	0.111	0.354	ND<109
SG01-DC-002-040	4340	128	NM NA	ND<0.0708	0.0146	0.223	0.861	ND<109
SG01-DC-003-040	3460	66.2	NM NA	ND<0.0762	ND<0.254	0.217	0.649	ND<230
SG01-DC-004-100	2140	143	NM NA	ND<0.0849	ND<0.283	0.719	1.30	ND<109
SG01-DC-005-130	2610	188	NM NA	ND<0.0307	0.0133	0.991	2.43	ND<108
SG01-DC-006-130	563	66.5	NM NA NM	ND<0.0207	0.00545	0.0885	0.445	3.98
SG01-DC-007-100	7.68	ND<2.73	NM	ND<0.00819	0.00636	0.00281	0.00759	ND<2.17
DC-007-Field Dup	6.09	ND<2.51	NM NA	ND<0.00752	0.00353	0.00243	ND<0.0501	ND<2.11
DC-007-MS/MSD	6.24	0.907	NM	ND<0.00844	0.00726	0.00670	0.0209	ND<2.16
SG01-DC-008-045	3530	209	NM	ND<0.0526	0.220	1.99	3.18	28.8
SG01-DC-009-070	3090	374	NM	ND<0.119	0.266	3.58	8.10	ND<26.4
SG01-DC-010-060	ND<14.3	ND<2.14	5	ND<0.0134	ND<0.0268	ND<0.0268	ND<0.0536	ND<28.6
SG01-DC-011-080	4240	15.1	68	0.308	ND<0.0223	0.107	0.355	64.4
SG01-DC-012-045	8690	34.6	843	0.335	1.05	1.47	7.67	136
SG01-DC-013-120	805	24.1	34	0.0440	0.287	0.420	2.19	96.7
SG01-DC-014-100	1020	28.2	102	0.0224	0.0205	0.163	0.426	ND<27.5
SG01-DC-015-080	390	4.81	22	ND<0.0112	0.0274	0.0327	0.0804	ND<28.8

Sample ID	DRO mg/kg	GRO mg/kg	PID ppm	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	RRO mg/kg
Cleanup Level	**250**	**300**	**-**	**0.5**	**5.4**	**5.5**	**78**	**10,000**
SG01-DC-016-040	4800	125	264	ND<0.0297	1.78	0.101	6.88	ND<59.8
SG01-DC-017-075	990	9.43	22	ND<0.0128	ND<0.0256	ND<0.0256	0.169	38.0
SG01-DC-018-065	738	31.9	137	0.0108	0.532	0.0265	0.836	56.7
SG01-DC-019-055	3900	15.9	102	ND<0.0105	0.209	0.0349	0.410	74.7
SG01-DC-020-045	3450	23.9	387	ND<0.0126	0.0844	ND<0.0252	0.355	71.6
SG01-DC-021-065	2180	27.4	175	ND<0.00994	0.235	ND<0.0199	0.420	ND<29.5
SG01-DC-022-085	2930	18.4	73	ND<0.0120	ND<0.0240	0.214	0.505	87.2
SG01-DC-023-060	2120	7.10	42/127	ND<0.0124	ND<0.0247	0.0670	0.139	55.0
SG01-DC-024-065	3830	17.1	51	ND<0.0138	ND<0.0276	0.156	0.382	69.0
DC-024-Field Dup	3760	18.5	51	ND<0.0129	ND<0.0259	0.179	0.372	66.0
SG01-DC-025-045	1780	6.09	80	0.0926	ND<0.0269	0.0300	0.069	ND<31.1
SG01-DC-026-080	1890	8.25	62	0.161	ND<0.0253	0.0609	0.170	ND<31.5
SG01-DC-027-040	763	10.1	63	0.0144	ND<0.0270	0.0879	0.236	ND<30.3
DC-027-MS/MSD	1200	9.76	63	ND<0.0130	ND<0.0259	0.0829	0.208	ND<30.3
SG01-DC-028-040	611	ND<1.92	5	ND<0.0120	ND<0.0240	ND<0.0240	ND<0.0479	ND<31.0
SG01-DC-029-090	2820	229	176	0.163	0.477	3.77	7.98	ND<27.4
SG01-DC-030-110	413	30.9	74	0.0189	0.0503	0.530	1.06	ND<28.3
DC-030-Field Dup	198	26.1	74	0.0113	0.0331	0.380	0.738	ND<28.0
SG01-DC-031-095	2270	113	193	ND<0.00919	0.171	2.21	3.81	79.9
SG01-DC-032-090	14.7	ND<1.51	6	ND<0.00941	ND<0.0188	ND<0.0188	ND<0.0376	ND<28.5
DC-032-Field Dup	ND<14.7	ND<1.82	6	ND<0.0114	ND<0.0227	ND<0.0227	ND<0.0454	ND<29.4
Average	1,067	35	NA	.036	.043	.30	.64	26
Model Limit	3,478	193	NA	.05	1.53	.48	1.06	NA

MS/MSD- Matrix spike/matrix spike duplicate sample
PID – Photoionization detector; GRO – gasoline-range organics; DRO - diesel range organics; RRO – residual-range organics
mg/kg – milligrams/kilogram; ppm – parts per million
NA – Not applicable; ND- Non-detect
Shaded analytical results indicate contaminant concentrations above cleanup criteria shown in Table 3-1.

6.3 BACKFILL CHARACTERIZATION SAMPLES

Backfill was obtained from the St. George Island borrow area and from decommissioned groundwater monitoring well access pads. Nine samples were collected and field screened with a PID; of these, three samples from the stockpiled borrow material (SG01-BF-001-350, SG01-BF-002-350, SG01-BF-003-450), and one sample from well pad material (SG01-BF-008-030) were submitted for fixed laboratory analyses. Sample analytical results indicate that concentrations of all contaminants were either non-detect or well below ADEC Method Two cleanup levels.

Table 6-3 Backfill Characterization Samples Analytical Results

Sample ID	DRO mg/kg	GRO mg/kg	PID ppm	Benzene mg/kg	Toluene mg/kg	Ethylben-zene mg/kg	Xylenes mg/kg	Total Lead mg/kg	RRO mg/kg
Cleanup Level	**250**	**300**	**-**	**0.5**	**5.4**	**5.5**	**78**	**400**	**10,000**
SG01-BF-001-350	2.74	ND<2.86	0	0.00573	0.0112	0.00739	0.0283	ND<2.38	31.5
SG01-BF-002-350	5.5	ND<3.92	0	ND<0.0118	0.00620	ND<0.0392	ND<0.0785	ND<2.55	57.4
SG01-BF-003-450	3.69	ND<2.63	1	ND<0.00790	0.00403	0.00187	ND<0.0527	ND<2.17	37.3
SG01-BF-004-070	NM	NM	1	NM	NM	NM	NM	NM	NM
SG01-BF-005-065	NM	NM	0	NM	NM	NM	NM	NM	NM
SG01-BF-006-060	NM	NM	1	NM	NM	NM	NM	NM	NM
SG01-BF-007-050	NM	NM	2	NM	NM	NM	NM	NM	NM
SG01-BF-008-030	ND<13.3	ND<2.45	3	ND<0.0153	ND<0.0306	ND<0.0306	ND<0.0612	NM	ND<26.6
SG01-BF-009-020	NM	NM	2	NM	NM	NM	NM	NM	NM

PID – Photoionization detector; GRO – gasoline-range organics; DRO - diesel range organics; RRO – residual-range organics
mg/kg – milligrams/kilogram; ppm – parts per million
ND- Non-detect
NM- Not submitted for fixed laboratory analysis.

7.0 QUALITY ASSURANCE AND QUALITY CONTROL

To ensure that analytical results accurately represent site conditions, quality assurance and quality control (QA/QC) procedures were followed for soil sampling and laboratory analysis. The QAP (NOAA 2006) establishes the QA/QC requirements; this section provides an overview.

7.1 FIELD PROCEDURES

Several field QA/QC procedures were implemented to ensure sample integrity and the accurate representation of site conditions.

Qualified Samplers

Samples were collected, controlled and shipped by ChemTrack personnel who were qualified in accordance with 18 AAC 75 (ADEC 2006a) and the ADEC UST Procedures Manual (ADEC 2002). Appendix D provides sampler qualification documentation.

Sample Control Procedures

Sample collection protocols, described in Section 5.0, ensured that samples were collected in the same representative manner from one sample to the next. After each sample was collected, the sample container was labeled with a unique identification number that was also recorded on a chain-of-custody (COC) form and in the field logbook. Fixed laboratory confirmation and characterization samples were kept cool and in ChemTrack's custody until they were shipped directly to the laboratory. The appropriate COC forms accompanied each sample shipment to the laboratory.

Documentation
Field activities were documented by ChemTrack in bound field logbooks. Field procedures, sample collection information, and sample identification information were recorded to ensure that samples were properly acquired, preserved, and identified in the field. Appendix C provides a copy of the field logbook generated during the corrective action.

7.2 ANALYTICAL PROCEDURES

Several QA/QC procedures were followed during this corrective action, both in the field and in the laboratory, to ensure accurate analytical representation of site conditions. Section 7.3 provides a review of the QA/QC results. Test America Analytical Testing Corporation (Beaverton, OR) and Analytica Environmental Laboratories (Anchorage, AK) provided laboratory analyses for DRO, GRO, RRO, BTEX, and select PAHs; both laboratories are ADEC approved in accordance with 18 AAC 78 *Underground Storage Tanks* (ADEC 2006b).

Trip Blanks
Trip blanks are used to verify that contamination is not originating from sample containers or other external factors during sample transport. A trip blank originates at the laboratory as a container with clean sand (for soil samples) that is transported to the site with the empty containers to be used for field sample collection. The trip blanks are stored at the site until the field samples have been collected. Each trip blank is extracted with methanol in the same manner as field samples, and is then analyzed for BTEX and GRO. Nine trip blanks were generated for the project excavation sampling. GRO and benzene were not detected in any samples; toluene, ethylbenzene, and total xylenes were detected in one trip blank at very low concentrations. Appendix D contains trip blank analytical results. Sample contamination during transport is not considered an issue.

Equipment Rinsate Blanks
Sampling equipment was disposable, one time use; rinsate blanks were not collected.

Field Duplicate Samples
Field duplicate samples are collected and analyzed to evaluate the precision of the project's soil testing process, which includes sample collection, shipment and analysis. Field duplicate samples are collected at the same time and from the same location as regular samples, assigned a unique ID number, and submitted to the laboratory for analysis. Evaluated together for trends, the relative percent differences (RPD) between the duplicates and their corresponding regular sample analytical results are used to assess the reproducibility of the soil testing program. An individual RPD outside an acceptable range may only be an indication of heterogeneous soil contaminant conditions; however, trends of RPD's outside acceptable ranges may indicate problems in the soil testing program such as improper sample collection or poor laboratory procedures.

The QAP (NOAA 2006) requires duplicate samples be collected at a minimum rate of 10 percent of the number of regular samples collected. During this project, 12 duplicate samples were collected to evaluate 110 excavation confirmation and day cover characterization samples. ChemTrack also collected seven samples that were identified as "matrix spike/ matrix spike duplicate (MS/MSD)" samples. These samples were collected in the same manner as field duplicate samples, and can be evaluated as field duplicate samples. Duplicate samples were analyzed for DRO, GRO, RRO, and BTEX. Appendix D contains the laboratory analytical report for duplicate samples; field duplicate samples are designated by "9" in the first digit of the last three digits of the sample ID; e.g., SG01-CS-002-965. ChemTrack's seven MS/MSD samples are identified as such by the sample identification number. Section 7.3 provides an assessment of the soil testing precision.

Matrix Spike and Matrix Spike Duplicates
Field sample aliquots are spiked by the laboratory with known concentrations of the target analytes to measure the accuracy of applicable analytical methods for a sample matrix, e.g., site soils. These laboratory-prepared samples are referred to as matrix spike (MS) samples. Percent recovery is determined for each sample spike analyte. Acceptable percent recoveries differ, depending on the matrix and analytical method used. The laboratory also prepares a duplicate of the spiked sample (MSD). MS/MSD samples are prepared at a rate of 1 for every 20 field

samples analyzed. The RPD between the MS and MSD analysis can be calculated to evaluate analytical precision. In the event that a sample displays a percent recovery or RPD outside the allowable range, sample data in that particular analytical batch are flagged by the laboratory with a qualifier indicating the discrepancy. Flags are typically posted adjacent to the laboratory's reported value (see Appendix D). Section 7.3 provides an assessment of the analytical accuracy.

Laboratory Quality Assurance and Quality Control

Additional laboratory QA/QC procedures include: duplicate analysis of field samples; laboratory control samples (LCS), LCS duplicates (LCSD), method blanks, and surrogate spiking. These QA/QC procedures are established by the laboratory in accordance with its standard operating procedures and certification requirements. The results of the laboratory QA/QC are generally discussed in the laboratory's data package narrative and indicated, when appropriate, as flagged qualifiers. Section 7.3 provides an assessment of the laboratory QA/QC results.

7.3 DATA QUALITY OBJECTIVES AND RESULTS

The following subsections provide a summary of the objectives and results for precision, accuracy, representativeness, completeness, and comparability associated with analytical data resulting from the Oceanfront Sites 1 and 2 sampling. More details on data quality results can be found in Appendix D, which contains data validation checklists, laboratory data quality narratives and analytical results. Appendix D data validation is arranged by work order number; for reference, Table 7-1 below correlates work order numbers with the sample identification numbers found in Figure 10 and Tables 6-1, 6-2, 6-3 and 7-2.

Table 7-1 Sample ID Correlation To Work Order Number

Sample ID	Work Order	Sample ID	Work Order	Sample ID	Work Order	Sample ID	Work Order
SG01-CS-001-075	PPJ0006	SG01-CS-030-140	PPJ0447	CS-057-MS/MSD	PPK0211	SG01-DC-010-060	PPJ0006
SG01-CS-002-065	PPJ0006	SG01-CS-031-020	PPJ0808	SG01-CS-058-070	PPK0211	SG01-DC-011-080	PPJ0006
CS-002-Field Dup	PPJ0006	SG01-CS-032-015	PPJ0808	SG01-CS-059-040	PPK0211	SG01-DC-012-045	PPJ0006
SG01-CS-003-095	PPJ0006	CS-032- Field Dup	PPJ0808	SG01-CS-060-030	PPK0211	SG01-DC-013-120	PPJ0006
SG01-CS-004-080	PPJ0006	SG01-CS-033-025	PPJ0808	SG01-CS-061-060	PPK0211	SG01-DC-014-100	PPJ0006
SG01-CS-005-050	PPJ0006	SG01-CS-034-070	PPJ0808	SG01-CS-062-050	PPK0211	SG01-DC-015-080	PPJ0447
SG01-CS-006-140	PPJ0006	SG01-CS-035-040	PPJ0808	CS-062- Field Dup	PPK0211	SG01-DC-016-040	PPJ0447
SG01-CS-007-130	PPJ0006	SG01-CS-036-080	PPJ0808	SG01-CS-063-115	PPK0211	SG01-DC-017-075	PPJ0447
SG01-CS-008-120	PPJ0006	SG01-CS-037-050	PPJ0808	SG01-CS-064-095	PPK0211	SG01-DC-018-065	PPJ0447
SG01-CS-009-130	PPJ0006	SG01-CS-038-065	PPJ0808	SG01-CS-065-025	PPK0211	SG01-DC-019-055	PPJ0447
SG01-CS-010-135	PPJ0006	CS-038-MS/MSD	PPJ0808	SG01-CS-066-045	PPK0211	SG01-DC-020-045	PPJ0447
SG01-CS-011-085	PPJ0006	SG01-CS-039-065	PPJ0808	SG01-CS-067-030	PPK0211	SG01-DC-021-065	PPJ0447
SG01-CS-012-080	PPJ0447	SG01-CS-040-070	PPJ0808	SG01-CS-068-105	PPK0211	SG01-DC-022-085	PPJ1114
CS-012- Field Dup	PPJ0447	SG01-CS-041-0651	PPJ0808	SG01-CS-069-080	PPK0211	SG01-DC-023-060	PPJ1114
SG01-CS-013-100	PPJ0447	SG01-CS-042-070	PPJ0808	SG01-CS-070-050	PPK0211	SG01-DC-024-065	PPJ1114
SG01-CS-014-120	PPJ0447	SG01-CS-043-080	PPJ0808	CS-070- Field Dup	PPK0211	DC-024-Field Dup	PPJ1114
SG01-CS-015-085	PPJ0447	SG01-CS-044-075	PPJ0808	SG01-CS-071-100	PPK0211	SG01-DC-025-045	PPJ1114
SG01-CS-016-050	PPJ0447	SG01-CS-045-105	PPJ0808	SG01-CS-072-135	PPK0211	SG01-DC-026-080	PPJ1114
SG01-CS-017-140	PPJ0447	CS-045- Field Dup	PPJ0808	SG01-CS-073-140	PPK0211	SG01-DC-027-040	PPJ1114
SG01-CS-018-140	PPJ0447	SG01-CS-046-100	PPJ0808	SG01-CS-074-120	PPK0393	DC-027-MS/MSD	PPJ1114
SG01-CS-019-140	PPJ0447	SG01-CS-047-090	PPJ0808	CS-074-MS/MSD	PPK0393	SG01-DC-028-040	PPJ1114
CS-019-MS/MSD	PPJ0447	SG01-CS-048-070	PPJ0808	SG01-CS-075-095	PPK0393	SG01-DC-029-090	PPJ1114

Sample ID	Work Order	Sample ID	Work Order	Sample ID	Work Order	Sample ID	Work Order
SG01-CS-020-140	PPJ0447	SG01-CS-049-110	PPJ0808	SG01-DC-001-080	BP10628	SG01-DC-030-110	PPJ1114
SG01-CS-021-085	PPJ0447	SG01-CS-050-100	PPJ0808	SG01-DC-002-040	BP10628	DC-030-Field Dup	PPJ1114
SG01-CS-022-100	PPJ0447	SG01-CS-051-030	PPJ1108	SG01-DC-003-040	BP10628	SG01-DC-031-095	PPJ1114
SG01-CS-023-065	PPJ0447	CS-051- Field Dup	PPJ1108	SG01-DC-004-100	BP10628	SG01-DC-032-090	PPK0393
CS-023- Field Dup	PPJ0447	SG01-CS-052-065	PPJ1108	SG01-DC-005-130	BP10628	DC-032-Field Dup	PPK0393
SG01-CS-024-100	PPJ0447	CS-052-MS/MSD	PPJ1108	SG01-DC-006-130	BP10628	SG01-BF-001-350	BP10628
SG01-CS-025-055	PPJ0447	SG01-CS-053-105	PPJ1114	SG01-DC-007-100	BP10628	SG01-BF-002-350	BP10628
SG01-CS-026-095	PPJ0447	SG01-CS-054-125	PPK0211	DC-007-Field Dup	BP10628	SG01-BF-003-450	BP10628
SG01-CS-027-140	PPJ0447	SG01-CS-055-100	PPK0211	DC-007-MS/MSD	BP10628	SG01-BF-008-030	PPK0211
SG01-CS-028-130	PPJ0447	SG01-CS-056-080	PPK0211	SG01-DC-008-045	PPJ0006		
SG01-CS-029-140	PPJ0447	SG01-CS-057-035	PPK0211	SG01-DC-009-070	PPJ0006		

Data Precision

The degree of soil testing variation introduced during sample collection, shipping and analysis is assessed by determining the analytical RPDs between field samples and field duplicate samples; field samples and laboratory duplicates; LCS/LCSD pairs and MS/MSD pairs. For a sample set, the smaller the RPDs, the greater the inferred precision or reproducibility, and the higher the confidence that the analytical results represent actual site conditions. The RPD between field samples and field sample duplicates can be heavily influenced by heterogeneous soil conditions such as those found at NOAA Sites 1 and 2. Variation in a contaminant concentration at a soil sample location, particularly if the concentration is near the analytical detection limit, can produce high a RPD value regardless of the precision of the sampling process. RPD values for MS/MSD pairs, LC/LCD pairs, and laboratory duplicates are measures of the laboratory's analysis precision because they are derived from a single sample, not two samples from one sample location.

Table 7.2 (below) provides the DRO, GRO, and BTEX RPD between field samples and (1) field duplicates and (2) field samples ChemTrack collected for MS/MSD analysis. Analytical results for field duplicate and MS/MSD samples for RRO were all either non-detect or at very low concentrations (see Appendix D), therefore RRO RPDs are not listed on Table 7.2.

Table 7.2 RPDs are calculated using the following equation:

$$RPD = 100 \times 2(D1 - D2)/(D1+D2)$$

D1= Concentration of analyte in normal field sample

D2= Concentration of analyte in duplicate sample

The QAP (NOAA 2006) establishes data quality objectives (DQO) for precision RPD values as follows: DRO and RRO ± 30 %; GRO, benzene, toluene, ethylbenzene and xylenes ± 35 %. RPD values highlighted in yellow in Table 7.2 do not meet the precision DQO.

Evaluation of sample pairs SG01-CS-023-065/ SG01-CS-023-965 (GRO RPD -39), SG01-CS-045-105/ SG01-CS-045-905 (benzene RPD 80), SG01-DC-007-100/ SG01-DC-007-900 (toluene RPD 57, xylenes RPD 200), SG01-DC-007-100/ SG01-DC-007-MS/DS (ethylbenzene RPD -82, xylenes RPD -93), and SG01-DC-027-040/ SG01-DC-027-MS/DS (benzene RPD 200), reveals that these RPD values above DQO target objectives are for analytes whose concentrations are near or below analytical detection limits. These high RPDs are not indicative of poor precision. Analytical results for these pairs were very close, but at such low concentrations, that slightly different results produced high RPDs.

Evaluation of sample pairs SG01-CS-062-050/ SG01-CS-062-950 (GRO RPD -36, benzene RPD -46, toluene RPD -52) and SG01-DC-030-110/ SG01-DC-030-910 (DRO RPD 70, benzene RPD 50, toluene RPD 41, xylenes

RPD 36) reveals that duplicate samples were consistently either higher in concentration (negative RPD) or lower in concentration (positive RPD) for all analytes. These differences can be attributed to site heterogeneousness and the likelihood that the duplicate sample was either more contaminated or less contaminated than its corresponding field sample. Duplicate samples are taken from the same location as the field samples, but are not a split from the field sample. Soil heterogeneousness can contribute to high RPD values. RPD values for both sample pairs are just outside the DQO targets; therefore these high RPDs likely do not indicate a soil testing precision problem.

Evaluation of sample pairs SG01-CS-023-065/ SG01-CS-023-965 (DRO RPD 88) and SG01-DC-027-040/ SG01-DC-027-MS/DS (DRO RPD -45) indicate RPD values outside of the DQO target of ± 30 %. However, the differences in DRO concentrations between the field samples and their duplicates are relatively small and can be reasonably attributed to soil heterogeneousness.

Review of RPD values for laboratory duplicates, MS/MSD pairs and LC/LCD pairs (see Appendix D) reveals that:

The BTEX RPD value for one laboratory duplicate pair from Work Order #PPJ0447 was outside the laboratory control limits while the surrogate recoveries were within control limits. The RPD data was qualified; however, the laboratory considered all sample data from the sample data group representative and valid.

The DRO RPD values for two laboratory duplicate sample groups from Work Order #PPJ0808 exceeded laboratory control limits due to heterogeneous sample matrices. The laboratory determined that data quality was not affected and that all sample group data was representative and valid.

In summary, the precision of the soil testing program for NOAA Sites 1 and 2 is satisfactory; no systemic sample processing issues were identified.

Table 7-2 Field Sample Precision Results

Sample ID[1]	**DRO (mg/kg)**	**RPD (%)**	**GRO (mg/kg)**	**RPD (%)**	**Benzene (mg/kg)**	**RPD (%)**	**Toluene (mg/kg)**	**RPD (%)**	**Ethyl-benzene (mg/kg)**	**RPD (%)**	**Xylenes (mg/kg)**	**RPD (%)**
SG01-CS-002-065	3190	14	229	-6	0	0	0.233	12	2.46	6	4.38	8
SG01-CS-002-965	2770		244		0		0.206		2.32		4.05	
SG01-CS-012-080	2900	-4	198	-3	0	0	2.00	-5	0	0	4.12	-9
SG01-CS-012-980	3030		205		0		2.10		0		4.49	
SG01-CS-019-140	1290	-7	21.3	17	0	0	0.266	9	0.0193	8	0.412	10
SG01-CS-019-MS/ MSD	1380		18.0		0		0.244		0.0178		0.374	
SG01-CS-023-065	127	88	2.36	-39	0	0	0	0	0	0	0	0
SG01-CS-023-965	49.6		3.52		0		0		0		0	
SG01-CS-032-015	0	0	0	0	0	0	0	0	0	0	0	0
SG01-CS-032-915	0		0		0		0		0		0	
SG01-CS-038-065	0	0	0	0	0	0	0	0	0	0	0	0
SG01-CS-038-MS/ MSD	0		0		0		0		0		0	
SG01-CS-045-105	0	0	0	0	0.0333	80	0	0	0	0	0	0
SG01-CS-045-905	0		0		0.0142		0		0		0	
SG01-CS-051-030	0	0	0	0	0	0	0	0	0	0	0	0
SG01-CS-051-930	0		0		0		0		0		0	
SG01-CS-052-065	0	0	0	0	0	0	0	0	0	0	0	0
SG01-CS-052-MS/ MSD	0		0		0		0		0		0	

Sample ID[1]	DRO (mg/kg)	RPD (%)	GRO (mg/kg)	RPD (%)	Benzene (mg/kg)	RPD (%)	Toluene (mg/kg)	RPD (%)	Ethyl-benzene (mg/kg)	RPD (%)	Xylenes (mg/kg)	RPD (%)
SG01-CS-057-035	0	0	0	0	0	0	0	0	0	0	0	0
SG01-CS-057-MS/MSD	0		0		0		0		0		0	
SG01-CS-062-050	5810	-3	132	-36	0.169	-46	0.312	-52	2.82	-25	11.3	-22
SG01-CS-062-950	5980		190		0.269		0.532		3.63		14.1	
SG01-CS-070-050	0	0	0	0	0	0	0	0	0	0	0	0
SG01-CS-070-950	0		0		0		0		0		0	
SG01-CS-074-120	0	0	0	0	0	0	0	0	0	0	0	0
SG01-CS-074-MS/MSD	0		0		0		0		0		0	
SG01-DC-007-100	7.68	23	0	0	0	0	0.00636	57	0.0028	15	0.0076	200
SG01-DC-007-900	6.09		0		0		0.00353		0.0024		0	
SG01-DC-007-100	7.68	21	0	0	0	0	0.00636	-13	0.0028	-82	0.0076	-93
SG01-DC-007-MS/MSD	6.24		0.907		0		0.00726		0.0067		0.0209	
SG01-DC-024-065	3830	2	17.1	-8	0	0	0	0	0.156	-14	0.382	3
SG01-DC-024-965	3760		18.5		0		0		0.179		0.372	
SG01-DC-027-040	763	-45	10.1	3	0.0144	200	0	0	0.0879	6	0.236	13
SG01-DC-027-MS/MSD	1200		9.76		0		0		0.0829		0.208	
SG01-DC-030-110	413	70	30.9	17	0.0189	50	0.0503	41	0.530	33	1.06	36
SG01-DC-030-910	198		26.1		0.0113		0.0331		0.380		0.738	
SG01-DC-032-090	0	0	0	0	0	0	0	0	0	0	0	0
SG01-DC-032-990	0		0		0		0		0		0	

Note 1. Field duplicates indicated with "9" in first digit of last three digits; "CS" in sample ID indicates excavation confirmation sample; "DC" indicates day cover characterization sample.

RPD = relative percent difference; DRO = diesel range organics; GRO = gasoline range organics

Shaded RPD values do not meet the Master Quality Assurance Plan (NOAA 2006) quality control objectives of ± 30% for DRO and ± 35 % for GRO and BTEX.

Data Accuracy

Accuracy refers to the degree to which a measurement agrees with its true value. Laboratories spike samples with known concentrations of target analytes to assess analytical accuracy by determining the percent recovery of the spike. MS, MSD, LCS, LCSD and blank samples are used for accuracy determination. Surrogate standards are also added to samples analyzed for organic constituents.

Surrogate recoveries for some analyses in Work Orders #'s PPJ0006, PPJ0447, PPJ0808, PPJ1114, and PPK-0211fell outside laboratory control limits due to sample matrix interference (see Appendix D). The laboratory determined that data quality was not affected.

Surrogate recovery for DRO analysis under Work Order PPJ0006 was outside laboratory controls; the laboratory determined the cause was solvent evaporation from the surrogate container prior to spiking the sample. The samples were reanalyzed, and the resulting data found to acceptable.

All sample data from the sample groups under the affected work orders was found to be representative and valid. Data accuracy is considered acceptable for the Sites 1 and 2 analytical results.

Data Representativeness
Representativeness expresses the degree to which sample data accurately and precisely represent the true site characteristics being measured. This project ensured representative data by adhering to QA/QC procedures during sample collection, storage, shipping and analysis. Soil samples were analyzed for contaminants that were previously identified through several site investigations. Samplers and laboratories met applicable ADEC qualification criteria.

The sample results provided by this report are judged to be representative of true site conditions based on observation of ChemTrack's sampling techniques, and review of analytical precision and accuracy data.

Data Completeness
Completeness is a measure of the percentage of project-specific data that are valid. When all data validation is completed, the percent completeness value is calculated by dividing the number of useable sample results by the total number of sample results obtained.

The QAP DQO for completeness is 85 percent or greater; 100 percent data completeness was achieved for this project.

Comparability
Comparability expresses the confidence with which one data set can be compared with another. Comparability of data is achieved by consistently following standard field and laboratory procedures and by using standard measurement units in reporting analytical data.

This project used standard procedures for both field and laboratory processes, and the units used to express sample results are reasonable for concentrations encountered. Data sets for this project are, therefore, deemed comparable.

8.0 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is used to evaluate exposure pathways for human health and ecological receptors. The following subsections provide an evaluation for each of the elements of the CSM for NOAA Sites 1 and 2 including: contamination sources, release mechanisms, impacted media, migration pathways, exposure routes, potential receptors, and a cumulative risk assessment. NOAA Sites 1 and 2 are evaluated together because they're located adjacent to each other, with contamination and subsequent cleanup occurring across their common boundary.

8.1 SOURCES OF CONTAMINATION AND RELEASE MECHANISMS

The sources of contamination at these sites were ASTs, fuel drums, fuel transfer piping, and fuel transfer operations which, due to leaks and sloppy operations, released an unknown amount of diesel fuel, gasoline and BTEX to the ground from the 1950s to 1970s.

8.2 IMPACTED MEDIA

NOAA Sites 1 and 2 have soil contaminated with DRO, GRO, benzene, ethylbenzene and xylenes above ADEC Method Two cleanup criteria. Groundwater underlying Sites 1 and 2 is contaminated with DRO, GRO and benzene above ADEC groundwater cleanup criteria.

8.3 MIGRATION PATHWAYS

Operations at NOAA Sites 1 and 2 stopped in the 1970s. Storage tanks, fuel drums and above ground transfer piping were removed between the 1970s and the 1990s. Site 1 was largely covered by soil excavated during installation of a nearby sewer system; both sites became overgrown by native tundra grasses. Surface transport pathways no longer exist.

Subsurface transport pathways include vertical migration through the vadose zone and lateral migration in groundwater.

8.4 EXPOSURE ROUTES

Direct exposure pathways involve direct contact (human or ecological) with contaminated media. Indirect exposure pathways involve contamination traveling through the environment to a location at which the receptors (human or ecological) are exposed.

Potential direct exposure pathways include dermal contact with or ingestion of petroleum contaminated soil. Corrective action at these sites has resulted in either the complete removal of PCS, or leaving PCS with contaminant concentrations below the ADEC Method Two ingestion criteria for DRO, GRO and BTEX (see Table 8.1 below). Dermal contact remains a possibility if future excavations in the area expose PCS left in place shallower than 15 feet bgs.

Potential indirect exposure pathways include inhalation of contaminated soil particles transported off site by the wind, and ingestion of surface water or groundwater containing dissolved contaminant phases. PCS remaining at these sites is not located at the ground surface, therefore contaminant transportation off site by wind or surface water is not possible. Corrective action at these sites has resulted in either the complete removal of PCS, or leaving PCS below the ground surface with contaminant concentrations below the ADEC Method Two inhalation criteria for DRO, GRO and BTEX (see Table 8.1 below).

Hydrogeological studies (TTEMI 2005a) have determined that contaminated groundwater in the vicinity NOAA Sites 1 and 2 does not pose a threat to the island's drinking water supply. Groundwater underlying these sites flows toward the Bering Sea (Figure 7). Hydrogeological modeling indicates that, even under maximum pumping conditions, the groundwater underlying NOAA Sites 1 and 2 will not fall within the municipal water well area of influence due to distance and geological features, such as faults, between the wells and these sites. Investigations (TTEMI 2005b) have found that the total dissolved solids (TDS) concentration in the groundwater in the vicinity of NOAA Sites 1 and 2 exceeds the ADEC drinking water quality standard of 500 milligrams per liter (mg/L). The elevated TDS concentration is indicative of saltwater intrusion from the nearby Bering Sea into the island water table, and means that groundwater in the vicinity of NOAA Sites 1 and 2 will likely never be used as a drinking water source. Sheen attributable to Sites 1 and 2 petroleum contamination has not been observed on the Bering Sea. There are no indirect exposure pathways for ingestion of surface or groundwater.

8.5 POTENTIAL RECEPTORS

NOAA Sites 1 and 2 are undeveloped and primarily used by island residents for access to the Bering Sea. There is a potential for dermal contact with DRO and GRO contaminated soil by future workers who excavate in areas where PCS has been left in place below the ground surface, i.e. along the north side of the City sewer system or in the Bering Sea buffer zone (see Figure 10). Direct exposure to benzene, ethylbenzene and xylenes is not likely because there is only one location, at 14 feet bgs, where these contaminant concentrations were left above the applicable ADEC cleanup criteria (see Figure 10). There is no discernable indirect exposure pathway for human or ecological receptors within Sites 1 and 2.

8.6 CUMULATIVE RISK ASSESSMENT

Cumulative risk is defined as the sum of risks resulting from multiple sources and pathways to which humans are exposed. When more than one hazardous substance is present at a site or multiple exposure pathways exist, the cleanup levels in Table B1 of 18 AAC 75.341 and Table C of 18 AAC 75.345 may need to be adjusted downward. In accordance with the requirements outlined in 18 AAC 78.600, NOAA must ensure that the cumulative cancer risk remaining after the completion of the corrective action does not exceed 1 in 100,000 (1×10^{-5}) and that the cumulative non-carcinogenic hazard index (HI) does not exceed 1.0. Each contaminant detected above one-tenth of the Table B1 inhalation or ingestion or Table C cleanup levels must be included in cumulative risk calculations for exposure pathways that are shown to be complete based on the site-specific CSM. For NOAA Sites 1 and 2,

the only known complete exposure pathway is potential dermal contact by anyone excavating in this area in the future.

Site 1 and Site 2 contaminants requiring cumulative risk evaluation are benzene, toluene, ethylbenzene and xylenes. ADEC does not include DRO, GRO and RRO in cumulative risk analysis. As shown in Table 8-1 below, remaining benzene and toluene concentrations do not exceed one-tenth of their corresponding Table B1 cleanup levels. Ethylbenzene and xylenes are not carcinogenic, and their Health Index (HI) equals 7.3×10^{-3}.

To summarize, the cumulative cancer risk for contaminants remaining at Sites 1 and 2 does not exceed 1×10^{-5}, and the cumulative non-carcinogenic hazard index is 7.3×10^{-3}, well below ADEC's criterion of 1.0.

Table 8-1 Cumulative Risk Determination

Chemical of Concern	**DRO**	**GRO**	**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes**
Table B.1 Soil Cleanup Level (mg/kg)[1]						
Ingestion	10,250	1,400	290	20,300	10,000	203,000
Inhalation	12,500	1,400	9	180	89	81
One-Tenth Table B.1 Cleanup Level (mg/kg)						
Ingestion	NA	NA	29	2,030	1,000	20,300
Inhalation	NA	NA	0.9	18	8.9	8.1
Highest Site Concentration (mg/kg)[2]	5,980	398	0.522	2.36	20.6	78.8
Site Concentration > 1/10 Table Criteria?	NA	NA	No	No	Yes	Yes
Carcinogenic/Non-carcinogenic (C/NC)?	-	-	-	-	NC	NC
Risk-Based Concentration (RBC, mg/kg)[3]						
Ingestion	-	-	-	-	10,100	203,000
Inhalation	-	-	-	-	4,500	-
Health Quotient (HQ)[4]						
Ingestion	-	-	-	-	2×10^{-3}	0.3×10^{-3}
Inhalation	-	-	-	-	5×10^{-3}	-
Health Index (HI) = Σ all HQs = 7.3×10^{-3}						

Note 1 – Table B.1 Cleanup Level based on "Under 40-Inch Zone".
Note 2 – Highest Site Concentration obtained from confirmation sample analytical results listed in Table 6-1.
Note 3 - RBC based on "Under 40-Inch Zone" found in Appendix B of ADEC Cumulative Risk Guidance.
Note 4 – HQ = Site concentration/applicable RBC
NA – ADEC does not include DRO, GRO and RRO in cumulative risk calculations.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The following subsections present conclusions and recommendations for NOAA Sites 1 and 2 based on corrective actions performed in 2006 and 2007.

9.1 CONCLUSIONS

Petroleum-contaminated soil has been removed from NOAA Sites 1 and 2 to the extent practicable. Contaminated soil remains in a strip, starting at about 3 feet bgs, running along the north side of the community's sewer system, and at one location just to the south of the sewer system at 10.5 feet bgs (sample location SG01-CS-053-105, Figure 10). Further excavation toward the sewer line would endanger it. Contaminated soil remains along the earthen barrier, starting at about 4 feet bgs, in the western end of Site 1 where it slopes toward the Bearing Sea (Figures 9 and 10). This buffer was left in place between Bering Sea and the site excavation to reduce the potential for storm seas breaching the excavation and carrying fill material and contamination to sea, a scenario of concern to the community. Contaminated soil also remains at refusal, between 7.5 and 13 feet bgs, in the western

end of the excavation; and from 14 feet bgs to the water table at 15 feet bgs primarily in the western half of the excavation (Figure 10). Further soil removal vertically is not practicable because of the presence of either hard basalt or the water table.

Confirmation sample analytical results show that the remaining soil contaminant concentrations are well below the ADEC cleanup criteria for inhalation and ingestion (see Tables 6-1 and 8-1). The cumulative cancer risk for remaining contaminants does not exceed 1×10^{-5}, and the cumulative non-carcinogenic hazard index is 7.3×10^{-3}, well below ADEC's criterion of 1.0.

The depth to the water table in the vicinity of Sites 1 and 2 is approximately 15 feet bgs. Due to its shallow depth and the history of these sites, it is likely that the groundwater became contaminated with petroleum products soon after fuel storage operations began in the 1950's. The removal of 14,280 cubic yards of PCS from these sites, most of what was present, should largely mitigate further introduction of contaminants to the groundwater. During PCS excavation, the water table was exposed in test pits to keep track of its depth. These test pits were left open as the excavation progressed, and no more than product sheen was observed accumulated on the exposed water. Environmental investigations have shown that the groundwater in vicinity of Sites 1 and 2 is not potable due to elevated TDS concentrations as a result of sea water intrusion. Hydrogeological investigations have determined that contaminated groundwater in this area will not be drawn into the community's drinking water wells, even under maximum pumping conditions. Given the lack of free product greater than sheen on the water table, the elevated TDS concentrations in the groundwater, and the lack of threat the contaminated groundwater poses to the community drinking water, further direct groundwater cleanup action, such as extraction wells, is not warranted and not practicable. NOAA has committed to long-term groundwater monitoring to determine the effectiveness of the cleanup actions undertaken at Sites 1 and 2.

9.2 RECOMMENDATION

NOAA requests written confirmation from ADEC that all appropriate corrective actions have been completed for mitigating petroleum contamination at NOAA Sites 1 and 2 on St. George Island, Alaska, and that ADEC grants a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

Request for Conditional Closure
NOAA Site 1/Two Party Agreement Site 1
Former Diesel Tank Farm
St. George Island, Alaska

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at NOAA Site 1/Two Party Agreement Site 1 on St. George Island in accordance with the Agreement.

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

Oct. 23, 2007
Date

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

11-02-2007
Date

Request for Conditional Closure
NOAA Site 2/Two Party Agreement Site 2
Former Drum Storage Area
St. George Island, Alaska

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at NOAA Site 2/Two Party Agreement Site 2 on St. George Island in accordance with the Agreement.

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

Oct 23, 2007
Date

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

11-02-2007
Date

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FIGURES

APPENDIX A
PHOTOGRAPHIC DOCUMENTATION

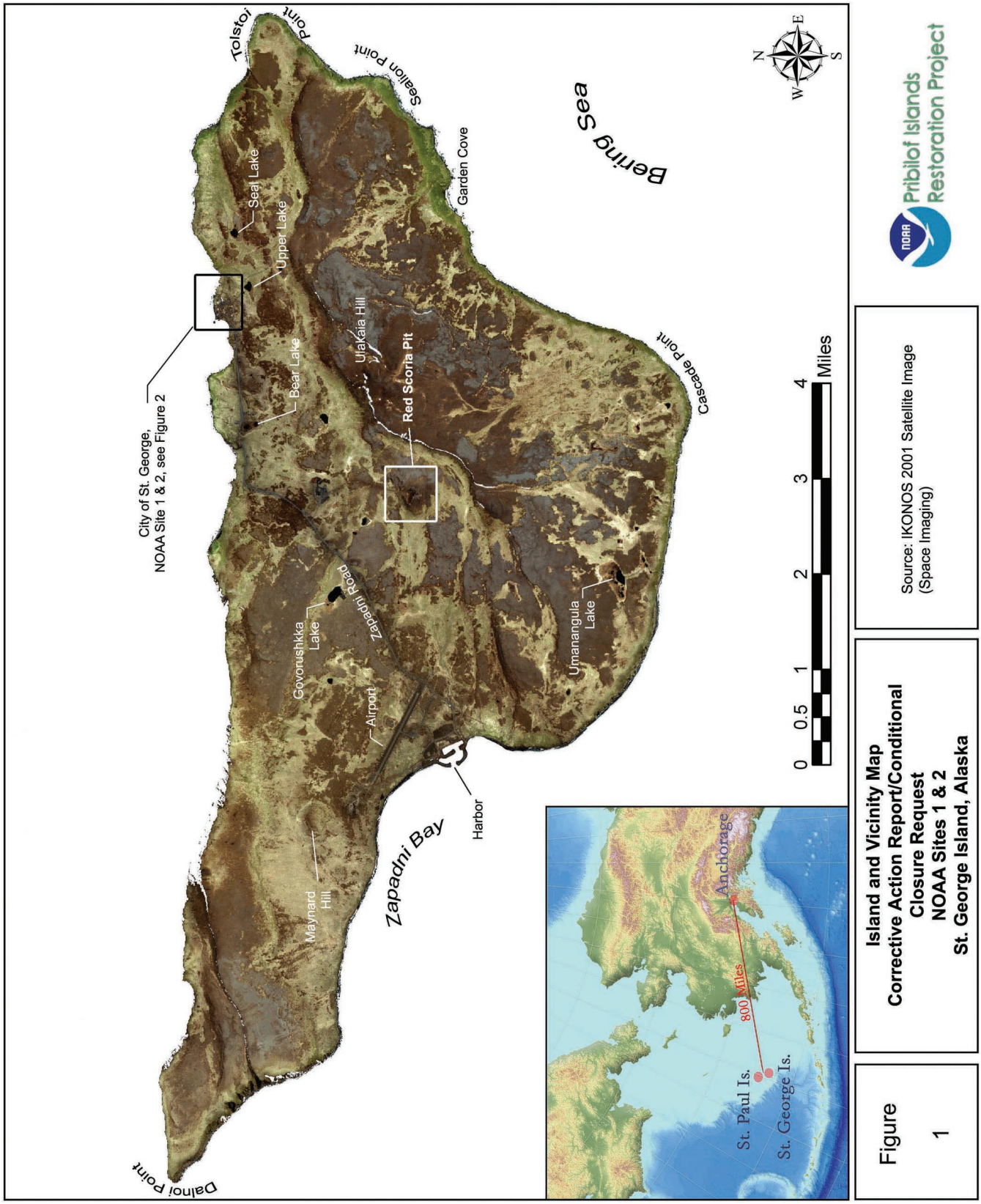


Figure 2	**Legal Property Description Map** **NOAA Sites 1 & 2** **St. George Island, Alaska**	Source: AeroMap U.S. 9/28/96 Aerial Photograph; Bureau of Land Management Land Survey Filed Febuary 15, 1985

Pribilof Islands Restoration Project

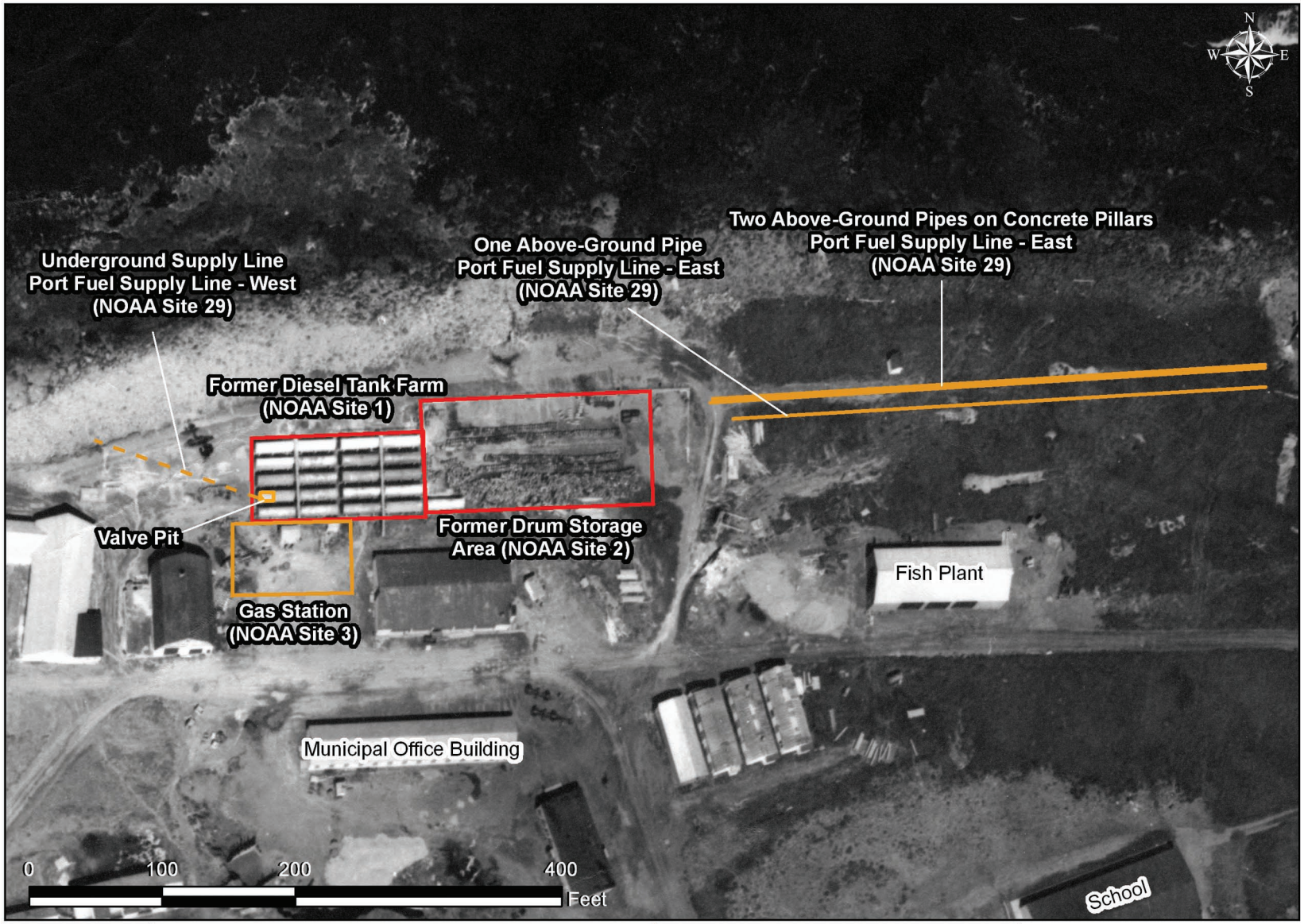


Figure 3	**Oceanfront Sites Historical Overview** **NOAA Sites 1 & 2** **St. George Island, Alaska**	Source: 1967 Aerial Photograph, and GIS Layers (Pribilof Project Database) Note: Supply Line Locations Approximate

Pribilof Islands Restoration Project

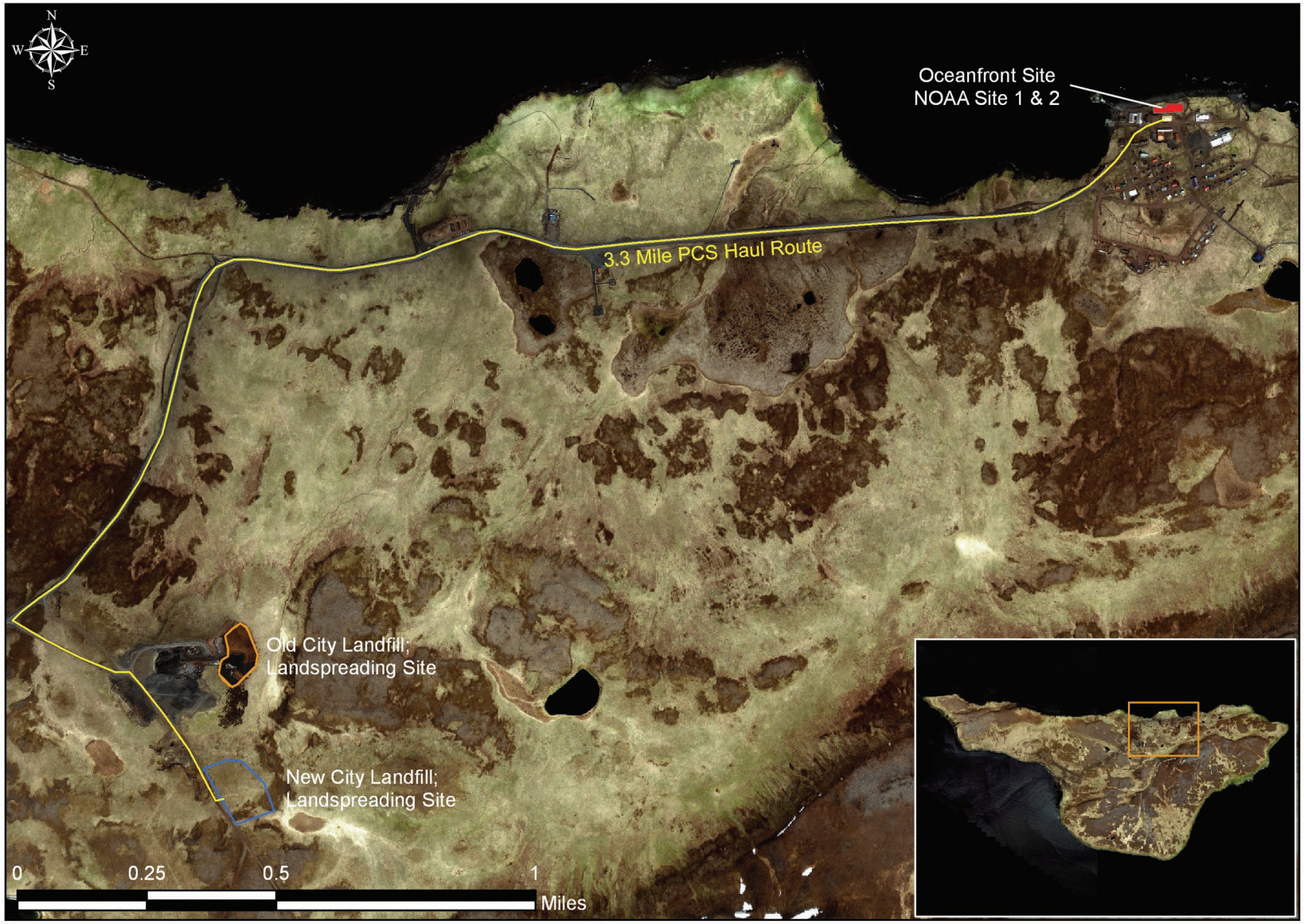
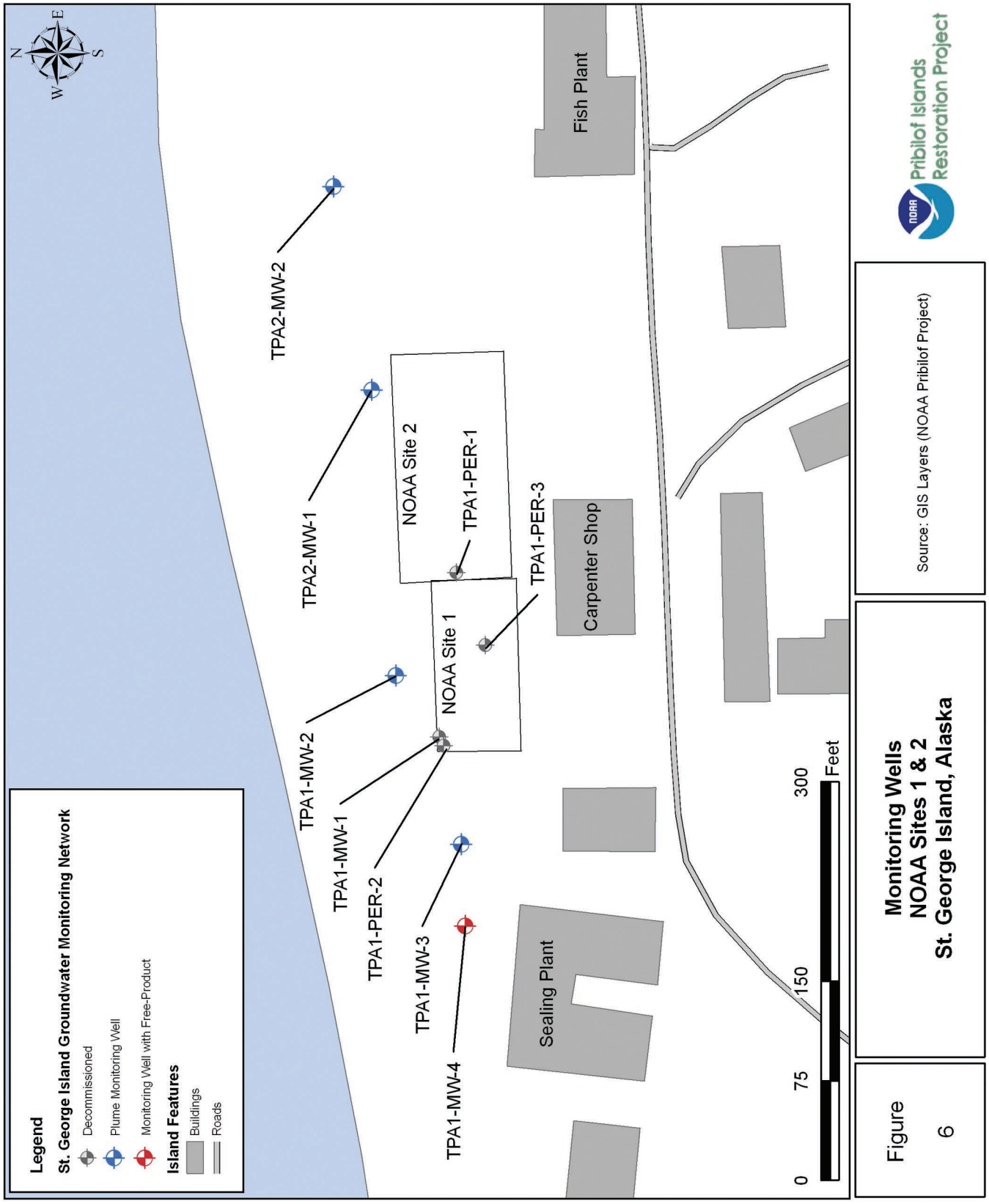


Figure 4	**Transportation Route for Petroleum Contaminated Soil Removal NOAA Sites 1 & 2 St. George Island, Alaska**	Source: Ikonos 2001 Satellite Image (Space Imaging); GIS Layers (Pribilof Project Database)

Pribilof Islands Restoration Project

Figure 5	**Investigative Trenching** **NOAA Sites 1 & 2** **St. George Island, Alaska**	Source: Remedial Design for TPA 1 & 8 Product Recovery Doc. (SLR Alaska 2007); Determinations of Effect and Monitoring Plan for Cultural Resources Doc. (Charles M. Mobley 2006); Aerial Photograph (AeroMap U.S. 1996) GIS Layers (NOAA Pribilof Project)	Pribilof Islands Restoration Project


Legend
St. George Island Groundwater Monitoring Network
Decommissioned
Plume Monitoring Well
Monitoring Well with Free-Product
Island Features
Buildings
Roads
N
E
S
W
TPA2-MW-2
TPA2-MW-1
TPA1-MW-2
TPA1-MW-1
TPA1-PER-2
TPA1-MW-3
TPA1-MW-4
NOAA Site 2
NOAA Site 1
TPA1-PER-1
TPA1-PER-3
Fish Plant
Carpenter Shop
Sealing Plant
0
75
150
300
Feet
Monitoring Wells
NOAA Sites 1 & 2
St. George Island, Alaska
Source: GIS Layers (NOAA Pribilof Project)
Pribilof Islands
Restoration Project
Figure
6

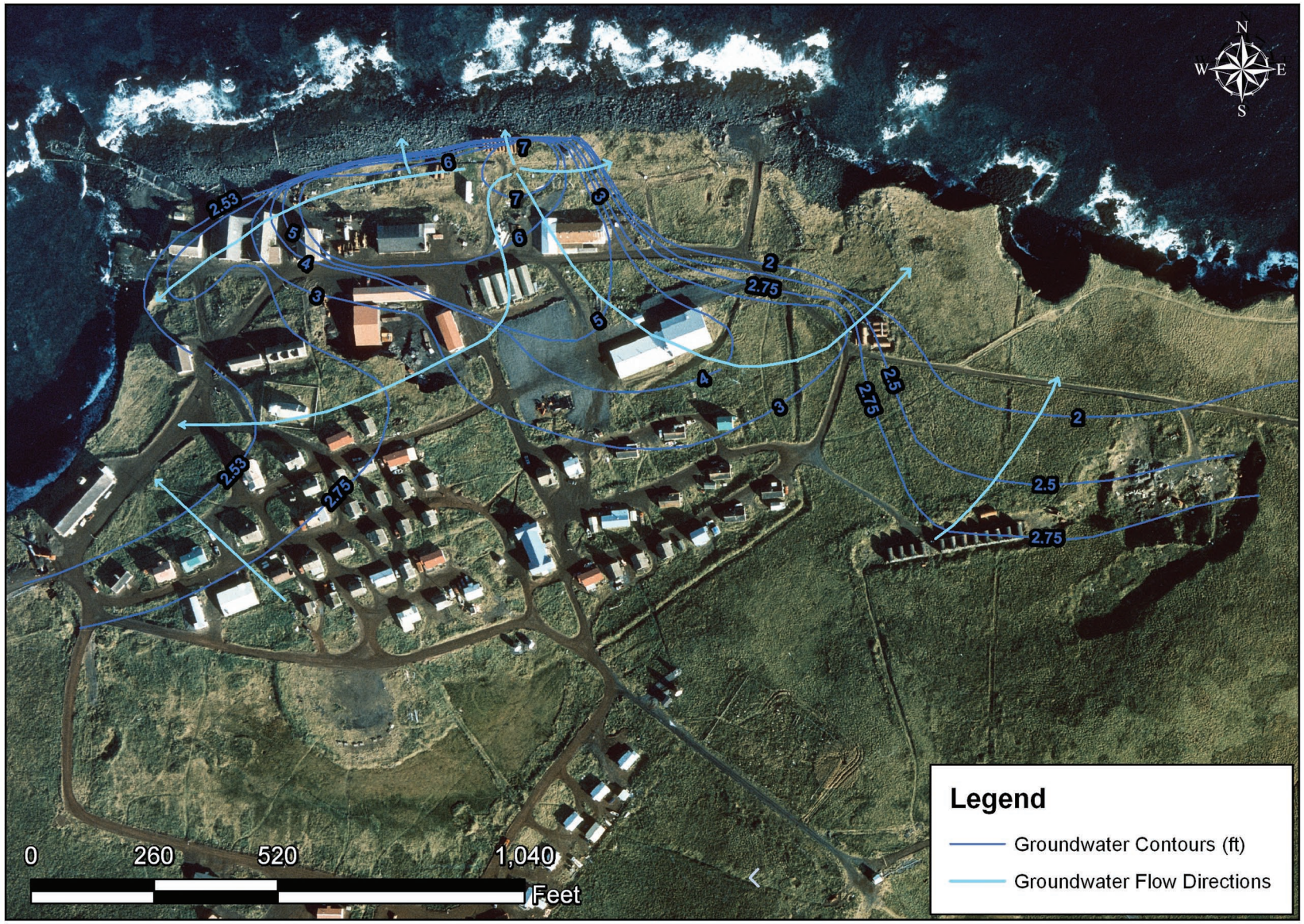


Figure 7	City of St. George Groundwater Contours and Flow Direction NOAA Sites 1 & 2 St. George Island, Alaska	Source: GIS Layers (NOAA Pribilof Project)	NOAA Pribilof Islands Restoration Project

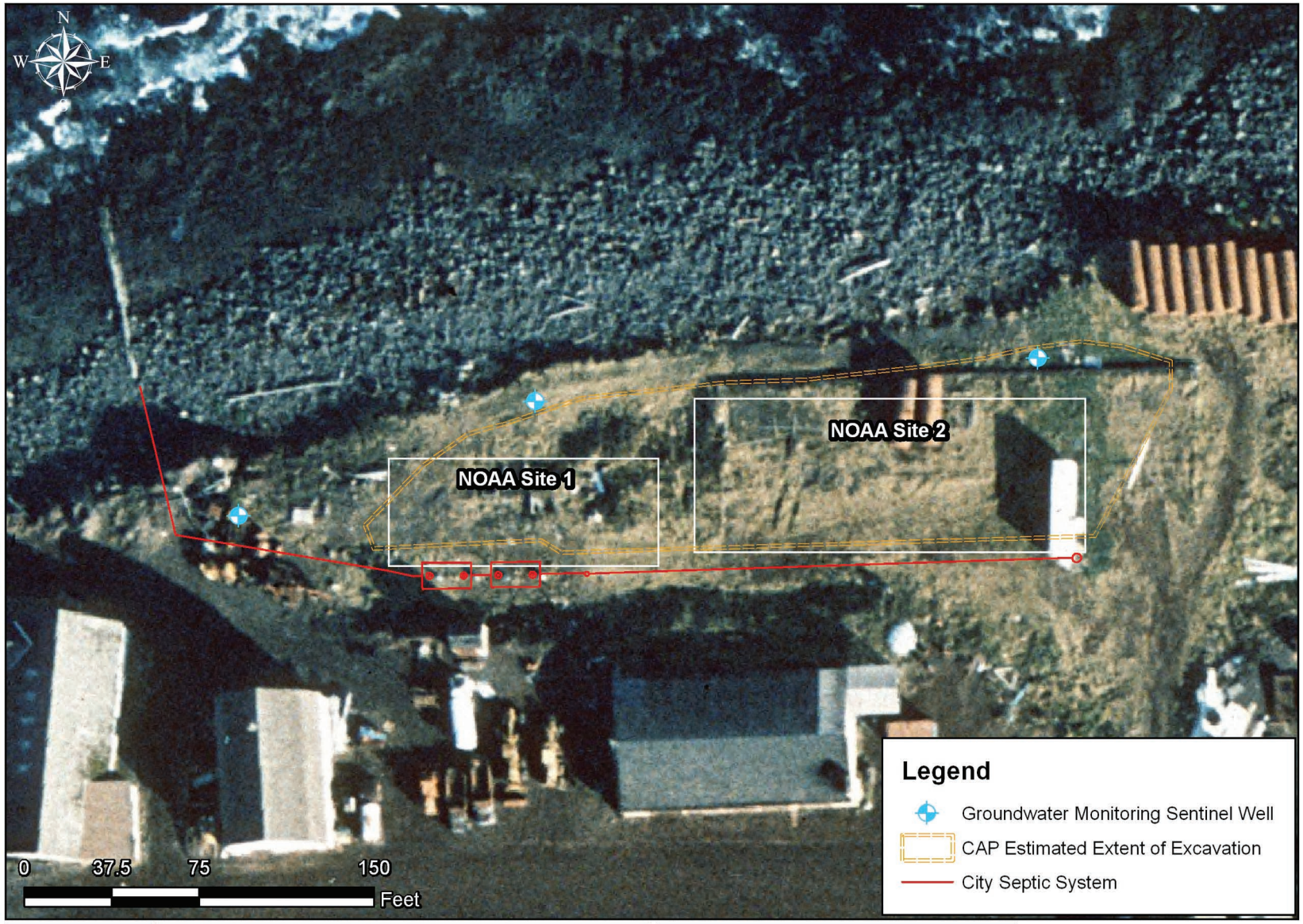


Figure 8

Corrective Action Plan (CAP) Estimated Excavation Extents
NOAA Site 1 & 2
St. George Island, Alaska

Source: Aerial Photograph (AeroMap U.S. 1996)
GIS Layers (NOAA Pribilof Project)

Pribilof Islands Restoration Project

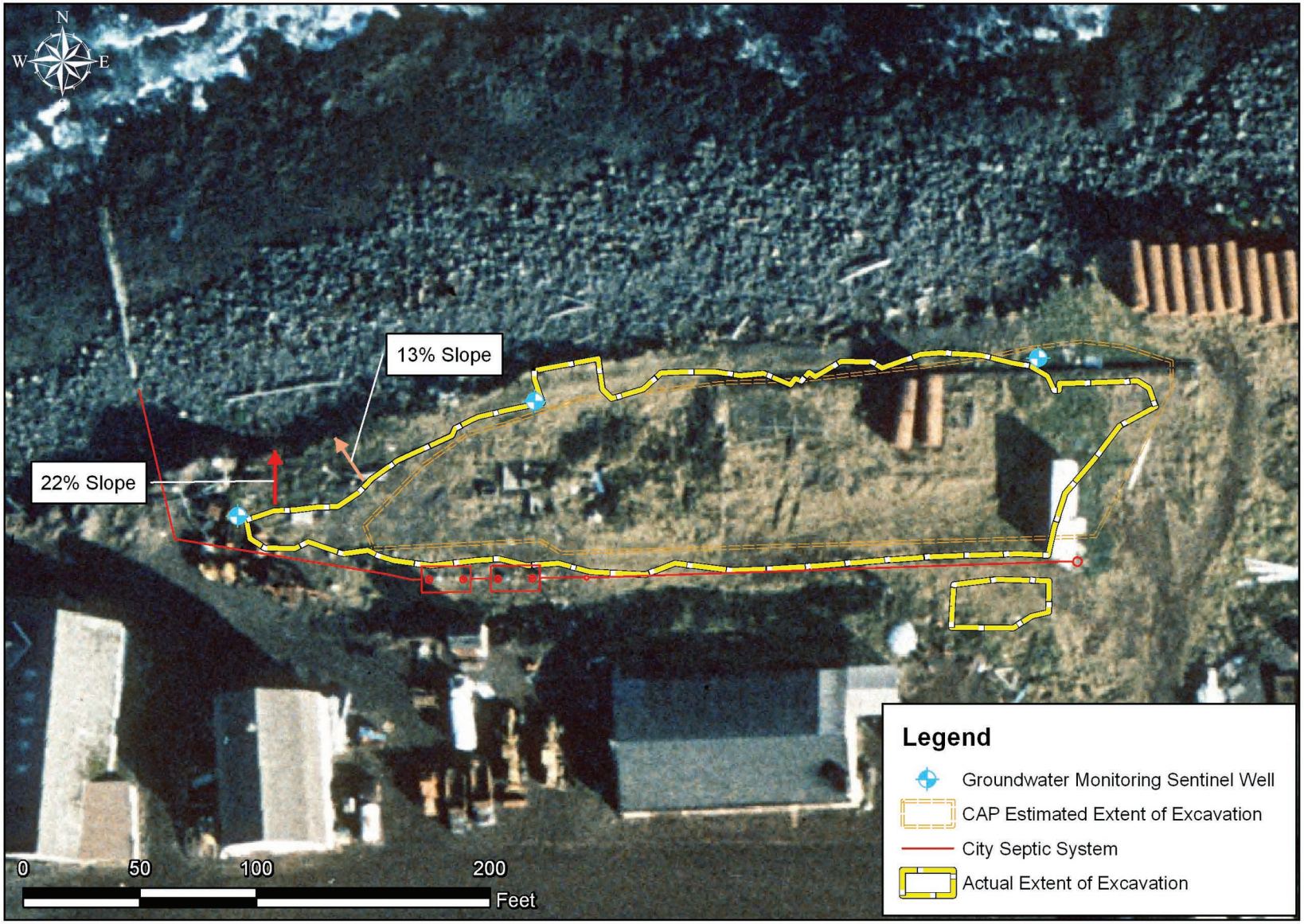


Figure 9	**Oceanfront 2006 Excavation Extent** **NOAA Sites 1 & 2** **St. George Island, Alaska**	Source: Aerial Photograph (AeroMap U.S. 1996) GIS Layers (NOAA Pribilof Project)	Pribilof Islands Restoration Project

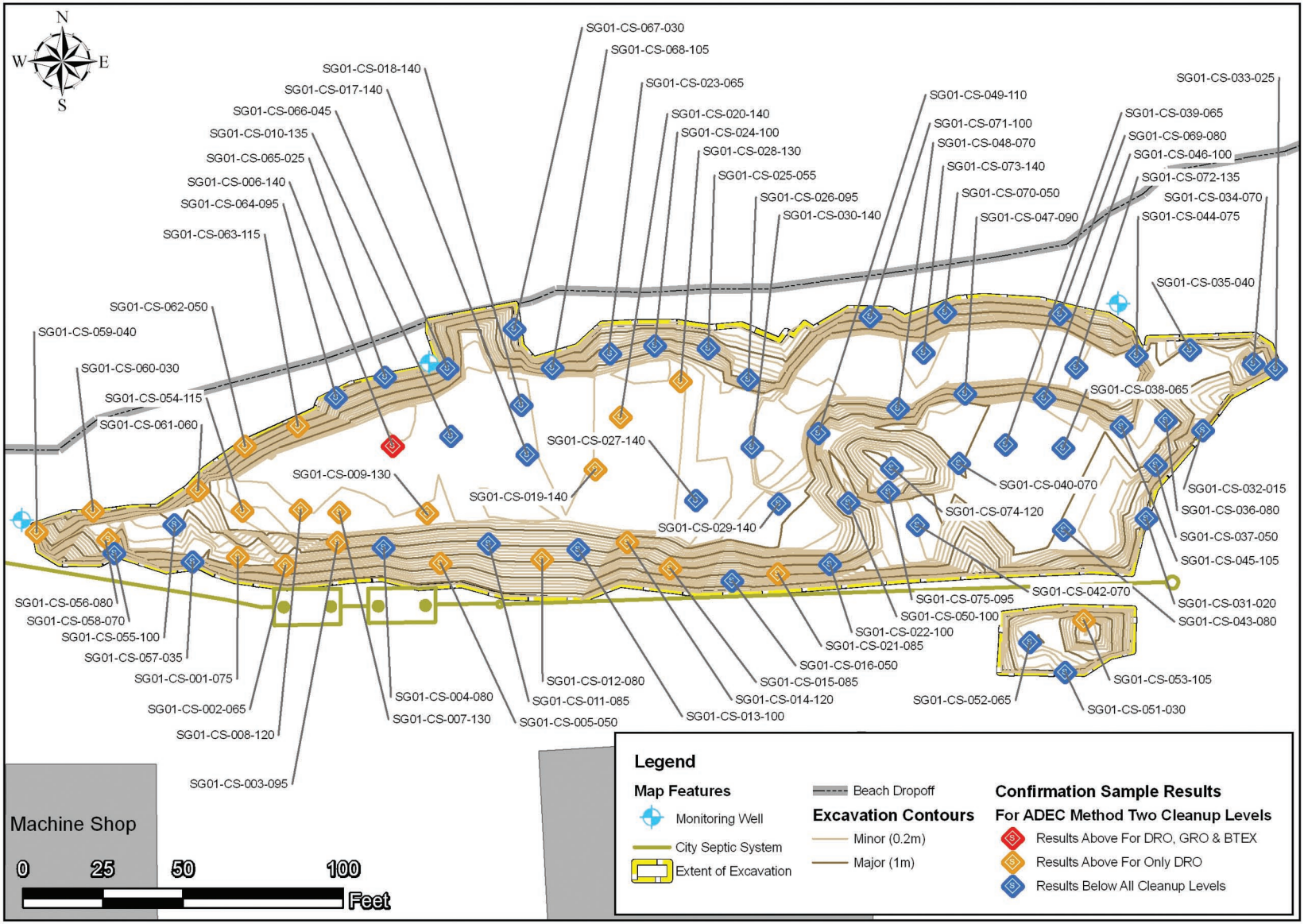


Figure 10

Oceanfront 2006 Excavation Extent And Sample Locations NOAA Sites 1 & 2 St. George Island, Alaska

Source: GIS Layers (NOAA Pribilof Project)

Pribilof Islands Restoration Project

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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITES 1 and 2
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property on the north side of the City of St. George along the Bering Sea coastline, St George Island, Alaska, 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Lot 1 of the East Landing Subdivision Tract 43
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 12.96" North Latitude, 169° 32' 47.33" West Longitude

This property, hereafter referred to as the Site (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135430; File ID 2643.38.007 and Reckey #1994250135431; File ID 2643.38.008.

The Site was identified as *Site 1 Former Diesel Tank Farm* and *Site 2 Former Drum Storage Area* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the Site as TPA Sites 1 and 2, and NOAA Sites 1 and 2. Following corrective action, NOAA submitted a conditional closure request for the Site to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2007). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that the Site cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2007). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the Site unless new information becomes available that indicates to ADEC that the Site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2007).

Grantor: U.S. Bureau of Land Management

Grantee: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Recording District: Aleutian Islands

Remedial Actions and Residual Contamination

TPA Sites 1 and 2, located adjacent to each other, were used as gasoline and diesel fuel storage depots

from the 1950s until the 1970s. Environmental investigations conducted in 1994 (Woodward-Clyde 1995) and 2001 (Tetra Tech 2003, Tetra Tech 2005) found heavy, widespread petroleum hydrocarbon contamination of the Site soils and groundwater. In 2006, NOAA removed approximately 14,280 cubic yards of petroleum-contaminated soil (PCS) from the Site resulting in one large excavation that spanned TPA Sites 1 and 2 (NOAA 2007). PCS removal generally proceeded from the west end of TPA Site 1 to the east end of TPA Site 2 in one continuous excavation. Soil contamination was easily discernable by sight and odor. PCS was removed laterally to the south until the municipal sewer system was reached; to the north until a buffer zone between the Bering Sea and the excavation was reached; and to the west until excavation was no longer practicable due to the convergence of the municipal sewer system, the Bering Sea buffer, and beach area slopes which limited excavator access (NOAA 2007). Excavation to the east proceeded until field screening indicated that cleanup goals had been met. Vertically, PCS removal was limited by reaching refusal from 7.5 to 13 feet below the ground surface (bgs) in the western end of the Site, and reaching the water table at approximately 15 feet bgs in the remainder of the excavation. The excavation bottom was maintained about one foot above the water table by periodically digging test pits to track the water table elevation. In areas where further excavation was not practicable, diesel range organics (DRO) contaminated soil remains. DRO, gasoline range organics (GRO), benzene, ethylbenzene, and total xylenes remain in one area in the western portion of the site at bed rock depth of 14 feet bgs. Figure 3, drawn to scale, shows the area that was cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

Groundwater in the general vicinity of the Site is known to be contaminated with DRO, GRO, and benzene due to fuel storage and transfer operations at multiple TPA sites in the area (Tetra Tech 2005). Groundwater in this area is monitored for contaminant concentration trends in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005). Figure 4 depicts area groundwater monitoring well locations and estimated groundwater flow directions.

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil or water from the site or use of the groundwater at or near the contaminated area requires notification to and approval from the ADEC in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

References:

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2008-000366-0

NOAA. 2007. *Corrective Action Report/Conditional Closure Request, NOAA Site1/Two Party Agreement Site 1, Former Diesel Tank Farm; NOAA Site2/Two Party Agreement Site 2, Former Drum Storage Area, St. George Island, Alaska*. Document date October 10, 2007; signed by John Lindsay (NOAA) October 23, 2007; signed by Louis Howard (ADEC Contaminated Sites Program) November 2, 2007.

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Woodward-Clyde. 1995. *Expanded Site Inspection, St. George Island, Alaska.* Wood-ward Clyde, Anchorage, Alaska. March 1995.

Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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2008-000366-0

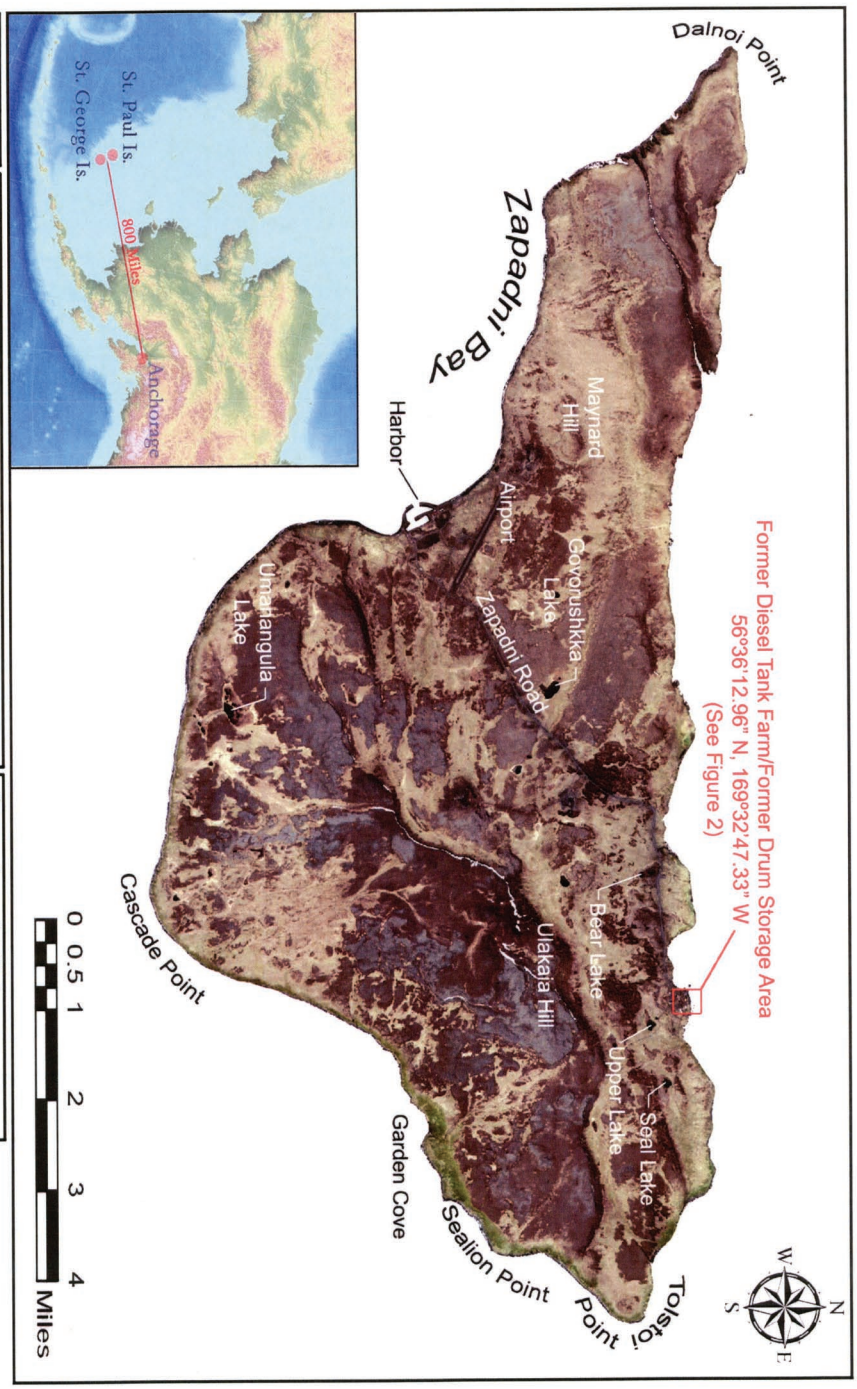

Figure 1

St. George Island Vicinity Map
Former Diesel Tank Farm/
Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

Source: Ikonos Satellite Imagery (Space Imaging 2001)
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Fig 1 STG Standard - TPA 1 & 2.psd
Date: 7/21/2008

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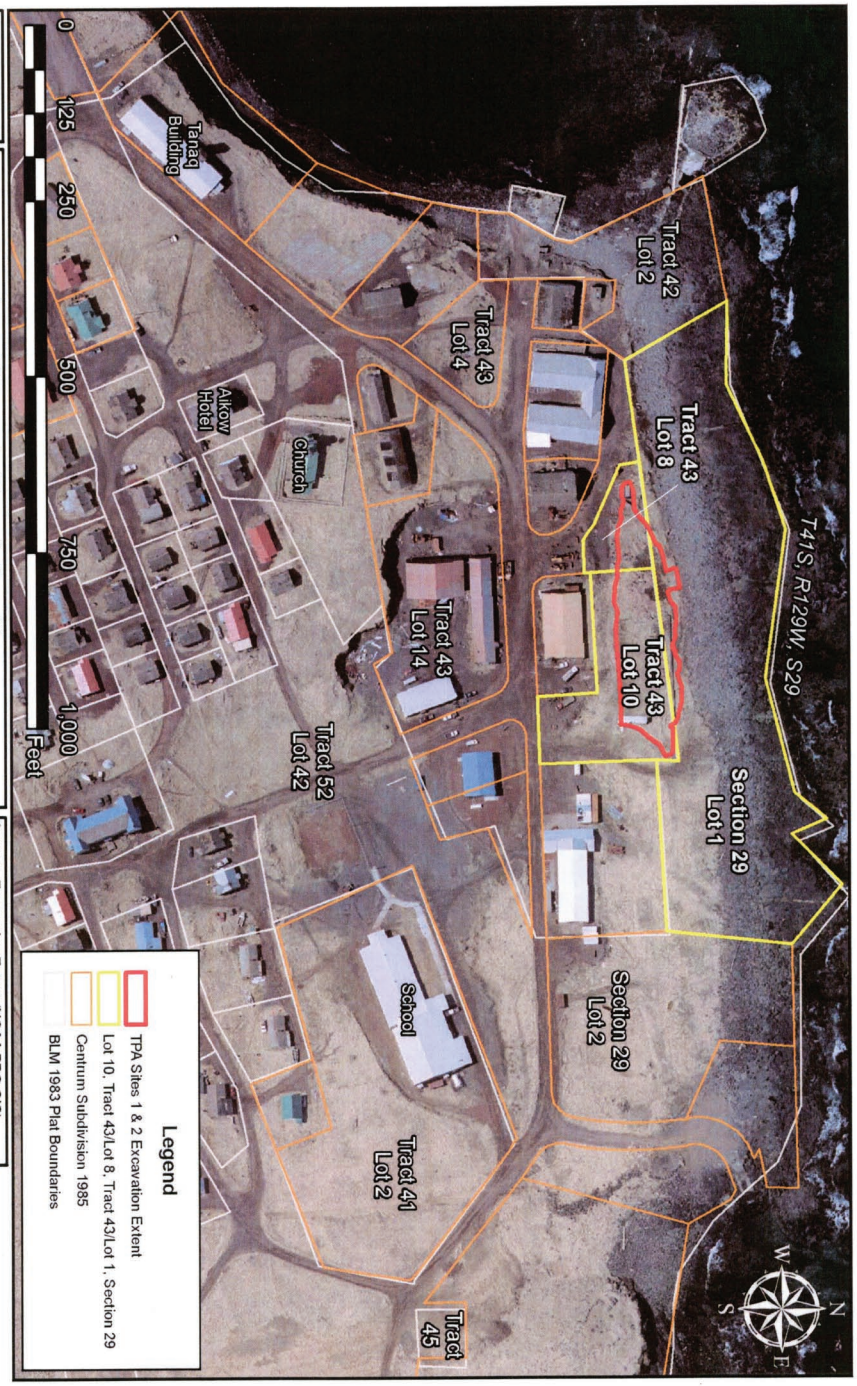
2008-000366-0



Legal Property Description Map
Lot 10, Tract 43/Lot 8, Tract 43/Lot 1, Section 29
Former Diesel Tank Farm/Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

Figure
2

Source: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985. Centrum Subdivision 10/31/85.
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Pribilof Islands Restoration Project

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2008-000366-0

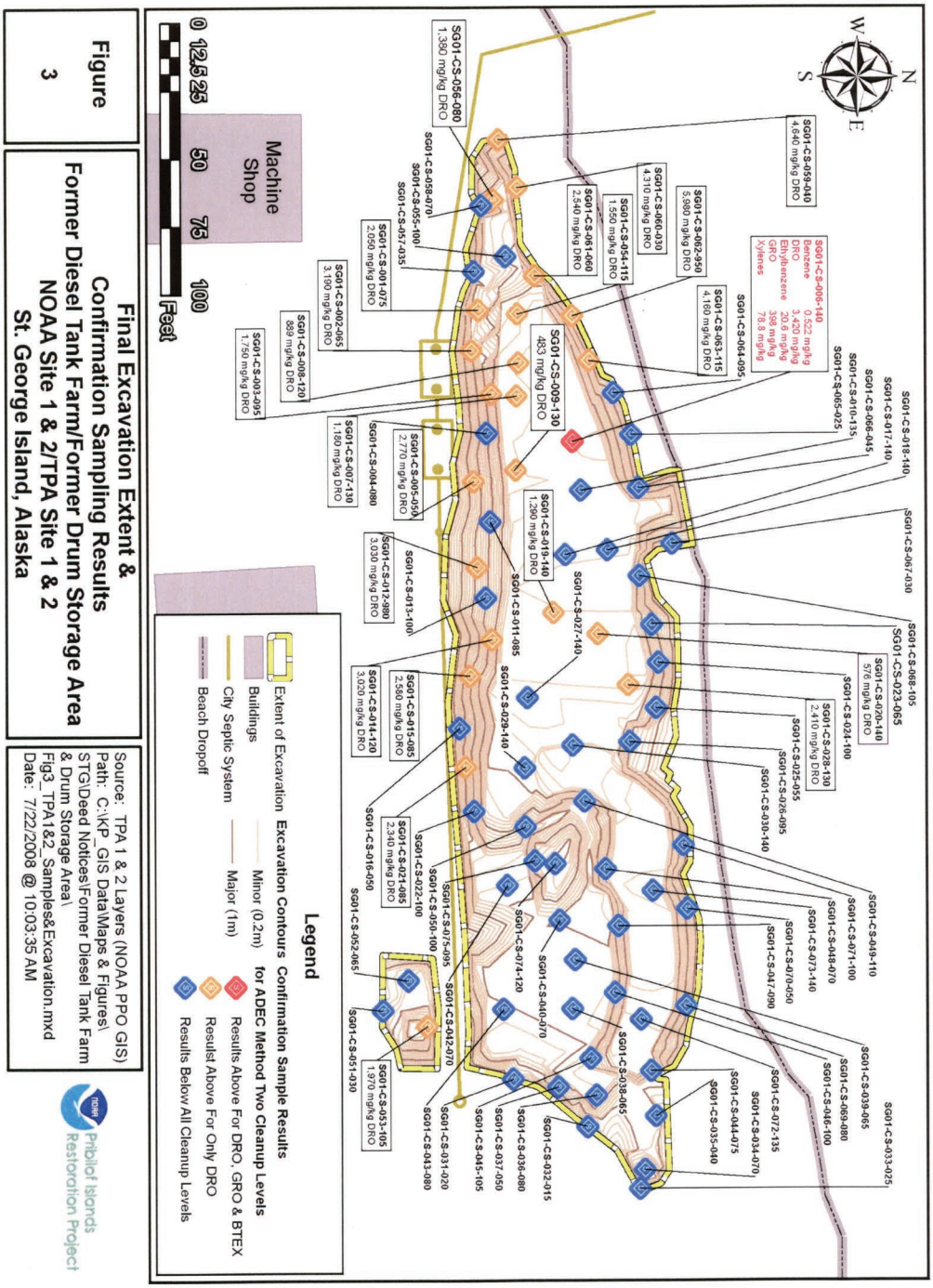

Figure 3

Final Excavation Extent & Confirmation Sampling Results
Former Diesel Tank Farm/Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

Source: TPA 1 & 2 Layers (NOAA PPO GIS)
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Figure 4

Location of Groundwater Wells & Gradient
Former Diesel Tank Farm/Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

Sources: Excavation, GW Wells, (NOAA PPO GIS Database), GW Flow (TTEMI 2005), Aero-Metric 2006 1 ft Aerial Photo
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Pribilof Islands Restoration Project

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2008-000366-0

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A L A S K A

2008-000367-0

Recording Dist: 305 - Aleutian Islands
8/5/2008 2:00 PM Pages: 1 of 7

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITES 1 and 2
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the City of St. George as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property on the north side of the City of St. George along the Bering Sea coastline, St George Island, Alaska, 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Lot 8, Tract 43
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 12.96" North Latitude, 169° 32' 47.33" West Longitude

This property, hereafter referred to as the Site (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135430; File ID 2643.38.007 and Reckey #1994250135431; File ID 2643.38.008.

The Site was identified as *Site 1 Former Diesel Tank Farm* and *Site 2 Former Drum Storage Area* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the Site as TPA Sites 1 and 2, and NOAA Sites 1 and 2. Following corrective action, NOAA submitted a conditional closure request for the Site to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2007). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that the Site cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2007). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the Site unless new information becomes available that indicates to ADEC that the Site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2007).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: City of St. George
PO Box 929
St. George, AK 99591

Recording District: Aleutian Islands

Remedial Actions and Residual Contamination

TPA Sites 1 and 2, located adjacent to each other, were used as gasoline and diesel fuel storage depots from the 1950s until the 1970s. Environmental investigations conducted in 1994 (Woodward-Clyde 1995) and 2001 (Tetra Tech 2003, Tetra Tech 2005) found heavy, widespread petroleum hydrocarbon contamination of the Site soils and groundwater. In 2006, approximately 14,280 cubic yards of petroleum-contaminated soil (PCS) was removed from the Site resulting in one large excavation that spanned TPA Sites 1 and 2 (NOAA 2007). PCS removal generally proceeded from the west end of TPA Site 1 to the east end of TPA Site 2 in one continuous excavation. Soil contamination was easily discernable by sight and odor. PCS was removed laterally to the south until the City sewer system was reached; to the north until a buffer zone between the Bering Sea and the excavation was reached; and to the west until excavation was no longer practicable due to the convergence of the City sewer system, the Bering Sea buffer, and beach area slopes which limited excavator access (NOAA 2007). Excavation to the east proceeded until field screening indicated that cleanup goals had been met. Vertically, PCS removal was limited by reaching refusal from 7.5 to 13 feet below the ground surface (bgs) in the western end of the Site, and reaching the water table at approximately 15 feet bgs in the remainder of the excavation. The excavation bottom was maintained about one foot above the water table by periodically digging test pits to track the water table elevation. In areas where further excavation was not practicable, diesel range organics (DRO) contaminated soil remains. DRO, gasoline range organics (GRO), benzene, ethylbenzene, and total xylenes remain in one area in the western portion of the site at bed rock depth of 14 feet bgs. Figure 3, drawn to scale, shows the area that was cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

Groundwater in the general vicinity of the Site is known to be contaminated with DRO, GRO, and benzene due to fuel storage and transfer operations at multiple TPA sites in the area (Tetra Tech 2005). Groundwater in this area is monitored for contaminant concentration trends in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005). Figure 4 depicts area groundwater monitoring well locations and estimated groundwater flow directions.

Site Use

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This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

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Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

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US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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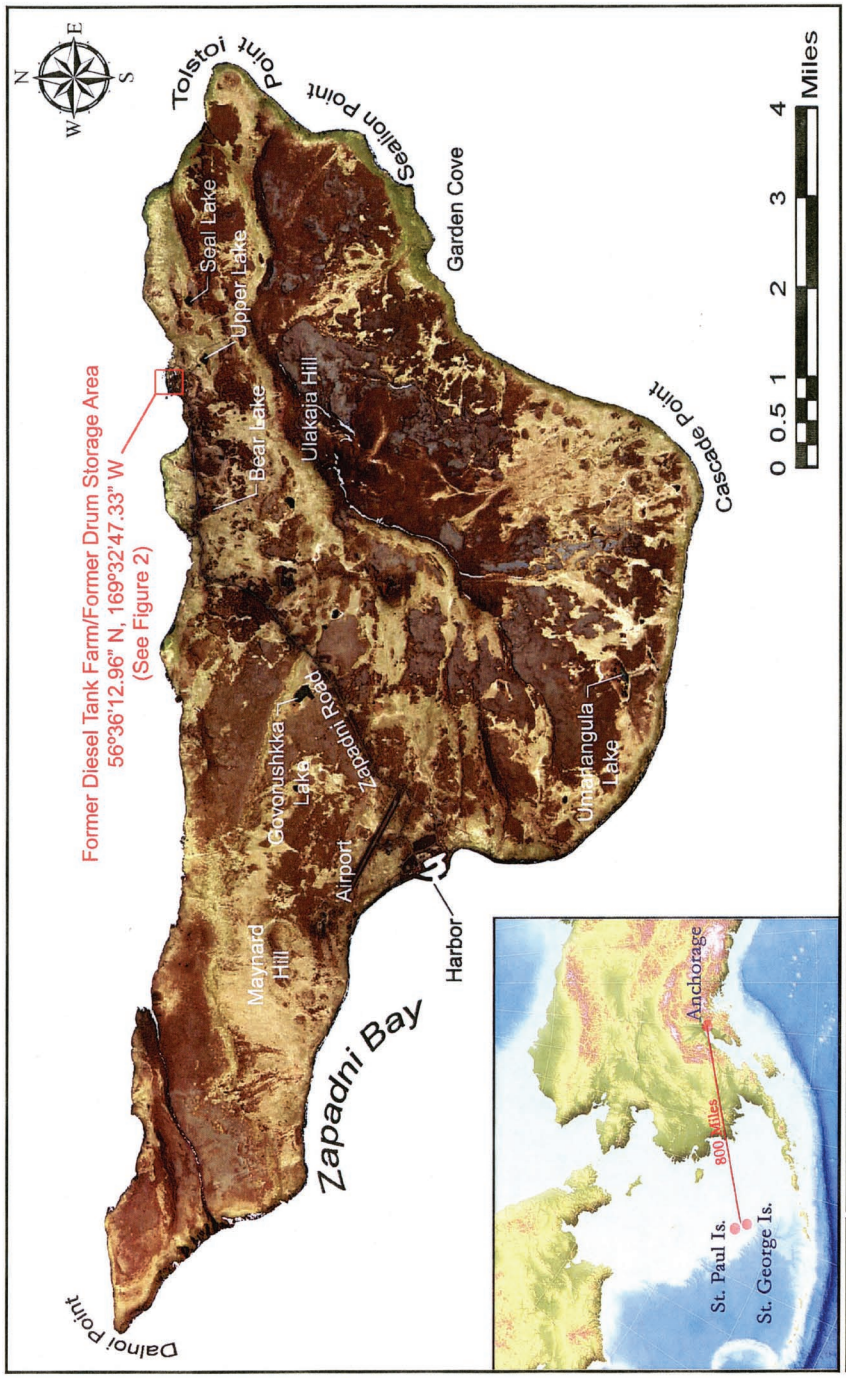

Pribilof Islands Restoration Project

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Date: 7/21/2008

St. George Island Vicinity Map
Former Diesel Tank Farm/
Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

Figure
1

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2008-000367-0

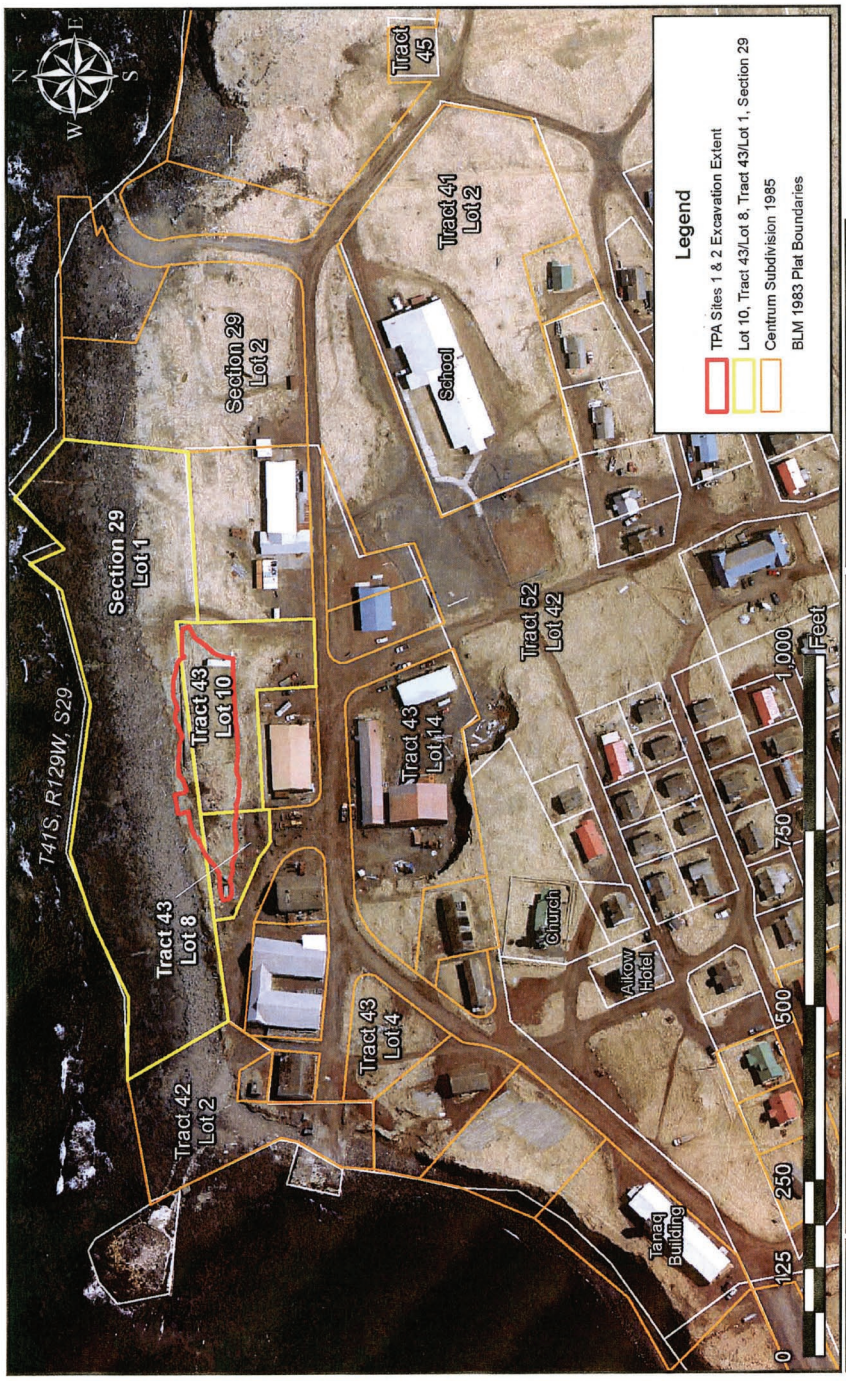

Figure 2

Legal Property Description Map
Lot 10, Tract 43/Lot 8, Tract 43/Lot 1, Section 29
Former Diesel Tank Farm/Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

Source: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985. Centrum Subdivision 10/31/85.
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Pribilof Islands Restoration Project

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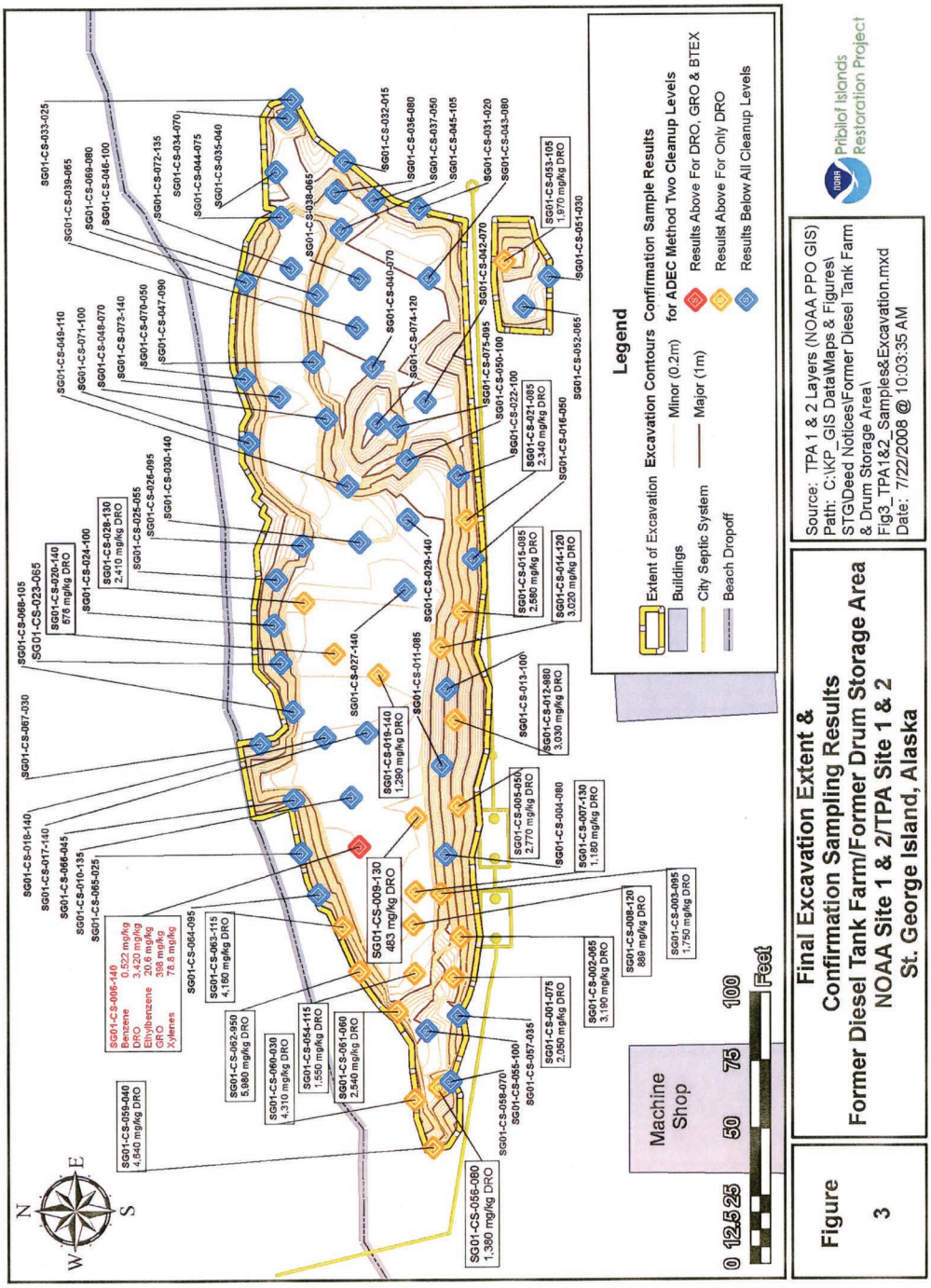

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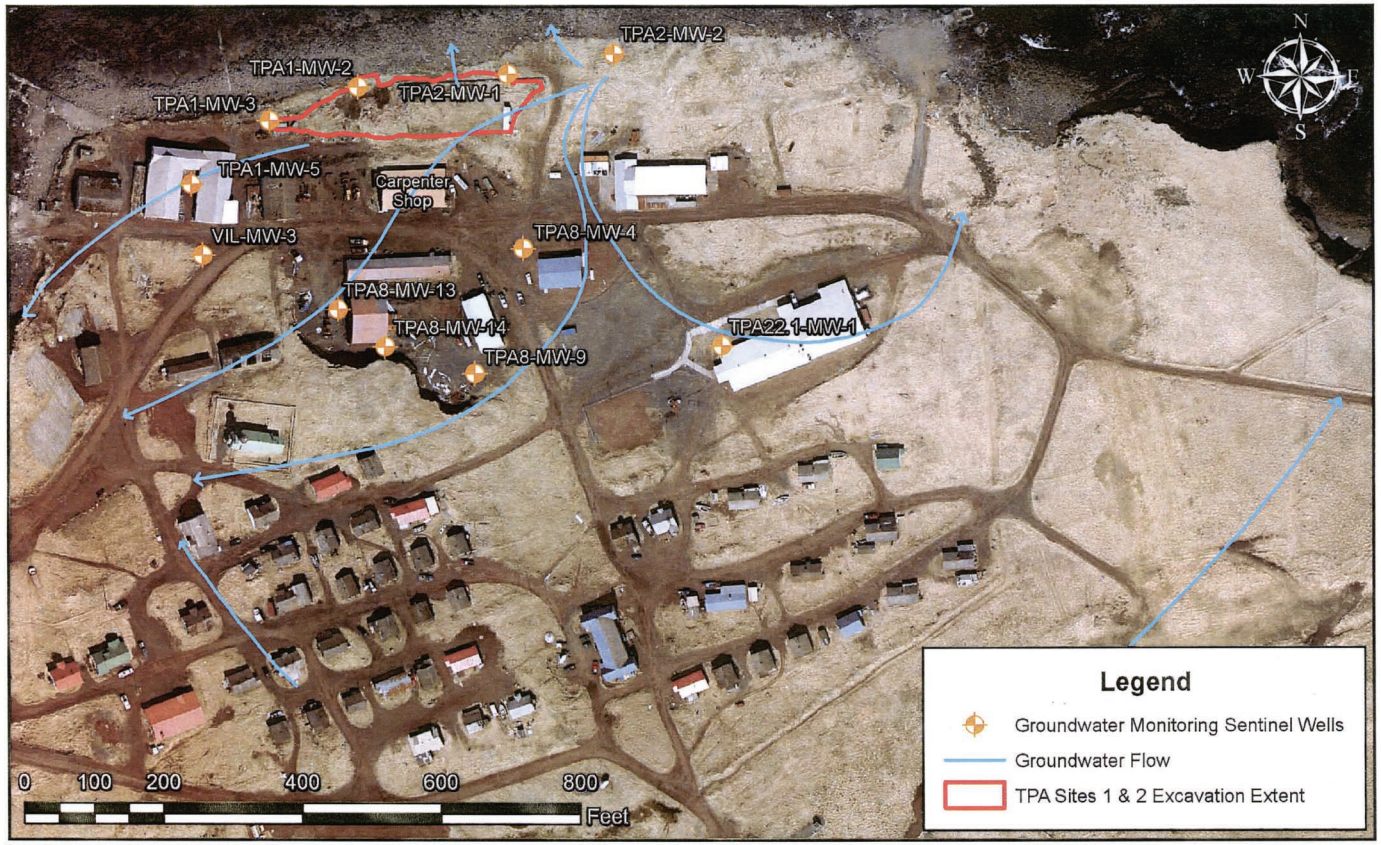

Figure 4

Location of Groundwater Wells & Gradient
Former Diesel Tank Farm/Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

Sources: Excavation, GW Wells, (NOAA PPO GIS Database), GW Flow (TTEMI 2005), Aero-Metric 2006 1 ft Aerial Photo
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Pribilof Islands Restoration Project

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2008-000367-0

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2008-000368-0

Recording Dist: 305 - Aleutian Islands
8/5/2008 2:00 PM Pages: 1 of 7

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2008-000368-0

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Printed Name: _____John A. Lindsay_____

Mailing Address:

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7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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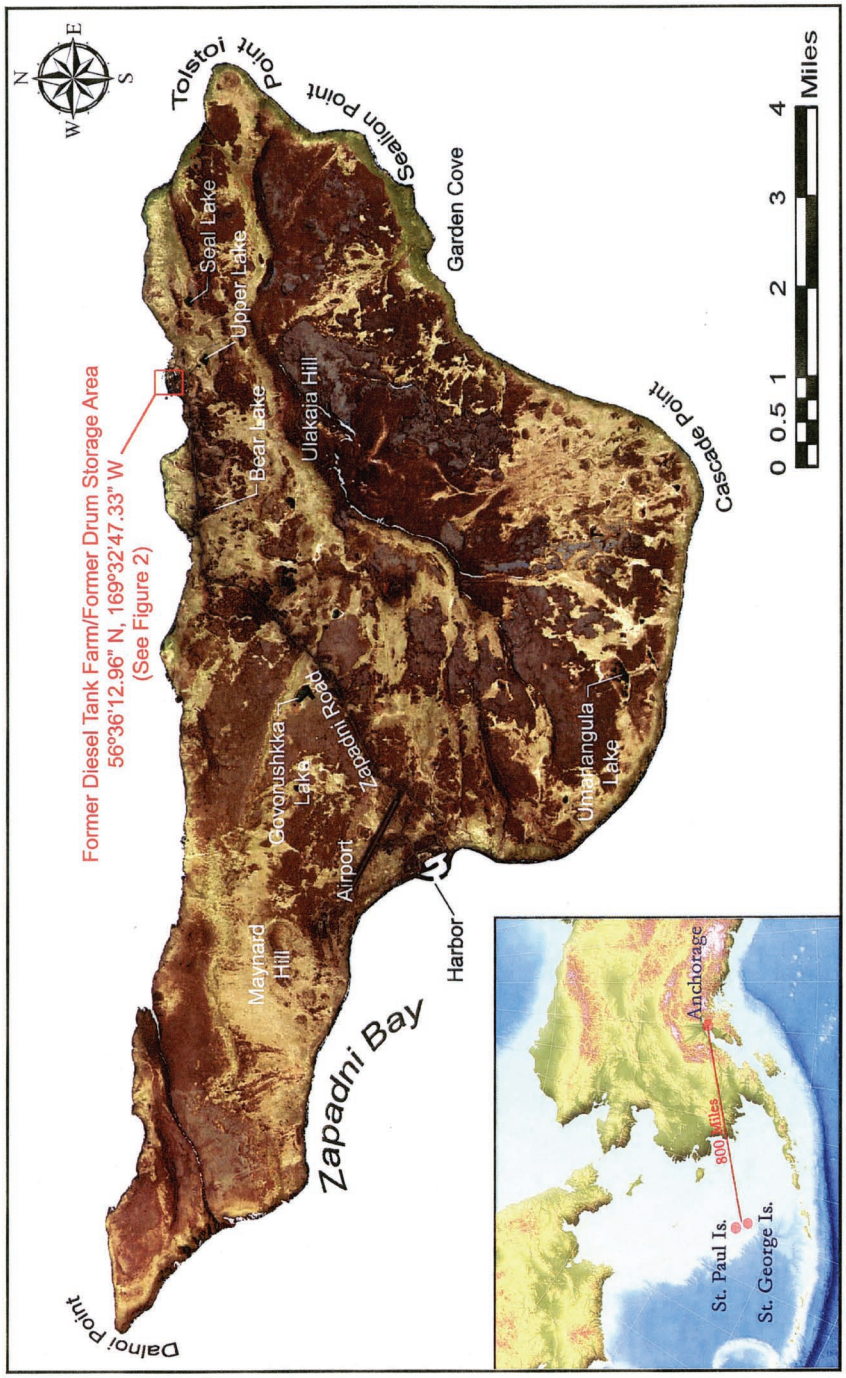
2008-000368-0



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Date: 7/21/2008

Pribilof Islands Restoration Project

Figure 1

St. George Island Vicinity Map
Former Diesel Tank Farm/
Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

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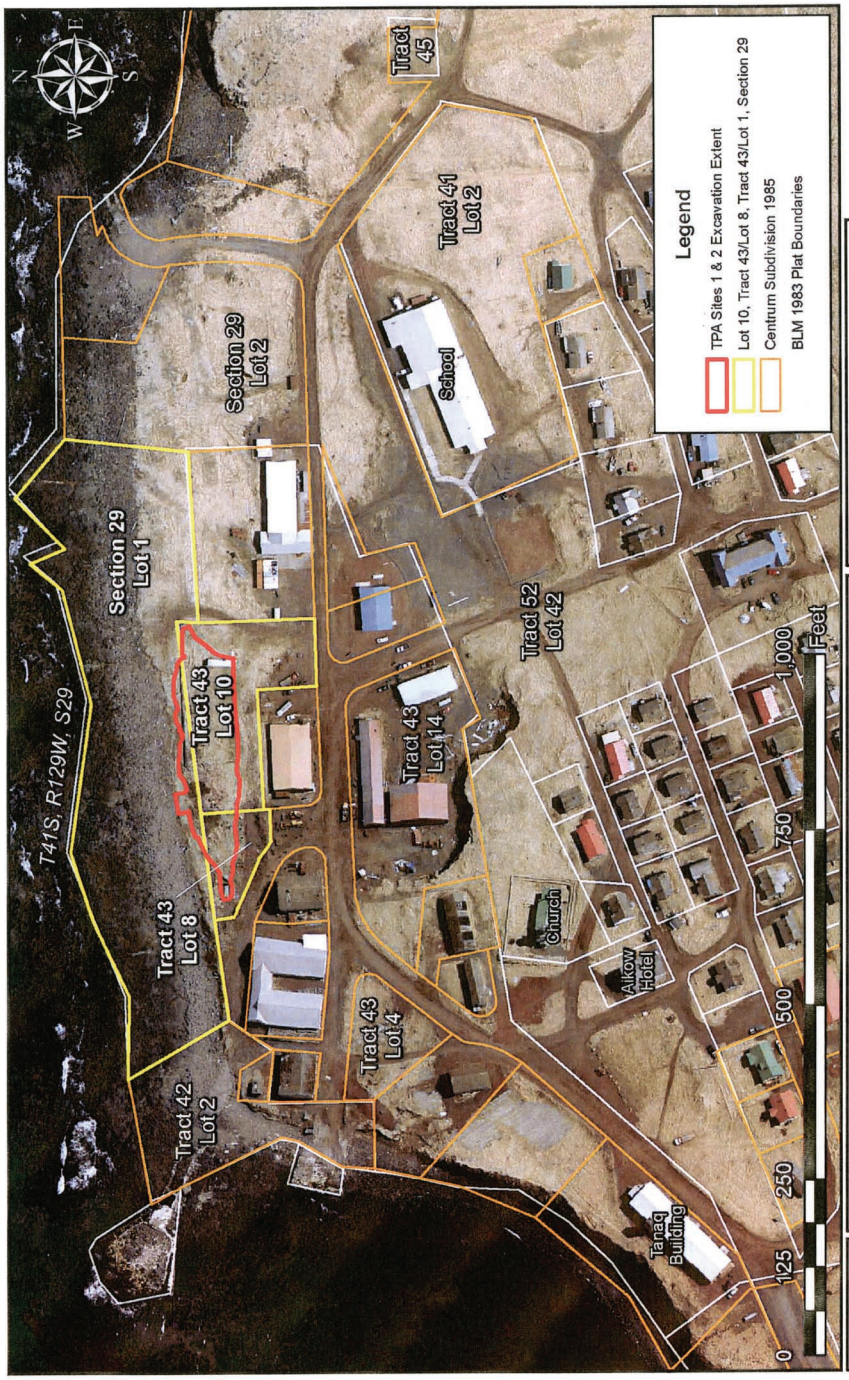
2008-000368-0



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Pribilof Islands Restoration Project

Figure 2

Legal Property Description Map
Lot 10, Tract 43/Lot 8, Tract 43/Lot 1, Section 29
Former Diesel Tank Farm/Former Drum Storage Area
NOAA Site 1 & 2/TPA Site 1 & 2
St. George Island, Alaska

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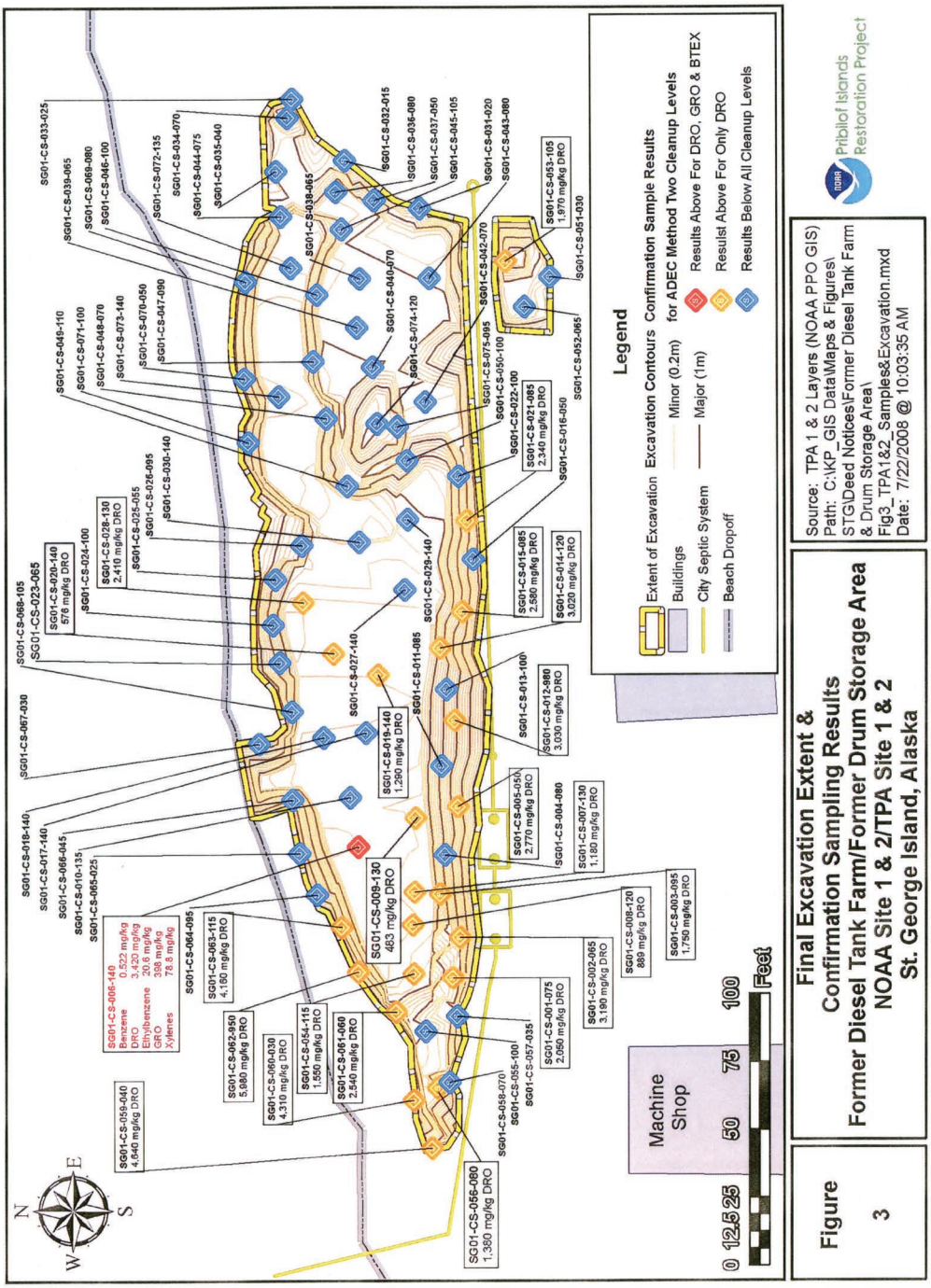
2008-000368-0



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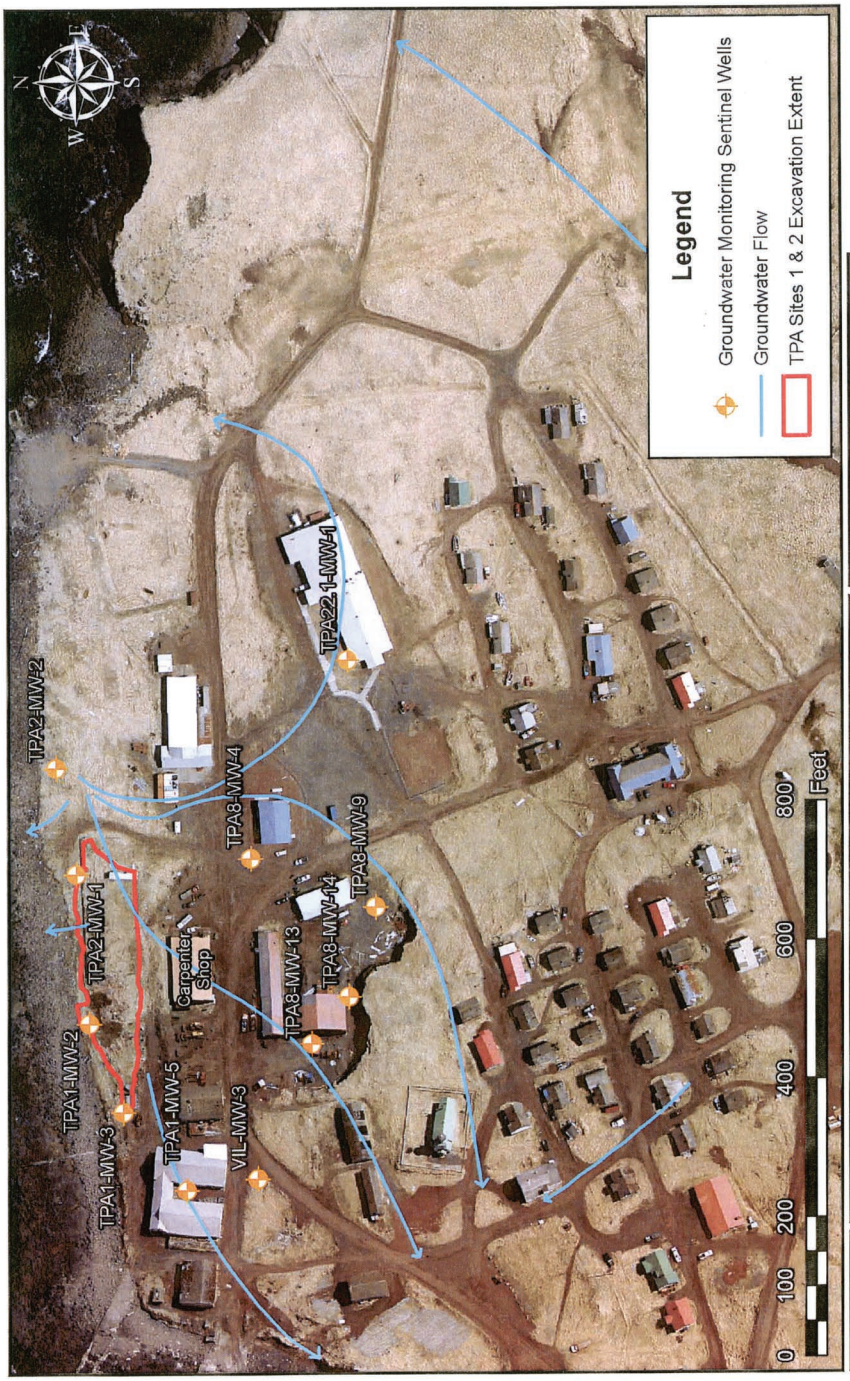

Sources: Excavation, GW Wells, (NOAA PPO GIS Database), GW Flow (TTEMI 2005), Aero-Metric 2006 1 ft Aerial Photo
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Pribilof Islands Restoration Project

Figure	Location of Groundwater Wells & Gradient Former Diesel Tank Farm/Former Drum Storage Area NOAA Site 1 & 2/TPA Site 1 & 2 St. George Island, Alaska
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2008-000368-0

NOAA Site 3
TPA Site 3: Inactive Gas Station

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Request for Conditional Closure
Inactive Gas Station
TPA Site 3/Site 3
St. George Island, Alaska

Site: Inactive Gas Station, also known as the Old Gasoline Station, Two-Party Agreement (TPA) Site 3, and National Oceanic and Atmospheric (NOAA) Site 3. The site is referred to as the "site" herein.

Location: St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On the island, the site is located on the waterfront of the City of St. George (the City) approximately 200 feet from the Bering Sea. It is on Zapadni Road between the machine shop and the carpenter shop and across from the municipal shop/offices (Latitude of 56° 36' 12" N and Longitude of 169° 32' 49.5" W; Figures 1 and 2).

Legal Property Description: The Inactive Gas Station is located in Lot 8 of Tract 43, Qawax Subdivision, which lies within Section 29, Township 41 South, Range 129 West of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Figure 2). The location of the gas station was known as Tract 65 prior to its subdivision in 1985. Tom Benson of Centrum was the surveyor for the subdivision, and Rolland Schmitten, N.W. Regional Director of NOAA's National Marine Fisheries Service, and Max Malavansky approved the survey in December of 1985. On April 25, 1986 Lot 8 was transferred by quit claim deed from NOAA to the City. The City owns the surface and subsurface estate.

Type of Release: Spilling, leaking, and dumping of petroleum products during fueling activities and station operations.

History and Background:
Two 1,000-gallon underground storage tanks (USTs), a fuel shed, and a dispensing island were located at the Inactive Gas Station. One UST was used for gasoline and the other for diesel. The gasoline UST was installed in the 1970s; the installation date for the diesel UST is not documented (E&E 1993). These tanks were operated under Alaska Department of Environmental Conservation (ADEC) UST facility ID number 3047 until taken out of operation in the 1990s when a new fuel facility at Zapadni Bay became operational (Polarconsult 1997a). The tanks supplied fuel for motor vehicles and fishing vessels.

Summary of Site Investigations:
<u>Ecology and Environment, Inc. – Preliminary Assessment (1992)</u>
Ecology and Environment, Inc. (E&E) conducted a preliminary assessment based on available files and literature, interviews with local officials and residents, and a site visit from October 5 through 8, 1992 (E&E 1993). At the time of the visit, fill and vent pipes for the gasoline UST were observed west of the filling station. E&E was unable to locate fill and vent pipes for the diesel UST. Stained soil was not evident. E&E recommended further investigation to determine the nature and extent of contamination.

<u>Woodward-Clyde – Expanded Site Inspection (1994)</u>
Woodward-Clyde performed an expanded site inspection on St. George to identify the nature and extent of soil and groundwater contamination (Woodward-Clyde 1995). Woodward-Clyde completed two test pits, TP-3 and TP-4, to the northwest and north of the Inactive Gas Station, respectively. TP-3 was completed at a drainage between the Machine Shop and the Inactive Gasoline Station where a surface sheen had been observed. The first 6 inches of soil in this test pit was stained. Soil in both TP-3 and TP-4 exhibited a fuel odor.

Samples from each test pit were analyzed for DRO, GRO, toluene, ethylbenzene, total xylenes, polychlorinated biphenyls (PCBs), and total petroleum hydrocarbons (TPH) at a field laboratory. Results indicated the presence of DRO above its ADEC Method Two cleanup level (250 mg/kg) in samples collected from 4 and 9.5 ft below ground surface (bgs), with a maximum detection of 340 mg/kg. No other analytes were detected above their ADEC Method Two cleanup levels.

A sample from TP-3 was analyzed at an off-site fixed laboratory for DRO, GRO, TPH, toluene, ethylbenzene, total xylenes, halogenated volatile organics, PCBs, and metals (arsenic, cadmium, chromium and lead). Results indicated the presence of DRO above its ADEC Method Two cleanup level in a sample collected from 0.5 ft bgs. The concentration of DRO in this sample was 1,500 mg/kg. No other analytes were detected above their ADEC Method Two cleanup levels.

Woodward-Clyde recommended the removal of USTs from the Inactive Gasoline Station.

Columbia Environmental Sciences, Inc. – Site Reconnaissance (2000)
In June and August 2000, Columbia Environmental Sciences, Inc. (CESI) conducted site reconnaissance activities for several sites on St. George Island. At TPA Site 3, CESI observed that no traces of the site's operational history were present. CESI noted that the ground had been extensively reworked and covered with scoria; there was no obvious staining.

Tetra Tech EM, Inc – Site Characterization (2001)
In August and October 2001, Tetra Tech EM, Inc (Tetra Tech) conducted characterization sampling of TPA Site 3. Tetra Tech advanced five soil borings and collected samples from each boring. Fourteen samples were screened using Petroflag, and 11 samples were submitted to a fixed laboratory for DRO, GRO, RRO, VOC, semivolatile organic compounds (SVOC) and metals analyses (Figure 3; Tetra Tech 2003).

DRO was detected above its ADEC Method Two cleanup level of 250 mg/kg in two fixed-laboratory samples. A sample collected from the 2 to 4 ft bgs interval at location TPA3-GP3 contained 940 mg/kg DRO, and a sample collected from the 2 to 4 ft bgs interval at location TPA3-GP4 contained 4,400 mg/kg DRO. These sample locations are in the same vicinity as Polarconsult sample points SS 035, SS 042, and SS 049 located along the northern extent of the 1997 Polarconsult excavation (see Summary of Cleanup Actions below and Figure 5). This area is adjacent to the municipal sewer system, and thus, NOAA considers further excavation of this area not practicable.

VOCs were not detected above ADEC cleanup levels with the exception of 0.13 mg/kg benzene in a sample collected from the 0 to 2 feet bgs interval at location TPA3-GP3, and 0.09 mg/kg tetrachloroethylene (PCE) in a sample collected from the 2 to 4 feet bgs interval at the same location. Current ADEC cleanup levels are 0.02 mg/kg for benzene and 0.03 mg/kg for PCE. As discussed above, TPA3-GP3 is located adjacent to the sewer system, and thus further excavation in the area is not practicable. Furthermore, the benzene concentration is below ADEC's 1991 cleanup level of 0.5 mg/kg, and the PCE concentration is only slightly above the ADEC Method Two cleanup level for migration to groundwater and is well below cleanup levels based on ingestion and inhalation (160 and 80 mg/kg, respectively). There is no known source for PCE in this area.

At sample location TPA3-GP2, lead was found at 612 mg/kg in the sample depth interval 4 to 6 ft bgs. This concentration is above the residential cleanup level of 400 mg/kg lead (ADEC 2003). All other metals were found to be within St. George's background levels.

Fixed laboratory analysis indicated GRO, RRO, and SVOC concentrations were all below ADEC Method Two cleanup levels.

Tetra Tech EM, Inc – Groundwater Sampling (2003/2004)
During 2001 and 2003, groundwater-monitoring wells were installed in the City oceanfront area to support water quality monitoring, water level logging and flow gradient modeling, plume size determination, and product removal/groundwater treatment (Tetra Tech 2005a). Data collected from wells in the vicinity of TPA Site 3 indicate that groundwater flow in the area of the Inactive Gas Station is to the west-southwest. Four quarters of groundwater monitoring beginning in August 2003 found light non-aqueous phase liquids (LNAPL) in wells TPA1-MW-1 and TPA8-MW-12, with a thickness of 1 foot above groundwater. A thin layer of LNAPL in well TPA1-MW-4 inhibited the sampling of this well. Additionally, DRO, GRO, and benzene in well TPA1-MW-3 and DRO and GRO in well TPA1-MW-2 were detected above ADEC Table C cleanup levels. DRO, GRO, and benzene were not detected in down gradient well VIL-MW3. Spills and leakage from the Inactive Gas Station may have contributed to groundwater contamination in the City's waterfront area, however the LNAPL plumes are centered at and most likely attributable to historic operations at TPA Site 1 (Former Diesel Tank Farm) and TPA Site 8 (Active Power Plant). Groundwater contours and monitoring results are presented in Figure 4.

Summary of Applied Cleanup Levels:
With ADEC approval, NOAA employed ADEC Method Two cleanup criteria, except for benzene and total BTEX, when evaluating site conditions relative to the need for remedial action (18 AAC 75.341(c); ADEC 2003). The TPA allows NOAA to apply the 1991 State of Alaska cleanup levels (ADEC 1991), which NOAA did for benzene and total BTEX. Cleanup criteria were applied to the maximum extent practicable (18 AAC 75.325(f), 18 AAC 75.990).

Summary of Cleanup Actions:
In July and August 1997, NOAA's contractor, the St. George Tanaq Corporation (Tanaq), and its subcontractor, Polarconsult Alaska Inc. (Polarconsult), removed the two 1,000-gallon USTs from TPA Site 3. Inspection of the tanks and associated piping indicated that, although the tanks were in operable condition, the various piping connections were improperly made and probably contributed to constant leakage of diesel fuel and gasoline when in use (Polarconsult 1997a). As a result, Tanaq and Polarconsult removed the fueling shack, dispensing station, and approximately 1,624 cubic yards of contaminated soil from the site (Polarconsult 1997a, Polarconsult 1997b). Removal of contaminated soils from around the UST locations continued until sample results indicated cleanup levels had been met, equipment refusal was reached, or it was determined that further digging might undermine the municipal sewer system on the north side of the excavation. Samples taken to direct soil removal and document final contamination levels indicated that although most of the contamination associated with the site was removed, some was left in place at the bottom of the excavation and in the vicinity of the municipal sewer system. Twenty-three confirmation samples and one duplicate were analyzed for DRO, GRO, lead, and BTEX. Figure 5 shows the final extent of excavation and the location of confirmation samples with an indication of those exceeding the site cleanup levels. Table 1 presents the confirmation sample results. The maximum DRO concentration known to remain is 17,600 mg/kg. The maximum GRO concentration known to remain is 7,720 mg/kg. BTEX above ADEC Method Two cleanup levels was left in place at one sample location (SS 038), with concentrations of 3.2 mg/kg benzene, 51.8 mg/kg toluene, 21.0 mg/kg ethylbenzene, 117 mg/kg total xylenes. Following completion of excavation activities, the excavation was backfilled. An impermeable plastic sheet was placed over the excavation and covered with scoria to reduce surface water infiltration.

On June 9, 2004, the St. George Chadux Corporation and its subcontractor, Tetra Tech, returned to TPA Site 3 to remove the lead-contaminated soil identified by Tetra Tech in 2001 (Tetra Tech 2005b). This soil was located southwest of the 1997 excavation, near the northeast corner of the Old Machine Shop (Figures 3 and 5). The excavation was advanced to a maximum depth of 6 ft bgs, and a total of approximately 6 cubic yards of soil was removed. One confirmation sample and one field duplicate were collected (Table 2, Figure 5). Analytical data indicate that concentrations of total lead in soils remaining in place are below the ADEC Method Two cleanup level of 400 mg/kg. Two samples and one duplicate were collected from the excavated soils. Analytical data indicated that concentrations of both total lead and leachable lead are below the respective cleanup levels (Table 2). The excavated soil was placed in flexible intermediate bulk containers and shipped off island for disposal at Columbia Ridge Landfill in Arlington, Oregon in October 2004. The excavation was backfilled with clean material from the local scoria pit known as the red pit.

Recommended Action:
In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action, to the maximum extent practicable, at the Inactive Gas Station, TPA Site 3/Site 3 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

References:
Alaska Department of Environmental Conservation (ADEC). 1991. *Interim Guidance for Non-UST Contaminated Soil Cleanup Levels, Contaminated Sites Program*. July 17, 1991.

ADEC. 2003. Title 18 of the *Alaska Administrative Code* 75, Articles 3 and 9. *Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through January 30.

Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites. Pribilof Islands, Alaska*. February.

National Oceanic and Atmospheric Administration (NOAA). 1996. Pribilof Islands Environmental Restoration Two-Party Agreement, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2004. *Final Corrective Action Plan for Oceanfront Two Party Agreement Site 1 (Former Diesel Tank Farm), Site 2 (Former Drum Storage Area), Site 3 (Inactive Gas Station) and Site 25-1 (Port Fuel Supply Line, East-West), St. George, Alaska*. February.

Polarconsult Alaska, Inc. (Polarconsult). 1997a. *Environmental Site Investigation, St. George Debris Cleanup and UST Decommissioning, Pribilof Islands Environmental Restoration Project, Volumes I and II*. November.

Polarconsult. 1997b. *Environmental Site Investigation, St. George Debris Removal Report, Pribilof Islands Environmental Restoration Project, Volume III*. December.

Tetra Tech EM, Inc. (Tetra Tech). 2003. *Draft Site Characterization Report, Oceanfront Sites, Two-Party Agreement Site No. 1, 2, and 3, Pribilof Environmental Restoration Project, St. George Island, Alaska*. Tetra Tech EM Inc., Mountlake Terrace, Washington. January 20.

Tetra Tech. 2005a. *Final, Field Investigation Report, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project, St. George Island, Alaska*. June 23.

Tetra Tech. 2005b. Letter Report (Final), Removal of Lead-Contaminated Soils from TPA Sites 3, 9, and 19, St. George Island, Alaska. July 6.

Woodward-Clyde. 1995. *Expanded Site Inspection St. George Island, Alaska*. Woodward-Clyde, Anchorage, Alaska. March.

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

July 20, 2005
Date

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the Inactive Gas Station, TPA Site 3/Site 3 in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

July 25, 2005
Date

Tables and Figures

Table 1. 1997 Removal Action – Confirmation Sample Summary, Inactive Gas Station, TPA Site 3/Noaa Site 3, St. George Island, Alaska

Sample Number	Sample Depth (feet)	Diesel-Range Organics (mg/kg)	Gasoline-Range Organics (mg/kg)	Benzene (mg/kg)	Total BTEX (mg/kg)	Lead (mg/kg)
SS 033	14.6	**664**	**352**	0.4	**41**	1.7
SS034	15.2	U	U	U	0	1.3
SS 035	4.3	**2430**	100	0.4	9	248.0
SS 036	8.1	5	U	U	0	3.4
SS 037	4.4	5	U	U	0	3.7
SS 038	14.1	**477**	**768**	**3.2**	**193**	2.7
SS 039	9.8	U	U	U	0	1.2
SS 040	4.6	**900**	U	U	0	2.6
SS 041	12.0	5	U	U	0	1.4
SS 042	6.1	**1040**	114	U	5	1.1
SS 043	13.0	21	4	U	0	3.0
SS 044	6.5	U	U	U	0	4.8
SS 045	9.2	14	U	U	0	1.6
SS 046	4.1	4	U	U	0	1.2
SS 047	5.7	U	U	U	0	2.5
SS 048	10.5	17	U	U	0	4.6
SS 049	3.5	**2160**	120	U	5	1.8
SS 050	12.2	763	34	U	1	5.1
SS 051	3.5	**2350**	143	U	6	1.3
SS 229	6.9	**1970**	-	-	-	4.0
SS 230	6.9	**17600**	-	-	-	19.6
SS 231	6.9	**2100**	**6440**	**367**	**4437**	23.4
SS 232	6.9	**2950**	**7720**	**161**	**3019**	146.0
SS 233	10.0	**952**	68	0.3	10.2	16.6
Cleanup Level		250[a]	300[a]	0.5[b]	15[b]	400[a, c]

Notes:

mg/kg milligram per kilogram

BTEX benzene, toluene, ethylbenzene, xylene

U Indicates sample was analyzed by not detected.

\- Indicates sample was not analyzed.

a Alaska Department of Environmental Conservation (ADEC) Method Two cleanup level, under 40-inch zone, migration to groundwater pathway

b 1991 ADEC cleanup levels; under the Two Party Agreement, NOAA is directed to apply 1991 ADEC cleanup levels, however, NOAA has attempted to remove contamination to within the current cleanup levels where applicable to the maximum extent practicable.

c According to ADEC Method Two, lead cleanup levels must be determined based on site-specific land use. NOAA is using the residential cleanup level (400 mg/kg).

Results in **bold** exceed cleanup levels.

Table 2. 2004 Removal Action - Analytical Data Summary, Inactive Gas Station, TPA Site 3/Noaa Site 3, St. George Island, Alaska

Sample Number	**Lead (mg/kg)**	**TCLP Lead (mg/L)**
Confirmation Samples		
SG03-CS-001-060	122	--
SG03-CS-001-250 [a]	161	--
Characterization Samples		
SG03-CH-001	16.4	0.1 U
SG03-CH-001-250 [b]	17.4	0.1 U
SG03-CH-002	219	0.159
ADEC Method Two Cleanup Level	*400* [c]	*5* [d]

Notes:

ADEC Alaska Department of Environmental Conservation
mg/kg Milligram per kilogram
mg/L Milligram per liter
-- Not analyzed
TCLP Toxicity Characteristic Leachate Procedure
TPA Two-Party Agreement
U The analyte was analyzed for, but not detected above the sample reporting limit
a Duplicate of sample number SG03-CS-001-060
b Duplicate of sample number SG03-CH-001
c According to ADEC Method Two, lead cleanup levels must be determined based on site-specific land use. NOAA is using the residential cleanup level (400 mg/kg).
d Maximum allowable concentration for the toxicity characteristic obtained from 40 Code of Federal Regulations 261.24. Analyses for leachable lead were conducted in accordance with TCLP using EPA SW-846 Method 1311 and 6010.

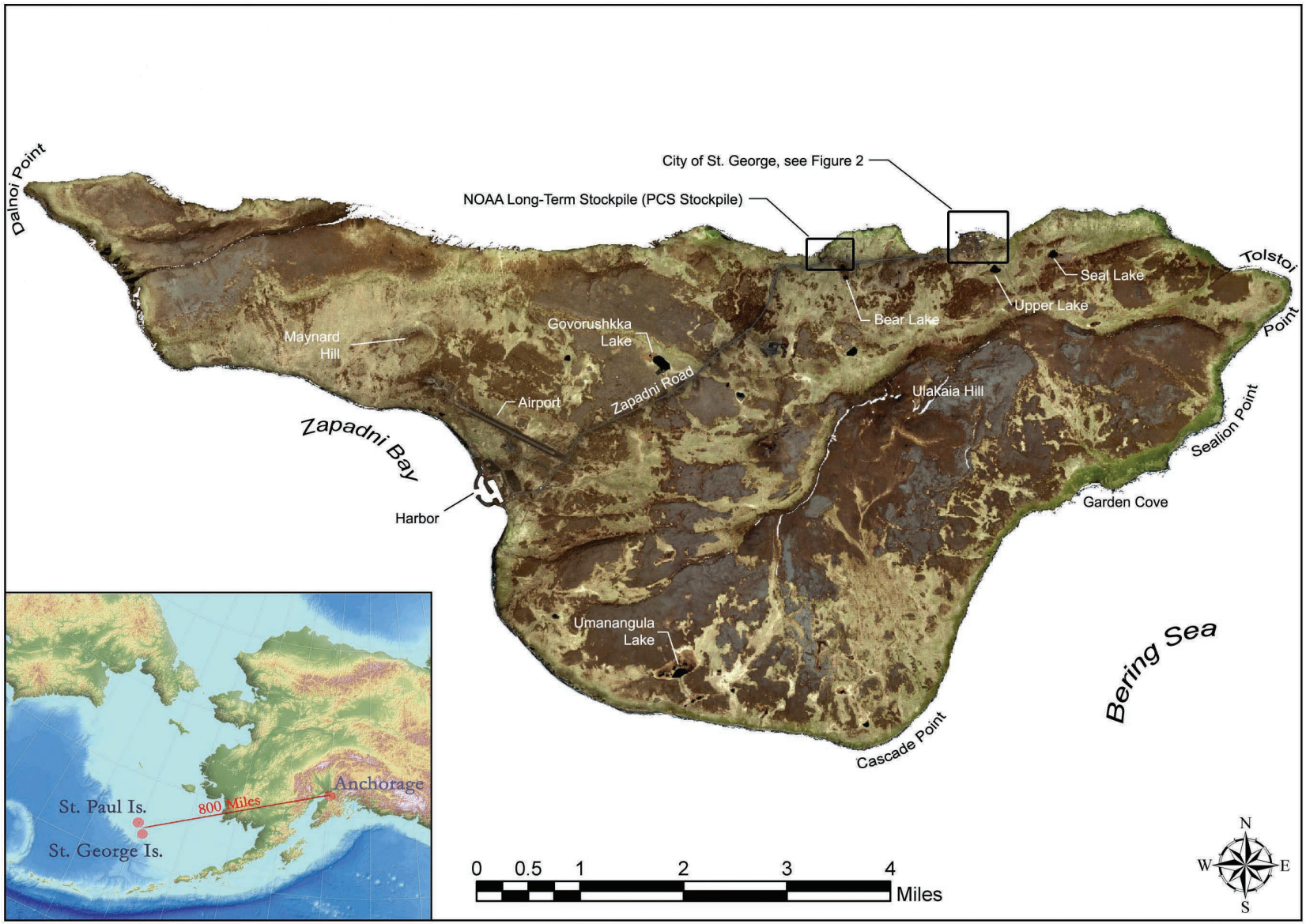

Figure 1	**Island and Vicinity Map Inactive Gas Station TPA Site 3/NOAA Site 3 St. George Island, Alaska**	Source: Ikonos 2001 Satellite Image

Pribilof Islands Restoration Project

Figure 2	Legal Property Description Map Inactive Gas Station TPA Site 3/NOAA Site 3 St. George Island, Alaska	Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985	Pribilof Islands Restoration Project

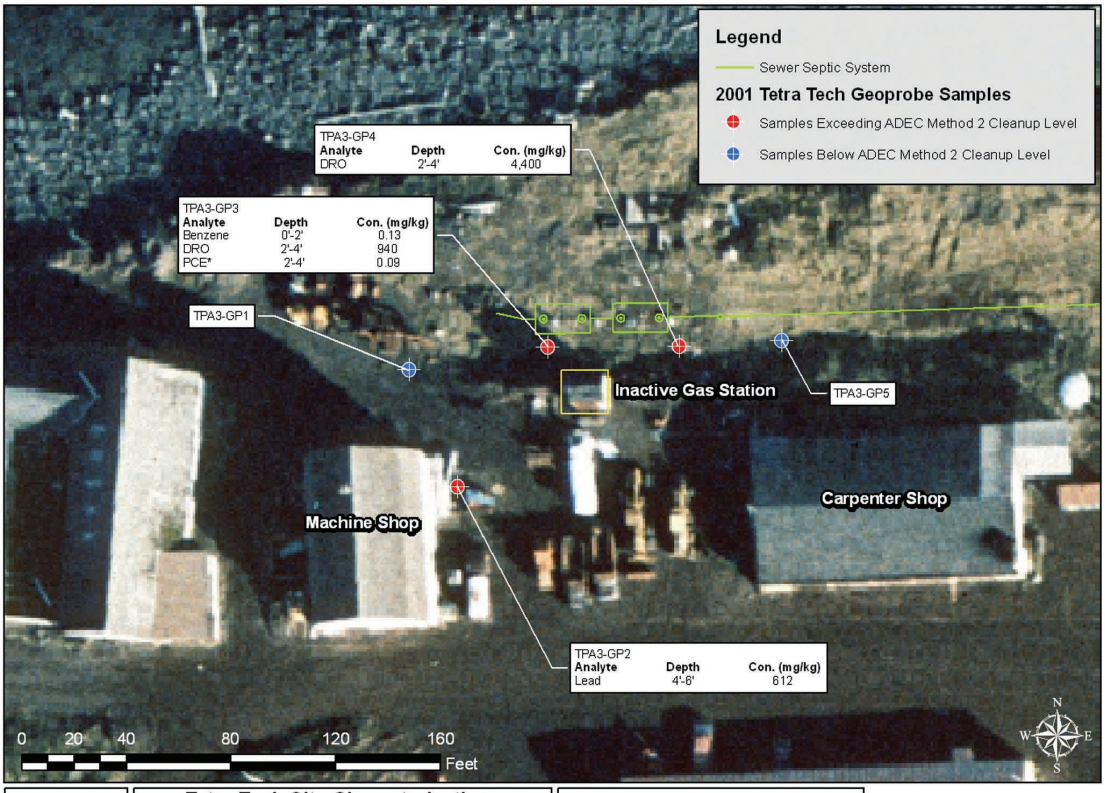

Figure 3	Tetra Tech Site Characterization Sampling Results Inactive Gas Station TPA Site 3/NOAA Site 3 St. George Island, Alaska	Source: Aeromap U.S. 9/28/96 Aerial Photograph; Tetra Tech EM Site Characterization Report Oceanfront Sites Two-Party Agreement Sites No. 1, 2, & 3 Note: Only data for Method 2 Exceedences are shown on map. *PCE also known as Tetrachloroethene.	Pribilof Islands Restoration Project

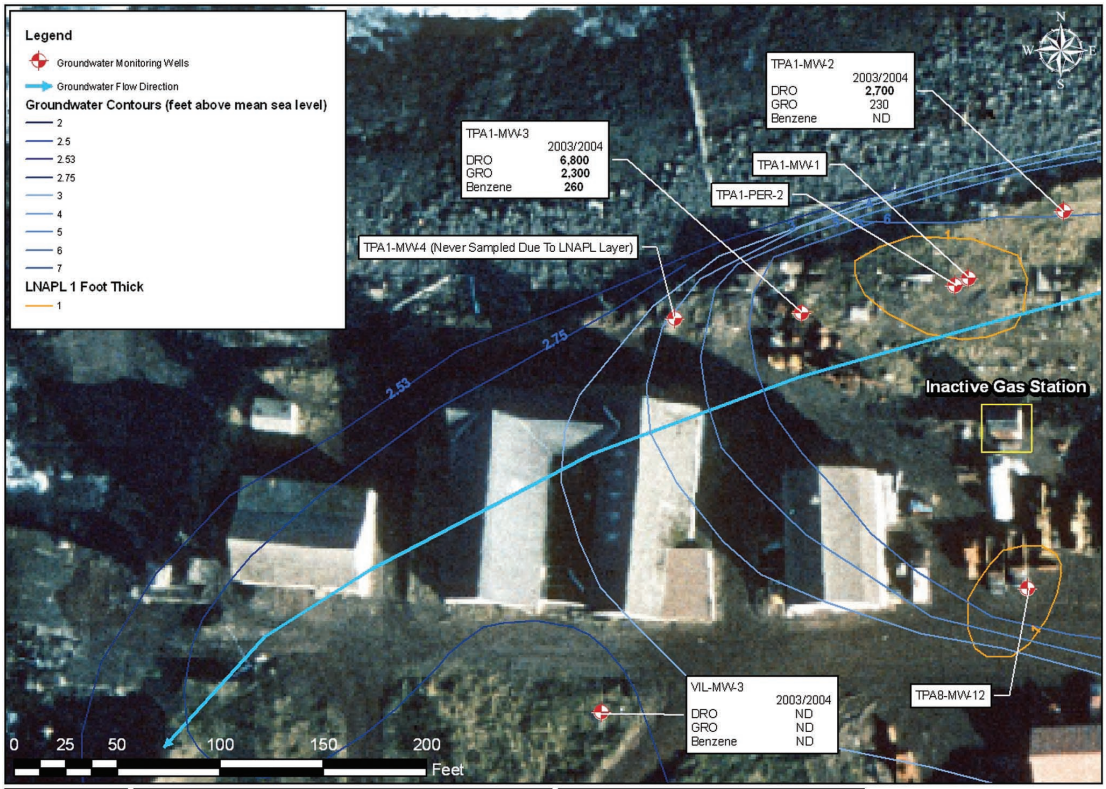

Figure 4	Groundwater Sampling Results & Groundwater Flow Direction Inactive Gas Station TPA Site 3/NOAA Site 3 St. George Island, Alaska	Source: Aeromap U.S. 9/28/96 Aerial Photograph; Tetra Tech EM Field Investigation Report, St. George Island, April 26, 2005. Note: Results in µg/L (Micrograms per liter); ND (analyte was analyzed for but was not detected); Results presented represent the maximum detection in the four quarters of sampling during 2003-2004.	Pribilof Islands Restoration Project

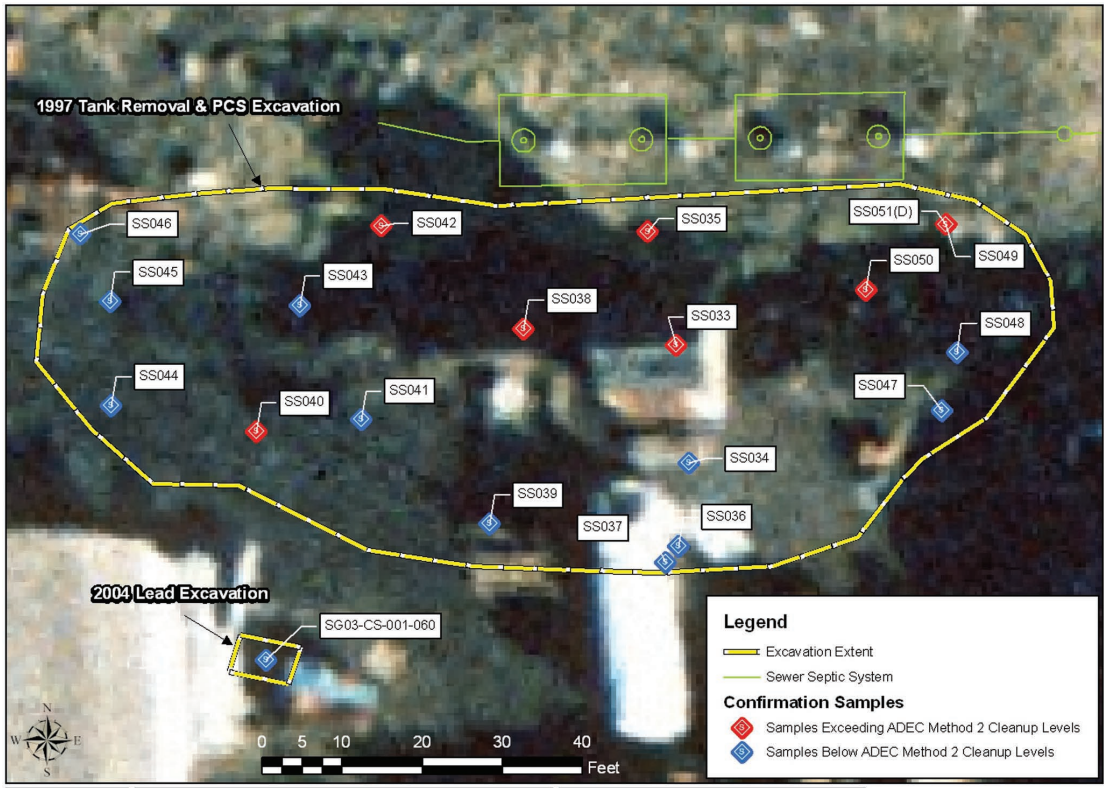

Figure 5	Excavation and Confirmation Sample Locations Inactive Gas Station TPA Site 3/NOAA Site 3 St. George Island, Alaska	Source: Environmental Site Investigation St. George Debris Cleanup & UST Decommissioning, Polarconsult Alaska, Inc. 11/97; Letter Report Removal of Lead-Contaminated Soils from TPA Sites 3, 9, 19, and PCB Sampling at TPA 9, St. George Island, Alaska. Tetra Tech EM Inc. 5/2005. Note: See tables 1 & 2 for sample results.	Pribilof Islands Restoration Project

cc

A L A S K A

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Recording Dist: 305 - Aleutian Islands
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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 3
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property on the west side of the Tanaq Corporation Shop in the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Tract 43
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 12.27" North Latitude, 169° 32' 49.68" West Longitude

This property, hereafter referred to as Site 3 (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135432; File ID 2643.38.009.

This site was identified as *Site 3, Inactive Gas Station* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 3 and NOAA Site 3. Following corrective action, NOAA submitted a request for conditional closure for Site 3 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 3 cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2005a).

Grantor: U.S. Bureau of Land Management

Grantee: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Recording District: Aleutian Islands

Remedial Actions and Residual Contamination

Two 1,000-gallon underground storage tanks (USTs), a fuel shed, and a dispensing island were located at Site 3. One UST stored gasoline and the other stored diesel fuel. The gasoline UST was installed in the 1970s; the installation date for the diesel fuel UST is not documented. These tanks were operated under ADEC UST facility ID number 3047 until taken out of operation in the 1990s (Polarconsult 1997). In 1997, the USTs and approximately 1,624 cubic yards of petroleum hydrocarbon contaminated soil were removed from the site (Polarconsult 1997). Contaminated soil removal continued until field screening indicated ADEC cleanup requirements were met or further excavation was not practicable due to reaching equipment refusal at bedrock or endangering the municipal sewer system on the north side of the excavation. The excavation was backfilled with clean material. Diesel range organics (DRO) contaminated soil remains just south of and parallel to the municipal sewer system at depths of 3.5 feet below the ground surface (bgs) and deeper. DRO, gasoline range organics (GRO), benzene, toluene, ethylbenzene, and total xylene contamination remains in the area beneath the past location of the dispensing station at equipment refusal/bedrock depth of approximately 14 feet bgs.

In 2001, a site investigation found a location south of the Inactive Gas Station excavation where the concentration of lead in the soil exceeded the ADEC Method Two criterion (Tetra Tech 2003). In 2004, NOAA removed the lead contaminated soil from this location; confirmation sample analytical results indicated that the site meets ADEC cleanup requirements for lead (Tetra Tech 2005a). In 2004, the lead contaminated soil was shipped off-island for disposal (NOAA 2005a).

Attached is a diagram (Figure 3) drawn to scale that shows the areas that were cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

Groundwater in the general vicinity of Site 3 is known to be contaminated with petroleum products due to fuel storage and transfer operations at multiple TPA sites in the area (Tetra Tech 2005b). Groundwater in this area is monitored for contaminant concentration trends in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b). Figure 4 depicts area groundwater monitoring well locations and estimated groundwater flow directions.

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil or water from the site or use of the groundwater at or near the contaminated area requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

References:

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2005a. *Request for Conditional Closure, Inactive Gas Station, TPA Site 3/Site 3, St. George Island, Alaska*. Signed by John Lindsay (NOAA) and submitted with cover letter July 20, 2005. Signed by Louis Howard of ADEC Contaminated Sites Program, July 25, 2005.

NOAA. 2005b. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volumes 1 through 3. November 2.

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Tetra Tech. 2005a. *Final Letter Report, Removal of Lead-Contaminated Soils from TPA Sites 3, 9, and 19 and PCB Sampling at TPA Site 9, St. George Island, Alaska.* July 6.

Tetra Tech. 2005b. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 7
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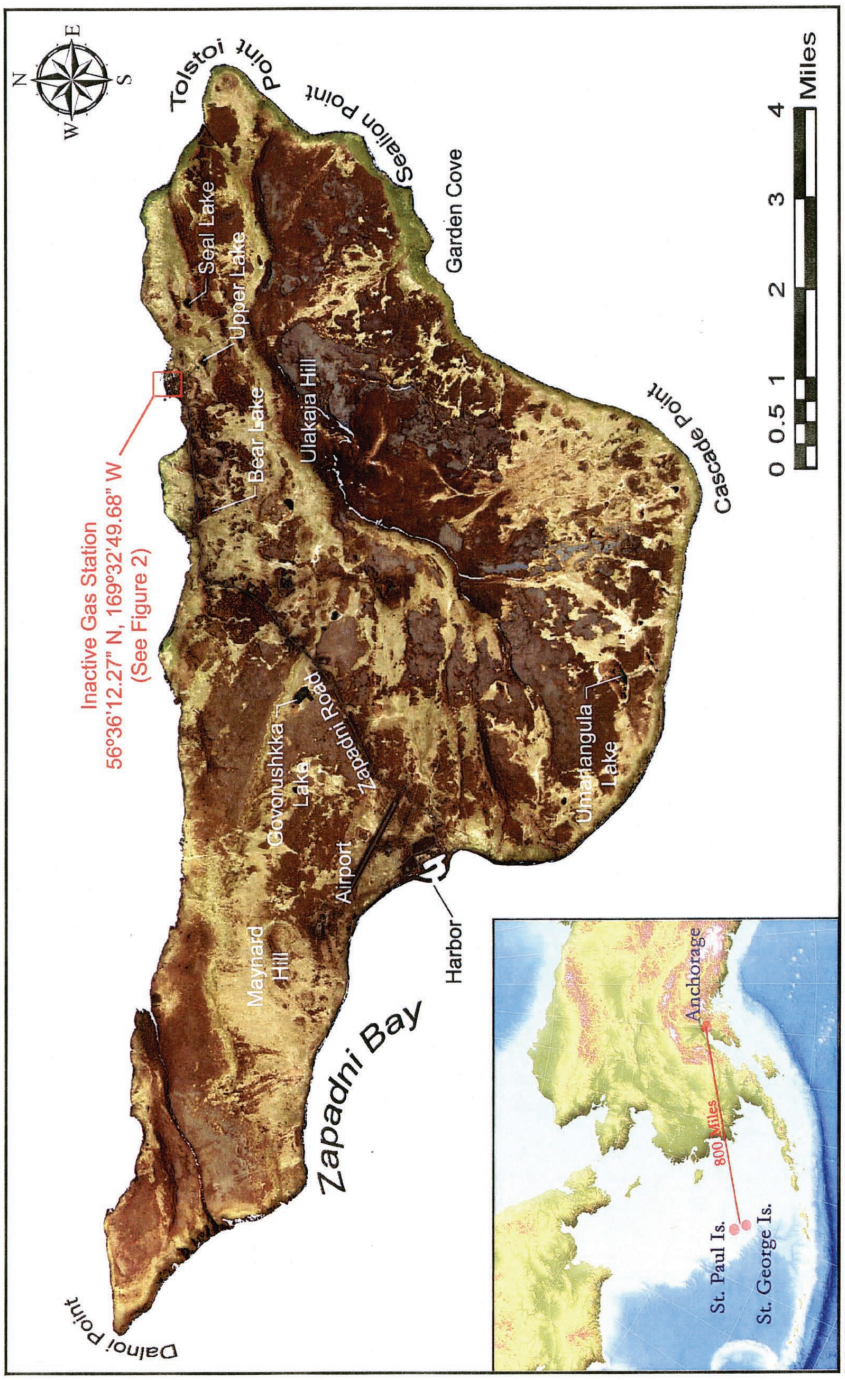

Pribilof Islands Restoration Project

Source: Ikonos Satellite Imagery (Space Imaging 2001)
Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Inactive Gas Station\Fig 1 STG Standard - TPA 3.psd
Date: 7/21/2008

Figure 1

St. George Island Vicinity Map
Inactive Gas Station
NOAA Site 3/TPA Site 3
St. George Island, Alaska

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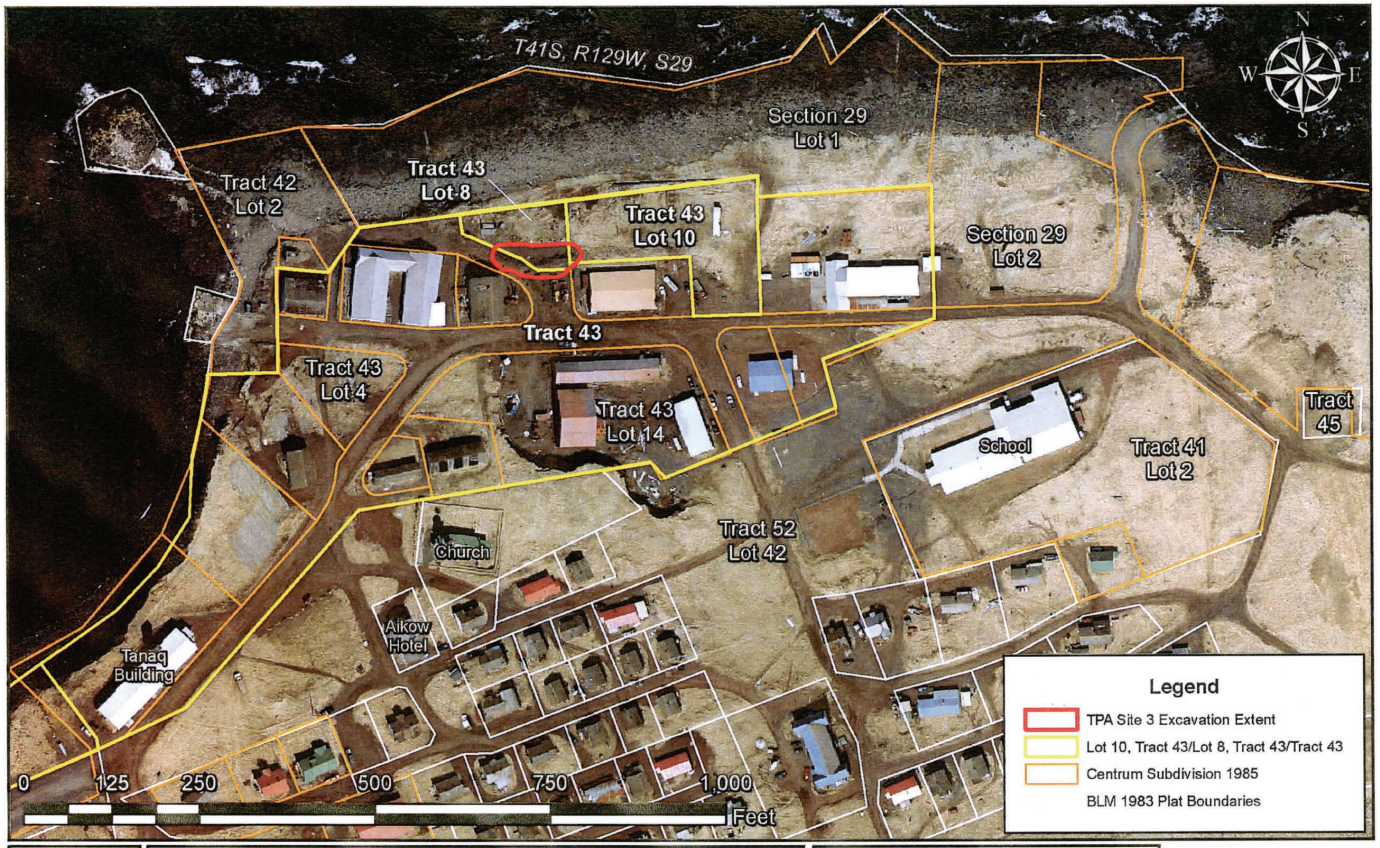

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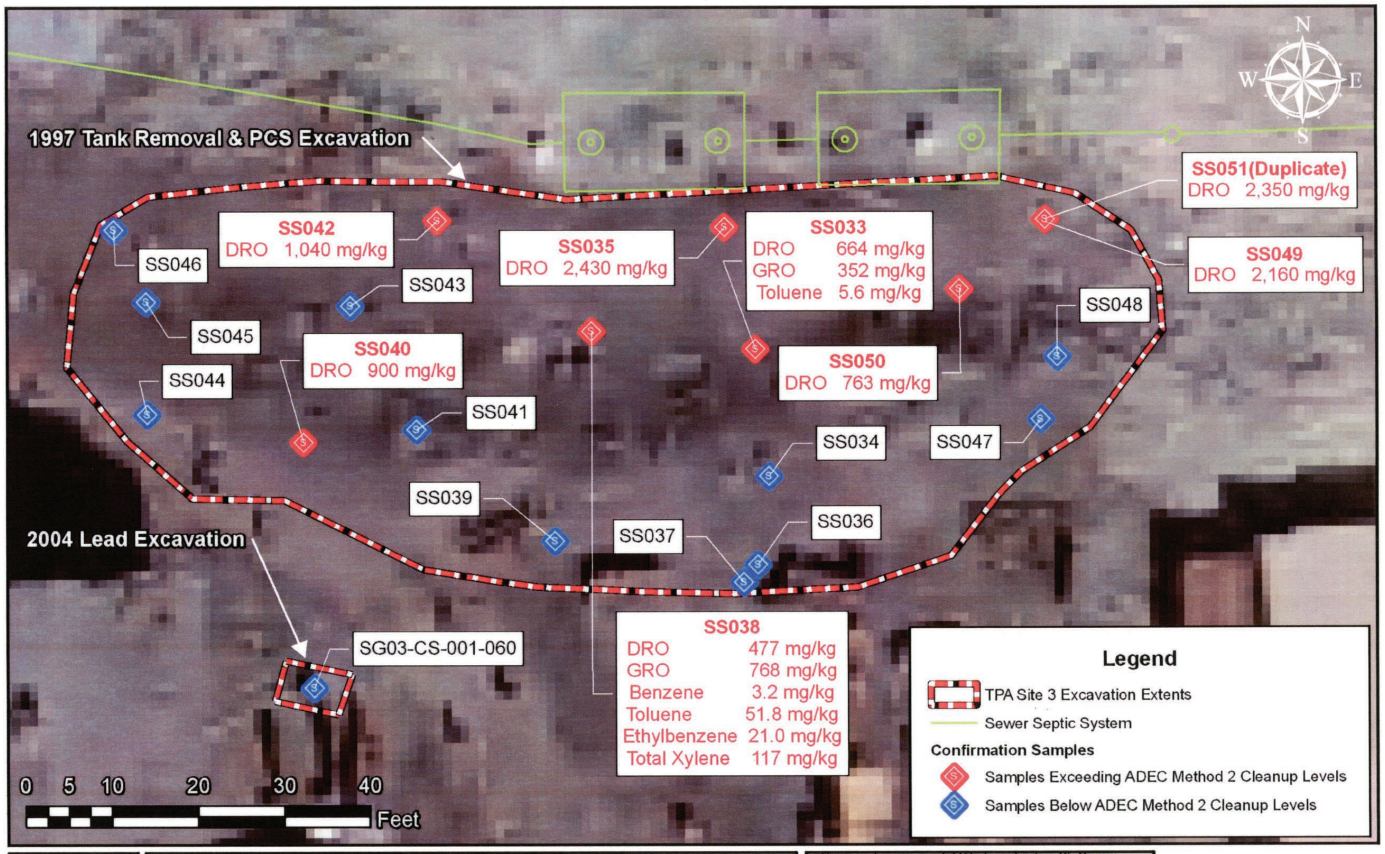

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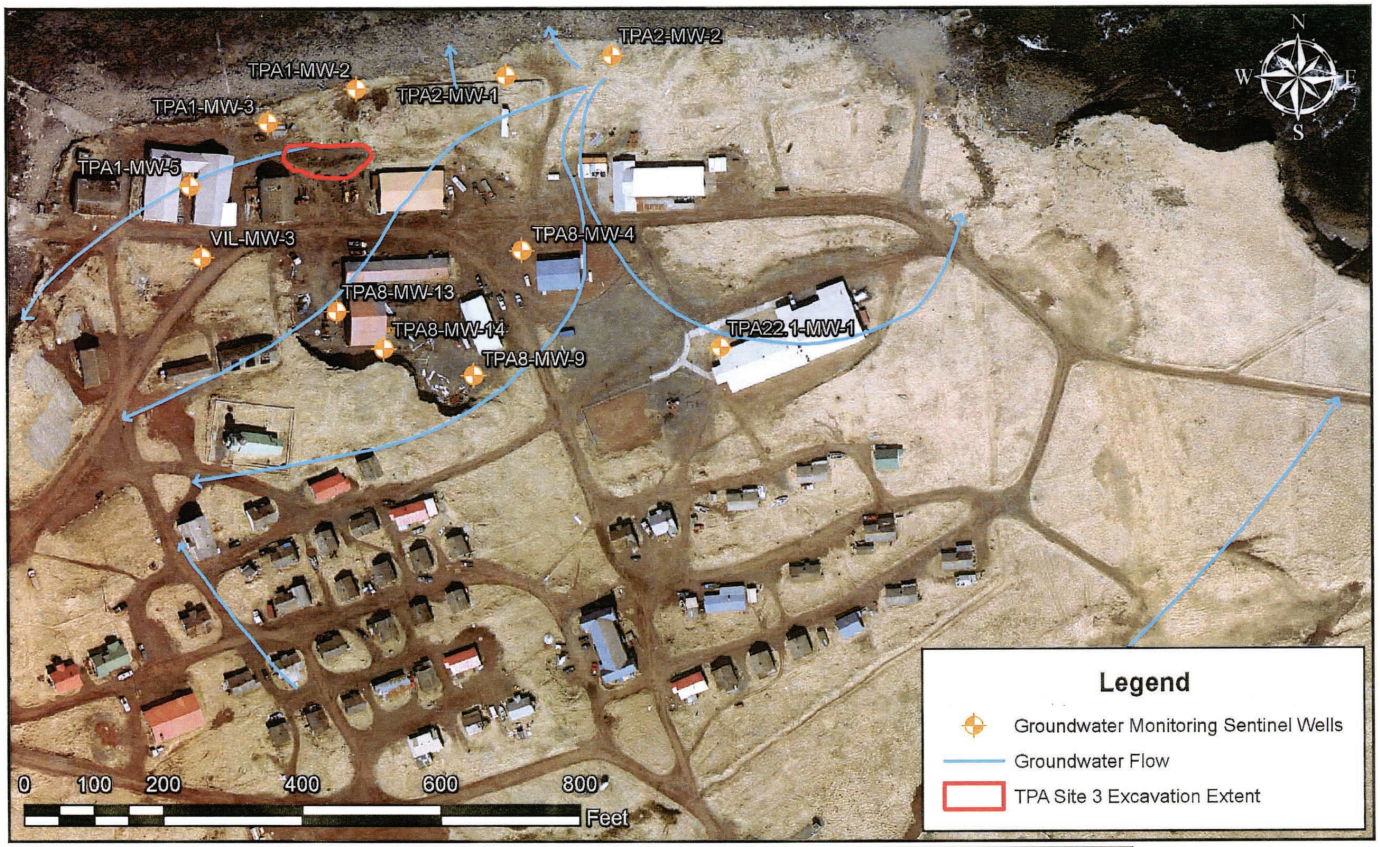

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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 3
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the City of St. George as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property on the west side of the Tanaq Corporation Shop in the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Lot 8, Tract 43
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 12.27" North Latitude, 169° 32' 49.68" West Longitude

This property, hereafter referred to as Site 3 (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135432; File ID 2643.38.009.

This site was identified as *Site 3, Inactive Gas Station* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 3 and NOAA Site 3. Following corrective action, NOAA submitted a request for conditional closure for Site 3 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 3 cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2005a).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: City of St. George
PO Box 929
St. George, AK 99591

Recording District: Aleutian Islands

Remedial Actions and Residual Contamination

Two 1,000-gallon underground storage tanks (USTs), a fuel shed, and a dispensing island were located at Site 3. One UST stored gasoline and the other stored diesel fuel. The gasoline UST was installed in the 1970s; the installation date for the diesel fuel UST is not documented. These tanks were operated under ADEC UST facility ID number 3047 until taken out of operation in the 1990s (Polarconsult 1997). In 1997, the USTs and approximately 1,624 cubic yards of petroleum hydrocarbon contaminated soil were removed from the site (Polarconsult 1997). Contaminated soil removal continued until field screening indicated ADEC cleanup requirements were met or further excavation was not practicable due to reaching equipment refusal at bedrock or endangering the municipal sewer system on the north side of the excavation. The excavation was backfilled with clean material. Diesel range organics (DRO) contaminated soil remains just south of and parallel to the municipal sewer system at depths of 3.5 feet below the ground surface (bgs) and deeper. DRO, gasoline range organics (GRO), benzene, toluene, ethylbenzene, and total xylene contamination remains in the area beneath the past location of the dispensing station at equipment refusal/bedrock depth of approximately 14 feet bgs.

In 2001, a site investigation found a location south of the Inactive Gas Station excavation where the concentration of lead in the soil exceeded the ADEC Method Two criterion (Tetra Tech 2003). In 2004, NOAA removed the lead contaminated soil from this location; confirmation sample analytical results indicated that the site meets ADEC cleanup requirements for lead (Tetra Tech 2005a). In 2004, the lead contaminated soil was shipped off-island for disposal (NOAA 2005a).

Attached is a diagram (Figure 3) drawn to scale that shows the areas that were cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

Groundwater in the general vicinity of Site 3 is known to be contaminated with petroleum products due to fuel storage and transfer operations at multiple TPA sites in the area (Tetra Tech 2005b). Groundwater in this area is monitored for contaminant concentration trends in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b). Figure 4 depicts area groundwater monitoring well locations and estimated groundwater flow directions.

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil or water from the site or use of the groundwater at or near the contaminated area requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

References:

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

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NOAA. 2005a. *Request for Conditional Closure, Inactive Gas Station, TPA Site 3/Site 3, St. George Island, Alaska.* Signed by John Lindsay (NOAA) and submitted with cover letter July 20, 2005. Signed by Louis Howard of ADEC Contaminated Sites Program, July 25, 2005.

NOAA. 2005b. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volumes 1 through 3. November 2.

Tetra Tech Environmental Management, Inc. (Tetra Tech). 2003. *Draft Site Characterization Report, Oceanfront Sites, Two-Party Agreement Site No. 1, 2, and 3, St. George Island, Alaska.* Mountlake Terrace, Washington. January 20.

Tetra Tech. 2005a. *Final Letter Report, Removal of Lead-Contaminated Soils from TPA Sites 3, 9, and 19 and PCB Sampling at TPA Site 9, St. George Island, Alaska.* July 6.

Tetra Tech. 2005b. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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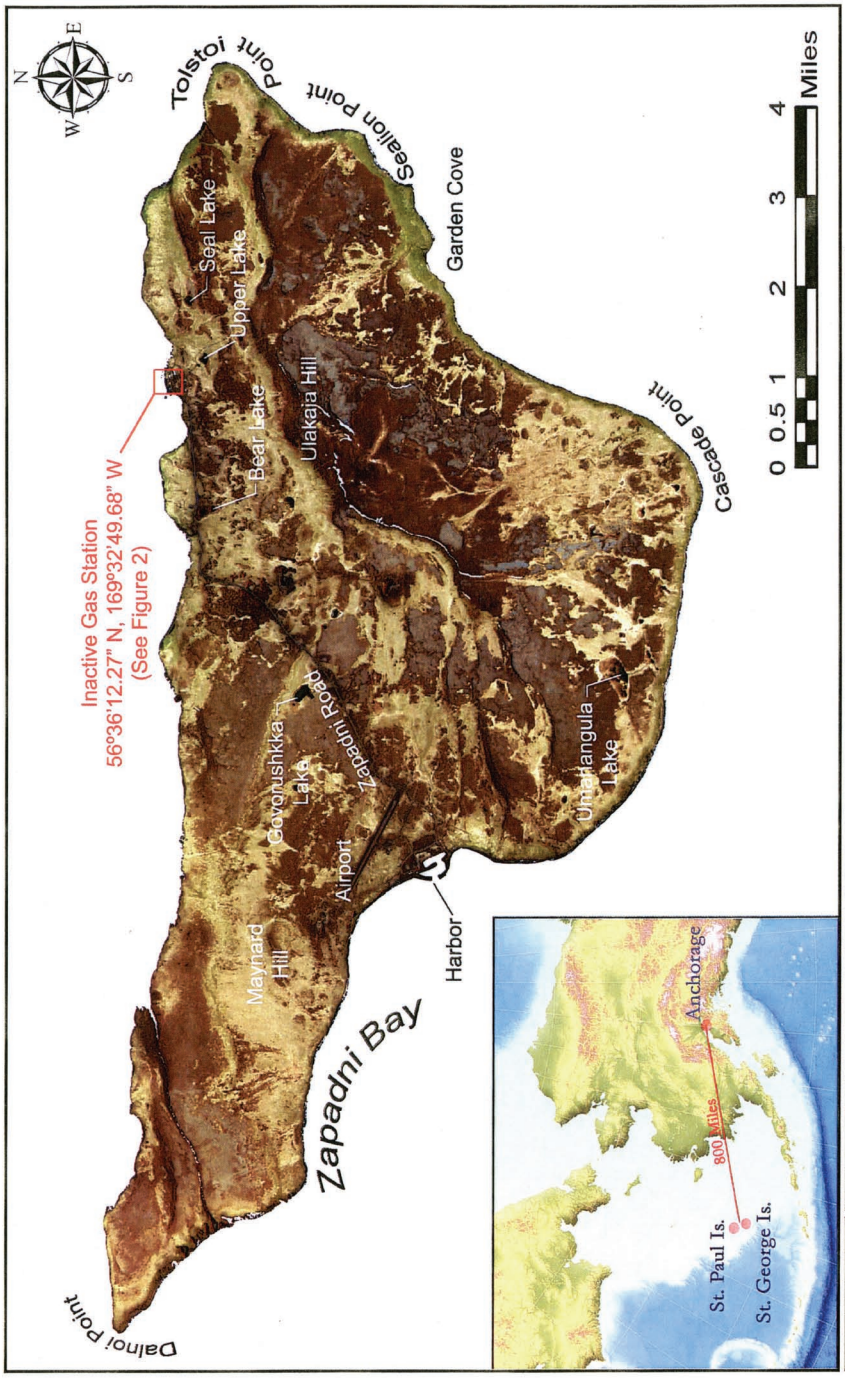

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Pribilof Islands Restoration Project

St. George Island Vicinity Map
Inactive Gas Station
NOAA Site 3/TPA Site 3
St. George Island, Alaska

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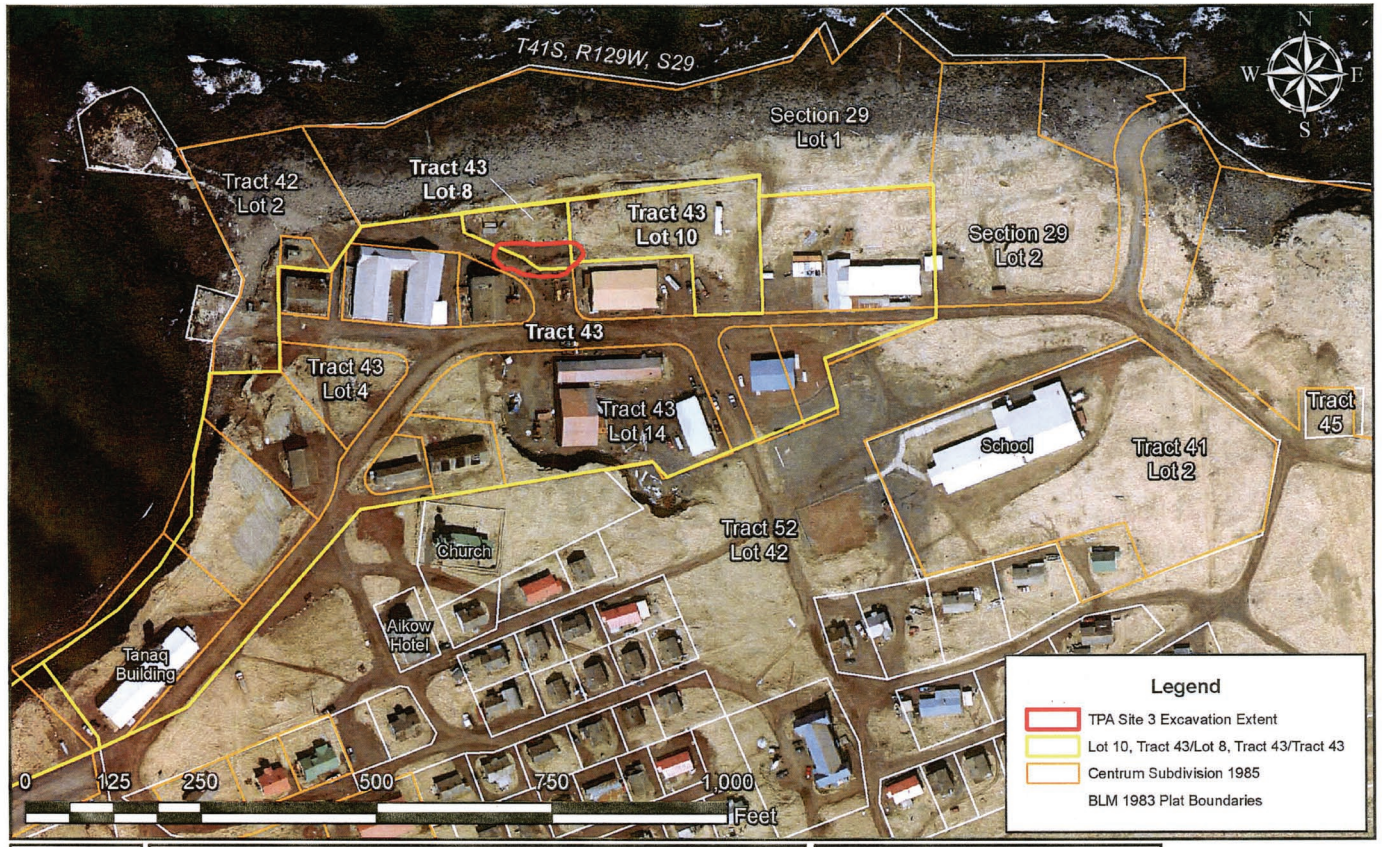

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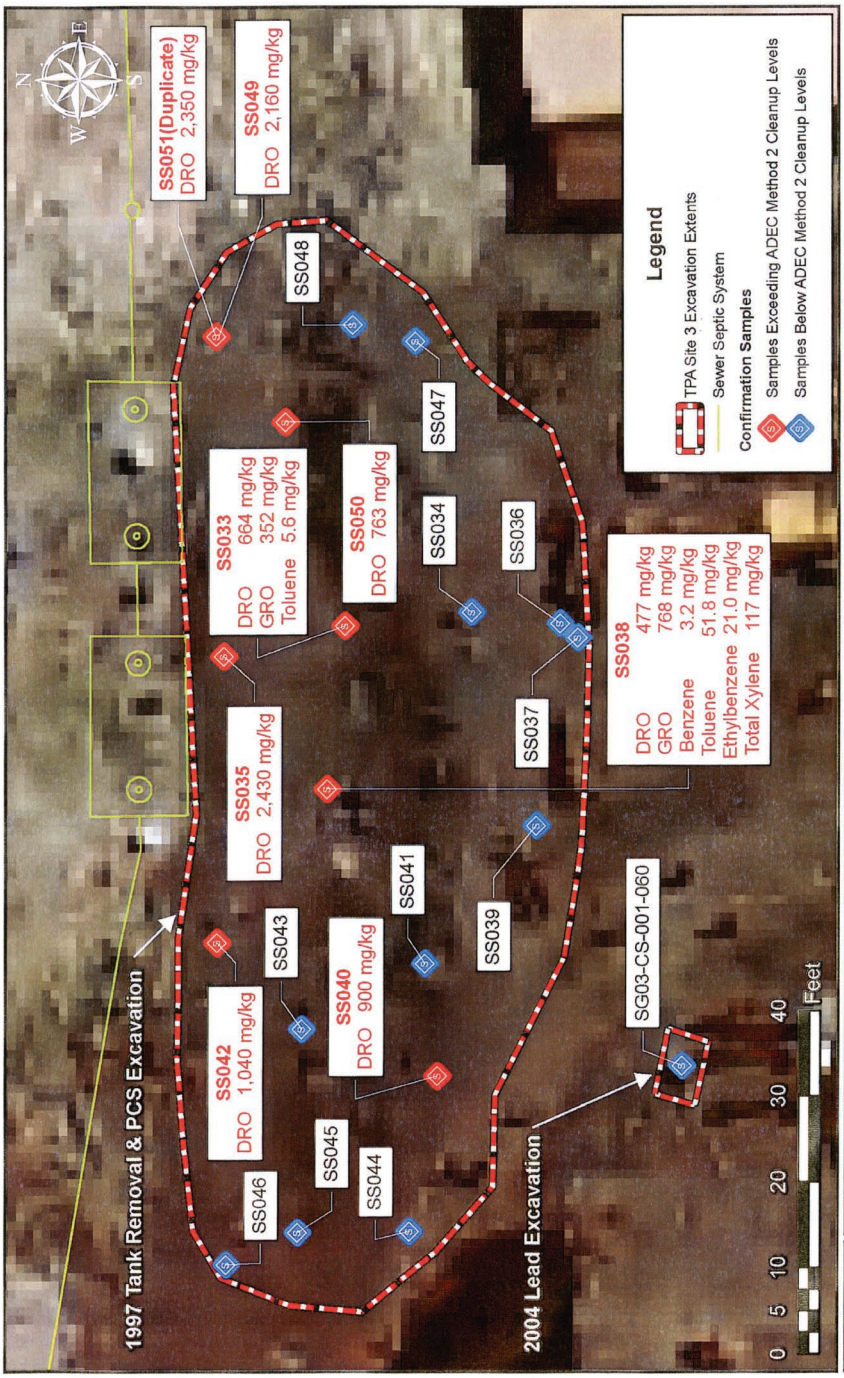

Figure 3

Final Excavation Extent & Confirmation Sampling Results
Inactive Gas Station
NOAA Site 3/TPA Site 3
St. George Island, Alaska

Sources: Environmental Site Investigation St. George Debris Cleanup & UST Decommissioning, Polaroconsult Alaska, Inc. 11/87; Letter Report Removal of Lead-Contaminated Soils from TPA Sites 3, 9, 19, and PCB Sampling at TPA 9, St. George Island, Alaska, Tetra Tech EM Inc. 5/2005. Aero-Metric 1 ft. 2006 Aerial.
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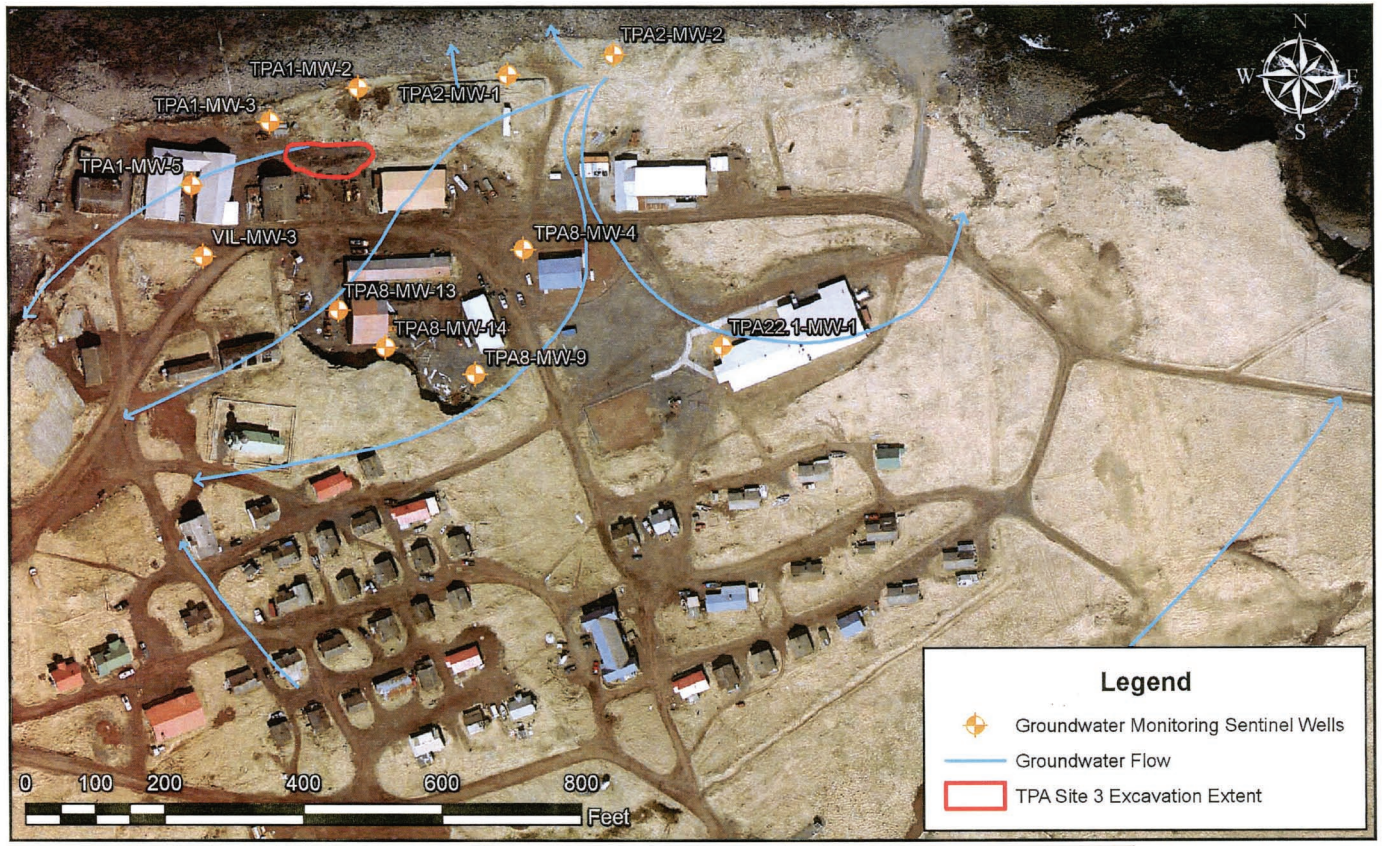

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NOAA Site 4
TPA Site 4: Active Landfill

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FINAL REPORT

ST. GEORGE LANDFILL CLOSURE
(NOAA AWARD NUMBER NA77AB052)

FOR

INTERIM CLOSURE OF A COMMUNITY DUMP
ON ST. GEORGE ISLAND, ALASKA

WORK COMPLETED IN DECEMBER 2001

BY

THE CITY OF ST. GEORGE, ALASKA
UNDER COOPERATIVE AGREEMENT WITH
THE NATIONAL OCEANOGRAPHIC AND
ATMOSPHERIC ADMINISTRATION

MARCH 2003

Introduction

This project involved the partial closure of a 50 year old, open burning dump located on Tract 38B, a 5.78 acre parcel within Section 36, Township 41 South, Range 130 West, Seward Meridian, Alaska. The closure design and construction were performed by the City of St. George under a Cooperative Agreement with the National Oceanographic and Atmospheric Administration (NOAA) pursuant to Public Law 104-91. The work was performed in accordance with State of Alaska solid waste regulations and was completed in the fall of 2001.

Project Summary

A chronology of the project follows:

- In 1996 NOAA invited the City of St. George to submit an application to participate with NOAA in a Cooperative Agreement to close the community dump.
- On August 5, 1996 the City submitted an application to NOAA with an estimated total cost of $2.2 million.
- Subsequent negotiation of the scope of work between the City of St. George and NOAA resulted in award of Cooperative Agreement Number NA77AB052 in the amount of $1,738,358, with a specified performance period of August 1, 1997 through February 28, 1999. The scope of work generally included four activities:
    1) Preparing engineering plans and obtaining the necessary regulatory approvals to close the dump.
    2) Executing the construction required to close the dump, including purchase and mobilization of a bulldozer, wheel loader and three dump trucks.
    3) Construction of barriers to control access to the closed dump.
    4) Reporting activities required by regulatory and funding agencies including a final closeout report.

- In September 1997 the City purchased five pieces of "good used" construction equipment, with funds from the Agreement. This equipment included:
    - John Deere 644G wheel loader
    - Caterpillar D-6H bulldozer
    - 3 ea GMC General 10/12CY dump trucks

  The equipment was barged to St. George, arriving on November 17, 1997.
- Also in the fall of 1997 negotiations began for purchase of scoria, to cover the dump, from the Aleut Corporation's red scoria pit. (Scoria is a vesicular cindery lava that is commonly ripped and used as fill on St. George Island).

  In addition, mechanics began repairing the undercarriage on the City's Caterpillar D-8 bulldozer, for use in ripping and stockpiling scoria cover material.
- Engineers performed a topographic survey of the dump and completed a draft closure plan, work plan and outline specifications for performing the work. Five copies of these work products were transmitted to NOAA with instructions to forward two copies to the Alaska Department of Environmental Conservation (ADEC), so the agency reviews could occur simultaneously. The transmittal to NOAA occurred on December 19, 1997.
- Plan review comments were received from NOAA and ADEC in February 1998.
- The City of St. George revised the plans per the Agency comments in March 1998. Soon thereafter ADEC's Solid Waste Program Coordinator confirmed that the revised closure plans satisfactorily addressed the Department's February 1998 technical review comments.
- In a March 24, 1998 teleconference with NOAA and the City of St. George, ADEC stated that it "may approve the closure plan on its technical merits; however an alternative solid waste management system must be in place prior to construction

(implementation) of the dump closure". NOAA took the position that it was not responsible for establishing a new solid waste management system for St. George Island. The teleconference ended with a promise of a follow-up letter from ADEC's Commissioner to NOAA. The project was at an impasse!

- On June 3, 1998 ADEC Commissioner Michelle Brown sent a formal letter to Terry D. Garcia, Assistant Secretary for Oceans & Atmosphere, US Department of Commerce, NOAA. The letter stated "it would be irresponsible of ADEC to allow the existing landfill (dump) to be closed without alternative solid waste systems in place".
- As of December 1998 neither ADEC nor NOAA moved from positions taken on March 24th. No construction had taken place. On December 17, 1998 NOAA's position softened slightly when the Agency indicated that it might consider "some measures toward landfill redevelopment" if disposal of 10,000 cubic yards of petroleum contaminated soil could be incorporated into the dump closure plan.
- The St. George City Council expressed skepticism about the practicality of that suggestion on December 30, 1998.
- The original Cooperative Agreement expired on February 28, 1999 and NOAA proceeded to closeout the award, with $1.2 million of the original $1.7 million unspent.
- In the spring of 1999 John Lindsay became NOAA's program manager for Pribilof Projects and opened a dialogue with the City and ADEC to seek resolution of the stalemate. NOAA was interested in disposing of petroleum-contaminated soil in conjunction with the dump closure. The City was interested in resuming work on the project. St. George City Administrator Max Malavansky offered to revise the dump closure plans to accommodate placement of petroleum-contaminated and/or

remediated soil, beneath an impermeable top cap, if NOAA could obtain ADEC approval to do so. ADEC stated that if petroleum contaminated soils are involved, it would require monitoring wells around the perimeter of the closed dump.

NOAA also sought to obtain ADEC's permission to partially close the dump, acknowledging that final closure would occur after new solid waste management systems were in place. The responsibility for funding the construction of the new systems was not established. It was understood among the parties that if ADEC allowed partial closure of the dump, the City would be allowed to renegotiate the scope of the Cooperative Agreement, the Agreement would be reinstated and work would resume.

- On July 6, 1999 John Lindsay inspected the St. George community dump with St. George City Engineer, P.E. Chuck Eggener and Ken Valder, P.E. of TetraTech, a contractor to NOAA. Lindsay decided that NOAA would propose partial dump closure, without installation of monitoring wells, for consideration by ADEC.
- On July 7, 1999, after review of the City's construction capabilities, John Lindsay agreed in principle to allow the City of St. George to conduct a partial dump closure, if the closure requirements could be worked out with ADEC.
- On August 23, 1999, ADEC, knowing that NOAA sought approval to incorporate disposal of petroleum contaminated soil as part of the dump closure, and having suspicion that carbon tetrachloride might have been disposed of in the dump at some time in the past, said it would require NOAA to conduct contaminant fate and transport modeling before the State would set the final dump closure requirements. ADEC felt that contaminant transport modeling would help quantify the potential threat to groundwater.

- Also on August 23, 1999, ADEC again told NOAA that it will not be released from liability for the dump, even if it is partially closed, until new solid waste management systems are constructed and in use on St. George Island.
- In September 1999, NOAA program manager John Lindsay began working with NOAA's contracting department to explore requirements for reinstating the Cooperative Agreement with the City of St. George.
- In October 1999 NOAA contracted with South Carolina Research Associates (SCRA) to delineate the perimeter of the dump. The City of St. George subcontracted with SCRA to dig exploratory pits around the perimeter of the dump and to resurvey the dump. That work was completed in October 1999.
- NOAA engaged TetraTech to do the contaminant fate and transport modeling. TetraTech collected soil samples on the perimeter of the dump in October 1999.
- On October 27, 1999 NOAA advised the City that it could request a "no cost" extension of the Cooperative Agreement for landfill closure, even though the closure requirements had not yet been defined. The City made that request on November 4, 1999. NOAA subsequently reinstated the Cooperative Agreement and extended the completion date to December 31, 2001.
- During November and December 1999 and January and February 2000 the City of St. George provided information to TetraTech for contaminant fate and transport modeling. Representatives from ADEC, NOAA, City of St. George, TetraTech, USGS and St. George Tanaq Corporation reached agreement on the final modeling parameters on January 14, 2000.
- On January 27, 2000 NOAA advised the City that under the assumptions and parameters agreed upon at the January 14, 2000 meeting, the contaminant fate and transport model predicted concentrations of lead and arsenic in leachate from the

closed dump that exceed the state's maximum contaminant levels (MCL's) for groundwater.

- On January 28, 2000 representatives from ADEC, NOAA, City of St. George, TetraTech, USGS and Tanaq met to review the modeling results. The committee decided that the initial assumptions regarding the quantity of lead and arsenic in the dump were too conservative, and that the assumed solubilities of these elements were also too high. The committee changed the modeling assumptions for lead and arsenic and directed TetraTech to rerun the model.
- On February 2, 2000 ADEC Solid Waste Program Coordinator Laura Ogar advised the parties that the changes made in the modeling assumptions brought the lead and arsenic concentrations in the leachate below the MCL's for groundwater. She indicated that ADEC would entertain a revised dump closure plan that incorporated 24 inches of soil cover over the refuse, provided a vegetative growth could be established on the top surface. No monitoring wells would be required.
- Between February and June 2000 several discussions took place among the parties (ADEC, NOAA, TetraTech, and the City) regarding material to be used for the top cover. Use of remediated soil from NOAA's "dirt burner" was impractical because it was too powdery and would not support vegetative growth. Scoria, a volcanic rock, appeared to be the only material readily available on the Island for covering the dump. ADEC took the position that scoria is not technically soil, passes water easily and would not support vegetative growth. An exhaustive search along the island's road system failed to identify a source of "soil" for cover material. As a result, NOAA requested a cost estimate from the City of St. George to incorporate an impermeable geosynthetic clay liner (GCL) as part of the top cover. GLC needs to be padded, covered and ballasted to be an effective barrier to percolating water.

Engineers feared placing sharp pieces of scoria over the GCL would puncture the liner. The City, therefore, conducted a test to see if scoria could be reduced to 1-inch or smaller pieces by crushing it under the tracks of a heavy bulldozer. The experiment failed.

- The City later identified a source of beach sand that, after screening, would be suitable for use as "paddling" above the geosynthetic clay liner.
- In June of 2000, the City completed final design drawings and outline specifications for the "interim closure" of the St. George dump in accordance with the final criteria agreed upon by ADEC, NOAA, and the St. George City Council. The closure program included:

    1) Removing vehicle hulks and large metal objects from the dump for later off-island disposal by NOAA. (As of the date of this report, the metals are stored in a quarry near the dump on St. George Island.)
    2) Grading and reshaping the refuse in preparation for installation of the top cover.
    3) Placing a compacted scoria "leveling course", with a minimum thickness of 6 inches, above the graded refuse.
    4) Installing geotextile padding over the leveling course.
    5) Placing a geosynthetic clay liner on top of the padding.
    6) Covering the GCL with a minimum of 8 inches of screened beach sand.
    7) Covering the beach sand with a minimum of 10 inches of compacted scoria.
    8) Signage and drainage improvements.

The top layer of scoria would not be vegetated, but would be graded to drain. Marker posts would be placed along the perimeter of the closed dump. An informational sign would be erected at the entrance to the facility. Access would be restricted except to

the southeast corner of the facility, which would continue to be operated as a sanitary landfill until new solid waste management systems has been commissioned on St. George Island. Upon opening of the new facilities, NOAA would be required by ADEC to complete the closure of the southeast quadrant of the original dump.

- In July 2000 ADEC approved the Interim Dump Closure Plans and authorized NOAA/City of St. George to close the dump (except for the southeast corner of the facility). Petroleum contaminated soil from NOAA's thermal remediation operation would not be used in the dump closure.
- Also during July 2000 the City developed a construction schedule for interim dump closure. The schedule called for grading and stockpiling of cover material during the fall of 2000 with placement of the GCL and top cover in 2001.
- In August 2000 the City developed a budget and cash flow forecast for the proposed construction.
- On September 12, 2000 the long awaited preconstruction conference took place on St. George Island. Participants included NOAA representatives John Lindsay, Dennis Hall and Nina Garfield. Mayor Alvin Merculief, City Administrator Max Malavansky, and City Finance Director Martha Malavansky represented the City of St. George. The City's engineering consultant, CE2 Engineers, Inc., was represented by design engineer Chuck Eggener, P.E., general superintendent Brian Aklin and on-site supervisor Errol Kister.
- Work began on the dump closure on September 13, 2000 with crews removing vehicle hulks and large metal objects from the refuse, for future off-island disposal by NOAA. The metal objects were temporarily stored in an adjacent quarry.
- Reshaping and contouring of the refuse began on September 15, 2000.

- On September 16, 2000 additional workers began extracting beach sand from City owned tidelands in the vicinity of the Harbor Master Building and stockpiling it near the dump. Scoria was also ripped and stockpiled.
- Work continued until winter shutdown on November 2, 2000. During the six weeks of fall construction City crews separated large metal objects from the refuse, graded, shaped and compacted the refuse; placed scoria leveling course, some of which was obtained from a city owned stockpile on the landfill site; and mined, transported and stockpiled over 7,000 cubic yards of beach sand, for future use in padding the GCL. Crews also ripped and stockpiling scoria at the "red pit", placing some of that material in a stockpile near the dump.
- The construction equipment was serviced and repaired during winter shutdown.
- During February 2001 the City received bids on the geotextile padding and the GCL. CE2's Bob Lee was chosen to replace Errol Kister as the on-site supervisor for the 2001 construction season.
- In March 2001 the City received bids for barge transport of dump closure materials from Seattle, Washington to St. George.
- In April 2001 CE2 surveyors completed construction staking. Repairs continued on the construction equipment.
- In May 2001 crews resumed ripping and stockpiling scoria and grading and shaping the refuse in preparation for installation of the impermeable top cap. The barge arrived from Seattle and the geotextile padding and geosynthetic clay liner were unloaded and staged near the dump. Scoria was spread and compacted over the shaped refuse. Mining and stockpiling of beach sand also continued.
- Late in May 2001 crews began installing geotextile fabric to pad the bottom side of the GCL.

- During June 2001 crews continued placing geotextile padding and began installing GCL under the direction of a factory trained installer. The GCL was covered with 8 inches of screened beach sand and ballasted with 10-inches of scoria. Monuments were set on the perimeter of the closed dump.
- During July 2001 crews placed boulders to channel traffic to the "temporary landfill" which was established in the southeast corner of the partially closed dump. A fence was erected on the north, south, and west sides of the temporary landfill. A sign was erected on the west side of the site to document the relative positions of the perimeter markers and to identify the site as a closed dump.
- In August 2001 crews completed dump closeout construction activities, cleaned up the staging areas, smoothed and graded the red scoria pit, and demobilized.
- In December 2001 a post-construction survey of the red scoria pit was performed to determine final extraction quantities for royalty payment to the Aleut Corporation. As-built drawings were also completed and the project was closed out. A "reduced" set of as-built drawings is attached along with photos taken before and after construction.

PRE-CLOSURE PHOTO LOOKING NORTH ALONG THE WORKING FACE OF THE DUMP.

PRE-CLOSURE PHOTO LOOKING SOUTHEAST TOWARD THE WORKING FACE OF THE DUMP.

THE CLOSED DUMP VIEWED FROM THE SOUTH. NOTE THE FENCED INTERIM LANDFILL OPERATION IN THE SOUTHEAST QUADRANT OF THE FACILITY

INFORMATION SIGN ON THE WEST SIDE OF THE CLOSED DUMP.

EASTERLY SLOPE OF THE CLOSED DUMP. NOTE BOUNDARY MARKER POST AT THE TOE OF THE SLOPE.

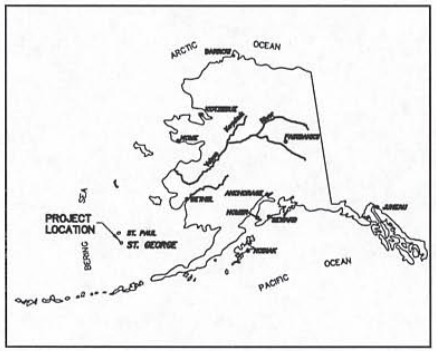
CLOSEUP OF A BOUNDARY MARKER POST

DRAINAGE DITCH ALONG THE NORTH SIDE OF THE CLOSED DUMP

SCRAP METAL REMOVED FROM THE DUMP AND TEMPORARILY STORED IN AN ADJACENT QUARRY FOR FUTURE OFF-ISLAND DISPOSAL.

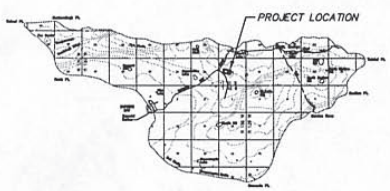
CITY OF ST. GEORGE, ALASKA

2000 INTERIM MUNICIPAL SOLID WASTE DUMP CLOSURE PLAN



Location Map

AS-BUILT DECEMBER 2001



ST. GEORGE ISLAND, ALASKA
APPROXIMATE SCALE: 1" = 2 MILE

VICINITY MAP

CE 2

CE2 ENGINEERS, INC.

ANCHORAGE, ALASKA

Consultant

RECORD DRAWING CERTIFICATE

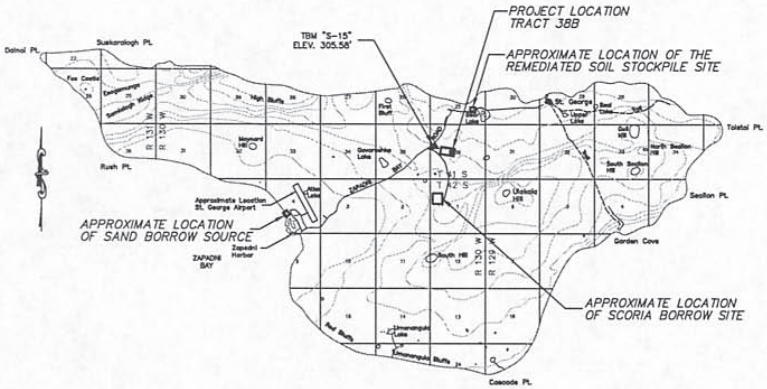
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION.
INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.

NAME: Charles K Eggner
DATE: 12/20/01

Construction Foreman: BOB LEE
Final Design (Date): SEPTEMBER 2000
ADEC Approval (Date): JULY 2000
Construction Period (From) SEPTEMBER 2000 (To) AUGUST 2001
As-Builts (Date): DECEMBER 2001

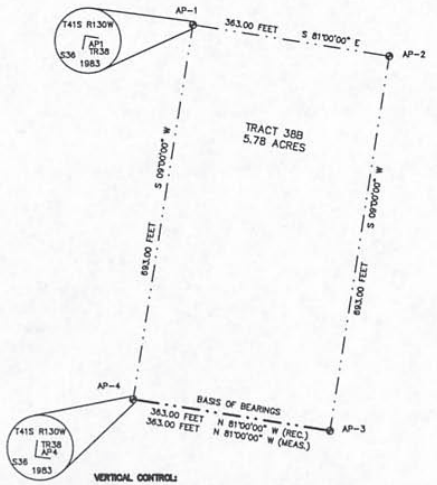
SHEET INDEX

No.	Title
	COVER SHEET
D-1	GENERAL NOTES AND LEGEND
C-1	EXISTING SITE AND PROPOSED GRADING PLAN
C-2	SECTIONS AND DETAILS
C-3	PUBLIC INFORMATION SIGN DETAILS



VICINITY MAP – ST. GEORGE ISLAND

APPROXIMATE SCALE: 1" = 1.0 MILE



VERTICAL CONTROL:

TBM "S-15" FROM THE ZAPADNI BAY ROAD PROJECT. A ONE INCH DIAMETER REBAR LOCATED APPROXIMATELY 115 FEET EAST OF THE INTERSECTION BETWEEN THE NORTHERNMOST LANDFILL ACCESS ROAD AND ZAPADNI BAY ROAD.

ELEVATION: 305.58 FEET MLLW AS POSTED BY RPK AND ASSOC., 1995

SURVEY CONTROL DIAGRAM

SCALE: 1" = 100'

ABBREVIATED INTERIM DUMP CLOSURE PLAN

1. The limits of grading and impermeable top cap installation shown on sheet C-1 were approximated by a test pit exploration program conducted during October 1999. The grading plan and limits of top cap installation may be modified in the field by the Engineer as necessary to insure that all lands on which solid waste has been disposed are covered by the impermeable top cap and overlying cover material.
2. Vehicle hulks and large metallic scrap shall be removed from the perimeter and working face of the active dump, and stored in the quarry immediately west of the dump (for future off island disposal) prior to interim closure of the dump. Refuse within the dump shall be consolidated, shaped and compacted with a bulldozer prior to interim closure.
3. Leveling, geotextile, top cap and cover materials shall be as shown on these drawings.
4. Covered areas and perimeter ditches shall be graded as shown to promote surface water runoff without causing erosion, and to minimize the amount of runoff entering the solid waste.
5. All work shall be inspected by a representative of the Engineer who shall be required to verify in writing to the Alaska Department of Environmental Conservation (A.D.E.C.) that all construction was performed in accordance with these plans and specifications. As-built drawings and photographs shall be submitted to A.D.E.C. upon completion of the project.
6. The City of St. George shall perform post-closure care and monitoring activities in accordance with the State of Alaska Solid Waste Regulations 18AAC60.390. The care and monitoring period shall begin upon completion of the interim closure work described in this plan set and notification of A.D.E.C. that the work has been completed. For a minimum of five (5) years after interim closure, longer if so determined by A.D.E.C., the City shall visually inspect the closed dump on an annual basis and repair any deficiencies after coordination with A.D.E.C. The City shall maintain records of the inspections and subsequent repair work. After the post-closure monitoring period, the City shall submit photographs of the facility, a report describing any problems encountered during visual monitoring and how those problems were remedied and, if applicable, record an appropriate notation on the deed and/or plat of the landfill property.

MATERIAL SPECIFICATIONS

(IN ASSOCIATION WITH FINAL COVER DETAIL B/C-2)

LEVELING COURSE –

Locally available, ripped red scoria, free from organics, ice and other deleterious materials, compacted to a smooth surface with a self propelled vibratory compactor to 90% of maximum density.

GEOTEXTILE MATERIAL BELOW THE TOP CAP (PADDING) –

Geotextile material below the impermeable GCL top cap shall be Synthetic Industries nonwoven geotextile Geotex 1601 (16oz nominal), or equal (800-349-7645) Geotextile material shall be installed per manufacturer's instructions. See sheet C-2 for installation notes.

GEOSYNTHETIC CLAY TOP CAP (GCL) –

The GCL shall consist of a layer of natural sodium bentonite clay encapsulated between two geotextiles and shall comply with the criteria listed in the table below.

PHYSICAL PROPERTY	REINFORCED GCL (BENTOMAT ST)
Bentonite Swell Index	24 mL/2 g Minimum
Bentonite Fluid Loss	18 mL Maximum
Bentonite Mass/Area	0.75 lb/ft^2
GCL Grab Strength	90 lbs
GCL Peel Strength	15 lbs
GCL Index Flux	$1x10^{-8}$ m/m^2/sec
GCL Permeability	$5x10^{-9}$ cm/sec
GCL Hydrated Internal Shear Strength	500 psf

Any reinforced GCL offered as a substitute must receive the engineer's approval regardless of physical properties. All GCLs shall be installed per manufacturer's instructions. See details on Sheet C-2 for installation notes.

GRANULAR COVER MATERIAL –

Locally available beach sand mined from City owned tidelands near the north arm of the St. George Harbor. (AS-BUILT)

TOP COVER –

Four inch minus locally available, ripped red scoria, free from organics, ice and other deleterious materials, compacted to a smooth surface with a self propelled vibratory compactor to 90% of maximum density. (AS-BUILT)

AS-BUILT

LEGEND

- TEMPORARY BENCH MARK
- 3" ALUMINUM CAP ON 1/2" STEEL ROD (EXISTING)
- SW COR — CLOSED DUMP BOUNDARY MARKER
- EXISTING FENCE
- CONTOUR INTERVAL (### INDICATES ELEVATION)
- EXISTING ACCESS ROAD
- DETAIL DESIGNATION (A) / SHEET ON WHICH DETAIL APPEARS (C-10)

EXAMPLE OF DETAIL CALLOUTS

EXAMPLE OF CROSS SECTION CALLOUTS

RECORD DRAWING CERTIFICATE
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. TO MY KNOWLEDGE, HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
NAME DATE

SCALE: AS NOTED

CONSTRUCTION RECORD
FIELD BOOK
DRAWN
PERSONNEL
AS-BUILT
APPROVED

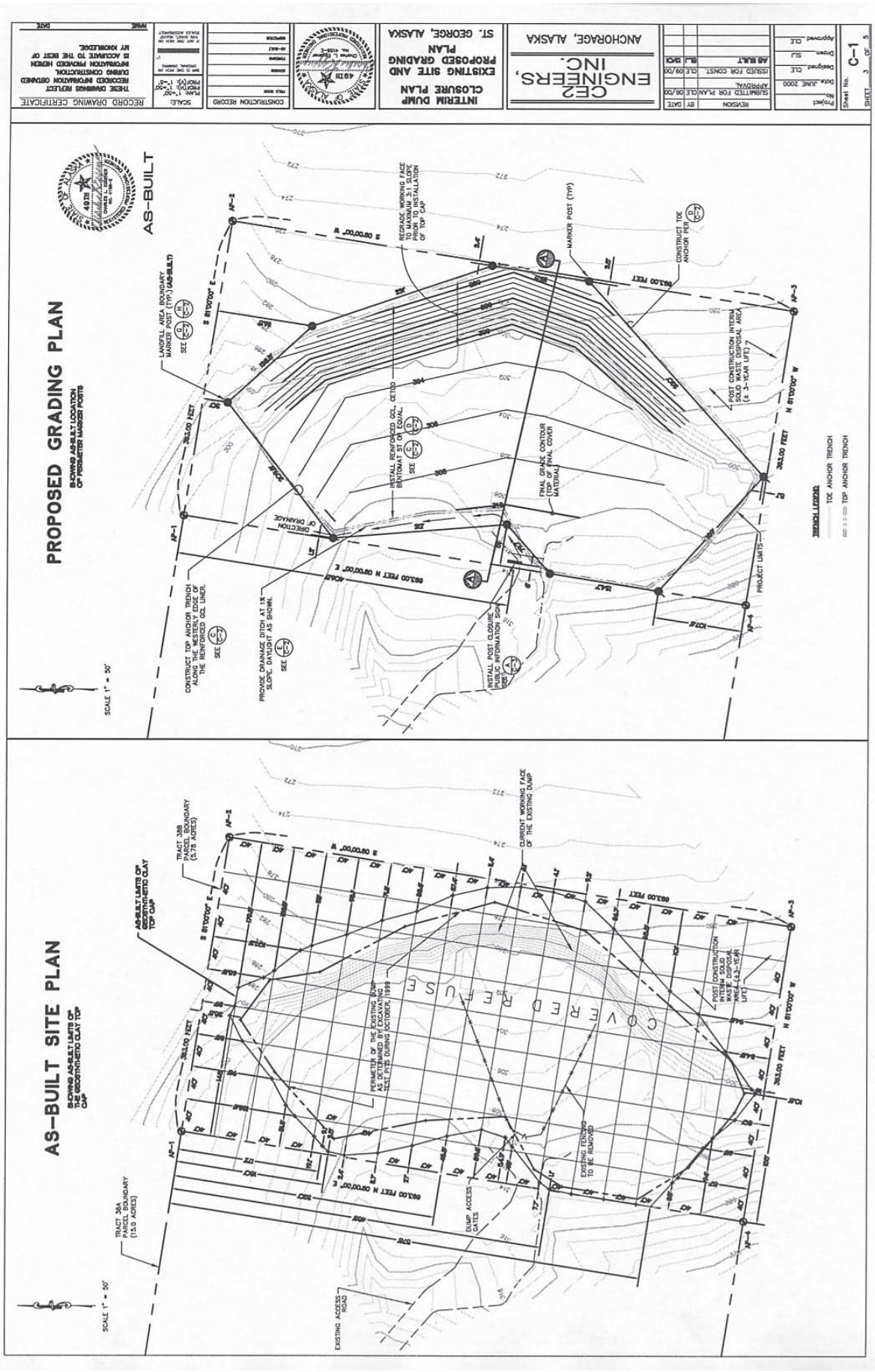
INTERIM DUMP CLOSURE PLAN
GENERAL NOTES AND LEGEND
ST. GEORGE, ALASKA

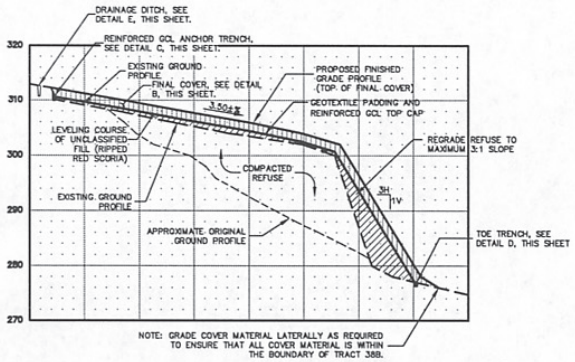
CE2 ENGINEERS, INC.
ANCHORAGE, ALASKA

REVISION	BY	DATE
SUBMITTED FOR PLAN/CE APPROVAL		06/00
ISSUED FOR CONST.	CLE	09/00
AS BUILT	SLJ	10/01

Project No.
Date JUNE 2000
Designed CLE
Drawn SLJ
Approved CLE

Sheet No. D-1
SHEET 2 OF 5

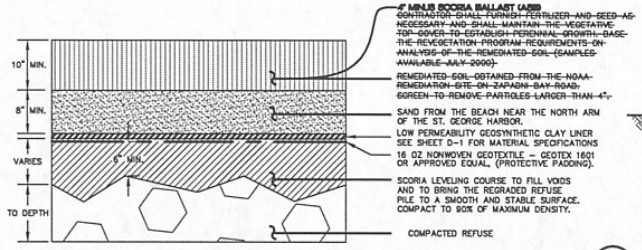

PROPOSED GRADING PLAN
SHOWING AS-BUILT LOCATION OF PERIMETER MARKER POSTS
AS-BUILT
SCALE 1" = 50'
LANDFILL AREA BOUNDARY MARKER POST (TYP.) (AS-BUILT)
REGRADE WORKING FACE TO MAXIMUM 3:1 PRIOR TO INSTALLATION OF TOP CAP
MARKER POST (TYP)
CONSTRUCT TOE ANCHOR PER
INSTALL REINFORCED GCL OETDD BENTOMAT ST OR EQUAL
FINAL GRADE CONTOUR (TOP OF FINAL COVER MATERIAL)
POST CONSTRUCTION INTERIM SOLID WASTE DISPOSAL AREA (± 3-YEAR LIFE)
DIRECTION OF DRAINAGE
CONSTRUCT TOP ANCHOR TRENCH ALONG THE WESTERLY EDGE OF THE REINFORCED GCL LINER.
PROVIDE DRAINAGE DITCH AT 1:5 SLOPE, DAYLIGHT AS SHOWN.
INSTALL POST CLOSURE PUBLIC INFORMATION SIGN
PROJECT LIMITS
TRENCH LEGEND
TOE ANCHOR TRENCH
TOP ANCHOR TRENCH
AS-BUILT SITE PLAN
SHOWING AS-BUILT LIMITS OF THE GEOSYNTHETIC CLAY TOP CAP
SCALE 1" = 50'
TRACT 38A PARCEL BOUNDARY (15.0 ACRES)
TRACT 38B PARCEL BOUNDARY (5.78 ACRES)
AS-BUILT LIMITS OF GEOSYNTHETIC CLAY TOP CAP
CURRENT WORKING FACE OF THE EXISTING DUMP
PERIMETER OF THE EXISTING DUMP AS DETERMINED BY EXCAVATING TEST PITS DURING OCTOBER, 1998
COVERED REFUSE
EXISTING FENCING TO BE REMOVED
DUMP ACCESS GATES
EXISTING ACCESS ROAD
POST CONSTRUCTION INTERIM SOLID WASTE DISPOSAL AREA (±3-YEAR LIFE)
CONSTRUCTION RECORD
RECORD DRAWING CERTIFICATE
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
INTERIM DUMP CLOSURE EXISTING SITE PLAN AND PROPOSED GRADING PLAN
ST. GEORGE, ALASKA
CE2 ENGINEERS, INC.
ANCHORAGE, ALASKA
REVISION
ISSUED FOR PLAN APPROVAL
SUBMITTED FOR CONST.
AS BUILT
Date JUNE 2000
Project No.
Designed CLE
Drawn SLJ
Approved CLE
Sheet No. C-1
SHEET 3 OF 5



SECTION A–A

A / C-2 LANDFILL COVER DETAIL

SCALE: HORIZONTAL 1" = 50'
VERTICAL 1" = 10'

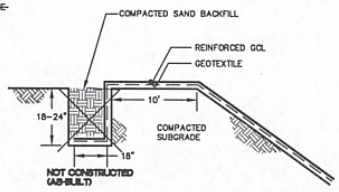


FINAL COVER NOTES:

1. EXISTING REFUSE SHALL BE COMPACTED AND SHAPED WITH A BULLDOZER PRIOR TO INSTALLATION OF LEVELING COURSE.
2. LEVELING COURSE SHALL BE LOCALLY AVAILABLE RED SCORIA CAREFULLY PLACED TO FILL VOIDS, THEN GRADED AND COMPACTED TO 90% MAXIMUM DENSITY.
3. GEOTEXTILE AND GCL TOP CAP SHALL BE INSTALLED IN A "ROLL OUT" FASHION IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL NOT BE DRUG OR OTHERWISE HANDLED IN A MANNER WHICH WOULD DAMAGE THE MATERIALS.
4. ALL EDGES OF THE GCL AND GEOTEXTILE SHALL BE SECURED PER THE ANCHOR TRENCH DETAILS.
5. GEOTEXTILE AND GCL SHALL BE PLACED SUCH THAT THE LONG SEAMS ARE PARALLEL TO THE DIRECTION OF SLOPE AND THE ENDS SHALL BE SHINGLED DOWN SLOPE TO LIMIT THE POTENTIAL FOR RUNOFF INTRUSION.
6. GEOTEXTILE AND GCL SHALL HAVE MINIMUM OVERLAPS OF 6 INCHES AT EACH EDGE AND 1 FOOT AT EACH END.
7. ALL INSTALLED GCL PANELS SHALL BE COVERED WITH 8" INCHES OF SAND AT THE END OF EACH WORK DAY TO PREVENT PREMATURE HYDRATION OF THE GCL. ANY SECTION OF GCL THAT IS HYDRATED WITHOUT THE DESIGN DEPTH OF COVER MATERIAL ON TOP OF IT SHALL BE REMOVED AND REPLACED BY STRIPPING THE COVER MATERIAL (IF ANY), REMOVING THE HYDRATED GCL LINER PANEL, AND REINSTALLING A DRY LINER PANEL WITH THE REQUIRED THICKNESS OF COVER MATERIAL.
8. COVER MATERIAL SHALL BE INSTALLED WITH A LOW GROUND PRESSURE BULLDOZER SUCH AS A CATERPILLAR D-3 WIDEPAD OR APPROVED EQUAL.

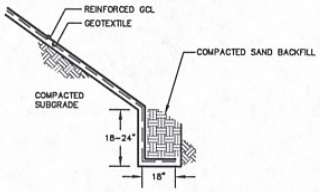
B / C-2 FINAL COVER DETAIL

NOT TO SCALE



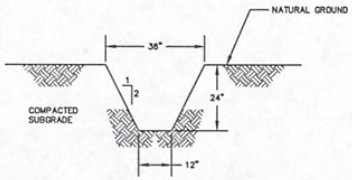
C / C-2 TOP ANCHOR TRENCH DETAIL

NOT TO SCALE



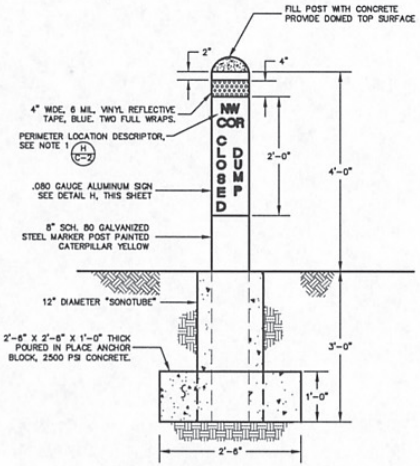
D / C-2 TOE ANCHOR TRENCH DETAIL

NOT TO SCALE



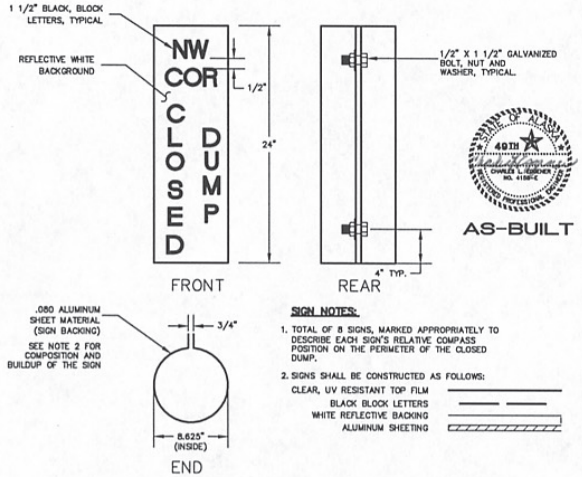
E / C-2 DRAINAGE DITCH DETAIL

NOT TO SCALE



G / C-2 DUMP AREA MARKER DETAIL

NOT TO SCALE

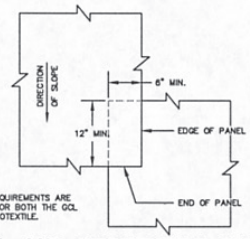


SIGN NOTES:

1. TOTAL OF 8 SIGNS, MARKED APPROPRIATELY TO DESCRIBE EACH SIGN'S RELATIVE COMPASS POSITION ON THE PERIMETER OF THE CLOSED DUMP.
2. SIGNS SHALL BE CONSTRUCTED AS FOLLOWS:
   - CLEAR, UV RESISTANT TOP FILM
   - BLACK BLOCK LETTERS
   - WHITE REFLECTIVE BACKING
   - ALUMINUM SHEETING

H / C-2 DUMP AREA SIGN DETAIL

NOT TO SCALE



F / C-2 GCL AND GEOTEXTILE OVERLAP DETAIL

NOT TO SCALE

RECORD DRAWING CERTIFICATE. THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED FROM FIELD OBSERVATIONS. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE. DATE

SCALE: AS NOTED

CONSTRUCTION RECORD

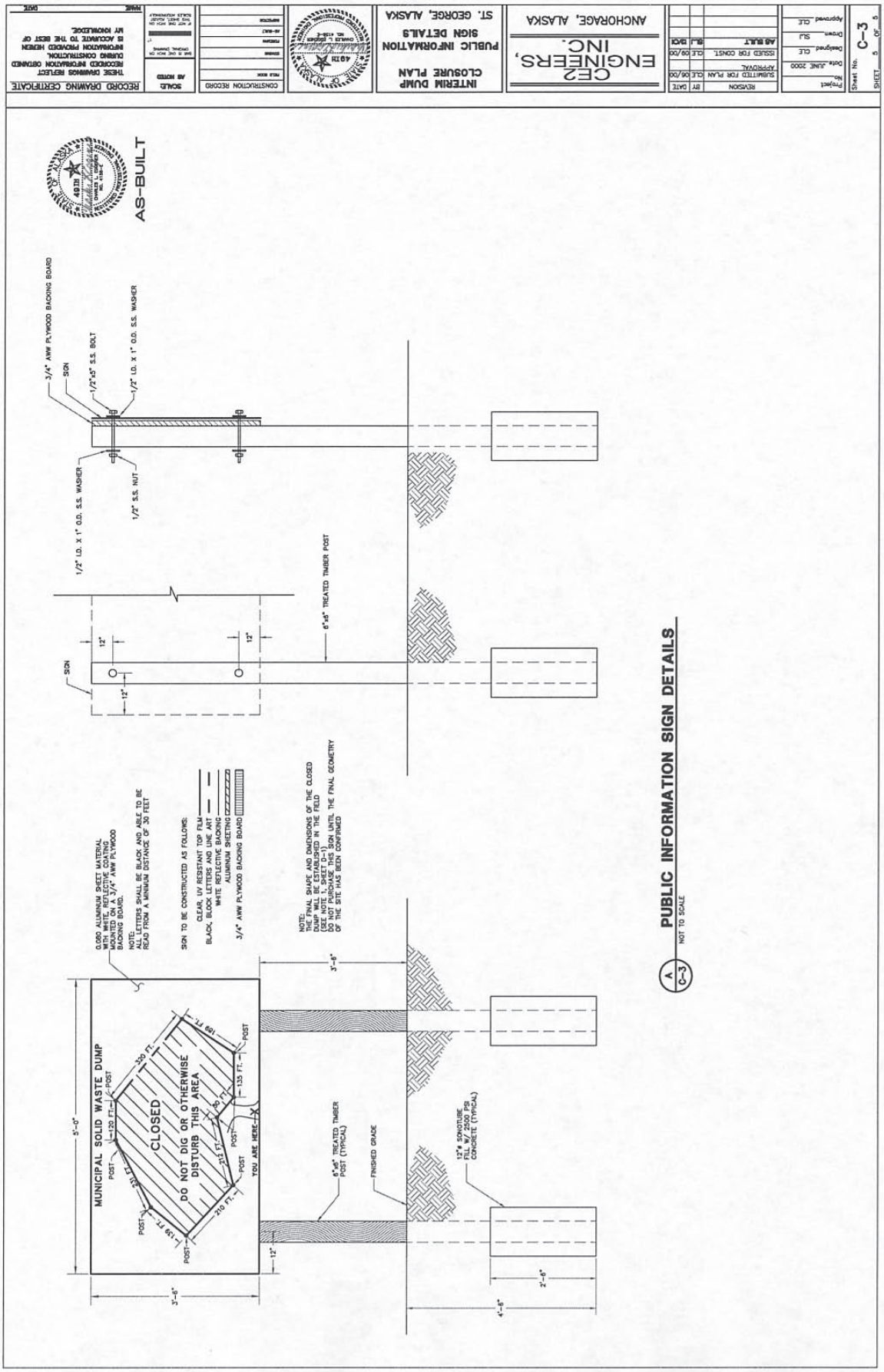
INTERIM DUMP CLOSURE PLAN
SECTIONS AND DETAILS
ST. GEORGE, ALASKA

CE2 ENGINEERS, INC.
ANCHORAGE, ALASKA

REVISION	BY	DATE
SUBMITTED FOR PLAN APPROVAL		04/26/00
ISSUED FOR CONST.		04/29/00
AS BUILT	BLJ	12/00

Project No. ____
Date JUNE 2000
Designed CJE
Drawn SLJ
Approved CJE

Sheet No. C-2
SHEET 4 OF 5


AS-BUILT
3/4" AWW PLYWOOD BACKING BOARD
SIGN
1/2"x5" S.S. BOLT
1/2" I.D. X 1" O.D. S.S. WASHER
1/2" I.D. X 1" O.D. S.S. WASHER
1/2" S.S. NUT
6"x6" TREATED TIMBER POST
12"
12"
12"
SIGN
0.080 ALUMINUM SHEET MATERIAL WITH WHITE REFLECTIVE COATING MOUNTED ON 3/4" AWW PLYWOOD BACKING BOARD.
NOTE:
ALL LETTERS SHALL BE BLACK AND ABLE TO BE READ FROM A MINIMUM DISTANCE OF 30 FEET
SIGN TO BE CONSTRUCTED AS FOLLOWS:
CLEAR, UV RESISTANT TOP FILM
BLACK, BLOCK LETTERS AND LINE ART
WHITE REFLECTIVE BACKING
ALUMINUM SHEETING
3/4" AWW PLYWOOD BACKING BOARD
NOTE:
THE FINAL SHAPE AND DIMENSIONS OF THE CLOSED DUMP WILL BE ESTABLISHED IN THE FIELD (SEE NOTE 1, SHEET G-1)
DO NOT PROCEED WITH FABRICATION UNTIL THE FINAL GEOMETRY OF THE SITE HAS BEEN CONFIRMED
MUNICIPAL SOLID WASTE DUMP
CLOSED
DO NOT DIG OR OTHERWISE DISTURB THIS AREA
YOU ARE HERE
POST
120 FT.
320 FT.
109 FT.
135 FT.
70 FT.
212 FT.
210 FT.
129 FT.
5'-0"
3'-6"
12"
6"x6" TREATED TIMBER POST (TYPICAL)
FINISHED GRADE
12" SONOTUBE FILL W/ 2500 PSI CONCRETE (TYPICAL)
3'-6"
2'-6"
4'-6"
A
C-3
PUBLIC INFORMATION SIGN DETAILS
NOT TO SCALE
CE2 ENGINEERS, INC.
ANCHORAGE, ALASKA
INTERIM DUMP CLOSURE PLAN
PUBLIC INFORMATION SIGN DETAILS
ST. GEORGE, ALASKA
REVISION
SUBMITTED FOR PLAN APPROVAL
ISSUED FOR CONST.
AS BUILT
Project No.
Date JUNE 2000
Designed CLE
Drawn SLJ
Approved CLE
Sheet No. C-3
SHEET 5 OF 5
CONSTRUCTION RECORD
AS NOTED
RECORD DRAWING CERTIFICATE
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL HEALTH
SOLID WASTE PROGRAM
555 CORDOVA STREET
ANCHORAGE, ALASKA 99501
http://www.state.ak.us/dec/home.htm

Telephone: (907)269-7590
Fax: (907) 269-7655

RECEIVED
Jul 2 4 2000

July 17, 2000

Mr. Chuck Eggener, P.E.
CE2 Engineers
PO Box 232946
Anchorage, Alaska 99523

Re: ADEC Approval of City of St. George, 2000 Interim Municipal Solid Waste Dump Closure Plan;

Dear Mr. Eggener,

The Alaska Department of Environmental Conservation (ADEC) has reviewed the 2000 Interim Municipal Solid Waste Dump Closure Plan, submitted by CE2 Engineers on June 30, 2000. The closure plan for the existing landfill is shown to include grading and compaction of the existing waste, possible removal of perimeter metal debris and vehicles, placement of bedding material suitable for installation of the geosynthetic clay (GCL) top cap, and soil cover on top of the GCL of adequate thickness in order to protect the liner. ADEC approves the plan with the following comments:

1.) The treated, petroleum contaminated soils from the NOAA project would be suitable for use as bedding material (with cover) within the cap once pcs treatment limits have been shown to be met.

2.) The cover over the GCL must be of adequate thickness in order to protect the GCL. The cap designer shall determine the thickness based on manufacturer recommendations.

3.) The surface of the landfill cap must be constructed in a manner appropriate for proposed future activities. The cap must be revegetated or otherwise appropriately completed. If future vehicle storage is proposed at the site then the surface of the landfill cap must provide a wearing surface suitable for driving and vehicle storage/transportation.

4.) The GCL was not a requirement of the Department, however if it is to be placed, it should be constructed in accordance with all manufacturers recommendations, including a statement certifying the suitable preparation of the bedding material prior to placement of the GCL liner.

Please call me at 269-7590 if you have any questions or need additional information.

Sincerely,

Laura Ogar

Laura Ogar
Solid Waste Program Coordinator
Logar@envircon.state.ak.us

Cc: John Lindsay, NOAA

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE
Seattle, WA 98115-6349

December 12, 2003

Mr. Louis Howard
Project Manager
Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501-2617

Subject: Request For Confirmation of Completion of Corrective Actions For Two Party Agreement Site 4, Active Landfill, St. George, Alaska

Dear Mr. Howard:

Pursuant to Paragraph 59 of the Pribilof Islands Environmental Restoration Two Party Agreement (TPA), National Oceanic and Atmospheric Administration (NOAA) requests Alaska Department of Environmental Conservation (ADEC) confirm that all corrective actions have been completed for Saint George Island TPA Site 4, identified in the agreement as the Active Landfill.

TPA Site 4, located on Tract 38B within Section 36, Township 41 South, Range 130 West, Seward Meridian, Alaska, is owned by the City of Saint George. The 5.78 acre landfill site had been in operation for approximately 50 years at the time of the TPA signing in 1996. In August 1997, NOAA awarded the City of St. George a Cooperative Agreement Grant of $1,738,358 to assist the City in closing the landfill.

The City and its contractor, CE2 Engineers, Inc., developed a closure plan approved by ADEC in July 2000. Closure included identifying the extents of the existing buried municipal waste; removal of vehicle hulks and large metallic scrap; grading and reshaping the municipal waste; installation of geotextile pad, geosynthetic clay cap and cover material in a manner that ensured all solid waste was covered; installation of perimeter drainage ditches, perimeter markers, and warning signage. Construction started September 2000 and was completed August 2001. As-built plan documents were certified by CE2 Engineers, Inc. in December 2001. Included in the final plan documents approved by ADEC is the requirement for the City of Saint George to perform post-closure care and monitoring activities in accordance with State of Alaska Solid Waste Regulations 18 AAC 60.390.

The closure of the active landfill in existence at the time of the TPA enactment, financed by NOAA and accomplished by the City of Saint George, fulfills NOAA's obligations under the TPA. Currently, the City is operating an interim solid waste disposal area within Tract 38B until a new municipal landfill (under construction) is operational. NOAA considers closure of this interim site the municipality's responsibility, not a TPA action. Attached is a copy of the ADEC letter approving the City's closure plan, reduced size certified as-built closure plan documents, and site photographs.

If you have any questions, please do not hesitate to contact me either in writing, or at (206) 526-4560.

Sincerely,

John A. Lindsay
Pribilof Project Manager

cc:
Robert A. Taylor (NOAA)

cc w/o attachments:
Leslie Simmons, ADEC, Solid Waste Program Coordinator
Alvin Merculief (City of St. George)
Max Malavansky (City of St. George)
St. George RAB

Attachments

STATE OF ALASKA

FRANK H. MURKOWSKI, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

555 Cordova Street
Anchorage, AK 99501
PHONE: (907) 269-7552
FAX: (907) 269-7649
http://www.state.ak.us/dec/home.htm

January 13, 2003

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE
Seattle, WA 98115-6349

RE: Request for Confirmation of Completion of Corrective Action
Two-Party Agreement Site 4, Active Landfill, St. George, Alaska

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document in a December 2003 meeting with National Oceanic and Atmospheric Administration (NOAA). The Department has reviewed the information and, in accordance with Paragraph 59 of the Pribilof Islands Environmental Restoration Two Party Agreement, confirms that no further corrective action is required at this specific site known as the Active Landfill (site 4).

The Department is basing its decision on the most current and complete data provided by NOAA. The Department reserves its rights, under: 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations, 18 AAC 60 Solid Waste regulations and AS 46.03 to require NOAA to perform additional investigation, cleanup, or containment if subsequent information indicates that: 1) additional contamination remains at the site which was previously undiscovered, which presents an unacceptable risk to human health, safety, or welfare, or the environment; or 2) the information provided was invalid, incomplete, or fraudulent.

Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard

Louis Howard
Project Manager

cc: Max Malavansky, Mayor City of St. George
Leslie Simmons ADEC SW Program

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2008-000373-0
Recording Dist: 305 - Aleutian Islands
8/5/2008 2:04 PM Pages: 1 of 7

NOTICE OF RESIDUAL SOIL CONTAMINATION and MUNICIPAL SOLID WASTE at
TWO PARTY AGREEMENT SITE 4
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the City of St. George (the City) as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator, hereby provide public notice that property located about 5 miles southwest of the City and about ½ mile east of Zapadni Road in central St. George Island, Alaska, 99591 is contaminated with petroleum products and contains municipal solid waste. More specifically, the property is described as follows:

Lot 1
Section 36, Township 41 South, Range 130 West, of the Seward Meridian, Alaska.
56° 35' 19.72" North Latitude, 169° 35' 38.67" West Longitude

This property, hereafter referred to as Site 4 (Figures 1 and 2), has been subject to debris and petroleum contaminated soil from a discharge, or release and subsequent cleanup of oil or other hazardous substances, regulated under 18 AAC 75, Article 3 as amended December 2006, and solid waste disposal, which is regulated under 18 AAC 60 as amended August 2003. Petroleum-contaminated soil (PCS) and solid waste present on this property must be managed in accordance with current and applicable laws. Site 4 is documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135447; File ID 2643.38.010.

Site 4 was identified as the *Active Landfill* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 4 and NOAA Site 4. Following corrective action, NOAA submitted a request for confirmation of completion of corrective actions to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2003). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that site cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (ADEC 2004a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further corrective action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (ADEC 2004a).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: City of St. George
PO Box 929
St. George, AK 99591

Recording District: Aleutian Islands

Remedial Actions and Residual Contamination

At the time of the TPA signing in 1996, Site 4 had been in operation as a municipal landfill/open-burning dump site for approximately 50 years (NOAA 2003). In 1994, 231 drums and 3 automotive batteries were removed from the site (Woodward-Clyde 1994). The majority of the drums were empty; those with contents were bulked and sampled for off-site disposal.

In 1995, an environmental investigation of Site 4 found no evidence of lateral migration of contaminants from the landfill to surrounding property, and found only diesel range organics (DRO) present in concentrations above applicable cleanup requirements (Woodward-Clyde 1995).

In 1997, 35 junked vehicles and equipment were removed from the site (Polarconsult 1997).

In 1999, 40 test pits were excavated at the site to delineate the landfill's extent and boundaries (EEG 2000). EEG's report noted that only domestic trash was encountered during test pitting; no large metallic objects, hazardous waste or containers suspected of containing hazardous waste were found.

In 2000, a contaminant fate and transport modeling study was conducted at the site to evaluate contaminant migration from the landfill and resulting potential risks to underlying groundwater and drinking water supplies (Tetra Tech 2000). Tetra Tech reported that the water table in the vicinity of Site 4 was about 250 feet below the ground surface, with the public water supply wells located 2.5 miles to the northeast. Based on SESOIL modeling, the report concluded that landfill contaminants were not likely to reach the water table in concentrations exceeding applicable groundwater cleanup levels, and that there was little potential for landfill leachate migrating to the island's drinking water supply.

In 2001, Site 4 was closed and covered with geotextile padding, geosynthetic clay liner, and eight inches of beach sand followed by 10 inches of scoria ballast (City of St. George 2003). However, an area in the southeast corner of Site 4 continued to be used by the City as an open burning dump until a new landfill became operational in 2006 (Figure 3).

In 2004, pursuant to PCS disposal discussions with NOAA, ADEC conducted a risk evaluation of the potential effects to human health from land farming PCS on St. George Island and determined that all associated risks were well below all risk management standards (ADEC 2004b). NOAA developed a SESOIL contaminant fate and transport model for PCS placed at the City's new landfill site, located southeast of Site 4, using PCS stockpile characterization results and other landfill site-specific data as model parameters (NOAA 2004). The model indicated that the PCS could be landspread at the new landfill site with minimal impact to the environment as long model parameters of average contaminant concentrations and PCS stockpile depth were met. NOAA proposed that the PCS be used beneficially as berm construction material and municipal day cover at the new landfill; ADEC approved the proposal (NOAA 2004; ADEC 2004c).

In 2005, NOAA prepared an Environmental Assessment (EA) to disclose potentially significant impacts to the human environment associated with the treatment and/or disposal of PCS on St. George Island (NOAA 2005). The EA concluded that the preferred disposal alternative for PCS was to reuse it beneficially in the construction and operations of the City's landfill and treatment by landspreading.

In 2006, based on the results of SESOIL modeling and the conclusions of the EA (Tetra Tech 2000, NOAA 2004, NOAA 2005), NOAA and ADEC determined that PCS from a NOAA stockpile (Non-TPA Site 32) could be used beneficially to cover the City's active dump site in the southeast corner of Site 4. Use of the PCS as cover material reduced landfill closure costs for the City by eliminating the expense of excavating clean cover material. On April 7, 2006, NOAA and ADEC held a public meeting on St.

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2008-000373-0

George that was attended by concerned island residents and representatives from the City Council and St. George Tribal Office. The purpose of the public meeting was to explain the modeling and associated parameters that led to the EA conclusion that landspreading at the City landfill sites was the preferred alternative for PCS disposal. NOAA and ADEC presented the data, and answered all questions to the satisfaction of those present. NOAA negotiated a purchase order with the City for moving PCS and sand bedding material from Site 32 to Site 4 (NOAA 2006). In October 2006, 6,500 cubic yards of PCS, sand bedding material, and temporary road material were removed from Site 32 and used as cover material at Site 4.

In 2007, Site 4's cover material was fertilized and seeded with native varieties of grasses.

Site Use

In the event that information becomes available which indicates that Site 4 may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

In the future, ADEC approval is required prior to moving the soil cover over the solid waste at Site 4 pursuant to 18 AAC 60. If contaminated soil and solid wastes are removed from the site, the site must be characterized and managed following regulations applicable at that time including (1) 18 AAC 75.325(i), (2) 18 AAC 75.370, and (3) 18 AAC 60 as amended. ADEC approval is required prior to moving soil or solid wastes that is, or has been, subject to the cleanup rules found at 18 AAC 75.325-.390, and 18 AAC 60 as amended.

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern, and until all wastes are removed from the property.

References:

Alaska Department of Environmental Conservation (ADEC). 2004a. Letter from Louis Howard, Project Manager, ADEC, Division of Spill Prevention and Response, Contaminated Sites Program to John Lindsay, Pribilof Project Manager, NOAA; Subject: *Request For Confirmation of Completion of Corrective Action For Two-Party Agreement Site 4, Active Landfill, St. George, Alaska.* Letter dated January 13, 2004.

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City of St. George. 2003. *Final Report, St. George Landfill Closure (NOAA Award Number NA77AB052) for Interim Closure of a Community Dump On St. George Island, Alaska.* March.

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Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volume 3. December 31.

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Woodward-Clyde. 1994. *Phase 1B Environmental Assessment, St. George Island, Alaska.* Woodward-Clyde, Anchorage, Alaska. March 31.

Woodward-Clyde. 1995. *Expanded Site Inspection, St. George Island, Alaska.* Woodward-Clyde, Anchorage, Alaska. March.

Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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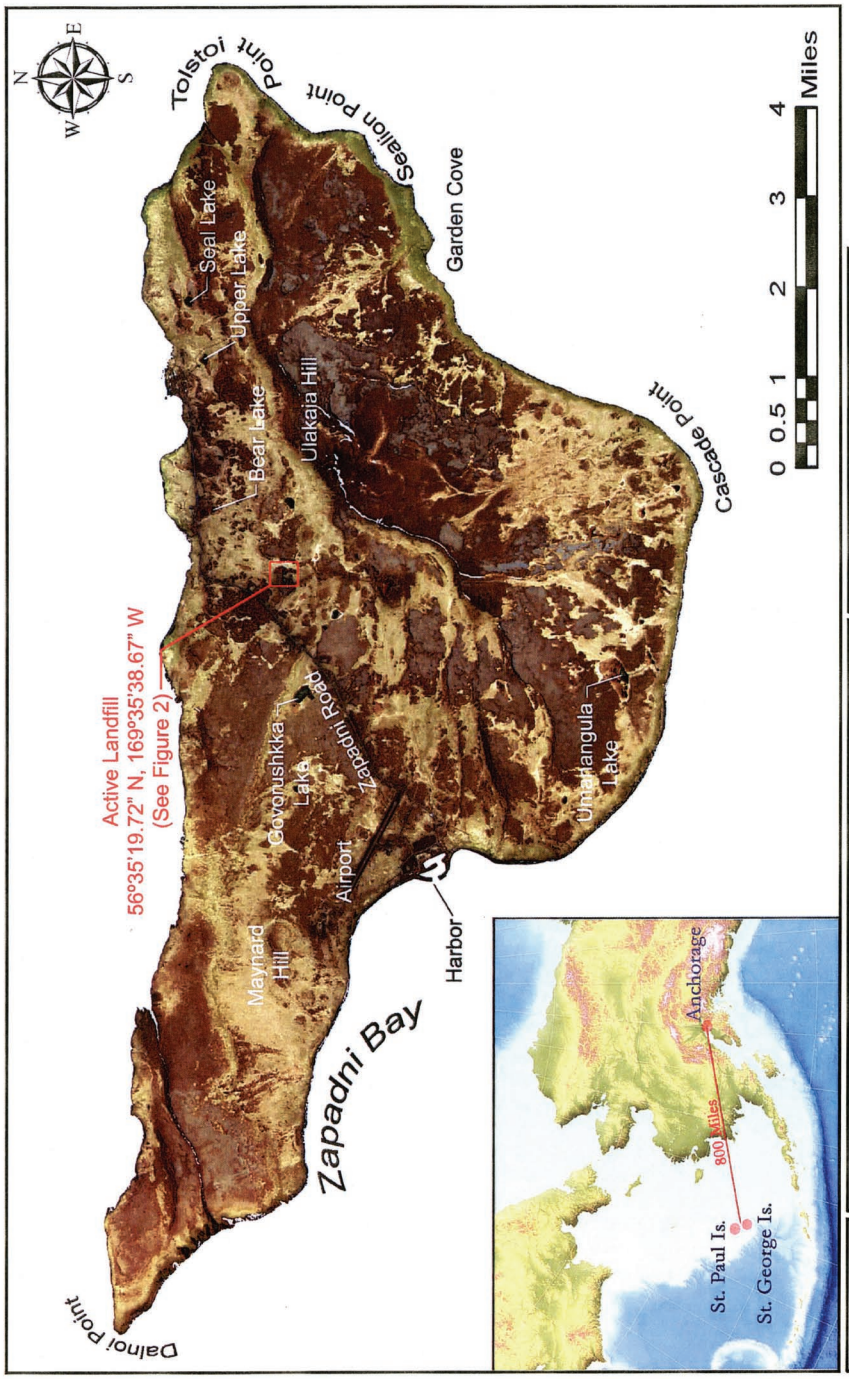
2008-000373-0



Pribilof Islands Restoration Project

Source: Ikonos Satellite Imagery (Space Imaging 2001)
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Date: 7/22/2008

Figure 1

St. George Island Vicinity Map
Active Landfill
NOAA Site 4/TPA Site 4
St. George Island, Alaska

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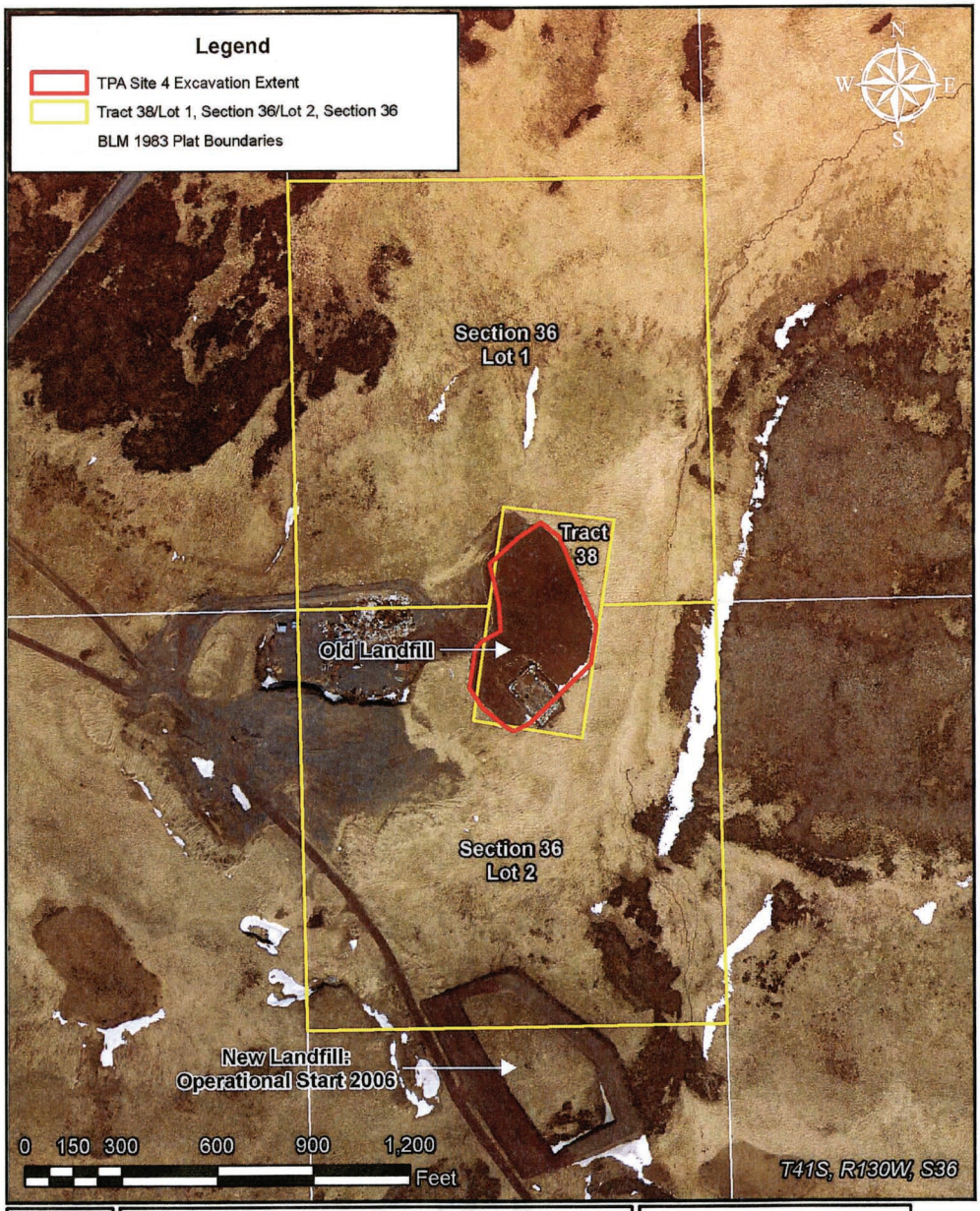

Figure 2	Legal Property Description Map Tract 38/Lot 1, Section 36/Lot 2, Section 36 Active Landfill NOAA Site 4/TPA Site 4 St. George Island, Alaska	Source: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo. 1983 Bureau of Land Management Land Survey Plat Officially filed February 15, 1985. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Active Landfill\Fig2_TPA4_PropDescription.mxd Date: 7/22/2008 @ 2:03:33 PM

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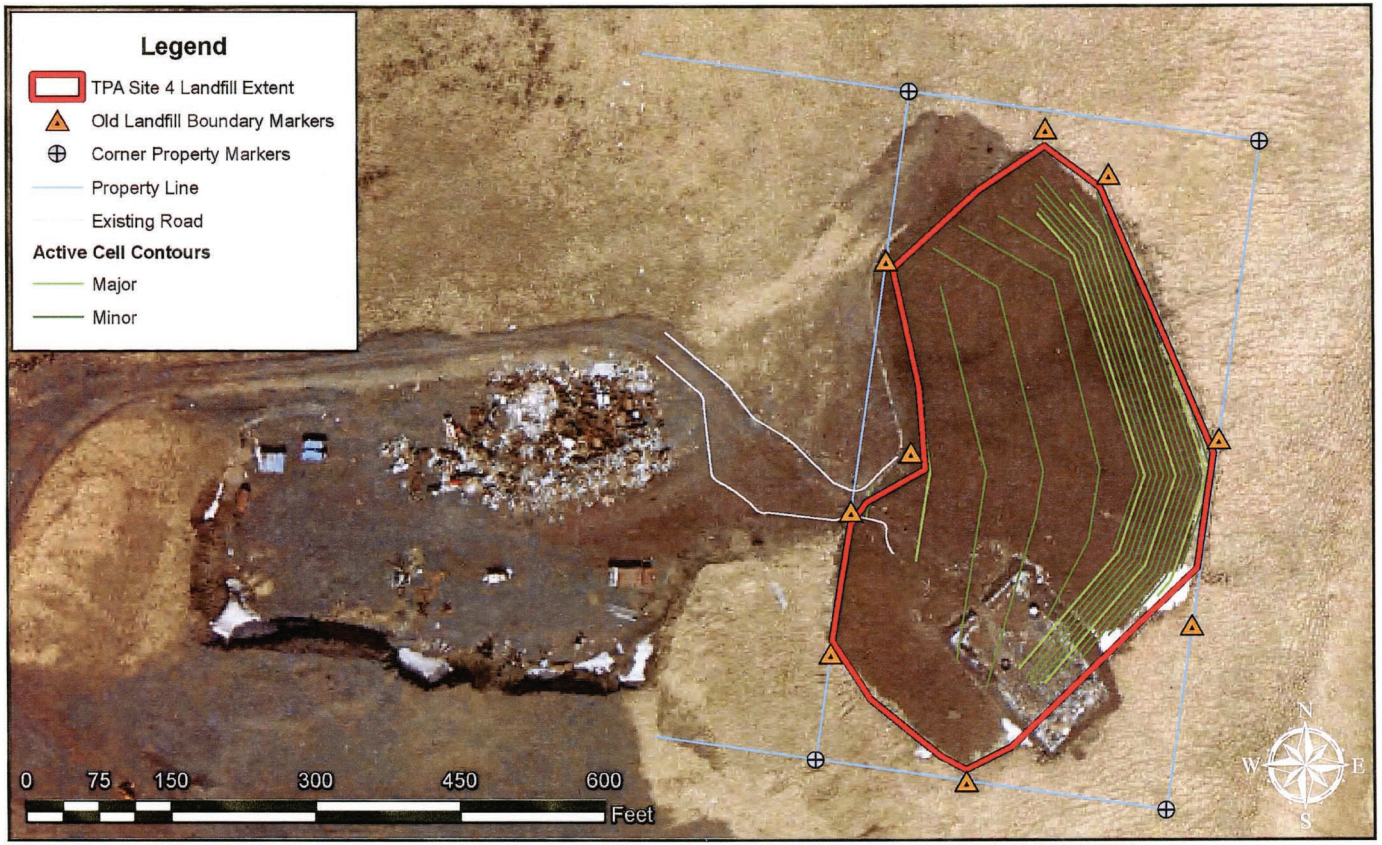

Figure 3	Active Landfill Overview Active Landfill NOAA Site 4/TPA Site 4 St. George Island, Alaska	Sources: Cad/GIS Layers (CE2 Engineers Site Plan), Aero-Metric 2 ft Aerial Photo Path: C:\KP_GIS Data\Maps & Figures\ STG\Deed Notices\Active Landfill\ Fig3_TPA4_Active_Landfill_Site.mxd Date: 7/22/2008 @ 3:35:54 PM

Pribilof Islands Restoration Project

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2008-000372-0

Recording Dist: 305 - Aleutian Islands
8/5/2008 2:03 PM Pages: 1 of 6

NOTICE OF RESIDUAL SOIL CONTAMINATION and MUNICIPAL SOLID WASTE at
TWO PARTY AGREEMENT SITE 4
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4141 B Street, Suite 301
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Grantee: City of St. George
PO Box 929
St. George, AK 99591

Recording District: Aleutian Islands

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2008-000372-0

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Tetra Tech Environmental Management, Inc. (Tetra Tech). 2000. *Vadose Zone Modeling Report, St. George Municipal Landfill, George Island, Alaska.* Seattle, Washington. April 28.

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Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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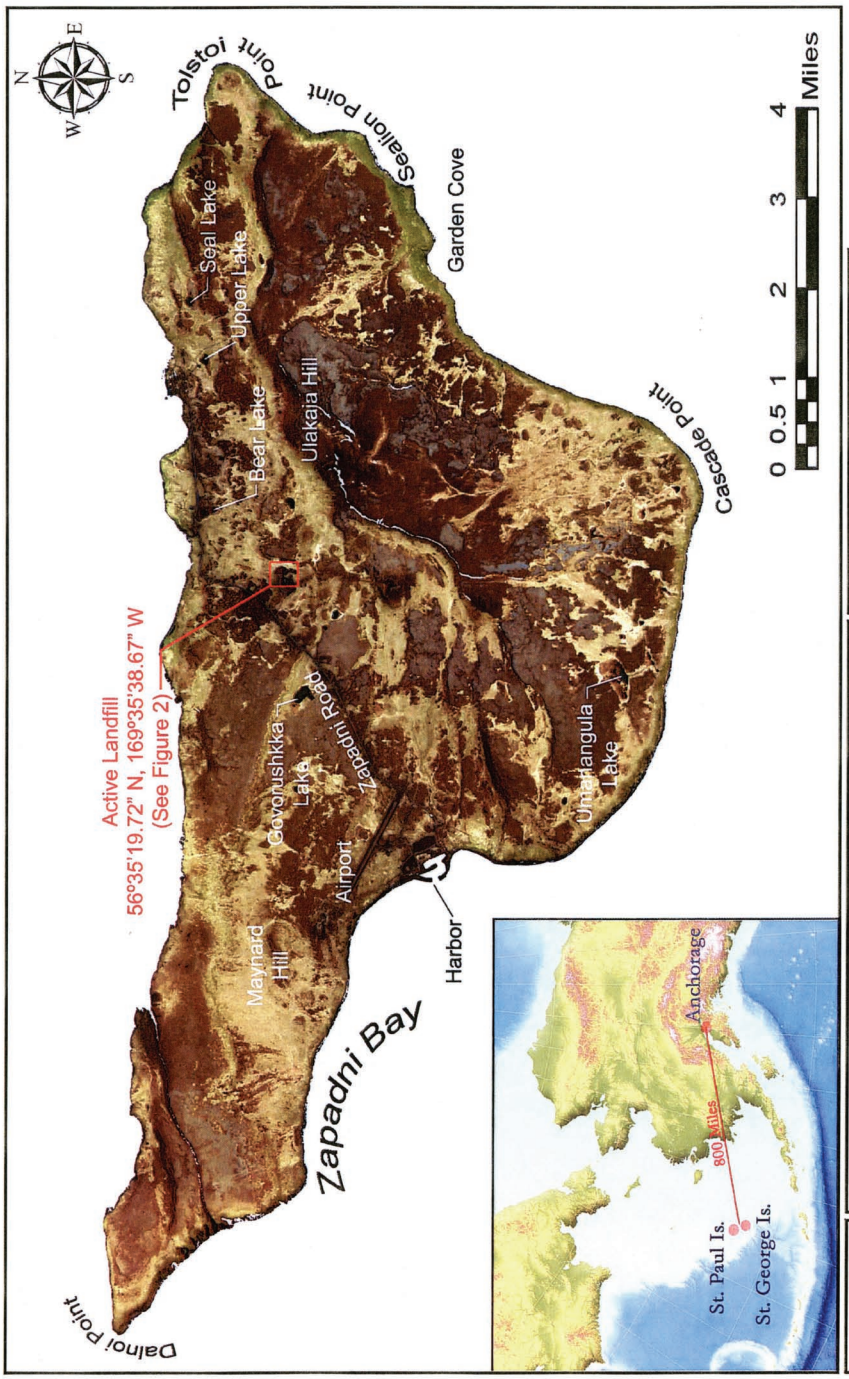
2008-000372-0



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Pribilof Islands Restoration Project

Figure 1

St. George Island Vicinity Map
Active Landfill
NOAA Site 4/TPA Site 4
St. George Island, Alaska

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2008-000372-0

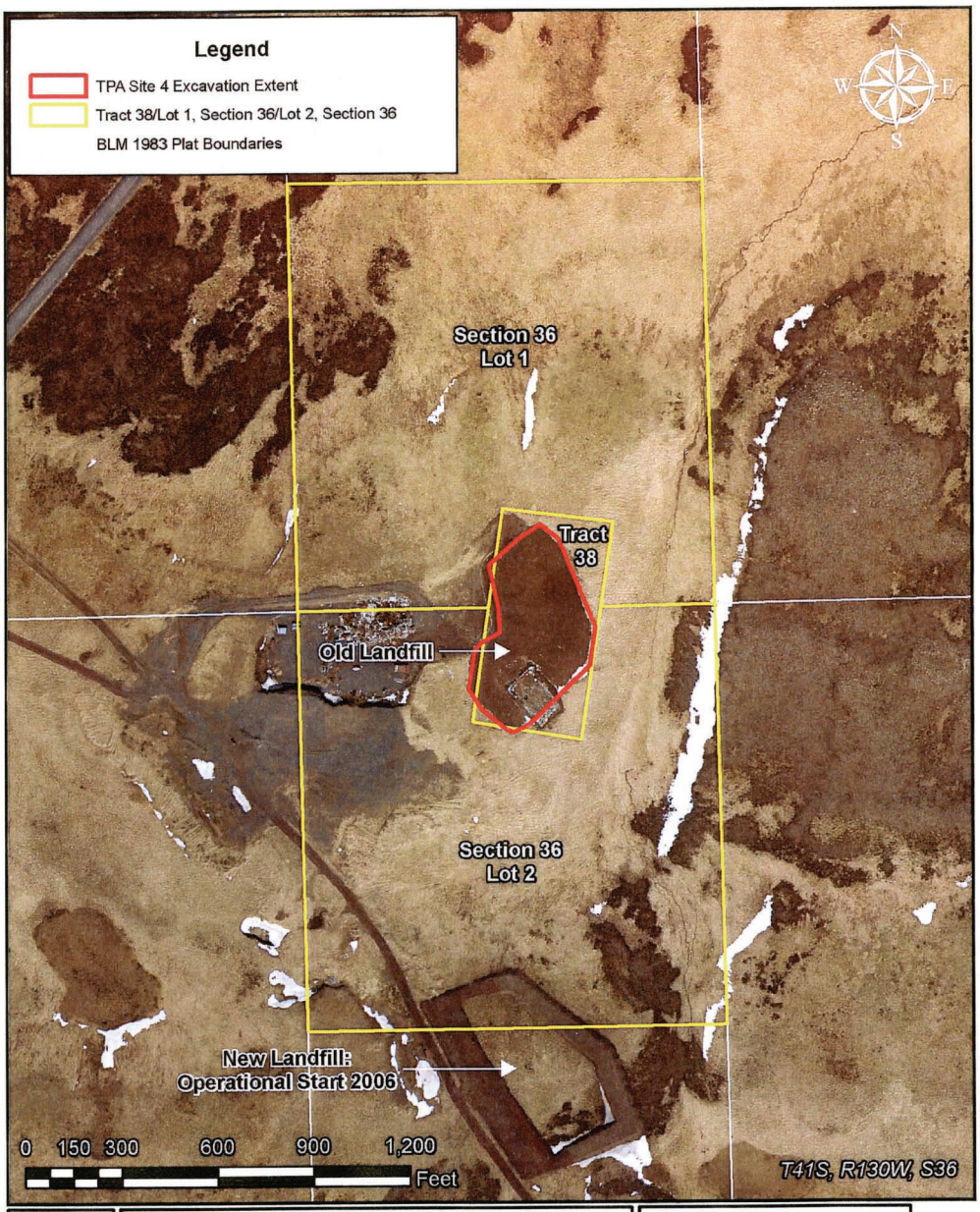

Figure 2	Legal Property Description Map Tract 38/Lot 1, Section 36/Lot 2, Section 36 Active Landfill NOAA Site 4/TPA Site 4 St. George Island, Alaska	Source: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo. 1983 Bureau of Land Management Land Survey Plat Officially filed February 15, 1985. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Active Landfill\Fig2_TPA4_PropDescription.mxd Date: 7/22/2008 @ 2:03:33 PM

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cc

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2008-000374-0

Recording Dist: 305 - Aleutian Islands
8/5/2008 2:04 PM Pages: 1 of 6

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St. George, AK 99591

Recording District: Aleutian Islands

Remedial Actions and Residual Contamination

At the time of the TPA signing in 1996, Site 4 had been in operation as a municipal landfill/open-burning dump site for approximately 50 years (NOAA 2003). In 1994, 231 drums and 3 automotive batteries were removed from the site (Woodward-Clyde 1994). The majority of the drums were empty; those with contents were bulked and sampled for off-site disposal.

In 1995, an environmental investigation of Site 4 found no evidence of lateral migration of contaminants from the landfill to surrounding property, and found only diesel range organics (DRO) present in concentrations above applicable cleanup requirements (Woodward-Clyde 1995).

In 1997, 35 junked vehicles and equipment were removed from the site (Polarconsult 1997).

In 1999, 40 test pits were excavated at the site to delineate the landfill's extent and boundaries (EEG 2000). EEG's report noted that only domestic trash was encountered during test pitting; no large metallic objects, hazardous waste or containers suspected of containing hazardous waste were found.

In 2000, a contaminant fate and transport modeling study was conducted at the site to evaluate contaminant migration from the landfill and resulting potential risks to underlying groundwater and drinking water supplies (Tetra Tech 2000). Tetra Tech reported that the water table in the vicinity of Site 4 was about 250 feet below the ground surface, with the public water supply wells located 2.5 miles to the northeast. Based on SESOIL modeling, the report concluded that landfill contaminants were not likely to reach the water table in concentrations exceeding applicable groundwater cleanup levels, and that there was little potential for landfill leachate migrating to the island's drinking water supply.

In 2001, Site 4 was closed and covered with geotextile padding, geosynthetic clay liner, and eight inches of beach sand followed by 10 inches of scoria ballast (City of St. George 2003). However, an area in the southeast corner of Site 4 continued to be used by the City as an open burning dump until a new landfill became operational in 2006 (Figure 3).

In 2004, pursuant to PCS disposal discussions with NOAA, ADEC conducted a risk evaluation of the potential effects to human health from land farming PCS on St. George Island and determined that all associated risks were well below all risk management standards (ADEC 2004b). NOAA developed a SESOIL contaminant fate and transport model for PCS placed at the City's new landfill site, located southeast of Site 4, using PCS stockpile characterization results and other landfill site-specific data as model parameters (NOAA 2004). The model indicated that the PCS could be landspread at the new landfill site with minimal impact to the environment as long model parameters of average contaminant concentrations and PCS stockpile depth were met. NOAA proposed that the PCS be used beneficially as berm construction material and municipal day cover at the new landfill; ADEC approved the proposal (NOAA 2004; ADEC 2004c).

In 2005, NOAA prepared an Environmental Assessment (EA) to disclose potentially significant impacts to the human environment associated with the treatment and/or disposal of PCS on St. George Island (NOAA 2005). The EA concluded that the preferred disposal alternative for PCS was to reuse it beneficially in the construction and operations of the City's landfill and treatment by landspreading.

In 2006, based on the results of SESOIL modeling and the conclusions of the EA (Tetra Tech 2000, NOAA 2004, NOAA 2005), NOAA and ADEC determined that PCS from a NOAA stockpile (Non-TPA Site 32) could be used beneficially to cover the City's active dump site in the southeast corner of Site 4. Use of the PCS as cover material reduced landfill closure costs for the City by eliminating the expense of excavating clean cover material. On April 7, 2006, NOAA and ADEC held a public meeting on St.

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George that was attended by concerned island residents and representatives from the City Council and St. George Tribal Office. The purpose of the public meeting was to explain the modeling and associated parameters that led to the EA conclusion that landspreading at the City landfill sites was the preferred alternative for PCS disposal. NOAA and ADEC presented the data, and answered all questions to the satisfaction of those present. NOAA negotiated a purchase order with the City for moving PCS and sand bedding material from Site 32 to Site 4 (NOAA 2006). In October 2006, 6,500 cubic yards of PCS, sand bedding material, and temporary road material were removed from Site 32 and used as cover material at Site 4.

In 2007, Site 4's cover material was fertilized and seeded with native varieties of grasses.

Site Use

In the event that information becomes available which indicates that Site 4 may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

In the future, ADEC approval is required prior to moving the soil cover over the solid waste at Site 4 pursuant to 18 AAC 60. If contaminated soil and solid wastes are removed from the site, the site must be characterized and managed following regulations applicable at that time including (1) 18 AAC 75.325(i), (2) 18 AAC 75.370, and (3) 18 AAC 60 as amended. ADEC approval is required prior to moving soil or solid wastes that is, or has been, subject to the cleanup rules found at 18 AAC 75.325-.390, and 18 AAC 60 as amended.

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern, and until all wastes are removed from the property.

References:

Alaska Department of Environmental Conservation (ADEC). 2004a. Letter from Louis Howard, Project Manager, ADEC, Division of Spill Prevention and Response, Contaminated Sites Program to John Lindsay, Pribilof Project Manager, NOAA; Subject: *Request For Confirmation of Completion of Corrective Action For Two-Party Agreement Site 4, Active Landfill, St. George, Alaska.* Letter dated January 13, 2004.

ADEC. 2004b. St. George Island Risk Evaluation Petroleum Contaminated Soils. Anchorage, Alaska. June 14.

ADEC. 2004c. Letter Approval. Petroleum Contaminated Soils Fate and Transport Modeling Summary, St. George Island, Alaska, October 2004. Anchorage, Alaska. October 29.

City of St. George. 2003. *Final Report, St. George Landfill Closure (NOAA Award Number NA77AB052) for Interim Closure of a Community Dump On St. George Island, Alaska.* March.

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Environmental Enterprise Group (EEG). 2000. *Completion Report Pribilof Islands Project, St. George, Alaska.* South Carolina Research Authority, Environmental Enterprise Group, 1899 North Hobson Ave., North Charleston, S. C. 29405. March 15.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2003. Letter from John Lindsay, Pribilof Project Manager, NOAA to Louis Howard, Project Manager, ADEC, Division of Spill Prevention and Response, Contaminated Sites Program; Subject: *Request For Confirmation of Completion of Corrective Actions For Two Party Agreement Site 4, Active Landfill, St. George, Alaska.* Letter dated December 12, 2003.

NOAA. 2004. St. George Island Landspreading Alternative for PCS Treatment, St. George Island, Alaska. Seattle, Washington. October 28.

NOAA. 2005. Environmental Assessment, St. George Island, Alaska, Petroleum-Contaminated Soil Treatment/Disposal Project. Seattle, Washington. July.

NOAA. 2006. PCS Stockpile Relocation and Interim Landfill/Ash Disposal Cell Cover on, St. George Island, Pribilof Islands, Alaska. NOAA Contract AB133C06SE3981 with St. George, City of. Seattle, Washington. July 19.

Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volume 3. December 31.

Tetra Tech Environmental Management, Inc. (Tetra Tech). 2000. *Vadose Zone Modeling Report, St. George Municipal Landfill, George Island, Alaska.* Seattle, Washington. April 28.

Woodward-Clyde. 1994. *Phase 1B Environmental Assessment, St. George Island, Alaska.* Woodward-Clyde, Anchorage, Alaska. March 31.

Woodward-Clyde. 1995. *Expanded Site Inspection, St. George Island, Alaska.* Woodward-Clyde, Anchorage, Alaska. March.

Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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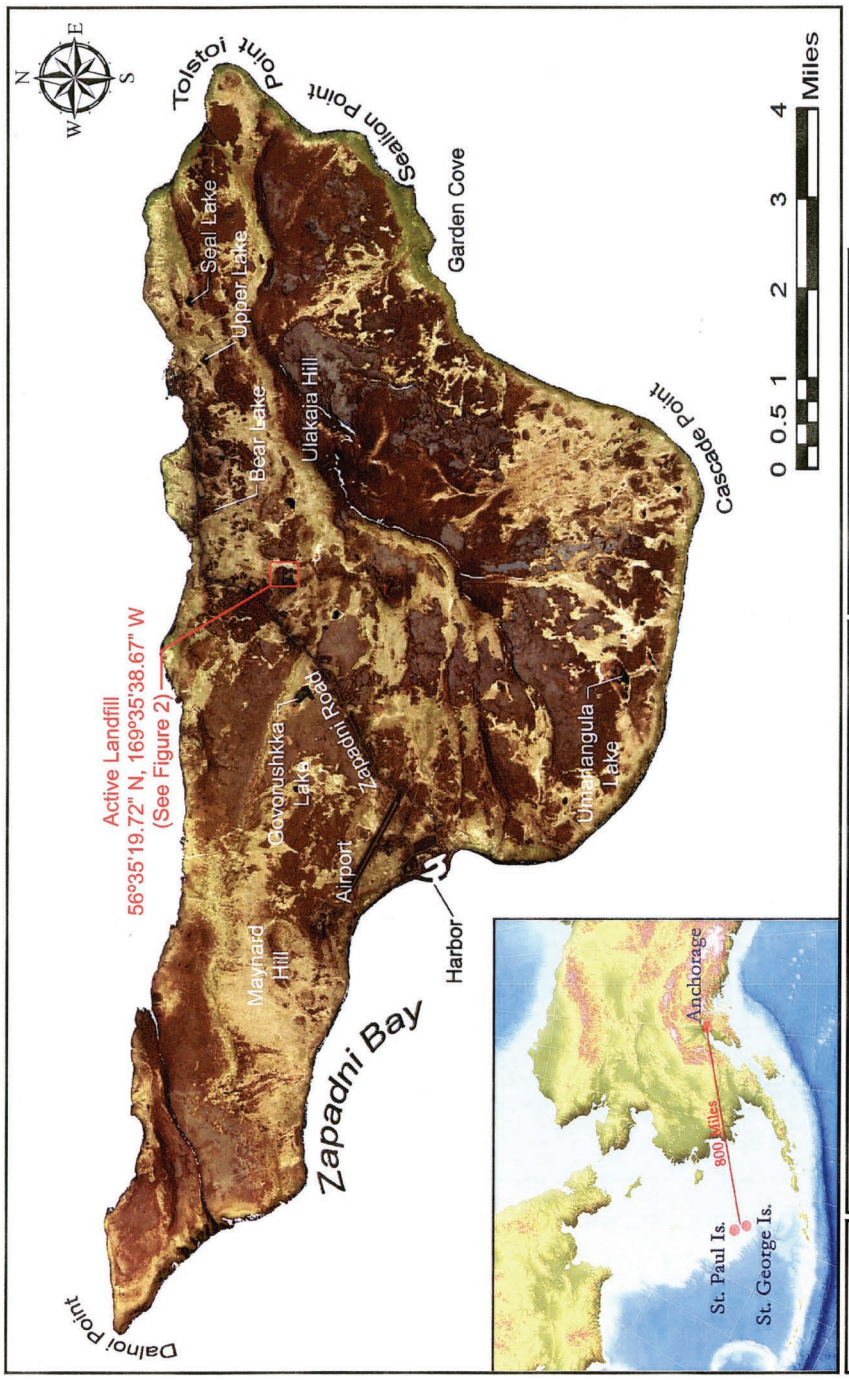
2008-000374-0



Source: Ikonos Satellite Imagery (Space Imaging 2001)
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Date: 7/22/2008

Pribilof Islands Restoration Project

Figure 1

St. George Island Vicinity Map
Active Landfill
NOAA Site 4/TPA Site 4
St. George Island, Alaska

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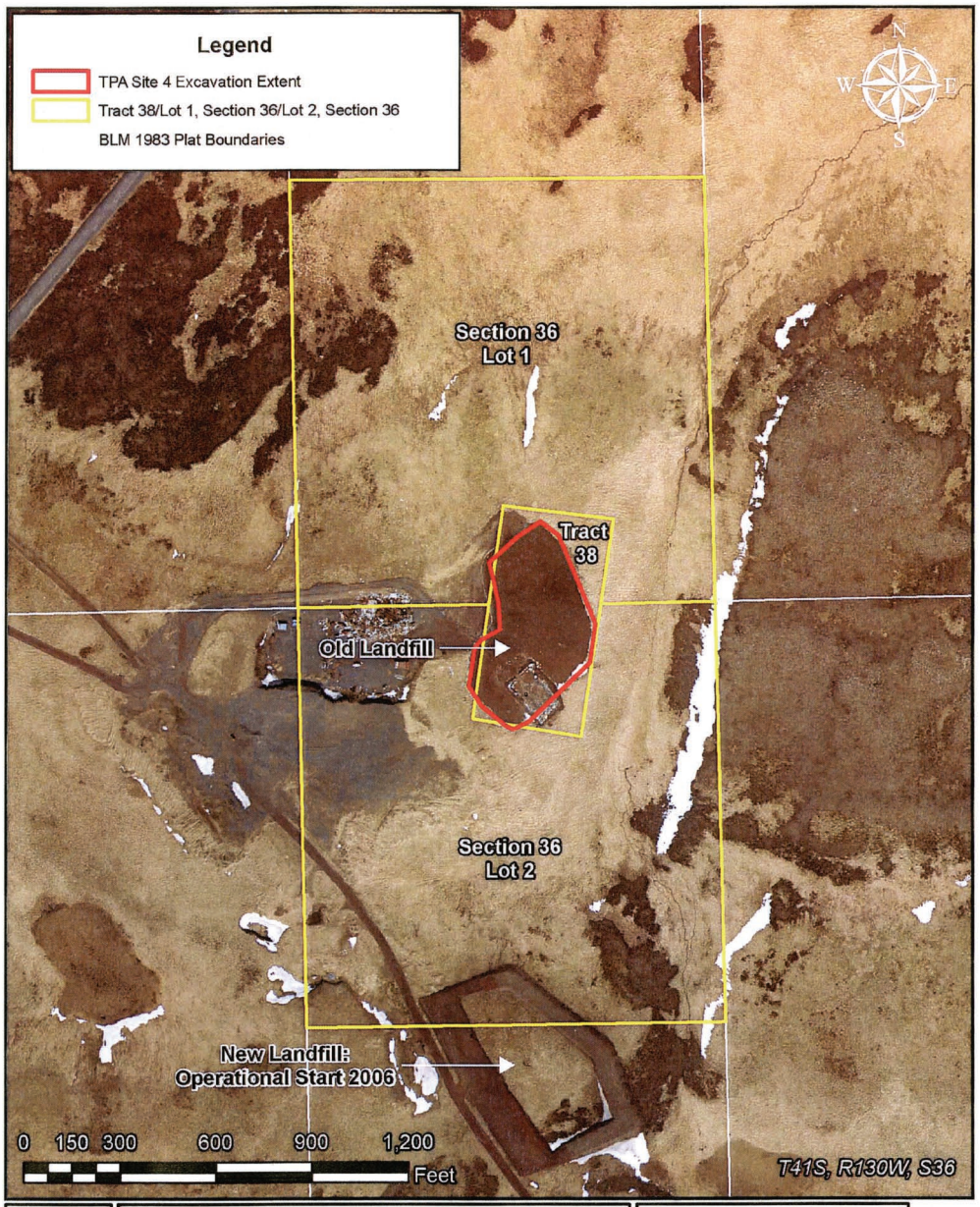

Figure 2	Legal Property Description Map Tract 38/Lot 1, Section 36/Lot 2, Section 36 Active Landfill NOAA Site 4/TPA Site 4 St. George Island, Alaska	Source: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially filed February 15, 1985. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Active Landfill\Fig2_TPA4_PropDescription.mxd Date: 7/22/2008 @ 2:03:33 PM

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NOAA Site 5
TPA Site 5: Ocean Dump Site

St. George Island, Alaska, Request for No Further Action,
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Letter from Louis Howard to John Lindsay RE: St. George Island Request for No Further Action Ocean Dump Site TPA Site No. 5, Dated February 19, 2003. Dated March 11, 2003 167

St. George Island, Alaska
Request for No Further Action
Ocean Dump Site
TPA Site No. 5

Site: Ocean Dump Site, Two-Party Agreement (TPA) Site Number 5

Location: St. George Island, Alaska (located between latitude 56°30' and 57°40' north and longitude 169°25' and 169°50' west). This site is located at base of an approximately 50-foot, vertical cliff northeast of the City of St. George.

Type of Release: solid waste, primarily metal debris and equipment, including two large track vehicles

History: The historical waste types and quantities disposed of in the ocean dump are unknown.

Summary of Site Investigations:
A 1992 preliminary assessment of this site found two large vehicles and other metal debris located at the bottom of the cliff. Visual contamination was not evident at the time of the site visit. Due to the location of the debris, the site is not readily accessible by land.

Summary of Clean up Actions:
Solid waste, mainly metal debris and equipment, was removed from the beach in accordance with a May 1997 work plan prepared by Polarconsult Alaska, Inc. and approved by the Alaska Department of Environmental Conservation.

Recommend Action:
In accordance with paragraph 59 of the Two Party Agreement (1996), NOAA requests written confirmation that all corrective action has been completed at the site in accordance with the Agreement and that no further action is required ("No Further Action Letter").

References:
Ecology and Environment. Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska. February 1993.

Woodward-Clyde Consultants, Inc. Phase 1B Environmental Assessment, St. George Island, Alaska. March 1994.

December 2000 letter from Polarconsult to Mr. Hall (NOAA) addressing Polarconsults findings during the 1997 environmental activities at the Ocean Dump Site. (1390.pdf)

For the National Oceanic and Atmospheric Administration

for

John Lindsay
NOAA, Pribilof Project Office

2/24/03
Date

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at TPA Site Number 5, the Ocean Dump Site, in accordance with the Agreement and that no further action is required.

For the Alaska Department of Environmental Conservation

Louis Howard

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

3/10/03
Date

* With conditions, see Attached letter

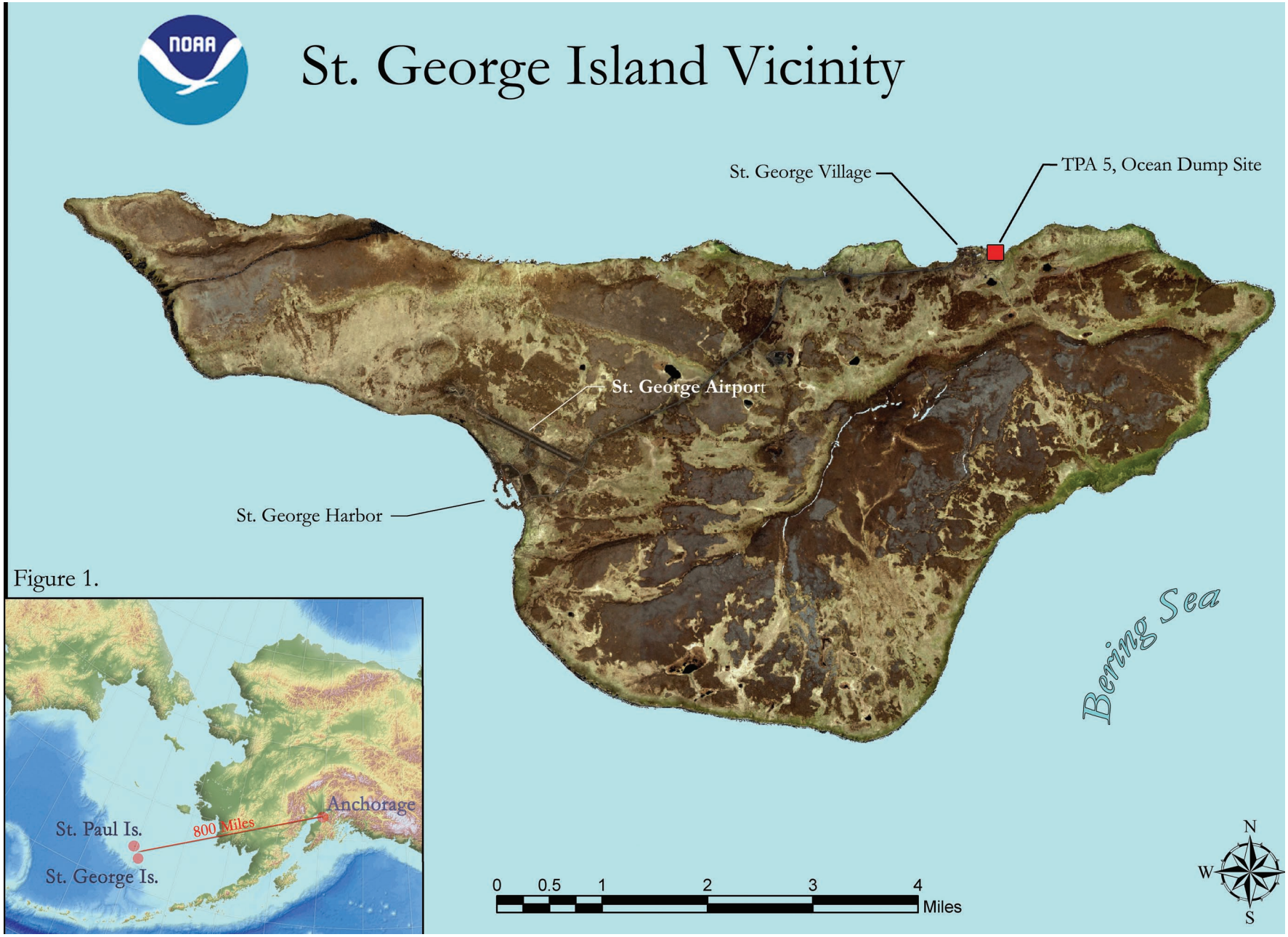

Figure 1. Location of the Ocean Dump Site, St. George Island, AK.

TPA 5, Ocean Dump Site

Figure 2.

0 70 140 280 420 560 Meters

Pribilof Islands Restoration Project

Figure 3. TPA Site 5, the Ocean Dump Site, before clean up.

Figure 3. TPA Site 5, the Ocean Dump Site, after clean up (July 2002).

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DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

March 11, 2003

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE BIN C15700
Seattle, WA 98115-6349

RE: St. George Island Request for No Further Action Ocean Dump Site TPA Site No. 5, Dated February 19, 2003

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document on February 26, 2003. Based on our review of the information provided, the Department finds the Ocean Dump Site listed in the Two Party Agreement (TPA) as Site No. 5, does not pose a significant threat to human health or safety, or the environment and will not require further remedial action or investigation.

The Department is basing its decision on the most current and complete information provided by NOAA. The Department reserves its rights, under 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations, 18 AAC 60 Solid Waste regulations and AS 46.03 to require the National Oceanic and Atmospheric Administration to perform additional investigation, cleanup, or containment if subsequent information indicates that

(1) the cleanup is not protective of human health, safety, or welfare, or of the environment; or

(2) the information the Department relied upon for its decision was invalid, incomplete, or fraudulent.

The Department requests NOAA attach a copy of this letter with the document. Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard
Project Manager

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NOAA Site 6
TPA Site 6: Open Pits Site

Request for Conditional Closure Open Pits Site, TPA Site 6/NOAA Site 6,
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Letter from Louis Howard to John Lindsay RE: Draft Corrective Action Report
Open Pits Two-Party Agreement Site 6, St. George, Alaska January 26, 2004.
Dated March 3, 2004.....185

Notice of Residual Soil Contamination at Two Party Agreement Site 6,
St. George Island, Alaska
(Lot 42, Tract 52).....187

Request for Conditional Closure

Site: Open Pits Site, also known as Two-Party Agreement (TPA) Site 6/National Oceanic and Atmospheric Administration (NOAA) Site 6. The site will be referred to as the Open Pits Site herein.

Location: St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea (Figure 1). The site is located east of the City of St. George and may be accessed from the road to the east rookery approximately 1,000 feet after passing the school heading east (Figure 2).

Legal Property Description: TPA Site 6 is located within Tract 52, in Section 29, Township 41 South, Range 129 West of the Seward Meridian, Alaska, from a Bureau of Land Management land survey filed February 15, 1985 (Figure 2). It is centered at Latitude 56° 36' 065" North, Longitude 169° 32' 18" West. The Aleut Corporation owns the subsurface estate. The surface estate is owned by the City of St. George.

History and Background:
The Open Pits Site is the location of a former quarry that covers an area of approximately 2 acres. Aerial photographs from 1948 and 1967 depict the area being used as a quarry. Since 1967 and up until the time that NOAA began environmental investigations on St. George, the site had been used for the disposal of solid waste, including domestic trash, coal, building materials, pipe, tires, scrap metal, concrete structures, drums, lead acid batteries, heavy equipment, and fuel storage tanks (NOAA 2003; Woodward-Clyde 1995).

Type of Release: Petroleum products may have leaked from heavy equipment, drums, or above ground storage tanks that had once been discarded at the site. Lead contamination could have been released from lead acid batteries.

Summary of Site Investigations:

Expanded Site Inspection, Woodward-Clyde 1993: In 1993, an inventory and bulking operation was conducted by Woodward-Clyde to remove government-owned drums, propane cylinders, and batteries from various locations on the island (Woodward-Clyde, 1994). Forty drums and six automotive batteries were inventoried and removed from the Open Pits Site. One vehicle and one abandoned crane were inspected and determined to be free of fluids. Four drums containing waste material were sampled and characterized. Chlorinated solvents and polychlorinated biphenyls (PCBs) were not detected in drum samples collected from the site and analyzed in an off site laboratory.

Initial Assessment, Hart Crowser 1996: In 1996, Hart Crowser conducted an initial site assessment with soil sample collection, the results of which are presented in the Expanded Site Inspection report (Hart Crowser, 1997). Thirteen test pits (TP) were

excavated in the investigation (Figure 3). Thirty-nine soil samples were submitted to a field laboratory for petroleum hydrocarbon analysis; 12 for PCB and pesticide analysis; and six for benzene, toluene, ethylbenzene, and total xylenes (BTEX) analysis. One of the samples was found to have gasoline range organics (GRO) at a concentration of 80 milligrams per kilogram (mg/kg), and diesel range organics (DRO) were detected in 11 of the samples at up to 6,800 mg/kg. Residual range organics were detected in eight of the samples at up to 2,100 mg/kg. BTEX, PCBs, pesticides, and metals were eliminated as contaminants of concern. Hart Crowser recommended excavation and removal of 620 cubic yards (yd^3) of contaminated soil.

St. George Tanaq Debris Cleanup, 1997: In 1997, debris cleanup activities were conducted by St. George Tanaq Corporation (Polarconsult, 1997). These activities involved the collection and off-island disposal of solid waste, machinery, scrap pipe, and other metal debris from the site. Evidence of petroleum contamination was observed under a wrecked crane during its removal from the site.

Tetra Tech Groundwater Monitoring, 2002, 2003, 2004: Groundwater monitoring for GRO, DRO, and volatile organic carbons was conducted at the Open Pits Site in 2002, 2003 and 2004 at two monitoring wells as shown in Figure 4 (Tetra Tech 2005). A third monitoring well at the Inactive/Abandoned Diesel Tank Farm, TPA Site 23, is shown on Figure 4 to provide groundwater results from a well upgradient of the Open Pits Site. No contaminants have been detected in these wells with analyses that achieved detection limits below the 18 AAC 75.345 Table C cleanup levels.

Summary of Applied Cleanup Levels:
The TPA allows NOAA to apply cleanup levels using the methods described in the 1991 non-underground storage tank (UST) regulations (ADEC 1991). However, with ADEC approval, NOAA elected to use current regulations (ADEC 2003) to address soil cleanup, except for benzene for which NOAA applied the 1991 cleanup level of 0.5 mg/kg. NOAA presented the applied cleanup methods in the Open Pits Site corrective action plan (Polarconsult 2002). In summary, the current State of Alaska Oil and Hazardous Substances Pollution Control Regulations (Title 18 of the *Alaska Administration Code* [AAC] 75) provides four methods to determine soil cleanup levels at petroleum-contaminated sites. Method One involves the use of Table A1 of 18 AAC 75.341(a) to calculate a cleanup level and can only be applied to sites where the groundwater does not contain hazardous substances associated with the site. Method Two, discussed at 18 AAC 75.341(c), employs two separate tables, including one for individual contaminants (Table B1) and one for petroleum hydrocarbon contaminants (Table B2). Method Three, discussed at 18 AAC 75.340(e), allows substitution of site-specific data for selected parameters used in the Method Two equations. Method Four, discussed at 18 AAC 75.340(f), requires the development and subsequent ADEC approval of a site-specific risk assessment (ADEC 2003).

NOAA selected Method Two to determine cleanup levels for DRO, RRO, and BTEX at the Open Pits Site. Figure 3 shows the locations of soil samples and results that exceeded the Method Two cleanup levels prior to cleanup actions.

Summary of Cleanup Actions:
Polarconsult conducted an excavation of petroleum contaminated soil (PCS) at three locations at the Open Pite Site in 2002 (Polarconsult 2004), following the approved corrective action plan (Polarconsult 2002) (Figure 3). Although Hart Crowser had estimated in 1997 that only 620 cubic yards (yd^3) of PCS remained on site, Polarconsult removed a total volume of 2,149 yd^3 (Polarconsult 2004). An additional 361 yd^3 of clean overburden was also excavated in the process, later used as clean fill. The cleanup actions at the three locations are discussed below.

Southeast Subsite: Polarconsult's excavation in the vicinity of TP-6 identified visibly contaminated soil exhibiting a strong diesel odor (Figure 5). Polarconsult evaluated soil on-site with a photoionization detector (PID) in an effort to estimate if the soil exceeded the site cleanup levels. Recovery of contaminated soil continued downward and outward until soil exceeding the cleanup levels was no longer evident, as determined by field screening. A total volume of 22 yd^3 of PCS was removed.

Crane Subsite: Polarconsults's excavation in the former area of the wrecked crane identified visibly contaminated soil with a strong diesel odor (Figure 6). Polarconsult continued recovery of PCS downward and outward until soil exceeding the cleanup levels was no longer evident, as determined by field screening, or until refusal occurred in competent red scoria at a depth of 5 feet bgs. Polarconsult observed that contamination continued vertically downward into the competent red scoria, but it could not be removed with the available equipment. After completing the removal of PCS, one confirmation sample exceeded the current Method Two cleanup level for Diesel, and one exceeded the current Method Two cleanup level for benzene, but this second sample did not exceed the 1991 Method Two benzene cleanup level used for the site. A total volume of 132 yd^3 of contaminated soil was removed.

Coal Subsite: Polarconsult's initial recovery activities at the Coal Subsite involved the removal and segregation of loose anthracitic coal. The coal was transported to the Long-term PCS Stockpile and placed in a separate location from petroleum-contaminated soil. Polarconsult began excavating in the area around TP-8 suspected to be contaminated with petroleum as reported by Hart Crowser, 1997 (Figure 7). However, Polarconsult did not find elevated levels of contamination, and refusal was encountered at 2 feet bgs instead of 8 feet bgs as expected. These discrepancies probably resulted from difficulties in relocating the TP-8 site.

In an effort to find the known contaminated soil, Polarconsult excavated a new series of test pits. Polarconsult encountered visibly contaminated soil exhibiting a strong diesel odor northwest of the location originally believed to be TP-8. Observation indicated that the petroleum contamination continued downward into the competent basalt where it could not be removed with the available equipment. In the softer scoria, excavation was

continued beyond the planned stopping depth of 15 feet bgs in an effort to reach the deepest extent of contamination. Recovery of contaminated soil continued vertically and horizontally until soil exceeding the cleanup levels was no longer evident as determined by field screening, until refusal occurred, or until the excavation extended beyond the limit of the excavator at about 21 feet bgs (Figure 7). Refusal occurred in competent basalt at several locations. A total volume of 1,995 yd^3 of contaminated soil was removed.

Following the corrective action plan (CAP), Polarconsult backfilled the three Open Pits Site subsites in late 2002, to the original contours that existed at the beginning of the project (Polarconsult 2004). The excavations were partially backfilled with 361 yd^3 of clean overburden that had been removed from the excavations, analyzed, and shown not to exceed the cleanup levels for petroleum compounds. The remaining volume of the excavations was filled with treated PCS from NOAA's enhanced thermal conduction treatment system. Since completion of the project, no erosion of the backfilled sites has occurred and NOAA believes that the site restoration goals of the project have been met as defined in the CAP.

Recommended Action:
In accordance with paragraph 59 of the TPA (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action to the maximum extent practicable at the Open Pits Site, TPA Site 6, NOAA Site 6, St. George Island, Alaska. NOAA requests ADEC grant a conditional closure that will not require further remedial action from NOAA. NOAA understands ADEC will require additional containment, investigation, or cleanup if subsequent information indicates that the level of residual contamination does not protect human health, safety, or welfare, or the environment.

References:
Alaska Department of Environmental Conservation (ADEC). 1991. Interim Guidance for Non-UST Contaminated Soil Cleanup Levels. Contaminated Sites Program. July 17.

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National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. January 26, 1996.

NOAA. 2003. Personal conversation between David B. Winandy, NOAA Contracting Officers Technical Representative, and David Ausman of Polarconsult Alaska,

Inc. Information provided by NOAA regarding the history of the Open Pits Site, TPA 6. Review of aerial photograph of site. St. George Island, Alaska. October 8.

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Polarconsult. 2004. *Final Corrective Action Report, Open Pits Site, TPA Site 6 Remedial Corrective Action Project St. George Island, Alaska*. August 23.

Tetra Tech. 2005. Draft Field Investigation Report, St. George Island, Alaska. May 2.

Woodward-Clyde Federal Systems, Inc. (Woodward-Clyde). 1994. *Final Report, Phase 1B Environmental Site Assessment, St. George Island, Alaska*. March 31.

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

8/01/05
Date

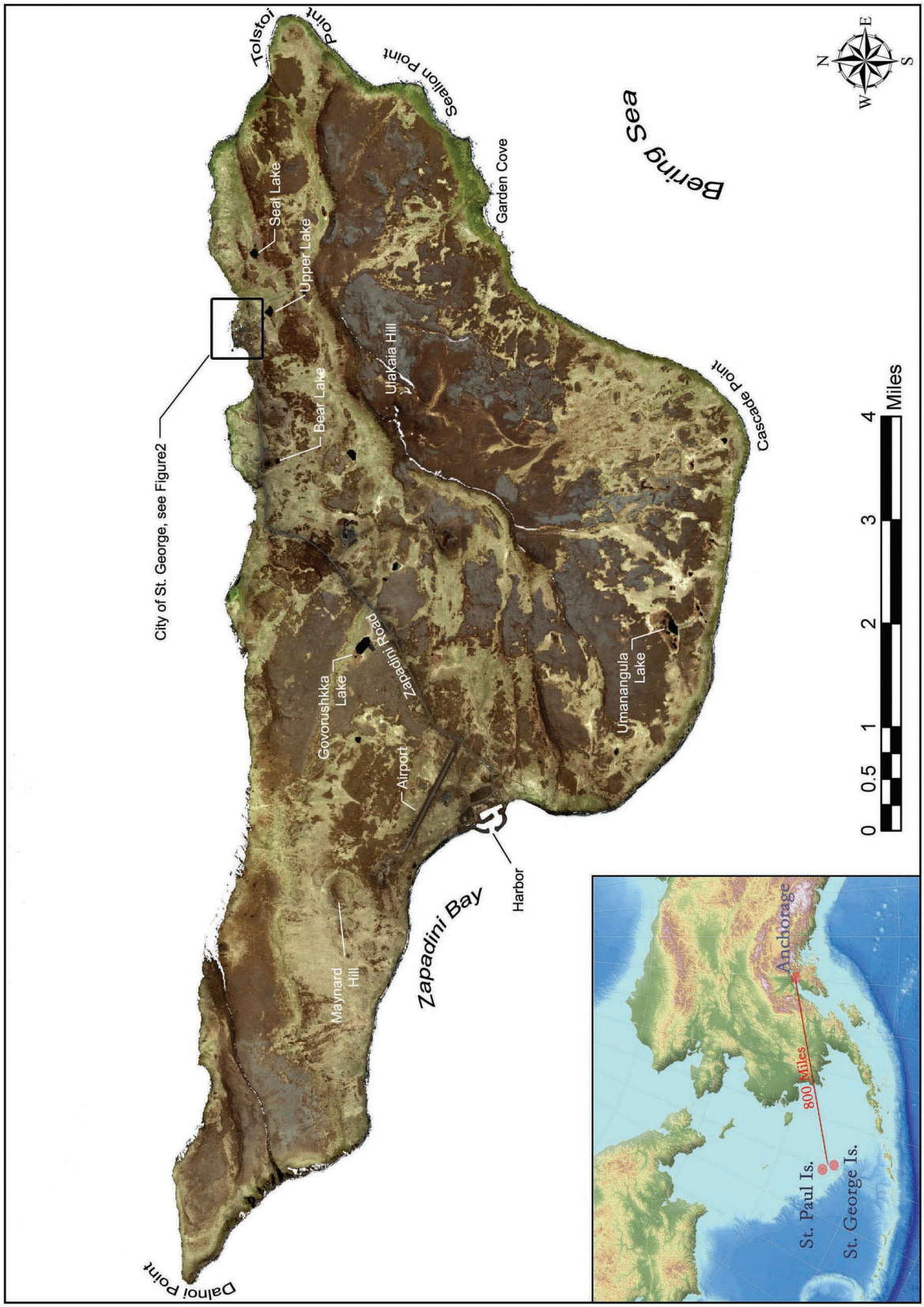
Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the Open Pits Site, TPA Site 6, NOAA Site 6, St. George Island, Alaska, in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

8/08/05
Date

Figures



Source: Ikonos 2001 Satellite Image

Island and Vicinity Map
Open Pits Site
TPA Site 6/NOAA Site 6
St. George Island, Alaska

Figure 1

Figure 2	**Legal Property Description Map** **Open Pits Site** **TPA Site 6/NOAA Site 6** **St. George Island, Alaska**	Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985

Pribilof Islands Restoration Project

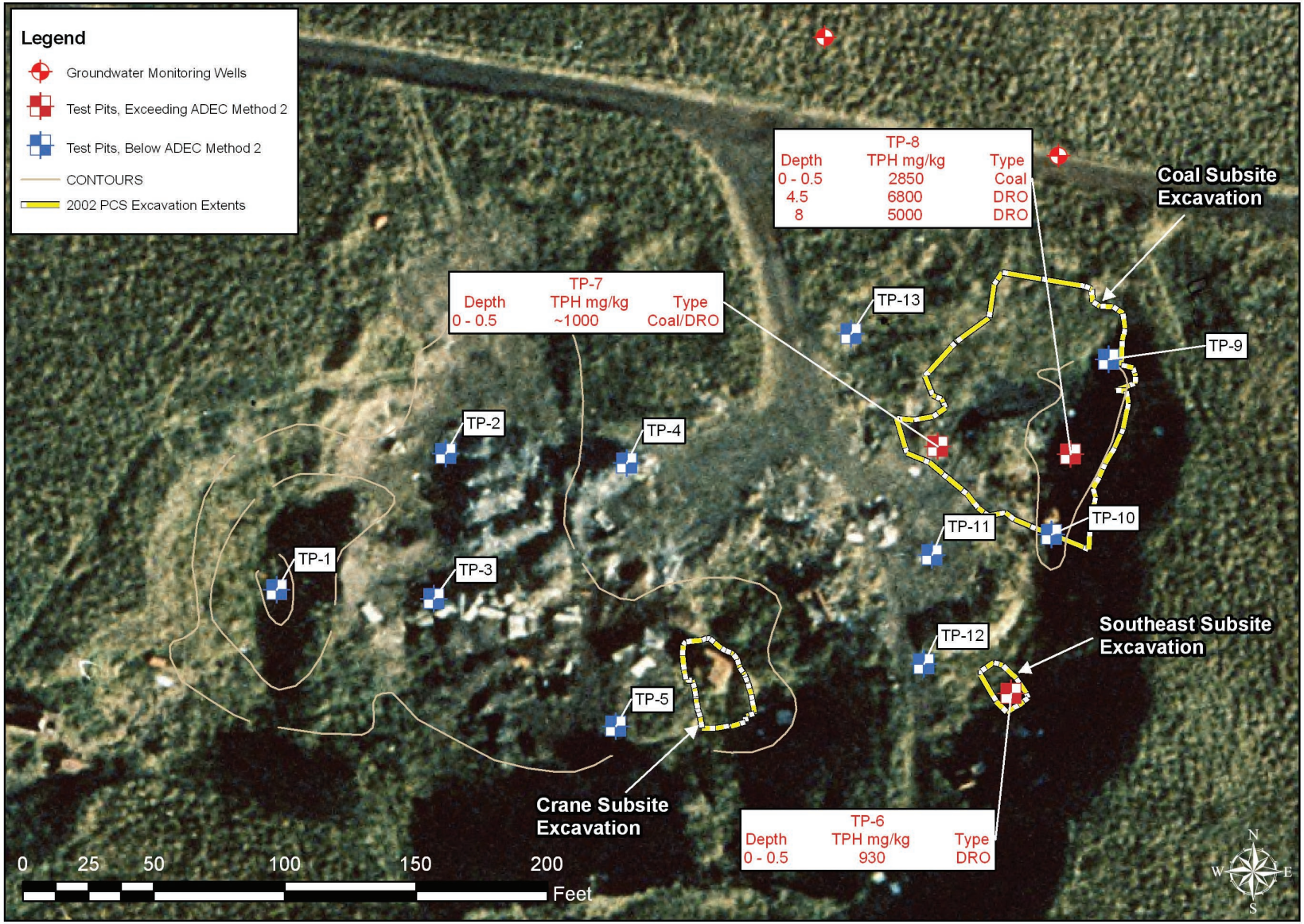


Figure 3

Hart Crowser 1996 Site Investigation
Open Pits Site
TPA Site 6/NOAA Site 6
St. George Island, Alaska

Source: Expanded Site Inspection St. George Island, Alaska. Volume 1, Hart Crowser, January 1997: Aero Map U.S. 9/28/96 Aerial Photograph.

Pribilof Islands Restoration Project

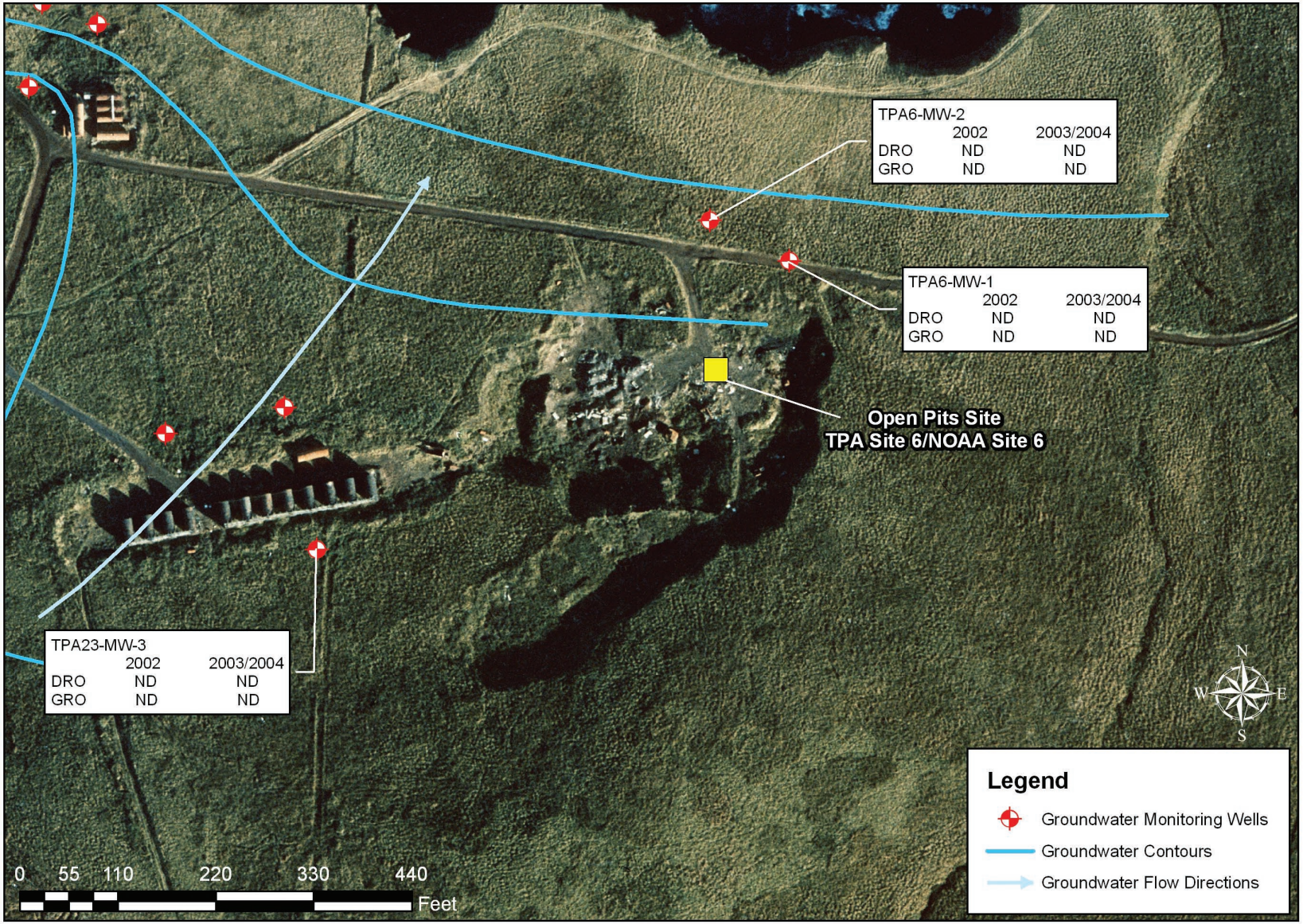


Figure 4

Groundwater Sampling Results for Petroleum Hydorcarbons Open Pits Site TPA Site 6/NOAA Site 6 St. George Island, Alaska

Source: TTEMI Initial Draft Field Investiagtion Report St. George Island, Alaska April 26, 2005; AeroMap U.S. 9/28/96 Aerial Photograph

Note: Results in µg/L (Microgram per liter); ND (analyte was analyzed for but was not detected); Resluts presented represent the maximum detection for the sampling cycle. Where no results are listed, DRO, GRO & BTEX were not detected.

NOAA Pribilof Islands Restoration Project

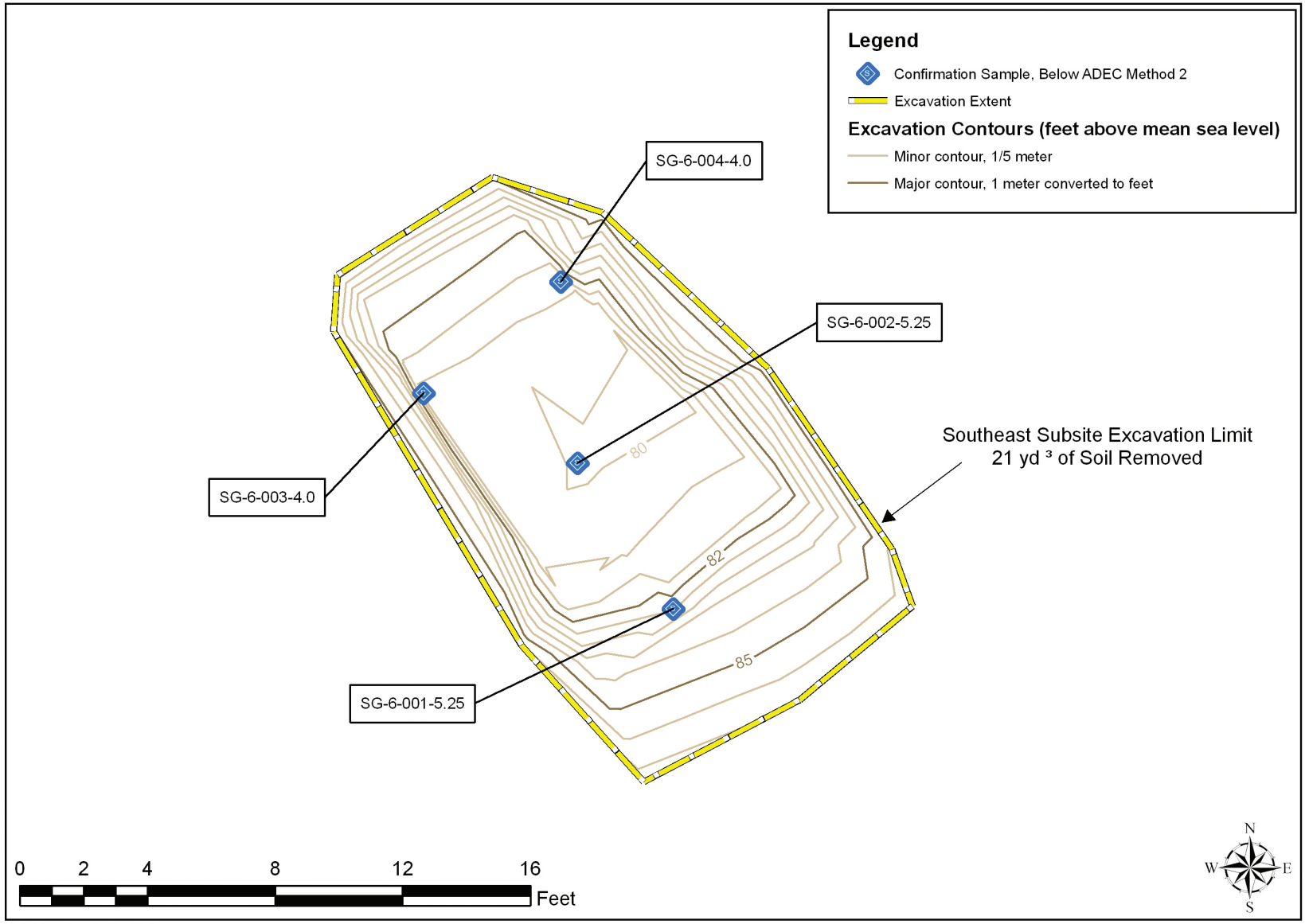


Figure 5

Southeast Subsite
Open Pits Site
TPA Site 6/NOAA Site 6
St. Goerge Island, Alsaka

Source: Survey Data Collected in the Field by Pribilof Project Staff; Analytical Data Provided in the Final Corrective Action Report Open Pits Site, TPA Site 6 Remedial Corrective Action Project St. George Island, Alaska Volume 1.

Pribilof Islands Restoration Project

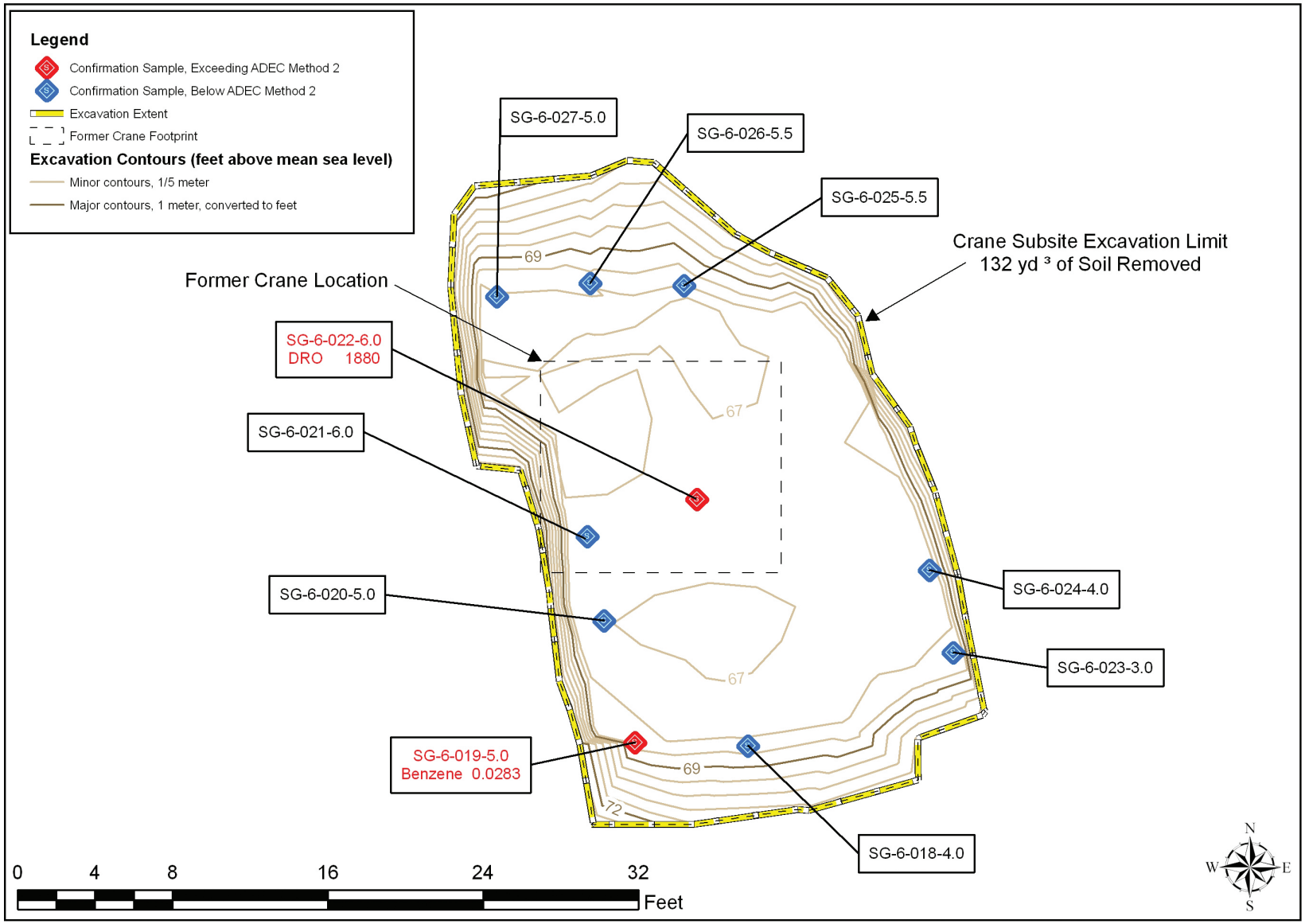


Figure 6

Crane Subsite
Open Pits Site
TPA Site 6/NOAA Site 6
St. George Island, Alaska

Source: Survey Data Collected in the Field by Pribilof Project Staff; Analytical Data Provided in the Final Corrective Action Report Open Pits Site, TPA Site 6 Remedial Corrective Action Project St. George Island, Alaska Volume 1.

Pribilof Islands Restoration Project

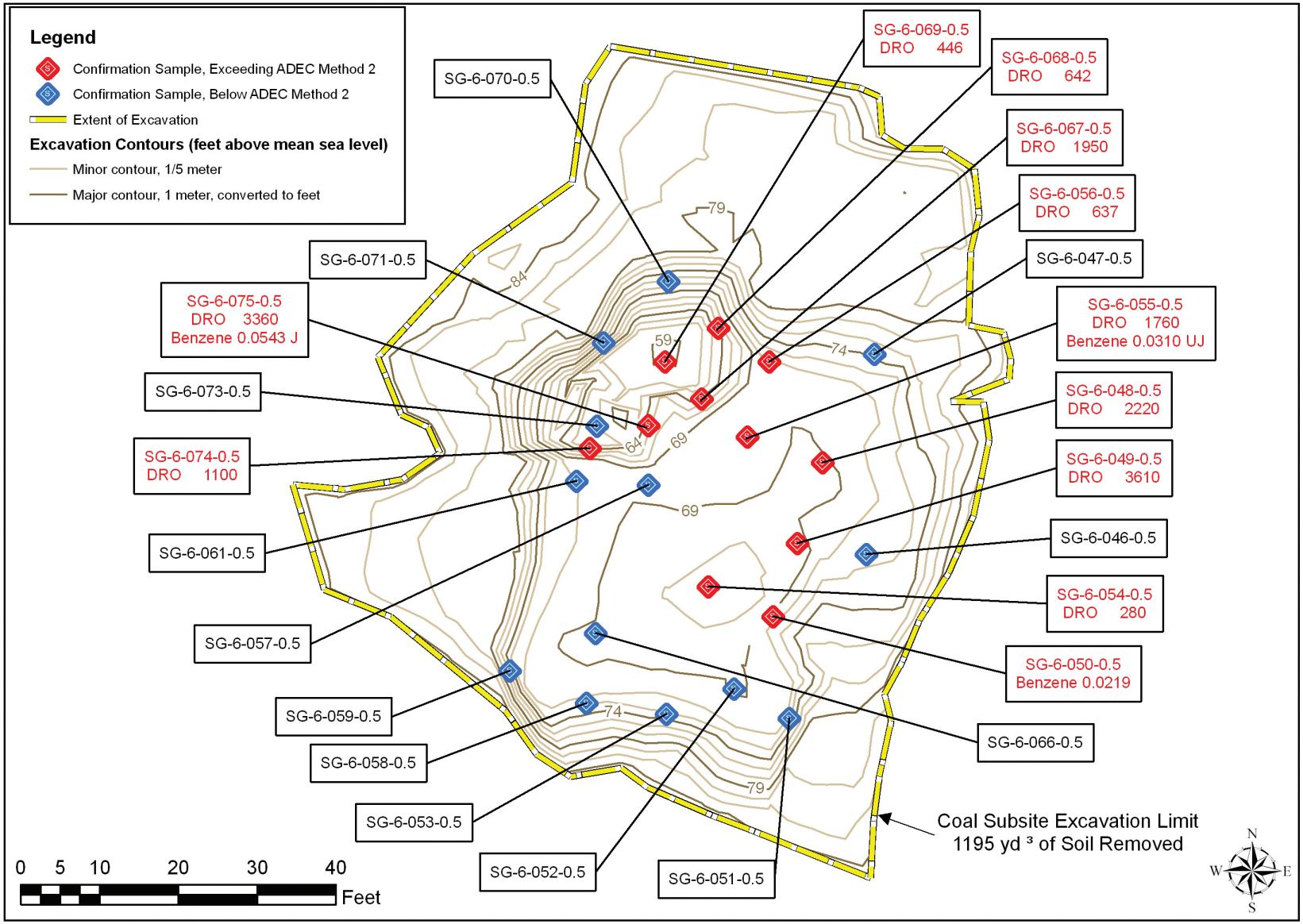


Figure 7

Coal Subsite
Open Pits Site
TPA Site 6/NOAA Site 6
St. George Island, Alaska

Source: Survey Data Collected in the Field by Pribilof Project Staff; Analytical Data Provided in the Final Corrective Action Report Open Pits Site, TPA Site 6 Remedial Corrective Action Project St. George Island, Alaska Volume 1.

Pribilof Islands Restoration Project

FRANK H. MURKOWSKI, GOVERNOR
555 Cordova Street
Anchorage, AK 99501
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DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

March 3, 2004

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE
Seattle, WA 98115-6349

RE: Draft Corrective Action Report Open Pits Two-Party Agreement Site 6, St. George, Alaska January 26, 2004

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document on February 24, 2004. Because further excavation of contaminated soil is not feasible, (e.g. due to difficulty excavating the more competent pyroclastic materials or refusal) and groundwater has not been impacted from contaminants at the site (wells TPA6-MW-1 & TPA6-MW-2), the Department concurs with the statements in the document that no further remedial action (NFRA) is necessary. Monitoring of groundwater may be required (see comments under 3.1.3 Hydrogeology).

This determination by the Department is in accordance with Paragraph 59 of the Pribilof Islands Environmental Restoration Two Party Agreement at the site known as the Open Pits TPA Site 6 (contaminated sites database site name: TPA 06 STG Open Pits Site, Reckey No. 1994250135434). The removal of 2,149 cubic yards of petroleum contaminated soil to prevent it acting as a potential source of groundwater contamination, combined with the depth to groundwater at the site (varies from 72 to 82 feet below ground surface) and the location of the closest active city drinking water well approximately 2,473 feet from the site supports this NFRA decision.

Closure of Sites of Operable Units
Paragraph 59 of the Pribilof Islands Environmental Restoration Two Party Agreement states: At any time while this Agreement is in effect, NOAA may request from ADEC written confirmation that all corrective action has been completed at a site(s) or operable unit(s) in accordance with this Agreement. Within thirty (30) Days of its receipt of such request. ADEC shall: (1) provide written confirmation that no further corrective action is required at the subject site(s) or operable unit(s): or (2) deny such request and provide a written explanation of the technical basis on which the request is denied. *ADEC shall not deny certification that*

corrective action is complete at any site(s) or operable unit(s) solely on the basis that post-remedial measures, such as monitoring, shall remain in place for a period of months or years.

The Department is basing its decision on the most current and complete data provided by NOAA. The Department reserves its rights, under: 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations and AS 46.03 to require NOAA to perform additional investigation, cleanup, or containment if subsequent information indicates that: 1) additional contamination remains at the site which was previously undiscovered and presents an *unacceptable risk to human health, safety, or welfare, or the environment*; or 2) the information provided was invalid, incomplete, or fraudulent.

3.1.3 Hydrogeology Page 11
Even though NOAA has data showing that soil remains contaminated above migration to groundwater standards, the document states that petroleum compounds have not been found in downgradient wells TPA6-MW-1 and TPA6-MW-2. However no data was presented in the document to substantiate this statement. The Department requests NOAA present at least two years of groundwater data sampling at the frequency of at least twice yearly from these wells to show that groundwater impacts have not occurred from the Open Pits site. The data may exist already in other reports, but it was not included in the document. If the data does exist, please submit it to the Department for its review or identify which document it exists in that so the Department may review it.

If the data does not exist, then NOAA will be required to monitor the groundwater for a period of at least two years at the frequency of no less than twice a year. If the monitoring indicates that the contaminants were present in the groundwater above Table C values listed in 18 AAC 75.345, the Department will require additional follow-up monitoring. However, if the groundwater results show that Table C values were not exceeded, the Department will allow NOAA to discontinue the monitoring since it is not necessary to ensure protection of human health, safety, and welfare, and of the environment.

Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard
Project Manager

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CC

A L A S K A

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NOTICE OF RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 6
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the City of St. George (the City) as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator, hereby provide public notice that property located east of the City on St. George Island, Alaska, 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Lot 42, Tract 52
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 6.94" North Latitude, 169° 32' 16.14" West Longitude

This property, hereafter referred to as Site 6 (Figures 1 and 2), has been subject to debris and petroleum contaminated soil from a discharge, or release and subsequent cleanup of oil or other hazardous substances, regulated under 18 AAC 75, Article 3 as amended December 2006 and solid waste disposal, which is regulated under 18 AAC 60 as amended August 2003. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135434; File ID 2643.38.012.

Site 6 was identified as the *Open Pits Site* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 6 and NOAA Site 6. Following corrective action, NOAA submitted a request for conditional closure to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that site cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further corrective action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2005a).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: City of St. George
PO Box 929
St. George, AK 99591

Recording District: Aleutian Islands

8

Remedial Actions and Residual Contamination

Aerial photographs taken in 1948 and 1967 indicate that Site 6 was used as a quarry and covered an area of approximately 2 acres. Sometime after 1967 and no later than 1993 the site was used for the disposal of solid waste, including domestic trash, coal, building materials, pipe, tires, scrap metal, concrete structures, drums, lead acid batteries, derelict equipment, and abandoned fuel storage tanks.

In 1993, forty drums and six automotive batteries were removed from the site. Two of the forty drums contained oily water, one drum contained 10 gallons of fuel oil, and one drum contained packing grease; the remaining thirty-six drums were empty. Chlorinated solvents and polychlorinated biphenyl (PCB) were not detected in drum content samples. An abandoned vehicle and crane were inspected and found to be free of fluids (Woodward-Clyde 1994).

In 1995, Hart Crowser conducted an inspection of Site 6 in which thirteen test pits were excavated and sampled for diesel range organics (DRO); gasoline range organics (GRO); residual range organics (RRO); benzene, toluene, ethylbenzene, and total xylene (BTEX); PCB; pesticides; metals; and semivolatile compounds. DRO was the only analyte determined to be a contaminant of concern at Site 6. The investigation also determined that anthracitic coal dumped at the site was not a threat to human health (Hart Crowser 1997).

In 1997, metal debris and other solid wastes were removed from the site (Polarconsult 1997). Evidence of petroleum contamination was observed under a crane during its removal.

In 2002, 2,149 cubic yards petroleum hydrocarbon contaminated soil was excavated and removed from three locations at Site 6; the coal subsite, the crane subsite, and the southeast subsite (Polarconsult 2004). Contaminated soil was removed to the extent practicable; however, DRO contamination in concentrations above the ADEC Method Two cleanup criterion remains in areas where equipment refusal occurred due to encountering bedrock, or excavation depths exceeded fifteen feet below the ground surface. The Site 6 excavations were backfilled with clean material. Attached are diagrams (Figures 3, 4 and 5) drawn to scale that show the areas that were cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2002, NOAA installed two groundwater monitoring wells down-gradient of Site 6. Groundwater samples collected from these wells from 2002 through 2004 had analytical results indicating all contaminants were either non-detect or detected at concentrations below ADEC cleanup standards (Tetra Tech 2005). Based on a determination that groundwater in the vicinity of Site 6 had not been adversely impacted, these monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b).

Site Use

In the event that information becomes available which indicates that Site 6 may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at

the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

References:

Hart Crowser. 1997. *Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska.* Prepared for U.S. Army Corps of Engineers, Seattle District. January.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2005a. *Request for Conditional Closure, Open Pits Site, TPA Site 6/NOAA Site 6, St. George Island , Alaska.* Signed by John Lindsay, Pribilof Project Manager, U.S. Department of Commerce, National Oceanic and Atmospheric Administration August 1, 2005; signed by Louis Howard, Project Manager, Alaska Department of Environmental Conservation, Division of Spill Prevention and Response August 8, 2005.

NOAA. 2005b. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volume 3. December 31.

Polarconsult. 2004. *Corrective Action Report (Final), Open Pits Site, TPA Site 6, Remedial Corrective Action Project, St. George Island, Alaska.* December 31.

Tetra Tech Environmental Management, Inc. (Tetra Tech). 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Woodward-Clyde. 1994. *Phase 1B Environmental Assessment, St. George Island, Alaska.* Woodward-Clyde, Anchorage, Alaska. March 31.

Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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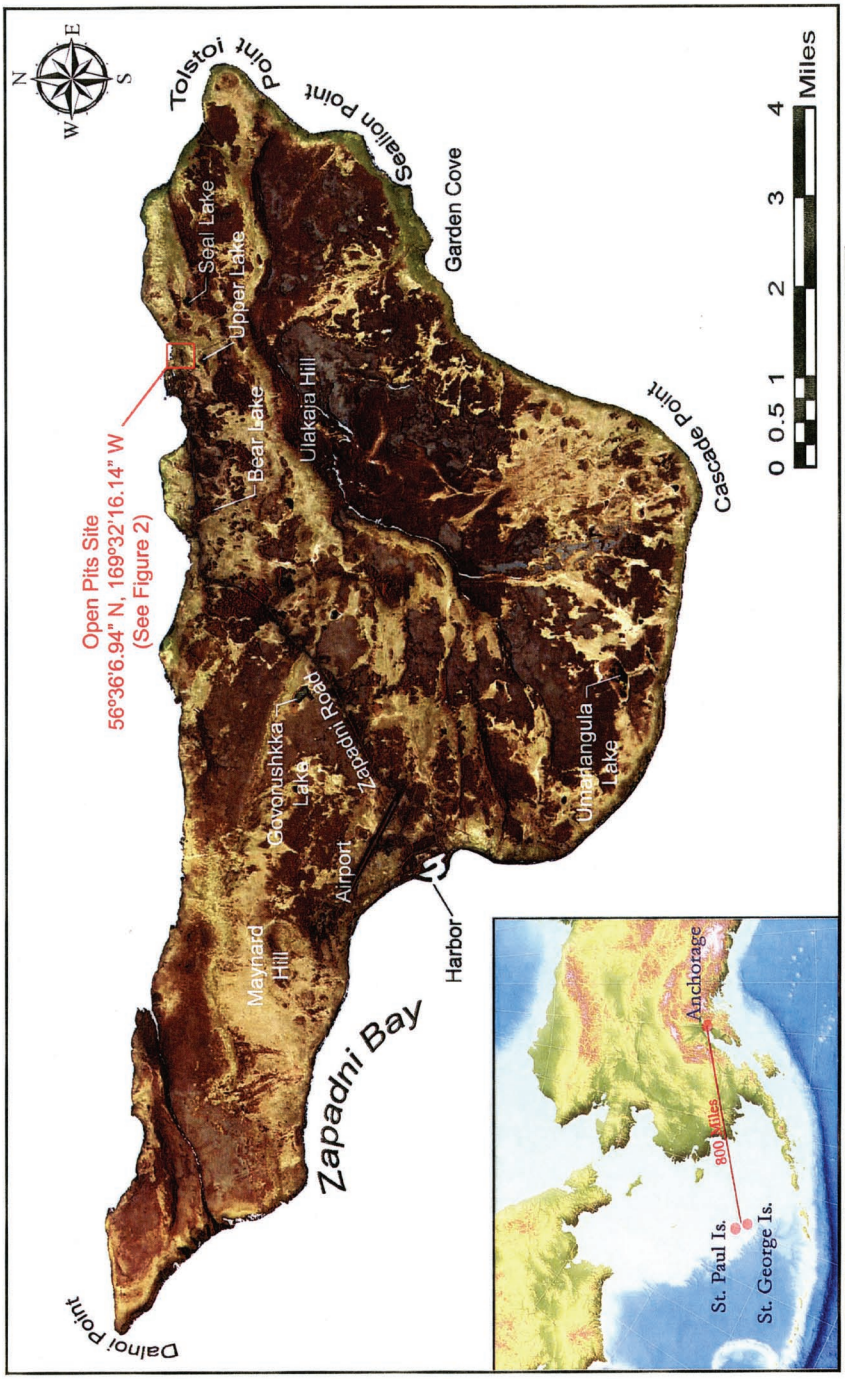

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Pribilof Islands Restoration Project

Figure 1

St. George Island Vicinity Map
Open Pits Site
NOAA Site 6/TPA Site 6
St. George Island, Alaska

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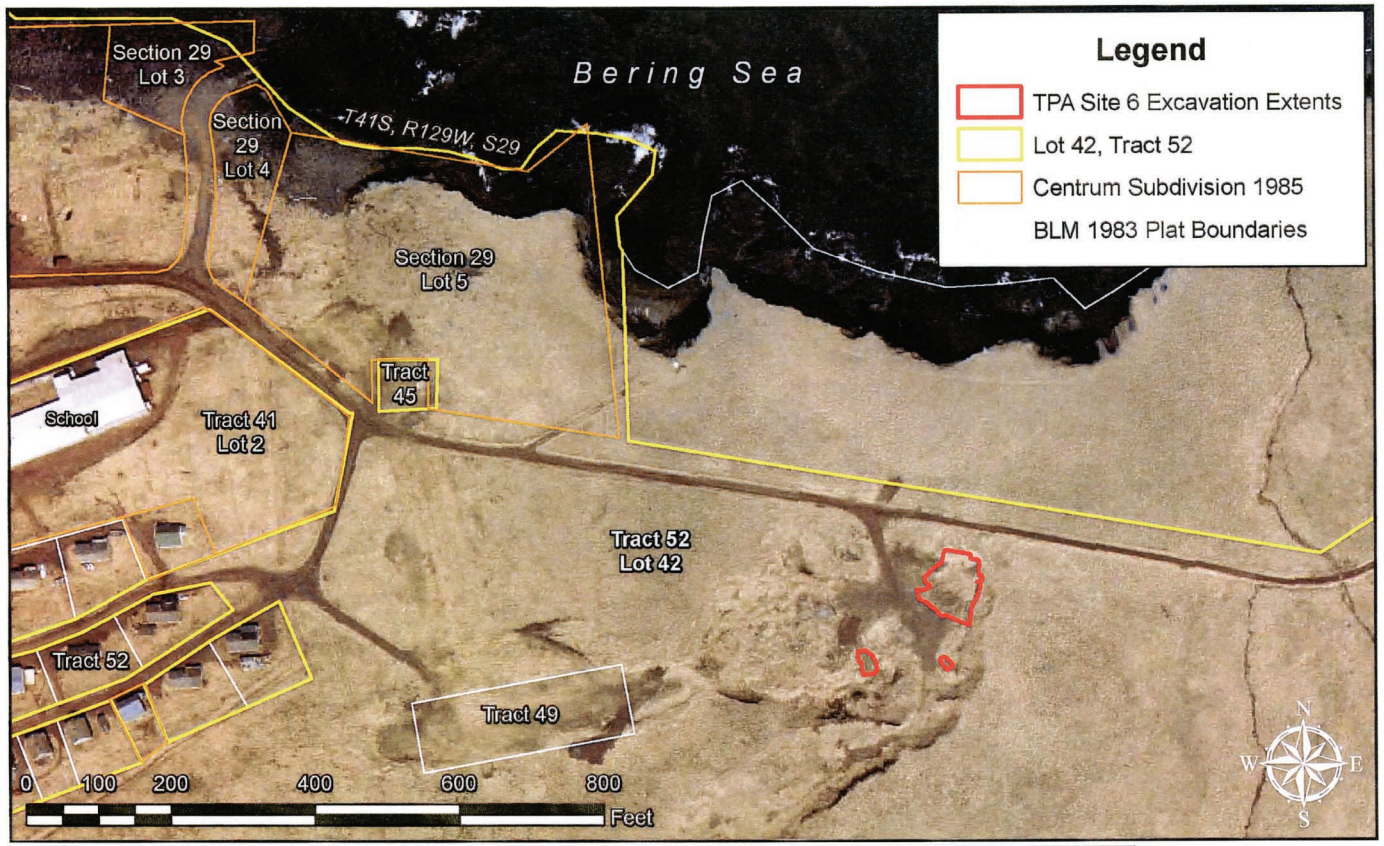

Figure 2	Legal Property Description Map Lot 42, Tract 52 of T41S, R129W, S29 Open Pits Site NOAA Site 6/TPA Site 6 St. George Island, Alaska	Sources: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially filed February 15, 1985. Centrum Subdivision. 10/31/85. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Open Pits Site\Fig2_TPA6_PropDescription.mxd Date: 8/7/2008 @ 9:27:18 AM	Pribilof Islands Restoration Project

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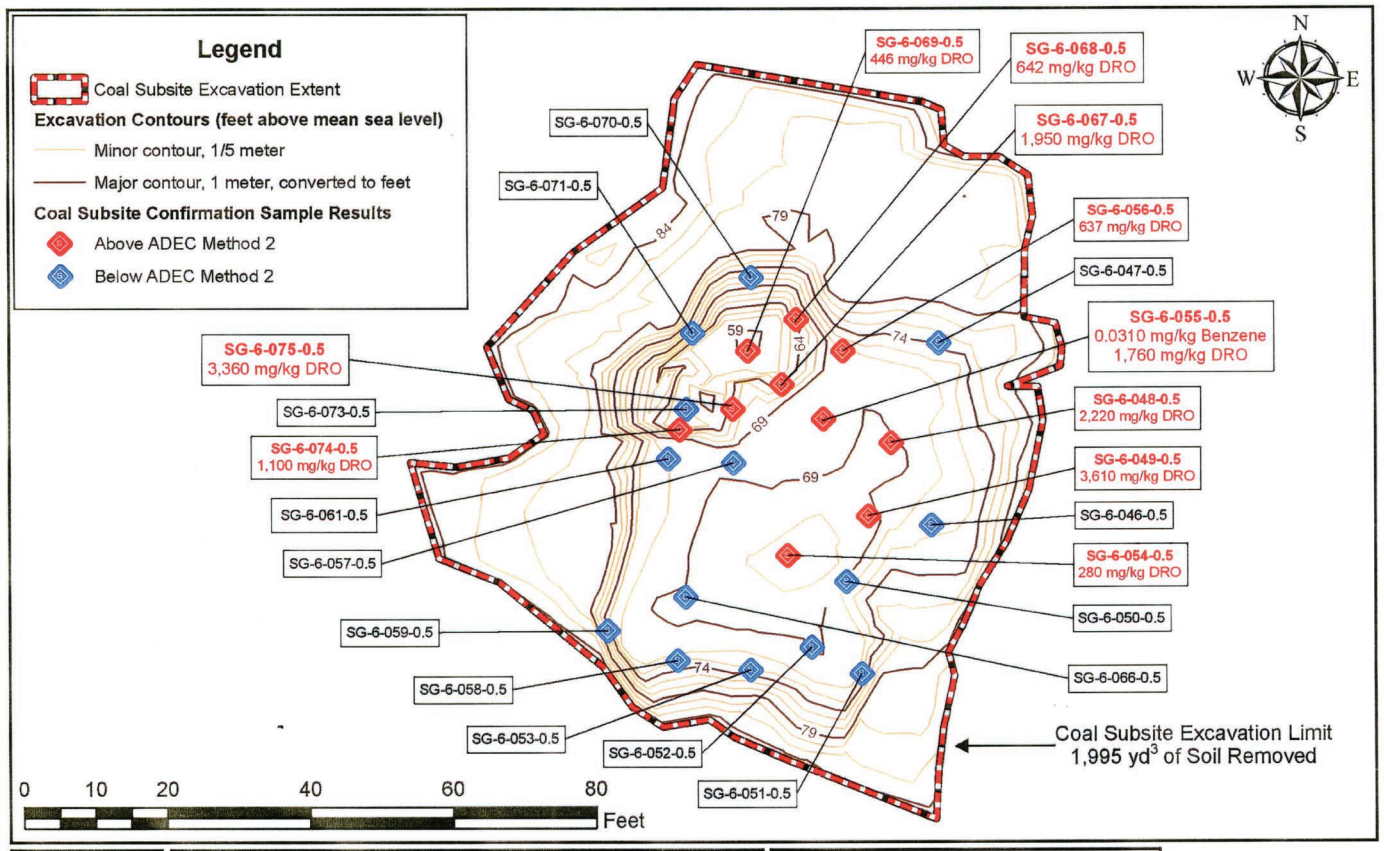

Figure 3	Final Coal Subsite Excavation Extent & Confirmation Sampling Results Open Pits Site NOAA Site 6/TPA Site 6 St. George Island, Alaska	Sources: GIS Layers (NOAA PPO GIS); survey data collected in the field by PPO staff, analytical data provided in the "Final Corrective Action Report, Open Pits Site, TPA Site 6 Remedial Corrective Action Project, Vol 1." Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Open Pits Site\Fig3_TPA6_Coal_Samples&Excavation.mxd Date: 8/7/2008 @ 11:21:20 AM

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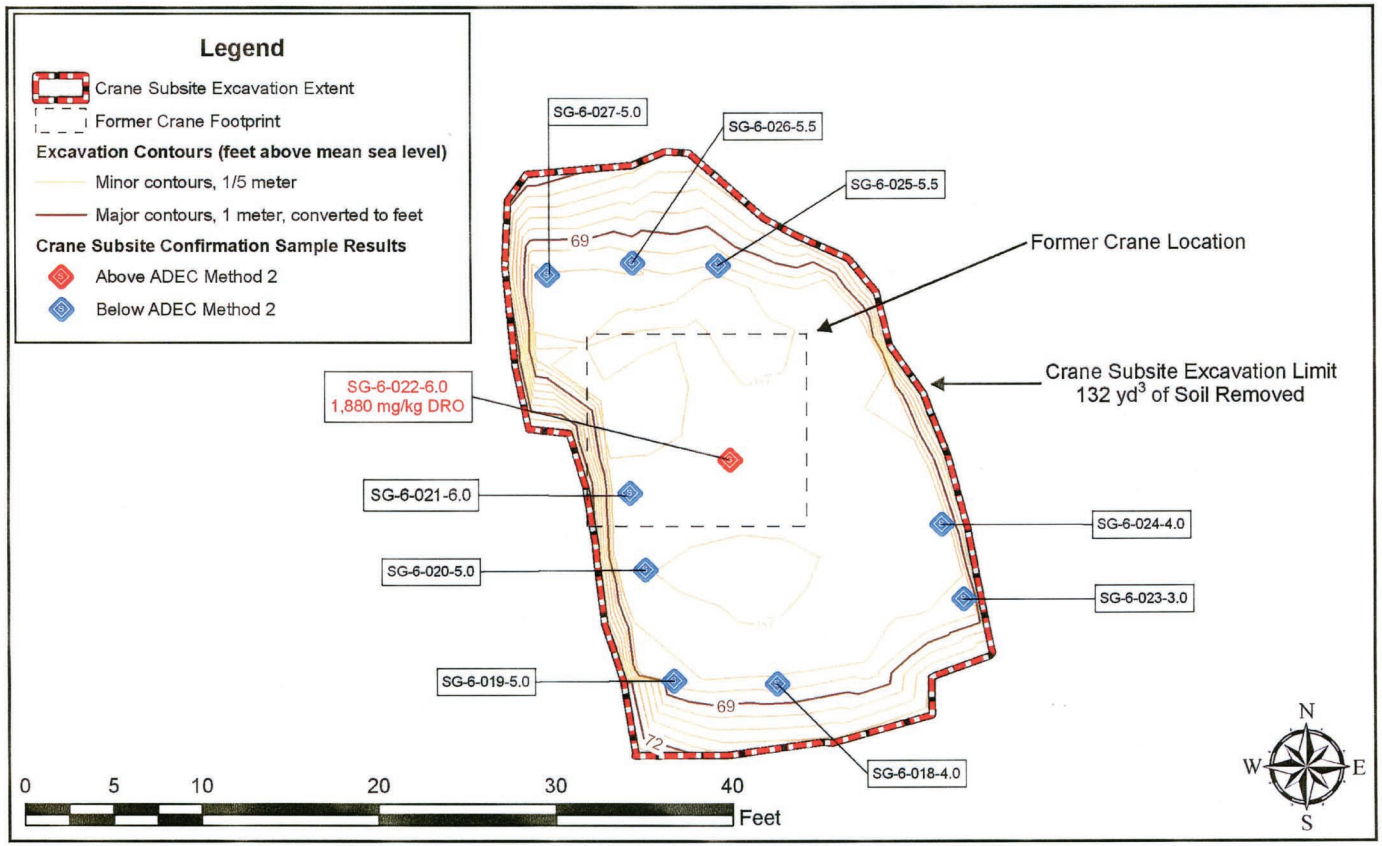

Figure 4	Final Crane Subsite Excavation Extent & Confirmation Sampling Results Open Pits Site NOAA Site 6/TPA Site 6 St. George Island, Alaska	Sources: Layers (NOAA PPO GIS), survey data collected in the field by PPO staff; analytical dataprovided in the "Final Corrective Action Report Open Pits Site, TPA Site 6 Remedial Corrective Action Project, Vol. 1." Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Open Pits Site\Fig4_TPA6_Crane_Samples&Excavation.mxd Date: 8/7/2008 @ 10:53:22 AM

Pribilof Islands Restoration Project

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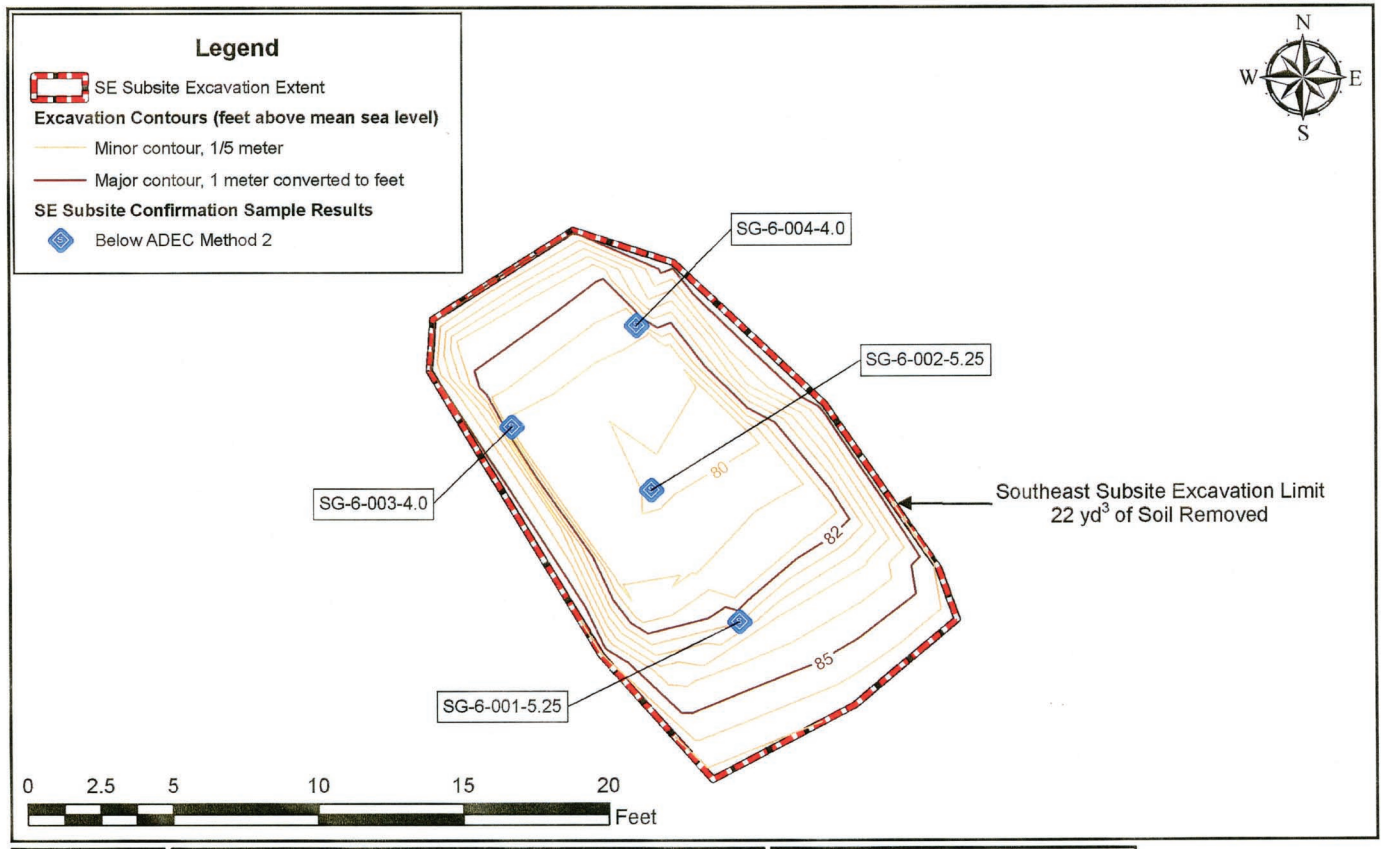


Figure 5	Final SE Subsite Excavation Extent & Confirmation Sampling Results Open Pits Site NOAA Site 6/TPA Site 6 St. George Island, Alaska	Sources: Survey Data Collected in the Field by Pribilof Project Staff; Analytical Data Provided in the Final Corrective Action Report Open Pits Site, TPA Site 6 Remedial Corrective Action Project, St. George Island, Alaska. Vol. 1. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Open Pits Site\Fig5_TPA6_SE_Subsite_Samples&Excavation.mxd Date: 8/7/2008 @ 11:29:46 AM	Pribilof Islands Restoration Project

NOAA Site 7
TPA Site 7: Ballfield/Former Landfill Site

Conditional Closure Request Ballfield/Former Landfill, TPA Site 7/ NOAA Site 7, St. George Island, Alaska 197

Letter from Ray Dronenburg to Mary Moloseau-Goetz, P.E. RE: Approval for Closure Request for St. George Island, Former Landfill/Ballfield Site. Dated September 9, 1997 211

Notice of Residual Soil Contamination and Municipal Solid Waste at Two Party Agreement Site 7, St. George Island, Alaska (Lot 42, Tract 52) 213

Conditional Closure Request
Ballfield/Former Landfill
TPA Site7/NOAA Site 7
St. George Island, Alaska

Site: Ballfield/Former Landfill, also known as St. George Island Two Party Agreement (TPA) Site 7 and as National Oceanic and Atmospheric Administration (NOAA) Site 7.

Location: St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea (Figure 1). TPA Site 7 is located in the southern portion of the City of St. George at 56° 36' 2.08'' N latitude, 169° 32' 49.41'' W longitude (Figure 2).

Legal Property Description: TPA Site 7 is in Tract 52, Township 41 South, Range 129 West, Section 29 of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Figure 2).

Type of Release: TPA Site 7 is the location of an historic landfill. Known releases from unknown sources consisted of lead and diesel range organics (DRO) contaminated soil located less than two feet below the surface of the landfill cover material.

History and Background: The Ballfield/Former Landfill is owned by the City of St. George. Ownership of this property was transferred from the federal government to the City in the 1980's. Dates and time frames of the former landfill operation, landfill closure and subsequent conversion to recreational use are not documented. Aerial photographs taken in 1948 (landfill active) and 1967 (landfill inactive and covered) show that the landfill was taken out of operation within this time span (NOAA 2003). Consequently, the landfill was closed prior to promulgation of regulatory standards for municipal solid waste landfills. The site is currently used for recreation, and city residents have constructed a basketball court in a portion of the area.

Summary of Site Investigations and Closure Actions

Site Investigations

In 1992, Ecology and Environment, Inc. (E&E) conducted a preliminary assessment of Pribilof Island sites that included interviews of residents and site visits. For TPA Site 7, they recorded concerns about an oily substance occasionally seen seeping from the elevated sides of the ballfield during summer months, and noted metal debris in the area surrounding the site. The assessment report recommended a site investigation with soil and water sampling (E&E 1993).

In 1993, Woodward-Clyde (WC) conducted an environmental assessment that included the removal of three partially buried drums from the landfill area. Two of the drums were found empty, the third contained rusty water (Woodward-Clyde 1994).

In 1994, Woodward-Clyde, conducted an expanded site inspection to determine the lateral extent of the buried landfill waste, search for buried transformers, and determine if contaminants in concentrations above applicable requirements had migrated outside the landfill boundaries. They collected surface and subsurface soil samples from nine test pits, and sediment samples from the drainage area west of the landfill. WC also conducted an electromagnetic search for buried transformer carcasses. With one exception, inorganic analyses indicated concentrations lied within normal background ranges. One sediment sample had a lead concentration at 140 milligram per kilogram (mg/kg), which is above background, but below the Alaska Department of Environmental Conservation (ADEC) Method Two cleanup level of 400 mg/kg (ADEC 2004). Organic analyses were all below levels of concern with the exception of DRO at two locations. However, chromatogram patterns indicated a biogenic rather than fuel origin for the DRO detected in all soil samples, therefore the report concluded that DRO was not a contaminant of concern. WC did not find any transformers, nor detect any polychlorinated biphenyl (PCB) in any collected samples. Woodward-Clyde recommended no further action be taken at TPA Site 7 (Woodward-Clyde 1995).

In 1997, based on the Woodward-Clyde findings, NOAA requested and ADEC granted a "No Further Action Site" designation for the Ballfield/Former Landfill Site (ADEC 1997).

In 1998, under contract to the St. George Tanaq Corporation, Polarconsult Alaska, Inc. (Polarconsult) excavated a test pit and installed a shallow well point within the former landfill boundaries. Field notes taken during the pit excavation do not mention detection of petroleum odor or staining, and they took no soil samples. Analysis of a well water sample returned a DRO concentration of 3.2 milligram per liter (mg/l), which is above the ADEC groundwater cleanup criterion of 1.5 mg/l (ADEC 2004). Polarconsult recommended additional site investigation to further characterize contamination nature and extent (Polarconsult 1998).

In 1999, the St. George Tanaq Corporation presented the Polarconsult data to the St. George Restoration Advisory Board. ADEC, after review of the data, reopened the site, as allowed by provisions of the TPA, and requested additional site characterization (ADEC 1999).

In 2000, Columbia Environmental Sciences, Inc. (CESI) conducted a site reconnaissance and noted a strong chemical/petroleum odor near a leachate pool, a strong sheen, and some sediment and vegetation covered with and orange-red stain (CESI 2001).

In 2001, Tetra Tech EM, Inc. (Tetra Tech) conducted a site investigation during which they advanced 21 test borings to refusal within the landfill, and installed five monitoring wells around the landfill. Tetra Tech collected soil and perched water samples from the borings; sediment and surface water samples from the drainage area south and west of the landfill; and groundwater samples from the wells. They analyzed soil and sediment samples for metals, gasoline range organics (GRO), DRO, residual range organics (RRO), pesticides, PCBs, and volatile and semi-volatile organics (VOC and SVOC). Water samples were analyzed for GRO, DRO, VOC, SVOC, and metals. Additionally, Tetra Tech collected background soil samples from six undeveloped locations on St. George Island to determine natural background metal concentrations. Analytical results indicated nearly all contaminant concentrations lied within natural background ranges and/or below regulatory cleanup levels. However, Tetra Tech found DRO and lead concentrations above cleanup levels in soil and perched water at several sample locations; and methylene chloride, a common laboratory contaminant, was detected in a single perched water sample (Tetra Tech 2003).

Tetra Tech detected DRO at four soil core locations, at sample depths greater than six feet below ground surface (bgs). At one core location, TPA7-GP21 (Figure 3), DRO was detected in soil at a concentration of 6,500 mg/kg within the two to eight foot bgs sample interval. Tetra Tech also detected DRO in water above the ADEC groundwater cleanup level in perched water samples taken from three soil core locations within the landfill (Tetra Tech 2003).

At TPA7-GP18 (Figure 3), Tetra Tech detected lead in soil at 444 mg/kg in the soil sample interval zero to two feet bgs. Lead was also detected at concentrations of up to 0.439 mg/l, which is above the ADEC groundwater criterion of 0.015 mg/l (ADEC 2004), in perched water samples from three soil core locations within the landfill (Tetra Tech 2003). Lead at 168 micrograms (µg)/L (total) was detected in one leachate (surface water) sample. However, the surface water quality criterion for lead is based on a particular site's water hardness, and is assessed in terms of dissolved lead (ADEC 2002a, ADEC 2003b). Therefore, the ADEC surface water quality criterion is not applicable to the total lead result obtained from the leachate sample.

Tetra Tech found methylene chloride at 8 µg/l in a single perched water sample; the cleanup level is 5 µg/L. Methylene chloride, a common laboratory contaminant, was not detected in any other soil or water samples.

Tetra Tech's report recommended adding two feet of cover material over the former landfill area, and monitoring for DRO and lead in leachate seeps and groundwater (Tetra Tech 2003).

From 2001 through 2004, groundwater samples were drawn from monitoring wells TPA7-MW-1 through TPA7-MW-5 (Figure 4). Analytical testing found all potential inorganic and organic contaminants below detection levels and/or below ADEC groundwater cleanup criteria (TTEMI 2005).

In 2004, Tetra Tech performed 4-hour (acute lead criterion) and 4-day (chronic lead criterion) composite sampling at three leachate seeps along the perimeter of the landfill (Figure 4). In accordance with ADEC requirements for surface waters (ADEC 2002a, ADEC 2003b), samples were analyzed for total aromatic hydrocarbons (TAH), total

aqueous hydrocarbons (TAqH), and dissolved lead as a function of water hardness. Analytical results indicated all samples met water quality standards for growth and propagation of fish, shellfish, other aquatic life, and wildlife (TTEMI 2005).

Final Corrective Actions

In response to Tetra Tech's site characterization report (ADEC 2002b, Tetra Tech 2003), ADEC requested that NOAA ensure that the final landfill area cover was:

- at least 2 feet thick,
- graded to promote drainage without erosion, and
- treated in a manner appropriate to the anticipated, future long-term use of the site.

These landfill cover criteria conform to ADEC's requirements for closure of a Class III Municipal Solid Waste Landfill (ADEC 2003a). ADEC also requested limited source removals of the near-surface DRO contaminated soil found at sample location TPA7-GP21, and the near-surface lead contaminated soil found at sample location TPA7-GP18 (Figure 3).

NOAA incorporated ADEC's requests in the TPA Site 7 Corrective Action Plan (NOAA 2003). NOAA began the final corrective actions on November 4, 2003, by first removing non-NOAA related debris such as scrap rebar, dilapidated bleacher risers and seats, a broken ping pong table, and other miscellaneous junk. NOAA contracted for hauling this debris to either the "Grey Pit" scrap pile or to the municipal landfill, if non-metal. The Grey Pit is an area located near the municipal landfill where auto bodies and other non-combustible debris are staged for future barging off-island or encapsulation (NOAA 2005a).

On November 5 and 6, 2003, NOAA removed approximately five cubic yards (CY) of lead contaminated soil from landfill sample location TPA7-GP18 (Figures 5 and 6). The contaminated soil was placed directly into supersacks, which were labeled, sampled for RCRA characterization, and stored for future off-island disposal. Six soil samples were taken from the excavation for field screening using a commercial test kit (Hybrivet Systems "Lead Check For Soil"). Field screening results indicated no lead concentrations above 400 mg/kg within the excavation. Two lead confirmation samples plus a duplicate were taken for fixed lab analyses. A perforated liner was installed and the excavation backfilled with clean material (NOAA 2005a).

On November 6, 2003, NOAA removed approximately 5 CY of DRO contaminated soil from landfill sample location TPA7-GP21 (Figures 5 and 7). However, after removal of the initial two bucket loads and their placement into a dump truck, NOAA observed a blue tile at about 2 feet bgs. Treating the tile as potential asbestos containing material (ACM), all subsequent dirt and tile was loaded into supersacks. The initial two PCS bucket loads were inspected and found free of tile, and the PCS was taken to the NOAA Petroleum-Contaminated Soil Stockpile (Figure 1). Metal drums were encountered further down in the excavation; after determining the drums were empty, they were removed as necessary and transported to the "Grey Pit". At four and one half feet bgs, NOAA encountered the perched water table and stopped further excavation work. Three confirmation samples plus a duplicate were taken in the excavation. The supersacks were stored for future off-island disposal. A perforated liner was installed and the excavation backfilled with clean material (NOAA 2005a).

Analyses of the three confirmation samples collected from the lead hot spot excavation (Figure 6) indicated a total lead concentration at 738 mg/kg in a sidewall sampling location, and 220 mg/kg at the bottom of the excavation. Analyses of the four confirmation samples collected from the DRO hot spot excavation (Figure 7) indicated non-detection of DRO, BTEX, and select PAHs. (NOAA 2005a).

Landfill cap improvement activities took place from November 6 to November 13, 2003. A Tetra Tech engineer placed grade stakes throughout the cover installation area to aid in control of final cover depth. NOAA improved the original landfill cap by placing a minimum of six inches of scoria atop the historic cap to bring cap thickness to at least the State minimum standard of two-feet, including over the area with an elevated lead level found in the excavation sidewall. Also, NOAA placed sand in low spots (in some areas up to three feet thick) prior to placing the six-inch scoria lift. NOAA mitigated precipitation infiltration by compacting and sloping the cap to direct runoff to the periphery of the landfill, which is channeled to mitigate leachate emanating from the landfill. Cover material was placed and compacted to raise the ballfield surface to the level of the basketball court's concrete slab,

which further mitigates infiltration. Approximately 1,030 CY of clean fill and cover material were placed, contoured and compacted at the site (NOAA 2005a). On the south side of the site, NOAA applied approximately ten cubic yards of scoria to create a ramp to a preexisting walkway made of wooden pallets that lead to housing on the south side of the marsh. Figure 5 shows the locations of the contaminated soil excavations, and final surface contours.

Conclusions and Recommendations:

Conclusions: TPA Site 7, a historic community landfill, was closed sometime prior to 1967, before regulatory control over landfill creation and closures. Site investigations found that most of the landfill footprint had at least two feet of cover material over the buried debris. However, investigations also found two locations in the northeastern portion of the landfill with DRO and lead contaminated soil less than two feet below the surface of the landfill.

NOAA excavated the DRO contaminated soil location. Confirmation sample analyses demonstrated that remaining soil had DRO, BTEX and select PAH concentrations below analytical detection levels.

NOAA also excavated the lead contaminated soil location. Field screening results indicated that remaining lead concentrations were below 400 mg/kg. While confirmation sample analyses found lead at a maximum concentration of 738 mg/kg in the excavation sidewall, a minimum of two feet of contoured and compacted capping material was subsequently installed over this location.

Groundwater and leachate analytical results show infiltration is not causing contaminants to migrate from the landfill in concentrations above applicable ADEC requirements (Tetra Tech 2005). In accordance with NOAA's long-term groundwater monitoring plan (NOAA 2005b) as approved by ADEC (ADEC 2005), the monitoring wells associated with TPA Site 7 were decommissioned in September 2005. Further, the approved plan suspends the need for further leachate sampling.

Although use of this site as a landfill was halted prior to promulgation of solid waste regulations, NOAA has substantially met the requirements of 18 AAC 60.390 (Closure Standards for a Class III Municipal Solid Waste Landfill) by ensuring the final cover material is at least 24 inches thick, has been graded to promote drainage without erosion, and has been treated in a manner appropriate to the anticipated, future long-term use of the site.

NOAA submitted a Post Closure Monitoring Plan to ADEC Division of Environment Health, Solid Waste Program (Appendix F of NOAA 2005a, submitted July 7, 2005). The Plan includes:

- a five-year program of visual monitoring of the integrity of the landfill cover material;
- NOAA's intent to record a notice with the property deed identifying the location of the landfill, and;
- NOAA's submission of an inspection summary report to ADEC at the end of the post-closure monitoring period describing the site conditions.

NOAA has mitigated the potential for inadvertent exposure to the contaminants remaining in the landfill, further excavation of this site is not warranted.

Recommended Action: In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate and corrective action, to the maximum extent practicable, at the Ballfield/Former Landfill, TPA Site 7/NOAA Site 7 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

References:

ADEC 1997. Letter from Mr. Ray Dronenburg (ADEC) to Ms. Mary Moloseau-Goetz (NOAA Pribilof Project Office) Regarding Approval for Closure Request for St. George Island, Former Landfill/Ballfield Site. September 15, 1997.

ADEC 1999. Letter from Mr. Louis Howard (ADEC) to Mr. John Lindsay (NOAA Pribilof Project Office) Regarding Reopening of a Closed Site: Ballfield/Former Landfill Two Party Agreement Site No. 7, St. George Island, AK. October 25, 1999.

ADEC 2002a. *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances*. State of Alaska. Amended through August 2002.

ADEC 2002b. Letter from Mr. Louis Howard (ADEC) to Mr. Greg Gervais (NOAA Pribilof Project Office) Regarding Draft Site Characterization Report: Ballfield/Former Landfill TPA Site No.7 St. George Island October 1, 2002. December 31, 2002.

ADEC 2003a. Title 18 Alaska Administrative Code (AAC) Chapter 60. Solid Waste Management. State of Alaska. Amended through August 8.

ADEC 2003b. *Title 18 of the Alaska Administrative Code 70 (18 AAC 70), Water Quality Standards*. State of Alaska. Amended through June 26, 2003.

ADEC 2004. *18 AAC 75, Articles 3 and 9. Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through May 26, 2004.

ADEC 2005. Letter from Mr. Louis Howard (ADEC) to Mr. John Lindsay (NOAA Pribilof Project Office) Regarding Draft Long Term Monitoring Plan, St. George Island, Alaska June 30, 2005. File Number 2644.38.007. August 8, 2005.

CESI 2001. *Draft Site Reconnaissance Report St. George Island, Alaska*. Columbia Environmental Sciences, Inc., Kennewick, Washington. February 2001.

E&E 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska*. Ecology and Environment, Inc., Anchorage, Alaska. February.

NOAA 1996. *Pribilof Islands Environmental Restoration Two-Party Agreement*, Attorney General's Office File No. 66 1-95-0126. January 26.

NOAA 2003. *Final Corrective Action Plan For Two Party Agreement Site Number 7. Pribilof Islands Environmental Restoration Project*. August 2003.

NOAA 2005a. *Final Corrective Action Report, TPA Site 7/NOAA Site 7 – Ballfield/Former Landfill, St. George Island, Alaska*. July 19.

NOAA 2005b. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Polarconsult 1998. Polarconsult Alaska, Inc. letter to the St. George Tanaq Corporation regarding environmental site assessment activities; dated April 3, 1998.

Tetra Tech 2003. *Final Site Characterization Report Ballfield/Former Landfill, Two-Party Agreement Site No. 7*. Tetra Tech EM Inc., Mountlake Terrace, Washington. July 11.

Tetra Tech 2005. *Final Field Investigation Report, Pribilof Environmental Restoration Project, St. George Island, Alaska*. Tetra Tech EM Inc., Mountlake Terrace, Washington. June 23.

Woodward-Clyde 1994. *Phase 1B Environmental Assessment St. George Island, Alaska*. Prepared by Woodward-Clyde for U.S. Army Corps of Engineers, Seattle District. Final report March 1994.

Woodward-Clyde 1995. *Expanded Site Inspection, St. George Island, Alaska*. Prepared by Woodward-Clyde for U.S. Army Corps of Engineers, Seattle District. Final report March 1995.

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

January 9, 2006
Date

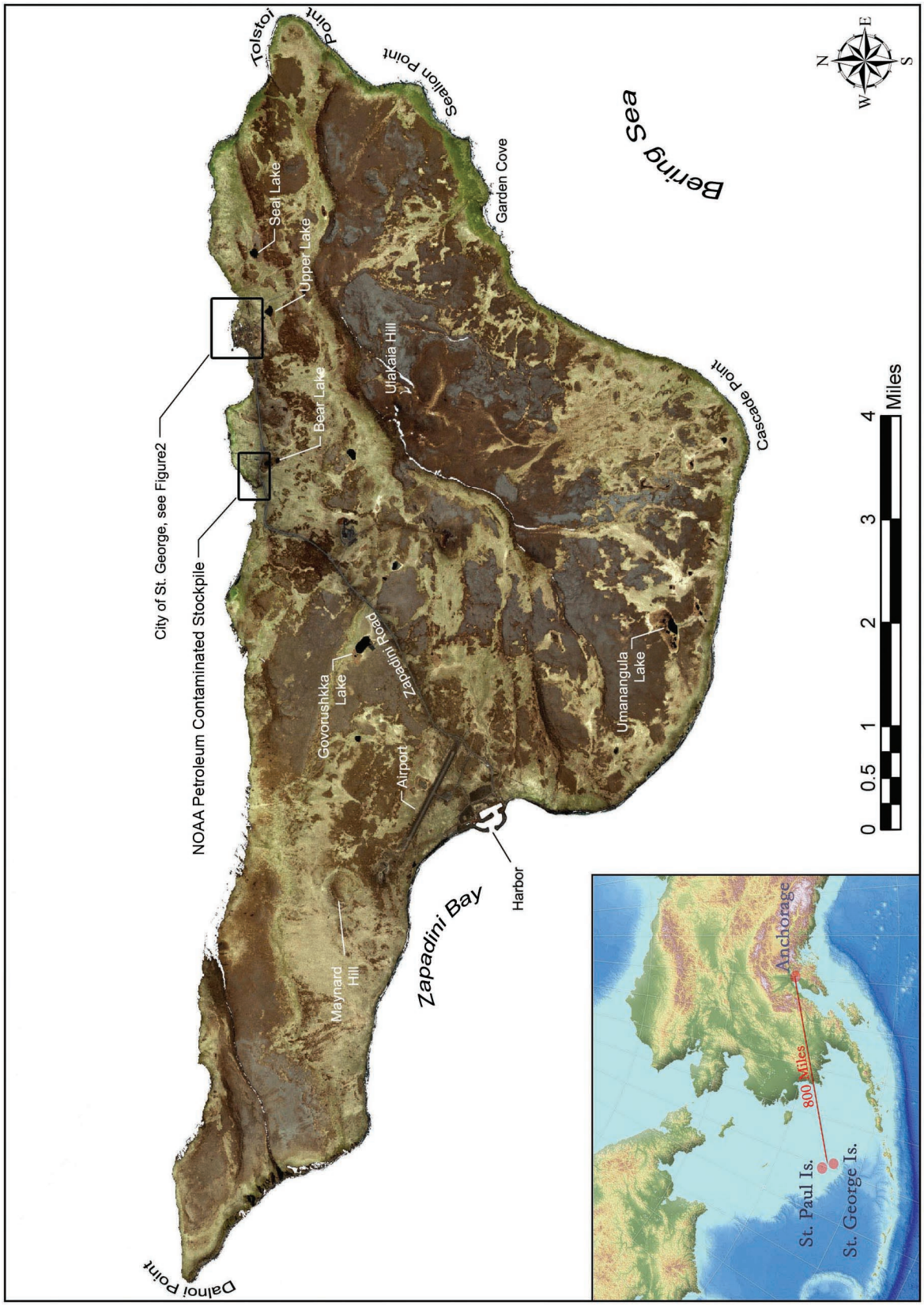
Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at the Ballfield/Former Landfill, St. George TPA Site 7/NOAA Site 7, in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

Jan 9, 2006
Date

Figures



Source: Ikonos 2001 Satellite Image

Pribilof Islands Restoration Project

Island Vicinity Map
Ballfield/Former Landfill
TPA Site 7/NOAA Site 7
St. George Island, Alaska

Figure 1

Figure 2	**Legal Property Description Map** **Ballfield/Former Landfill** **TPA Site 7/NOAA Site 7** **St. George Island, Alaska**	Source: AeroMap U.S. 9/28/96 Aerial Photograph, Bureau of Land Management Land Survey Filed Febuary 15, 1985

Pribilof Islands Restoration Project

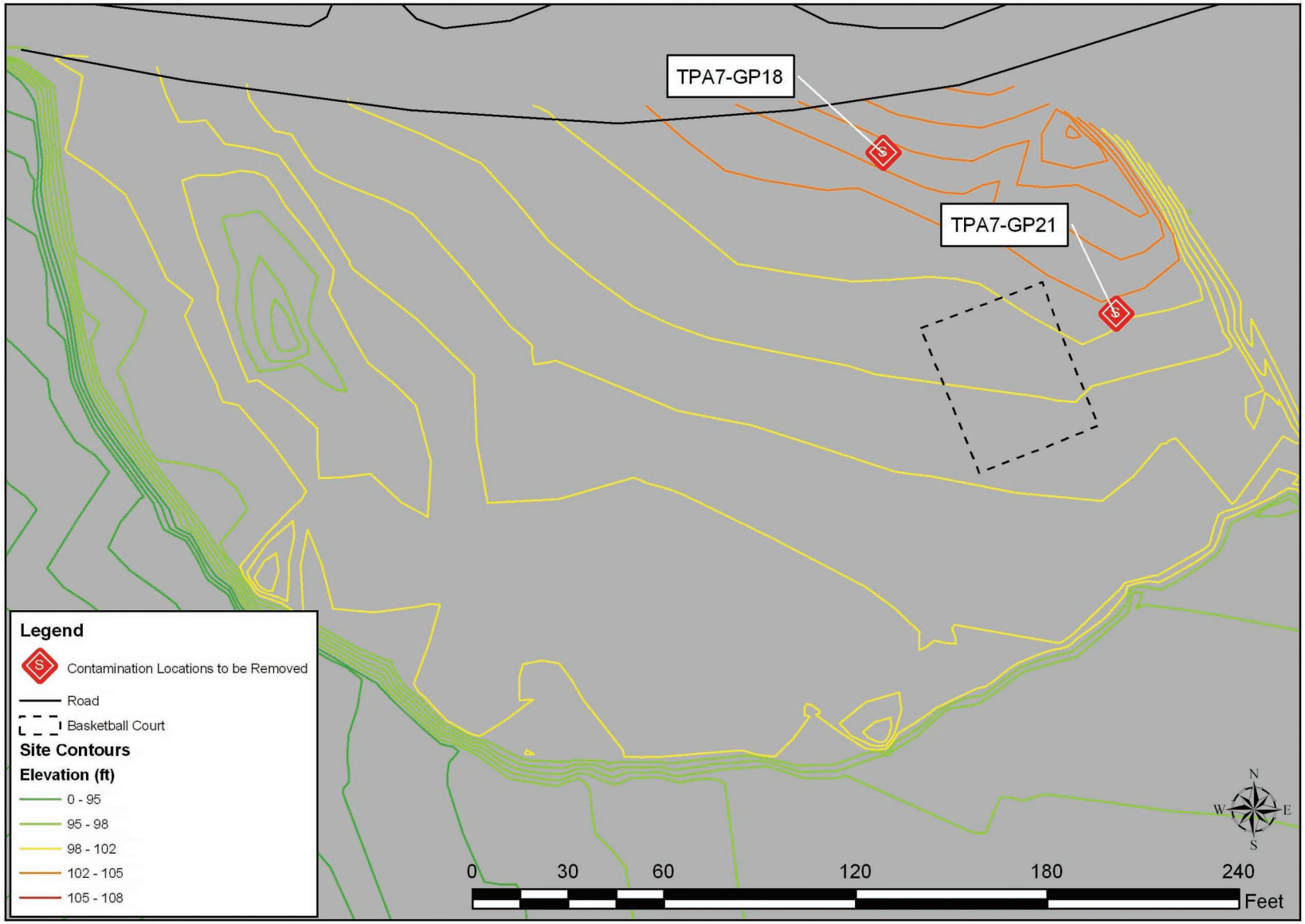


Figure 3

Site Conditions Prior to Corective Action
Ballfield/Former Landfill
TPA Site 7/NOAA Site 7
St. George Island, Alaska

Source: Pribilof Project Database

Note: Contours in Feet Above Mean Sea Level.

Pribilof Islands Restoration Project

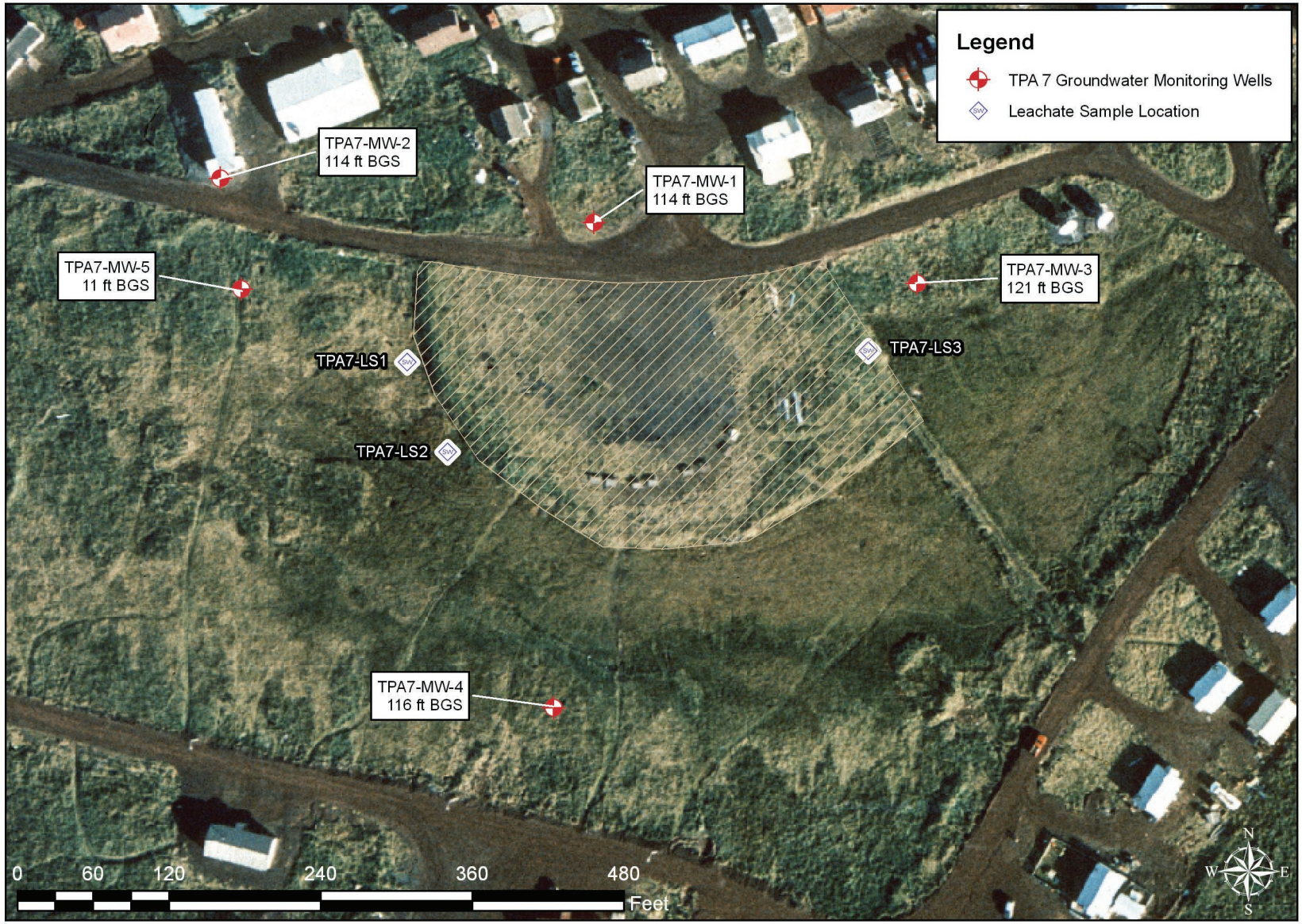


Figure 4	**Groundwater & Leachate Sampling Locations Ballfield/Former Landfill TPA Site 7/NOAA Site 7 St. George Island, Alaska**	Source: AeroMap U.S. 9/28/96 Aerial Photograph; TTEMI Draft Field Investigation Report, April 26, 2005

Pribilof Islands Restoration Project

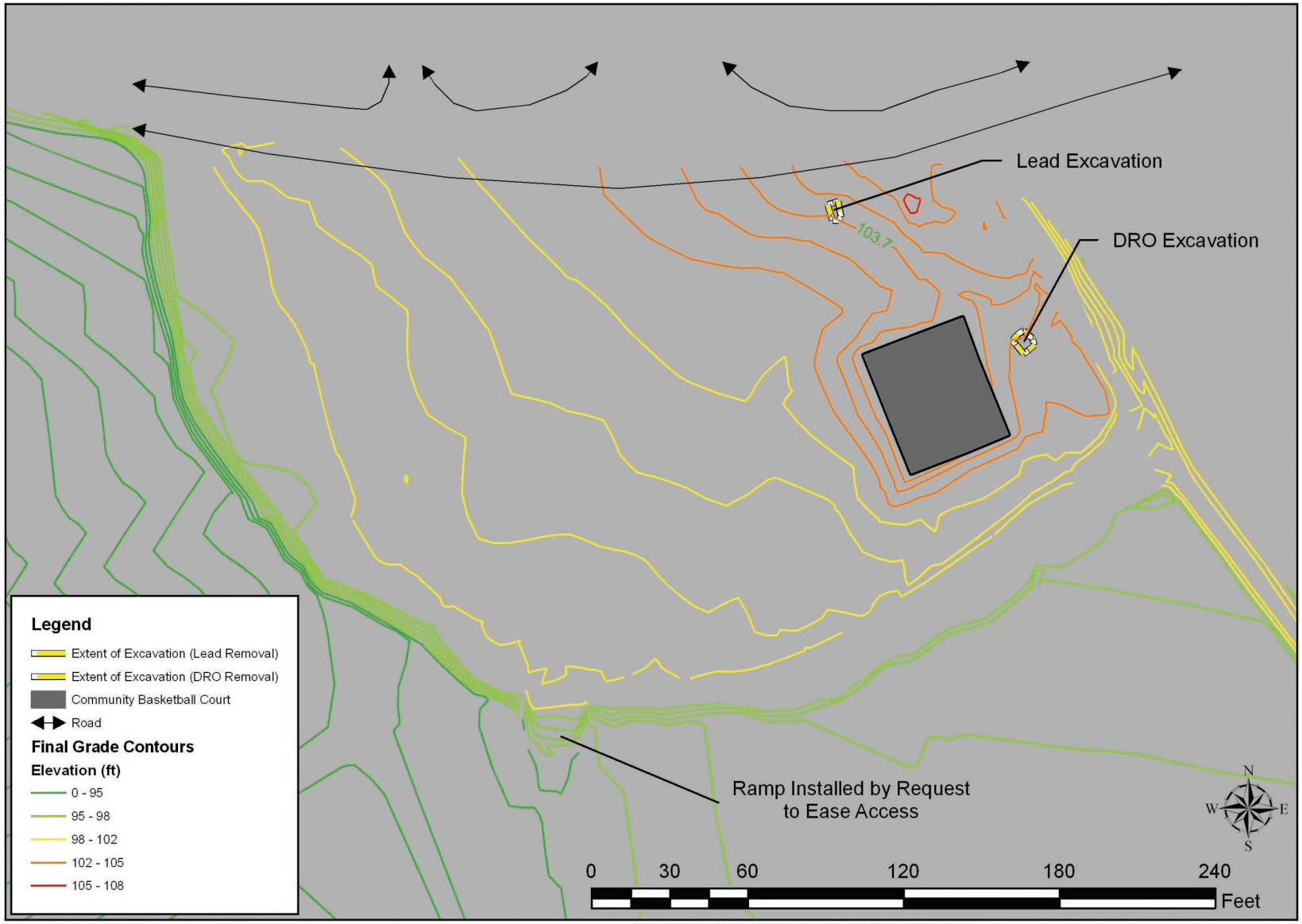


Figure 5

Site Conditions After Corrective Action
Ballfield/Former Landfill
TPA Site 7/NOAA Site 7
St. George Island, Alaska

Source: Pribilof Project Database

Note: Contours in Feet Above Mean Sea Level.

Pribilof Islands Restoration Project

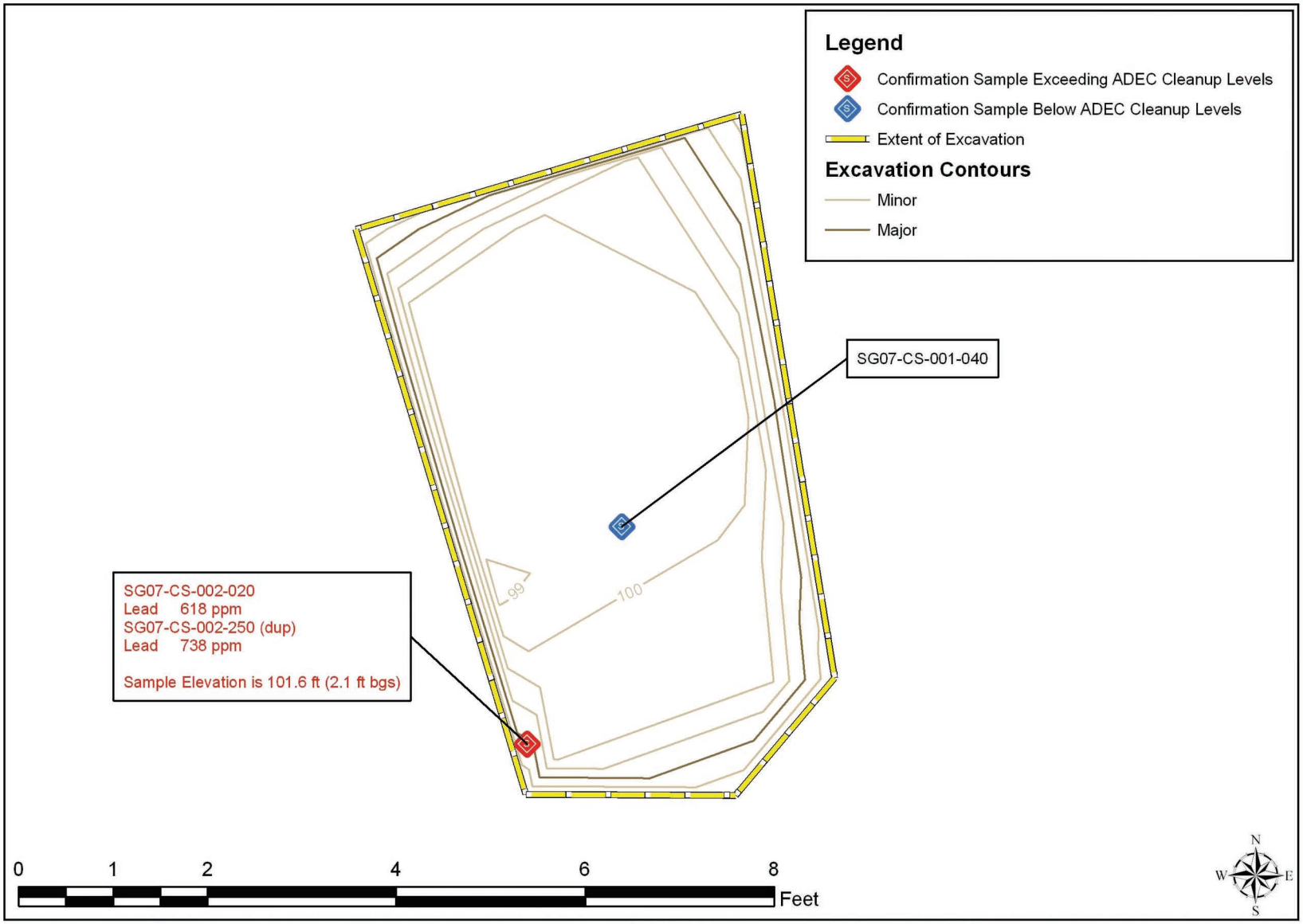


Figure 6

Lead Excavation
Ballfield/Former Landfill
TPA Site 7/NOAA Site 7
St. George Island, Alaska

Source: Pribilof Project Database

Note: Contours in Feet Above Mean Sea Level. Below ground surface (bgs).

Pribilof Islands Restoration Project

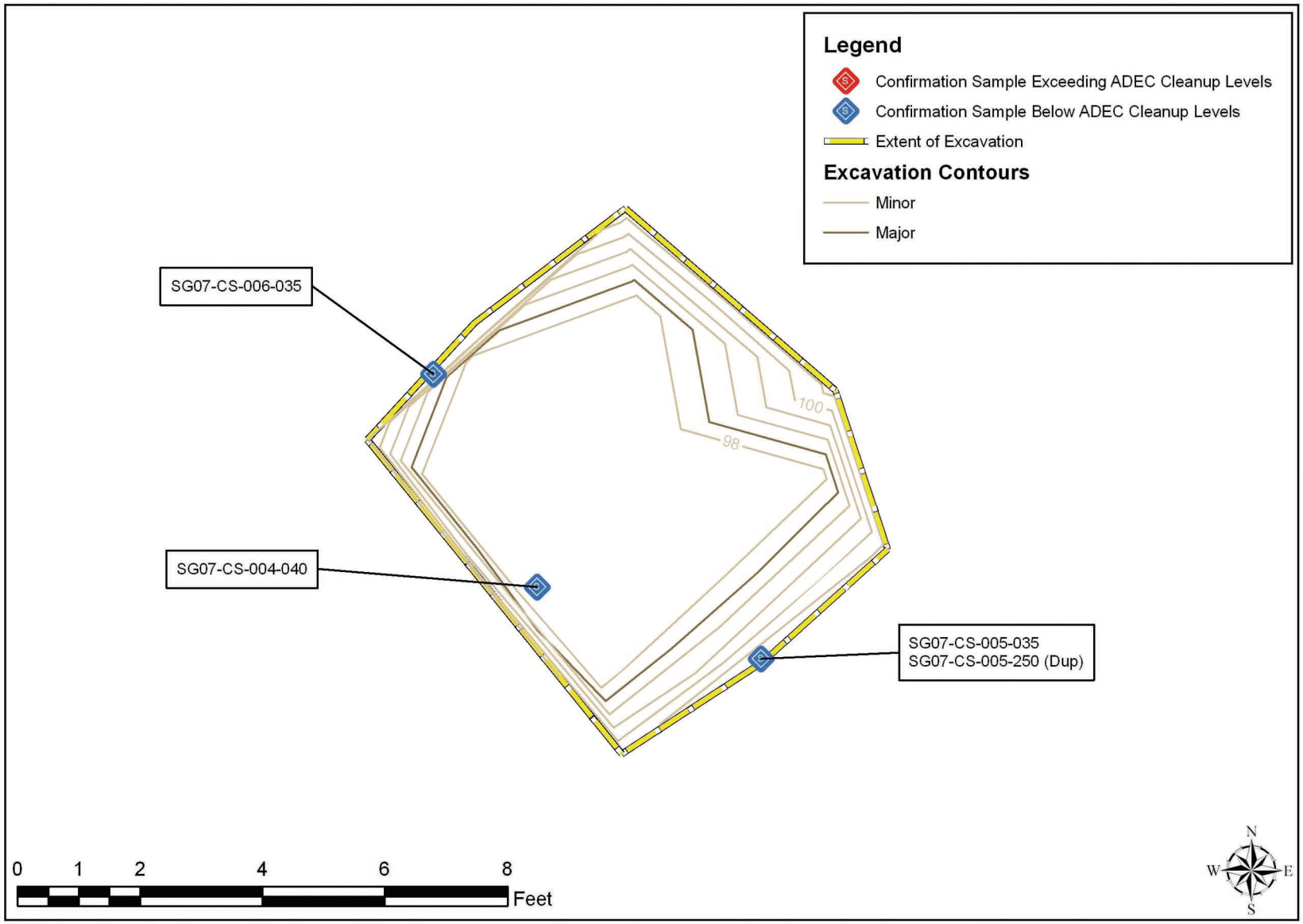


Figure 7

DRO Excavation
Ballfield/Former Landfill
TPA Site 7/NOAA Site 7
St. George Island, Alaska

Source: Pribilof Project Database

Note: Contours in Feet Above Mean Sea Level.

Pribilof Islands Restoration Project

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION & RESPONSE
CONTAMINATED SITES REMEDIATION PROGRAM
555 CORDOVA STREET, SECOND FLOOR
ANCHORAGE, AK 99501-2617

TELEPHONE: (907) 269-7659
FAX: (907) 269-7649

September 9, 1997

Ms. Mary Moloseau-Goetz, P.E.
U.S. Department of Commerce
Western Administrative Support Center
7600 Sand Point Way, NE
BIN C15700
Seattle, Washington 98 115-0070

REC'D SEP 15 1997

Re: Approval for Closure Request for St. George Island, Former Landfill/Ballfield Site

Dear Ms. Moloseau-Goetz:

The Department has reviewed your letter of July 16, 1997 and has the following comments:

- In agreement with the "two party agreement" (Item #7 - Attachment A) which states in part under recommendations of the March 1995 Hart Crowser ESI report, NOAA submits letter request for closure, this site will be considered closed on the State ADEC data base.

This letter constitutes approval to list site#7, Attachment A, St. George Landfill/Ballfield as a "No Further Action Site" only and should not be construed as implied for any other site. Because this site represents a landfill site, closure is in accordance with18 AAC 60 which could require additional site work for subsidence or leachate problems.

Sincerely,

Ray Dronenburg
Project Manager

RD:el

cc: File
RAB Members

256

cc

A L A S K A

2008-000371-0

Recording Dist: 305 - Aleutian Islands
8/5/2008 2:03 PM Pages: 1 of 13

NOTICE OF RESIDUAL SOIL CONTAMINATION and MUNICIPAL SOLID WASTE at
TWO PARTY AGREEMENT SITE 7
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the City of St. George (the City) as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator, hereby provide public notice that property located in the south-central area of the City of St. George on St. George Island, Alaska, 99591 contains buried municipal solid waste including lead-contaminated debris and petroleum-contaminated soil. More specifically, the property is described as follows:

Lot 42, Tract 52
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 2.74" North Latitude, 169° 32' 48.13" West Longitude

This property, hereafter referred to as Site 7 (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge, or release and subsequent cleanup of oil or other hazardous substances, regulated under 18 AAC 75, Article 3 as amended December 2006, and solid waste disposal, which is regulated under 18 AAC 60 as amended August 2003. Adequate soil cover needs to be maintained over the solid waste. If contaminated soil or solid wastes are exposed in the future they must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under site number Reckey #1994250135458; File ID 2643.38.013.

Site 7 was identified as the *Ballfield/Former Landfill* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 7 and NOAA Site 7. Following corrective action, NOAA submitted a conditional closure request to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2006). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that site cleanup has been performed to the maximum extent practicable even though residual petroleum and lead contaminated soils remained on the property (NOAA 2006). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further corrective action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2006).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: City of St. George
PO Box 929
St. George, AK 99591

Recording District: Aleutian Islands

Remedial Actions and Residual Contamination

Site 6 is currently owned by the City of St. George; however, the federal government owned the site when the landfill was in operation. Dates and time frames of the former landfill operation, landfill closure and subsequent conversion to recreational use are not documented. Aerial photographs taken in 1948 (landfill active) and 1967 (landfill inactive and covered) show that the landfill was taken out of operation within this time span (NOAA 2003). Consequently, the landfill was closed prior to promulgation of regulatory standards for municipal solid waste landfills. The site is currently used for recreation, and city residents have constructed a basketball court in a portion of the area.

In 1992, Ecology and Environment, Inc. (E&E) conducted a preliminary assessment of Pribilof Island sites that included interviews of residents and site visits. For TPA Site 7, they recorded concerns about an oily substance occasionally seen seeping from the elevated sides of the landfill during summer months, and noted metal debris in the area surrounding the site. The assessment report recommended a site investigation with soil and water sampling (E&E 1993).

In 1993, Woodward-Clyde conducted an environmental assessment that included the removal of three partially buried drums from the landfill area. Two of the drums were found empty, the third contained rusty water (Woodward-Clyde 1994).

In 1994, Woodward-Clyde, conducted an expanded site inspection to determine the lateral extent of the buried landfill waste, search for buried transformers, and determine if contaminants in concentrations above applicable requirements had migrated outside the landfill boundaries. They collected surface and subsurface soil samples from nine test pits and sediment samples from the drainage area west of the landfill. Woodward-Clyde also conducted an electromagnetic search for buried transformer carcasses. With one exception, inorganic analytical results indicated analyte concentrations were within normal background ranges. One sediment sample had a lead concentration at 140 milligram per kilogram (mg/kg), which is above background, but below the ADEC Method Two cleanup level of 400 mg/kg (ADEC 2006). Organic analytical results were all below levels of concern with the exception of diesel range organics (DRO) at two locations. However, chromatogram patterns indicated a biogenic rather than fuel origin for the DRO detected in all soil samples, therefore the report concluded that DRO was not a contaminant of concern. Woodward-Clyde did not find any transformers, nor detect any polychlorinated biphenyl (PCB) in any collected samples. Woodward-Clyde recommended no further action be taken at Site 7 (Woodward-Clyde 1995).

In 1997, based on the Woodward-Clyde findings, NOAA requested and ADEC granted a "No Further Action Site" designation for the Ballfield/Former Landfill Site (ADEC 1997).

In 1998, under contract to the St. George Tanaq Corporation, Polarconsult Alaska, Inc. (Polarconsult) excavated a test pit and installed a shallow well point within the former landfill boundaries. Field notes taken during the pit excavation do not mention detection of petroleum odor or staining, and they took no soil samples. Analysis of a well water sample returned a DRO concentration of 3.2 milligram per liter (mg/l), which is above the ADEC groundwater cleanup criterion of 1.5 mg/l (ADEC 2006). Polarconsult recommended additional investigation to further characterize the nature and extent of contamination at the site (Polarconsult 1998). ADEC, after review of Polarconsult's report, reopened the site as allowed by provisions of the TPA, and requested additional site characterization (ADEC 1999).

In 2000, Columbia Environmental Sciences, Inc. (CESI) conducted a site reconnaissance and noted a strong chemical/petroleum odor near a leachate pool, a strong sheen, and some sediment and vegetation covered with and orange-red stain (CESI 2001).

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In 2001, Tetra Tech EM, Inc. (Tetra Tech) conducted a site investigation during which they advanced 21 test borings to refusal within the landfill, and installed five monitoring wells around the landfill. Tetra Tech collected soil and perched water samples from the borings; sediment and surface water samples from the drainage area south and west of the landfill; and groundwater samples from the wells. They analyzed soil and sediment samples for metals, gasoline range organics (GRO), DRO, residual range organics (RRO), pesticides, PCBs, and volatile and semi-volatile organics (VOC and SVOC). Water samples were analyzed for GRO, DRO, VOC, SVOC, and metals. Additionally, Tetra Tech collected background soil samples from six undeveloped locations on St. George Island to determine natural background metal concentrations. Analytical results indicated nearly all contaminant concentrations were within natural background ranges and/or below regulatory cleanup levels. However, as discussed in the following paragraphs, Tetra Tech found DRO and lead concentrations above cleanup levels in soil and perched water at several sample locations; and methylene chloride, a common laboratory contaminant, was detected in a single perched water sample (Tetra Tech 2003).

Tetra Tech detected DRO at four soil core locations, at sample depths greater than six feet below ground surface (bgs). At one core location, DRO was detected in soil at a concentration of 6,500 mg/kg within the two to eight foot bgs sample interval. Tetra Tech also detected DRO in water above the ADEC groundwater cleanup level in perched water samples taken from three soil core locations within the landfill (Tetra Tech 2003). At another sample location, Tetra Tech detected lead in soil at 444 mg/kg in the soil sample interval zero to two feet bgs. Lead was also detected at concentrations of up to 0.439 mg/l, which is above the ADEC groundwater criterion of 0.015 mg/l (ADEC 2006), in perched water samples from three soil core locations within the landfill (Tetra Tech 2003). Total lead at 168 micrograms/liter was detected in one leachate (surface water) sample. However, the surface water quality criterion for lead is based on a particular site's water hardness, and is assessed in terms of dissolved lead (ADEC 2002a, ADEC 2003a). Therefore, the ADEC surface water quality criterion is not applicable to the total lead result obtained from the leachate sample.

Tetra Tech found methylene chloride at 8 µg/l in a single perched water sample; the cleanup level is 5 µg/L. Methylene chloride, a common laboratory contaminant, was not detected in any other soil or water samples.

Tetra Tech's report recommended adding two feet of cover material over the former landfill area and monitoring for DRO and lead in leachate seeps and groundwater (Tetra Tech 2003).

In response to Tetra Tech's site characterization report, ADEC requested that NOAA ensure that the final landfill area cover was at least 2 feet thick, graded to promote drainage without erosion, and treated in a manner appropriate to the anticipated, future long-term use of the site (Tetra Tech 2003, ADEC 2002b). These landfill cover criteria conform to ADEC's requirements for closure of a Class III Municipal Solid Waste Landfill (ADEC 2003b). ADEC also requested limited source removals of the near-surface DRO and lead contaminated soil.

In 2003, NOAA completed final corrective actions per an ADEC approved corrective action plan (NOAA 2003). Non-NOAA related debris such as scrap rebar, dilapidated bleacher risers and seats, and a broken ping pong table were removed from the surface of the site (NOAA 2005a). Approximately five cubic yards of lead contaminated soil was removed from the near-surface lead hot spot (Figures 3 and 4) and placed directly into shipping containers, which were labeled, sampled for hazardous waste characterization, and sent off-island for disposal. Six soil samples were taken from the excavation for field screening using a commercial test kit (Hybrivet Systems "Lead Check For Soil"). Field screening results indicated no lead concentrations above 400 mg/kg within the excavation. Two lead confirmation samples plus a duplicate were collected from the excavation for fixed lab analyses. A perforated liner was installed and the excavation backfilled with clean material (NOAA 2005a). Five cubic yards of DRO

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contaminated soil was excavated from the near-surface DRO hot spot (Figures 3 and 5) and removed from the site. However, after removal of the initial two bucket loads and their placement into a dump truck, NOAA observed a blue tile at about 2 feet bgs. Treating the tile as potential asbestos containing material (ACM), all subsequent dirt and tile was loaded into shipping containers and sent off-island for disposal. The initial two DRO-contaminated bucket loads were inspected and found free of tile. Flattened metal drums were encountered further down in the DRO excavation; after determining the drums were empty, they were removed as necessary and transported to the island's scrap metal site. At four and one half feet bgs, NOAA encountered the perched water table and stopped further excavation work. Three confirmation samples plus a duplicate were collected from the excavation. A perforated liner was installed and the excavation backfilled with clean material (NOAA 2005a).

Analyses of the confirmation samples collected from the lead hot spot excavation indicated a total lead concentration of 738 mg/kg in a sidewall sampling location, and 220 mg/kg at the bottom of the excavation. Analyses of confirmation samples collected from the DRO hot spot indicated non-detection of DRO, BTEX, and select PAHs (NOAA 2005a). Confirmation sample locations for the two excavations are shown in Figures 4 and 5.

NOAA improved the original landfill cap by placing a minimum of six inches of scoria atop the historic cap to increase cap thickness to at least the ADEC minimum standard of two feet. NOAA also used sand to fill cap low spots, in some areas up to three feet thick, prior to placing the six-inch scoria lift. NOAA mitigated precipitation infiltration by compacting and contouring the cap to direct runoff to the periphery of the landfill. Cover material was placed and compacted to raise the ball field surface to the level of the basketball court's concrete slab, which further mitigates infiltration. Approximately 1,030 cubic yards of clean fill and cover material were placed, contoured and compacted at the site (NOAA 2005a). On the south side of the site, NOAA applied approximately ten cubic yards of scoria to create a ramp to a pre-existing walkway made of wooden pallets that lead to housing on the south side of the marsh. Figure 3 shows final surface contours.

Groundwater samples were collected from the five monitoring wells installed at Site 7 from 2001 through 2004. Sample analytical results indicated all analytes either non-detect or detected at concentrations below ADEC cleanup standards (Tetra Tech 2005). Based on a determination that groundwater in the vicinity of the site had not been adversely impacted by contaminant migration from the old landfill, these monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b).

In 2004, Tetra Tech performed 4-hour (acute lead criterion) and 4-day (chronic lead criterion) composite sampling at three leachate seeps along the perimeter of the landfill. In accordance with ADEC requirements for surface waters (ADEC 2002a, ADEC 2003a), samples were analyzed for total aromatic hydrocarbons (TAH), total aqueous hydrocarbons (TAqH), and dissolved lead as a function of water hardness. Analytical results indicated all samples met water quality standards for growth and propagation of fish, shellfish, other aquatic life, and wildlife (TTEMI 2005).

Site Use

In the event that information becomes available which indicates that Site 7 may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

In the future, ADEC approval is required prior to moving the soil cover over the solid waste at Site 7 pursuant to 18 AAC 60. If contaminated soil and/or solid wastes are removed from the site, the site must be characterized and managed following regulations applicable at that time including (1) 18 AAC 75.325(i), (2) 18 AAC 75.370, and (3) 18 AAC 60 as amended. ADEC approval is required prior to moving soil or solid wastes that is, or has been, subject to the cleanup rules found at 18 AAC 75.325-.390, and 18 AAC 60 as amended.

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern, and until all wastes are removed from the property.

References:

Alaska Department of Environmental Conservation (ADEC). 1997. Letter from Mr. Ray Dronenburg (ADEC) to Ms. Mary Moloseau-Goetz (NOAA Pribilof Project Office) Regarding Approval for Closure Request for St. George Island, Former Landfill/Ballfield Site. Dated September 15, 1997.

ADEC. 1999. Letter from Mr. Louis Howard (ADEC) to Mr. John Lindsay (NOAA Pribilof Project Office) Regarding Reopening of a Closed Site: Ballfield/Former Landfill Two Party Agreement Site No. 7, St. George Island, AK. October 25, 1999.

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ADEC. 2002b. Letter from Mr. Louis Howard (ADEC) to Mr. Greg Gervais (NOAA Pribilof Project Office) Regarding Draft Site Characterization Report: Ballfield/Former Landfill TPA Site No.7 St. George Island October 1, 2002. December 31.

ADEC. 2003a. Title 18 of the Alaska Administrative Code 70 (18 AAC 70), Water Quality Standards. State of Alaska. Amended through June 26, 2003.

ADEC. 2003b. Title 18 Alaska Administrative Code (AAC) Chapter 60. Solid Waste Management. State of Alaska. Amended through August.

ADEC 2006. 18 AAC 75, Articles 3 and 9. *Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through December 2006.

CESI. 2001. *Draft Site Reconnaissance Report St. George Island, Alaska.* Columbia Environmental Sciences, Inc., Kennewick, Washington. February.

E&E 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska.* Ecology and Environment, Inc., Anchorage, Alaska. February.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2003. NOAA 2003. *Corrective Action Plan (Final) For Two Party Agreement Site Number 7 (Ballfield/Former Landfill), St. George, Alaska.* August 19.

NOAA. 2005a. *Corrective Action Report (Final), TPA Site 7/NOAA Site 7 – Ballfield/Former Landfill, St. George Island, Alaska*. July 19.

NOAA. 2005b. *Long-Term Groundwater Monitoring Plan (Final), St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

NOAA. 2006. *Conditional Closure Request, Ballfield/Former Landfill, TPA Site 7/NOAA Site 7, St. George, Alaska*. Signed by John Lindsay, Pribilof Project Manager, U.S. Department of Commerce, National Oceanic and Atmospheric Administration January 4, 2005; signed by Louis Howard, Project Manager, Alaska Department of Environmental Conservation, Division of Spill Prevention and Response January 9.

Polarconsult Alaska, Inc. (Polarconsult). 1998. Polarconsult Alaska, Inc. letter to the St. George Tanaq Corporation regarding environmental site assessment activities; dated April 3, 1998.

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Tetra Tech 2005. *Field Investigation Report (Final), St. George Island, Alaska, Pribilof Environmental Restoration Project*. Tetra Tech EM Inc., Mountlake Terrace, Washington. June 23.

Woodward-Clyde. 1994. *Phase 1B Environmental Assessment, St. George Island, Alaska*. Prepared by Woodward-Clyde for U.S. Army Corps of Engineers, Seattle District. Woodward-Clyde, Anchorage, Alaska. March 31.

Woodward-Clyde. 1995. *Expanded Site Inspection, St. George Island, Alaska*. Prepared by Woodward-Clyde for U.S. Army Corps of Engineers, Seattle District. Woodward-Clyde, Anchorage, Alaska. March.

Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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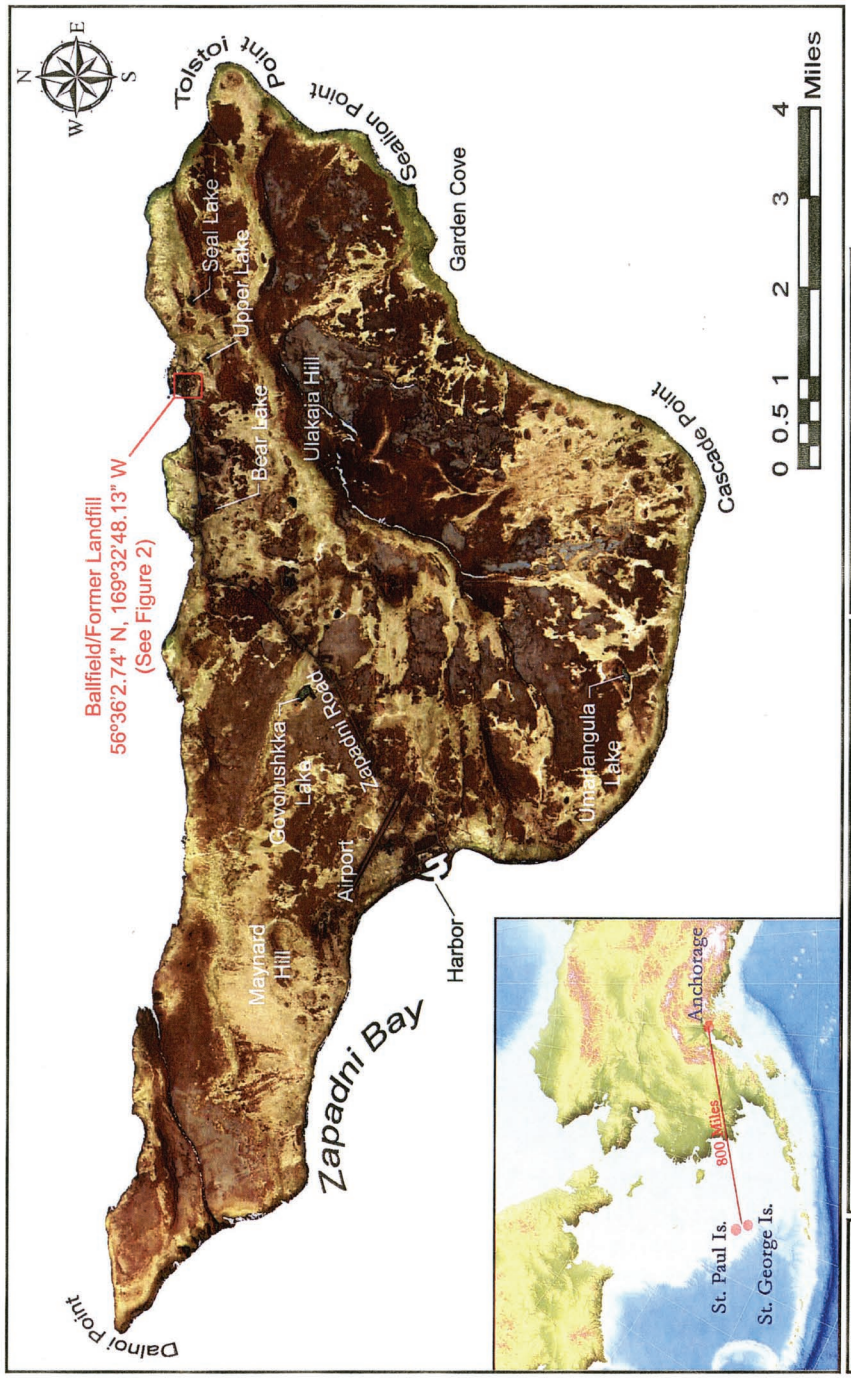
2008-000371-0



Pribilof Islands Restoration Project

Source: Ikonos Satellite Imagery (Space Imaging 2001)
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Figure 1

St. George Island Vicinity Map
Ballfield/Former Landfill
NOAA Site 7/TPA Site 7
St. George Island, Alaska

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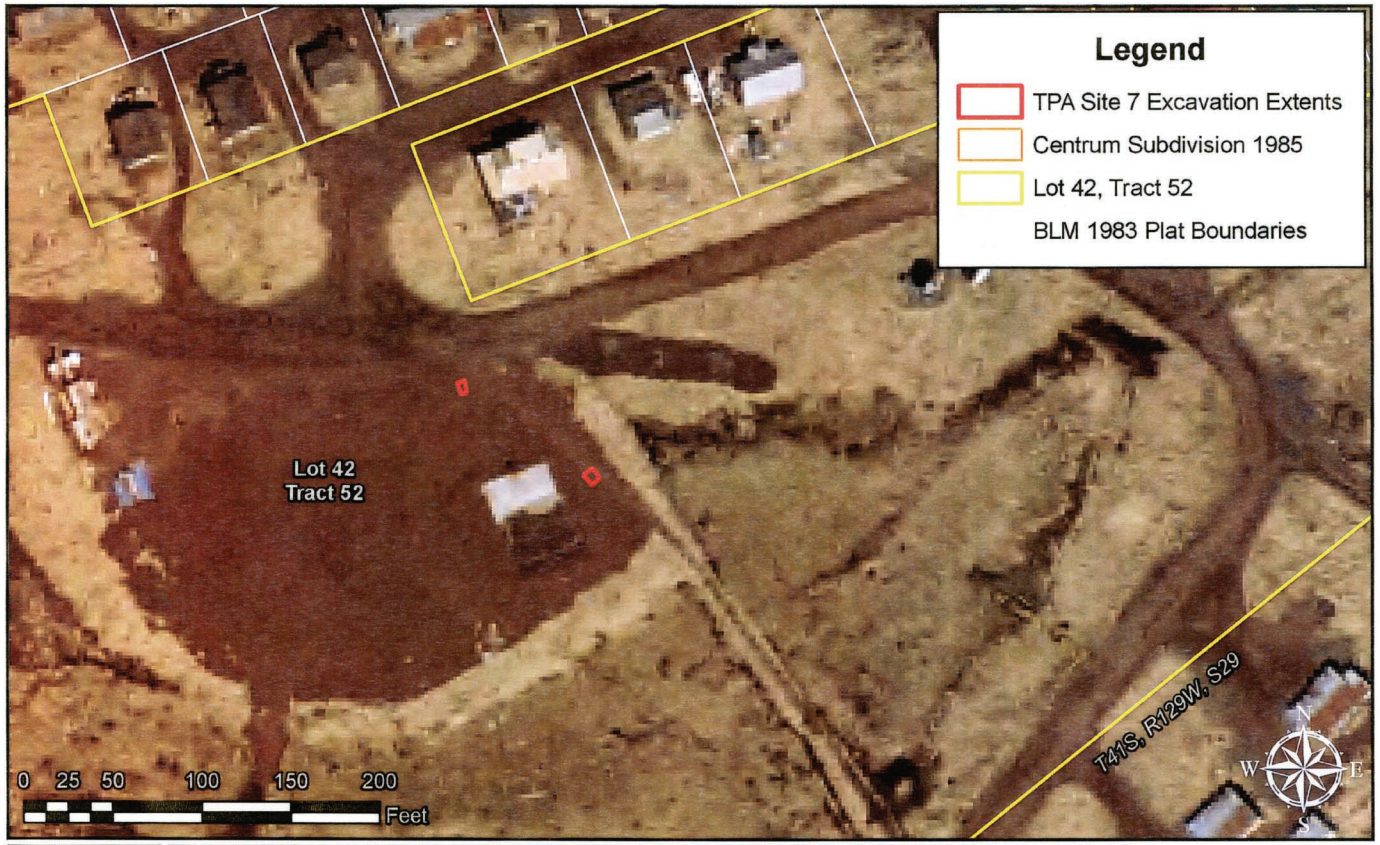

Figure 2	Legal Property Description Map Lot 42, Tract 52 of T41S, R129W, S29 Ballfield/Former Landfill NOAA Site 7/TPA Site 7 St. George Island, Alaska	Sources: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially filed February 15, 1985. Centrum Subdivision. 10/31/85. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Ballfield_Former Landfill\Fig2_TPA7_PropDescription.mxd Date: 7/29/2008 @ 4:01:34 PM

Pribilof Islands Restoration Project

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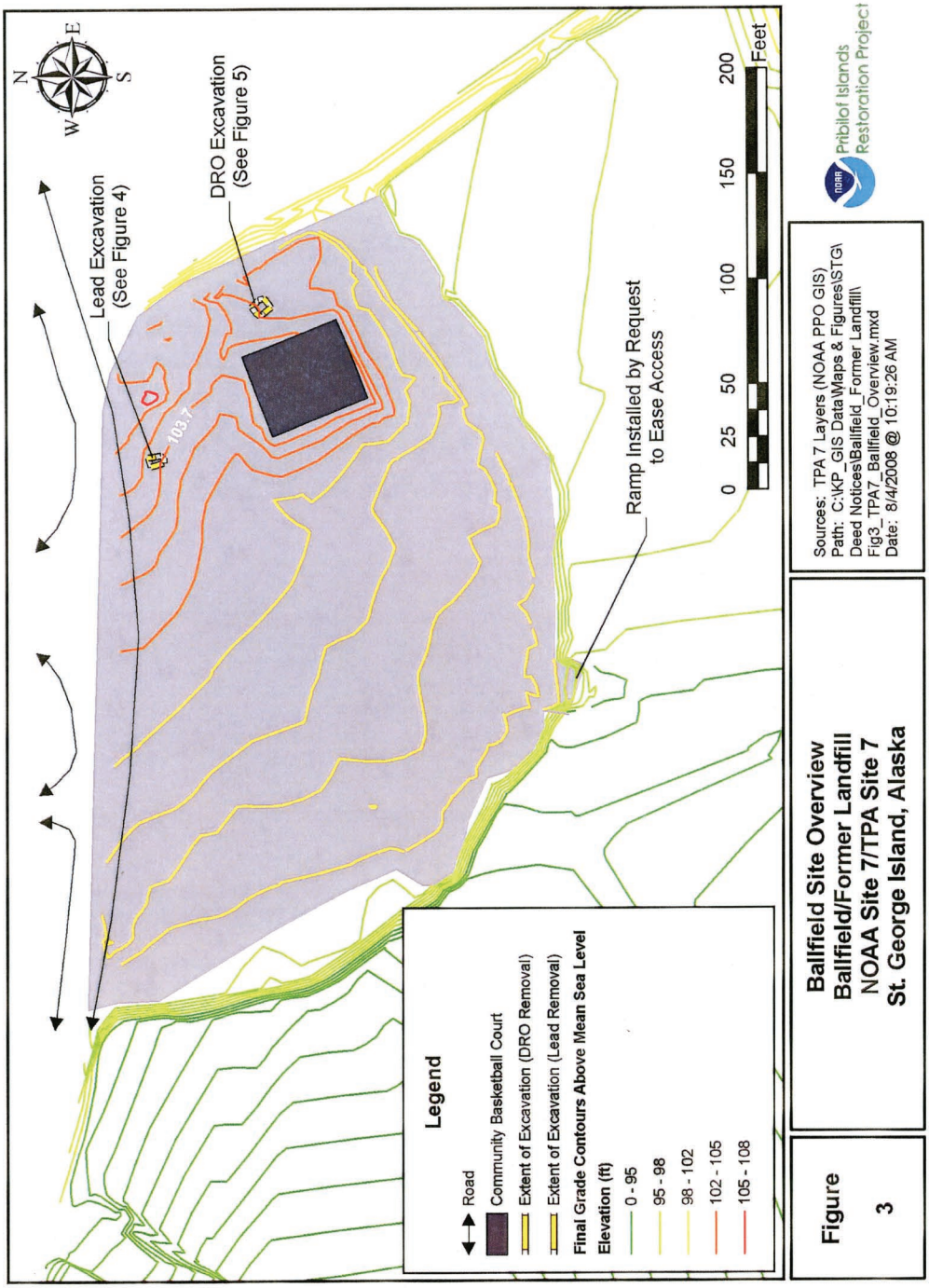

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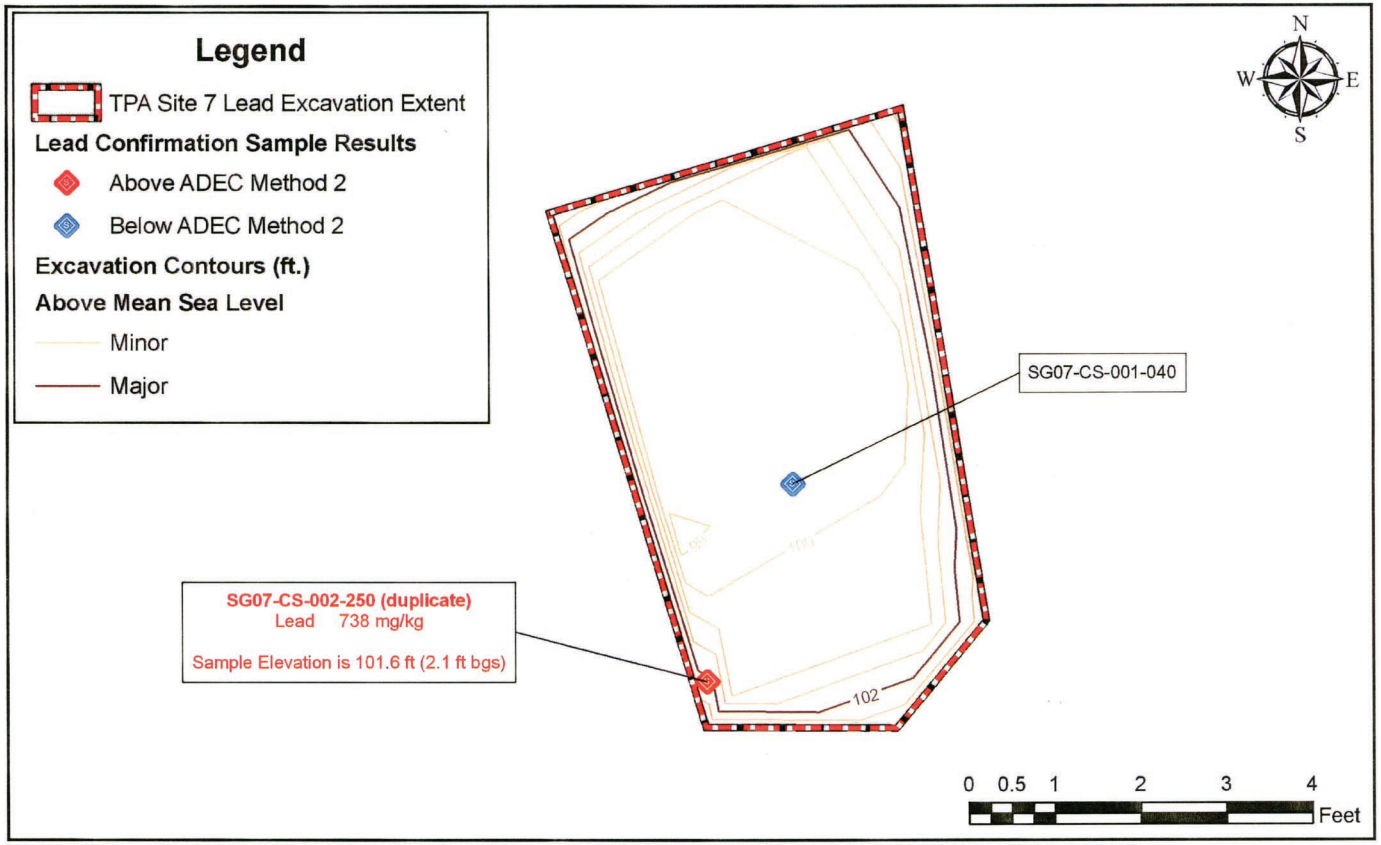

Figure 4	Final Lead Excavation Extent & Confirmation Sampling Results Ballfield/Former Landfill NOAA Site 7/TPA Site 7 St. George Island, Alaska	Sources: TPA Site 7 Layers (NOAA PPO GIS), Samples (PPO Chemical Database) Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Ballfield_Former Landfill\Fig4_TPA7_Lead_Samples&Excavation.mxd Date: 8/4/2008 @ 10:40:46 AM

Pribilof Islands Restoration Project

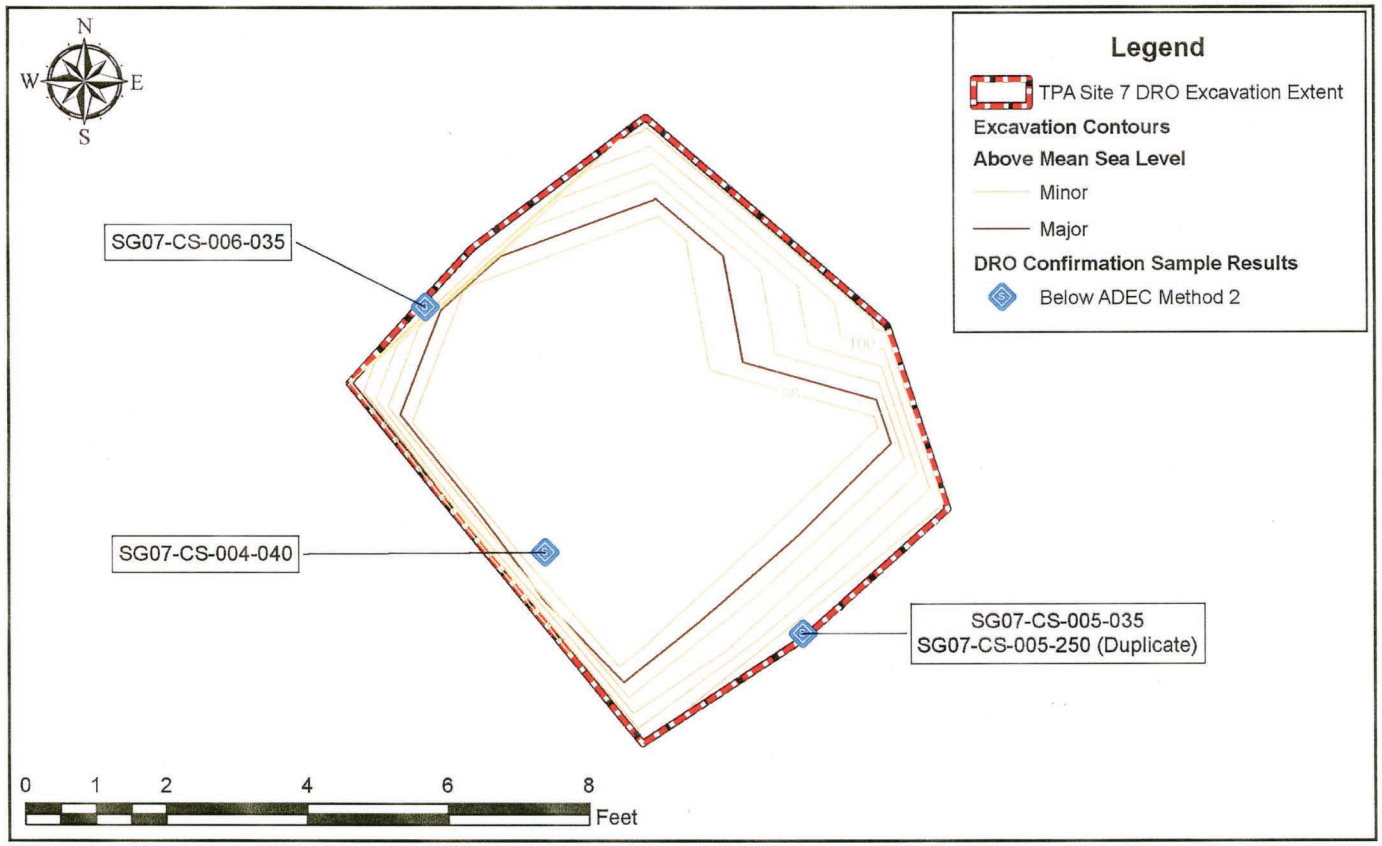

Figure 5	Final DRO Excavation Extent & Confirmation Sampling Results Ballfield/Former Landfill NOAA Site 7/TPA Site 7 St. George Island, Alaska	Sources: TPA 7 Layers (NOAA PPO GIS), Samples (PPO Chemical Database '03-07) Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Ballfield_Former Landfill\Fig5_TPA7_DRO_Samples&Excavation.mxd Date: 7/29/2008 @ 12:51:00 PM	Pribilof Islands Restoration Project

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2008-000371-0

NOAA erroneously included page 12 of 13 and page 13 of 13 in this recorded deed notice. These two pages are a figure attributed to Site 4, which are not applicable to this parcel or deed notice. For clarity these two pages have been omitted from this document.

NOAA Site 8
TPA Site 8: Active Power Plant

Request for Conditional Closure, Active Power Plant, TPA Site 8/Site 8, St. George Island, Alaska 227

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 8, St. George Island, Alaska (Lot 14, Tract 43) 237

Request for Conditional Closure
Active Power Plant
TPA Site 8/Site 8
St. George Island, Alaska

Site: Active Power Plant Site, also known as Two-Party Agreement (TPA; NOAA 1996) Site 8 and National Oceanic and Atmospheric (NOAA) Site 8. The Active Power Plant Site is referred to as "the site" herein.

Location: St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea (Figure 1). On the island, the site is located in the City of St. George approximately 70 feet northwest of the power plant and adjacent to the City office building (Latitude 56° 36' 10.28" N, Longitude 169° 32' 47.06" W; Figure 2).

Legal Property Description: The site is located in Lot 14 of Tract 43, Qawax Subdivision, which lies within Section 29, Township 41 South, Range 129 West of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Figure 2). The City of St. George owns the surface and subsurface estate.

Type of Release: Diesel fuel leaks, spills, and overflows associated with two underground storage tanks (USTs)

History and Background:
Two 4,000-gallon diesel fuel USTs were located at the site (Figure 3). These tanks supplied the power plant with fuel and were used for diesel storage exclusively. The Alaska Department of Environmental Conservation (ADEC) UST facility identification number for these tanks is 3047.

According to a preliminary assessment by Ecology and Environment (E&E), the northern UST was installed in 1962, and the southern UST was installed in the early 1970s (E&E 1993); although, Woodward-Clyde (1995) reported that St. George public works personnel stated the tanks were installed in the early 1980s. The southern tank was used until July 1997. Until decommissioning, the tanks were fueled regularly, initially by the federal government and later by a contracted fuel supplier.

Vent and fill pipes were located directly above the tanks. The fuel feed and return lines ran underground between the tanks and the power plant building. Prior to the mid 1980s, the northern tank was filled from a fuel distribution network that ran underground from the diesel tank farm (E&E 1993, Polarconsult 1997a). After the pipeline was suspected to be leaking, tanker trucks were used to fill the USTs (E&E 1993).

Summary of Site Investigations:
Preliminary Assessment
In October 1992, E&E performed a preliminary assessment at the site, which was known as the "Power Plant USTs Site" at that time. Areas of stained surface soil were identified around the fill and vent pipes on both tanks. E&E stated that the tanks did not meet U.S. Environmental Protection Agency or ADEC requirements for leak detection, corrosion protection, and spill and overfill protection. E&E recommended further investigation of the petroleum-contaminated surface and subsurface soil to determine the nature and extent of contamination (E&E 1993).

Expanded Site Inspection
During a 1994 expanded site inspection, Woodward-Clyde observed that soil staining was not limited to the fill and vent piping, but was widespread around both USTs and the power plant building. Eight test pits were excavated across the site to determine the extent of the contamination in soil (Figure 4). Fractured basalt bedrock was encountered at approximately 4 to 5 feet below ground surface (bgs) in all excavated test pit locations, and groundwater was not encountered during excavation activities. A total of four surface and eight subsurface samples were collected from the site. All samples were submitted to an onsite laboratory for total petroleum hydrocarbon (TPH), gasoline-range organics (GRO), diesel-range organics (DRO), volatile organic compounds (VOC), polychlorinated biphenyls (PCB), and metals. Two surface soil and two subsurface soil samples were sent to an offsite laboratory for confirmation analyses.

All four of the offsite laboratory samples (collected from test pits 1, 4, and 7) contained DRO, with concentrations varying from 220 to 3,700 milligrams per kilogram (mg/kg). The highest DRO concentration found was in test pit 4 at 4 feet bgs. The only other analyte detected in the offsite laboratory samples was tetrachloroethene, which was detected in the subsurface from test pits 4 and 7 at concentrations of 0.023 mg/kg and 1.9 mg/kg, respectively. Samples collected from test pits 4, 7, and 8 and analyzed onsite contained DRO at concentrations varying from 180 to 1,000 mg/kg. GRO, VOCs, and PCBs were not detected in any samples. Metals, including arsenic, cadmium, chromium, and lead were detected at concentrations consistent with the normal ranges of metals found in Alaska soil (Woodward-Clyde 1995).

Woodward-Clyde subcontracted Alaska Storage Tank Testing to conduct a UST integrity test on the active UST. The tightness test indicated that the UST and piping met ADEC requirements; leaking from the tank or associated piping was not apparent during the integrity test.

Environmental Site Investigation

Hart Crowser excavated two additional test pits south and southwest of Woodward-Clyde's test pit 4 (Hart Crowser 1997). Samples were collected from the surface, 4 feet bgs, and at the bottom of the excavated test pits, about 9 feet bgs. Six samples were collected and submitted to the field laboratory for diesel, gasoline, and oil analysis. Additionally, one sample from each test pit was submitted to the project laboratory for DRO analysis. Diesel, gasoline, and oil were not detected in soil samples collected from the test pits.

Groundwater Investigations

In 2001, NOAA installed monitoring wells TPA8-MW-1 through TPA8-MW-9 in the vicinity of the site. Additionally, in 2003, monitoring wells TPA8-MW-10 through TPA8-MW-13 were installed (Figure 5). Groundwater sampling was conducted in 2001 and 2002 (for wells installed in 2001); and in August 2003, November 2003, January 2004 and May 2004. Samples were analyzed for DRO, GRO, VOC, semi-volatile organic compounds (SVOC), and metals. Results are summarized below (NOAA 2005, Tetra Tech 2005a).

- Free product was observed in wells TPA8-MW-1, TPA8-MW-3, TPA8-MW-5, TPA8-MW-7, TPA8-MW-8, TPA8-MW-10, and TPA8-MW-12.
- Dissolved-phase DRO above the ADEC Table C criterion was found in wells TPA8-MW-2, TPA8-MW-4, TPA8-MW-6 (which was dry 4 out of 6 sampling events), and TPA8-MW-11.
- Perchloroethylene (PCE) above the Table C criterion was found in well TPA8-MW-2 in one sampling event (May 2004). The source of PCE is unknown.
- All analytes were below ADEC criteria in wells TPA8-MW-9 and TPA8-MW-13.

Summary of Applied Cleanup Levels:

Consistent with the TPA, for petroleum-contaminated soil NOAA relied on the interim soil guidance for non-UST soil cleanup levels (ADEC 1991) to establish site cleanup levels. The guidance employed a matrix to generate a score corresponding to a cleanup category of A, B, C, or D (18 Alaska Administrative Code [AAC] 78.315). The guidance stipulated that category A cleanup levels, the most stringent of the categorical cleanup levels, must be applied when groundwater has been impacted by the spill. Thus, NOAA determined that the applicable site cleanup levels are 50 mg/kg GRO, 100 mg/kg DRO, 2,000mg/kg RRO, 0.1 mg/kg benzene, and 10 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX). Cleanup criteria were applied to the maximum extent practicable (ADEC 2003; 18 AAC 75.325(f), 18 AAC 75.990).

Summary of Cleanup Actions:

At the Active Power Plant Site in 1997, Polarconsult removed the two 4,000-gallon USTs and their associated piping, excavated contaminated soil, and collected and analyzed confirmation samples (Polarconsult 1997a and 1997b). Excavation revealed that the tanks were set in sand, which was discolored and had a strong fuel odor. System inspections during tank removal indicated that underground tank piping connections were made improperly, thereby leading to chronic leakage during tank filling operations.

Excavation around the USTs continued until diesel fuel concentrations subsided or further excavation was impracticable due to the risk of undermining buildings or the inability to penetrate fractured basalt. About 1,128 cubic

yards of soil were removed from the site. Excavated soil was placed in an ADEC-approved petroleum-contaminated soil stockpile located on NOAA property on the north side of Zapadni Road, about 1 mile west of the City of St. George (Polarconsult 1996 and 1997a). Samples were collected from the excavation sidewalls, bottom, and intermediate locations around the site to establish contamination levels.

Results of confirmation sample analyses are summarized in Table 1. Polarconsult collected confirmation samples for DRO analysis from 31 locations. Of these, samples from 15 locations exceeded the site cleanup level. Analysis of BTEX was conducted on two samples. Results were below the site cleanup levels for benzene and total BTEX. One sample was analyzed for GRO, and results were below the GRO cleanup level. Polarconsult identified a large volume of darkly discolored soil just south of the southern UST. A sample collected from this location (SS060) was analyzed for waste oil constituents (arsenic, cadmium, chromium, lead, and halogenated volatile organic compounds). Only chromium was detected (17 mg/kg), and its concentration was below the cleanup level in 18 AAC 75.341 (ADEC 2003).

Following soil removal and sampling, the excavation was backfilled with material from the local scoria a pit. An impermeable plastic sheet was placed over the excavation and covered with scoria to reduce water infiltration (Polarconsult 1997a and 1997b).

Recommended Action:
Because NOAA has removed contaminated soil from the Active Power Plant Site, TPA Site 8/NOAA Site 8, to the extent practicable, and NOAA intends to address contaminated groundwater beneath the site under a separate corrective action plan, NOAA requests in accordance with paragraph 59 of the Two Party Agreement (NOAA 1996) written confirmation that it completed all appropriate corrective actions, to the maximum extent practicable, for contaminated soil at the site in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

References:
Alaska Department of Environmental Conservation (ADEC). 1991. *Interim Guidance for Non-UST Contaminated Soil Cleanup Levels, Contaminated Sites Program*. July 17, 1991.

ADEC. 2003. Title 18 of the *Alaska Administrative Code* 75, Articles 3 and 9. *Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through January 30.

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Polarconsult Alaska, Inc. (Polarconsult). 1996. Long-Term Containment Plan for the Storage of Contaminated Soil, Pribilof Restoration Project, St. George Island. Prepared for Alaska Department of Environmental Conservation. October 29.

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Polarconsult. 1997b. *Environmental Site Investigation, St. George Debris Removal Report, Pribilof Islands Environmental Restoration Project, Volume III*. December.

Tetra Tech EM Inc. (Tetra Tech). 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project, St. George Island, Alaska*. June 23.

Woodward-Clyde. 1995. *Expanded Site Inspection St. George Island, Alaska*. Woodward-Clyde, Anchorage, Alaska. March.

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

8/23/05
Date

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all soil corrective action has been completed to the maximum extent practicable at the Active Power Plant Site, TPA Site 8/Site 8 in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

8/31/05
Date

Tables and Figures

Table 1. Confirmation Sample Results, Active Power Plant, TPA Site 8, Site 8

a) Results of Soil Samples Analyzed for Diesel

Sample Number	Depth (ft)	DRO (mg/kg)
SS 052	10.4	**513**
SS 053	9.5	75
SS 054	4.5	**2930**
SS 055	14.4	**7900**
SS 056	4.9	60
SS 058	3.9	13
SS 060	8.6	**807**
SS 061	11.1	**1660**
SS 062	5.9	37
SS 063	9	**3620**
SS 065	8.3	28
SS 070	14.4	-
SS 071	8.6	-
SS 072	3.1	**8180**
SS 073	3.7	**133**
SS 074	5.9	**813**
SS 075	4.1	**1640**
SS 076	4.3	8
SS 077	10.1	31
SS 078	6.2	9
SS 079	6.1	**1460**
SS 080	5.8	7
SS 081	9.9	**533**
SS 082	4.5	**2600**
SS 083	4.9	13
SS 084	4.1	**946**
SS 085	6.9	U
SS 086	5	U
SS 087	7.1	U
SS 088	5.8	21
SS 089	9.5	**1560**
SS 090	9.5	**2580**
SS 091	9.8	**1410**
SS 092	5.5	20
SS 093	3.4	14
Site Cleanup Level		100

b) Results of Select Soil Samples Analyzed for Additional Constituents

Sample Number	Depth (ft)	Lead (mg/kg)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	GRO (mg/kg)	Bezene (mg/kg)	Total BTEX (mg/kg)	RRO (mg/kg)	HVO (mg/kg)
SS 058	3.9	-	-	-	-	-	-	-	U	-
SS 060	8.6	U	U	0	17	-	-	-	U	U
SS 070	14.4	-	-	-	-	-	U	3.4	-	-
SS 071	8.6	-	-	-	-	5.7	U	0.09	-	-

Notes:

mg/kg milligrams per kilogram
ft feet
BTEX benzene, toulene, ethylbenzene, xylene
DRO diesel-range organics
GRO gasoline-range organics
HVO halogenated volatile organics
RRO residual-range organics
U indicates sample was analyzed but not detected
- indicates sample was not analyzed
concentration exceeds site cleanup level

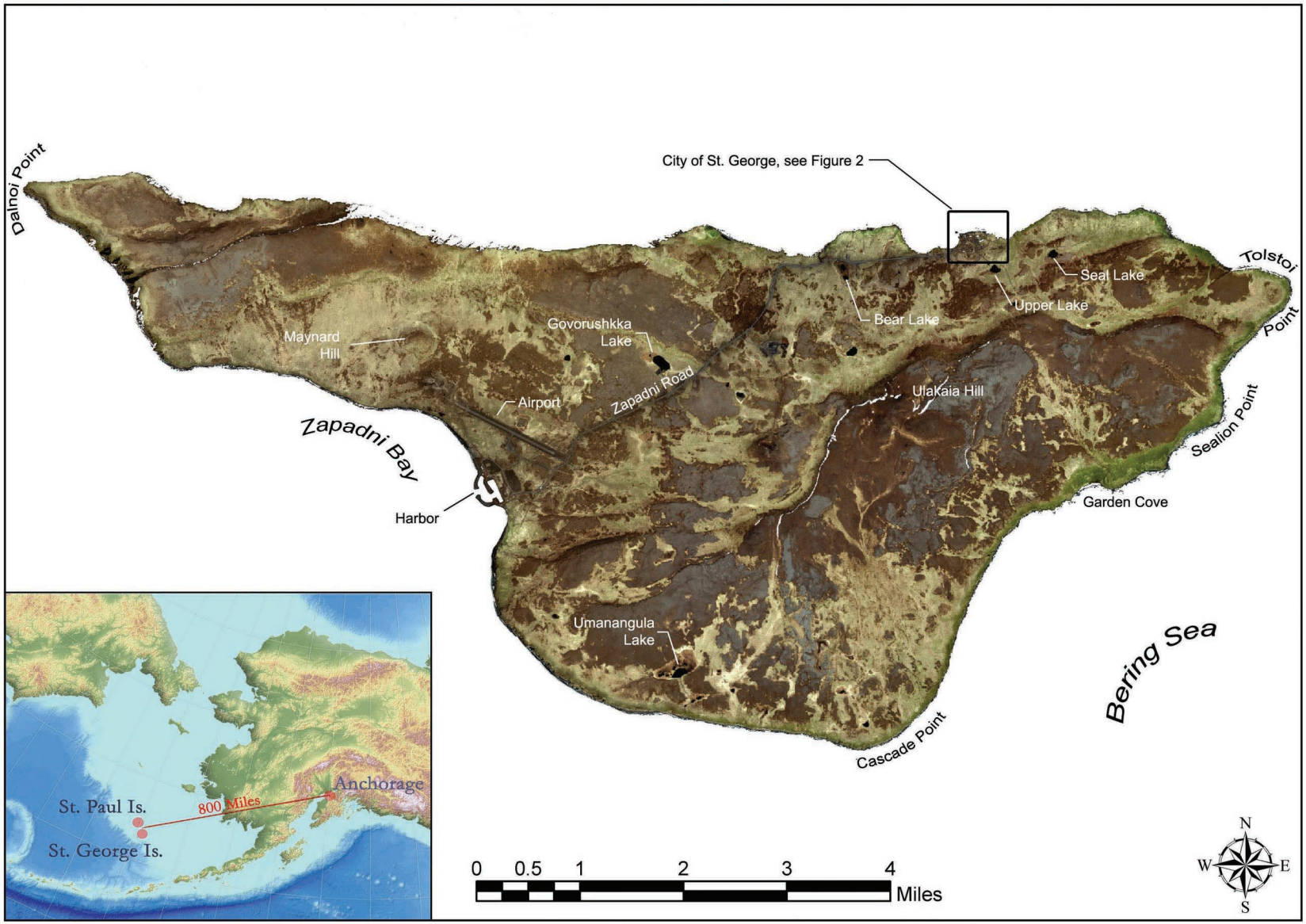

Figure 1	**Island and Vicinity Map Active Power Plant TPA Site 8/Site 8 St. George Island, Alaska**	Source: Ikonos 2001 Satellite Image

Pribilof Islands Restoration Project

Figure 2	Legal Property Description Map Active Power Plant TPA Site 8/NOAA Site 8 St. George Island, Alaska	Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985	Pribilof Islands Restoration Project

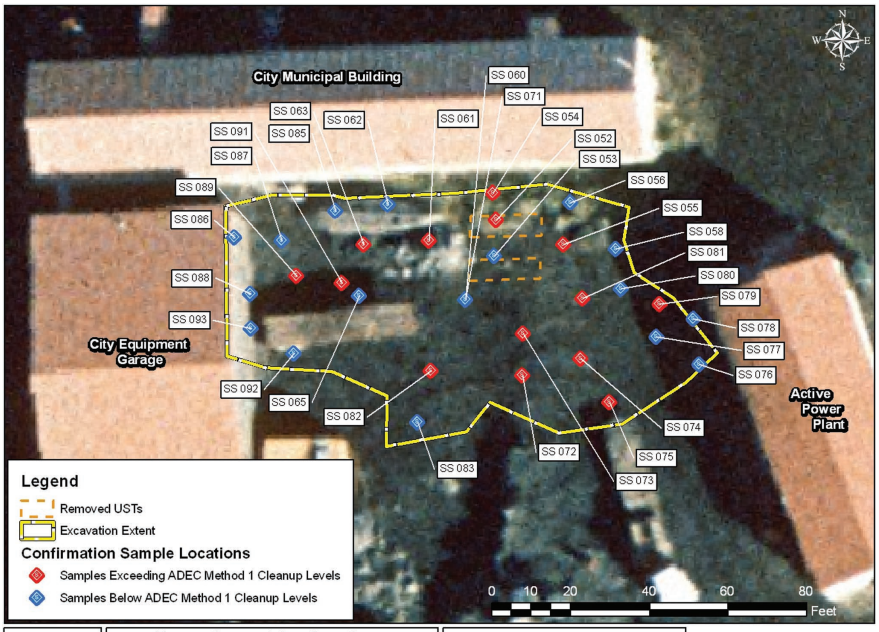

Figure 3	Excavation and Confirmation Sample Locations Active Power Plant TPA Site 8/NOAA Site 8 St. George Island, Alaska	Source: Environmental Site Investigation St. George Debris Cleanup & UST Decommissioning, Polarconsult Alaska, Inc. 11/97 Note: See Table 1 for sample results.	Pribilof Islands Restoration Project

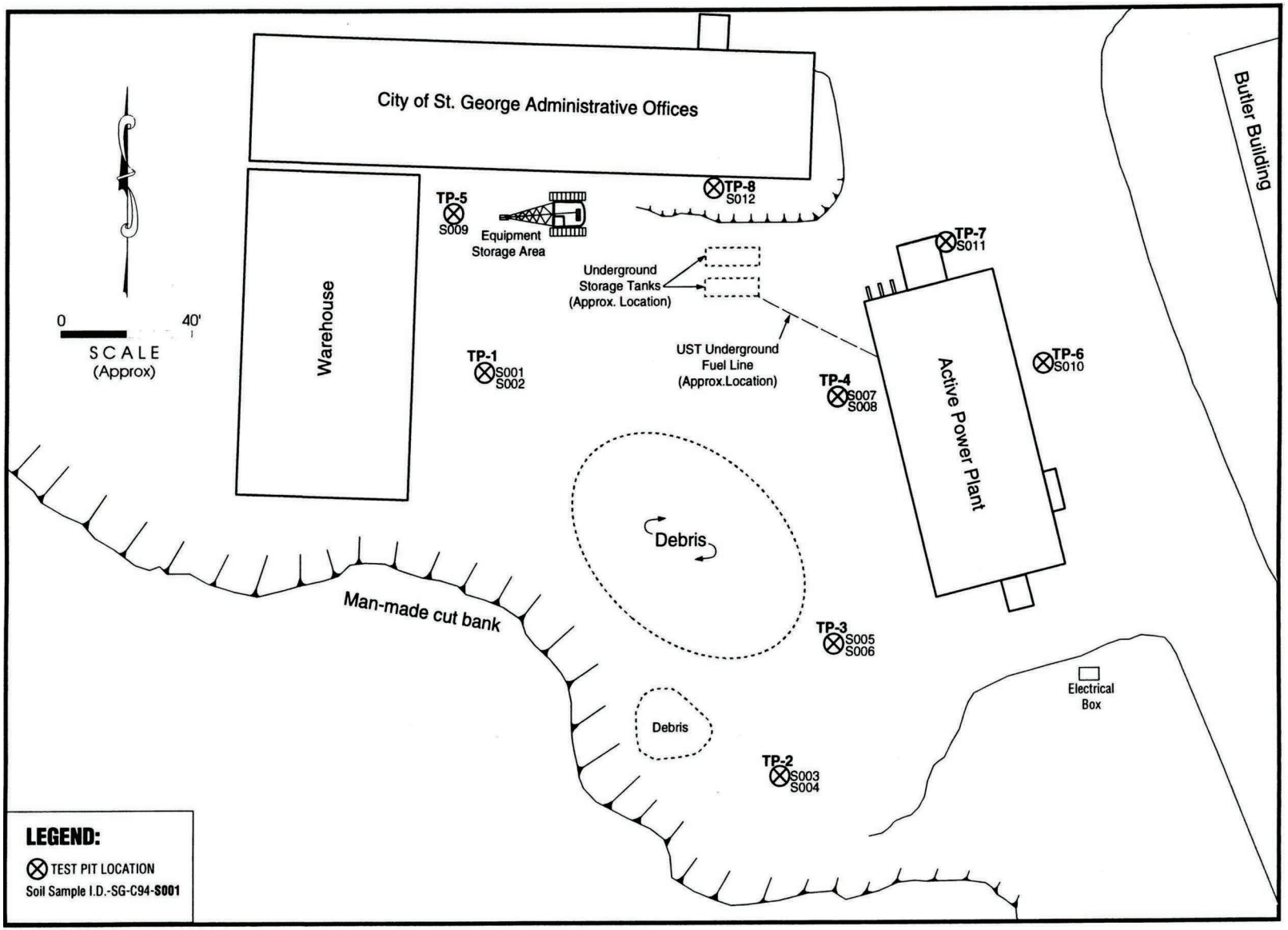

Figure 4	Test Pit Locations Expanded Site Inspection 1994 Active Power Plant TPA Site 8/NOAA Site 8 St. George Island, Alaska	Source: Expanded Site Inspection, St. George Island, Woodward Clyde 3/95

Pribilof Islands Restoration Project

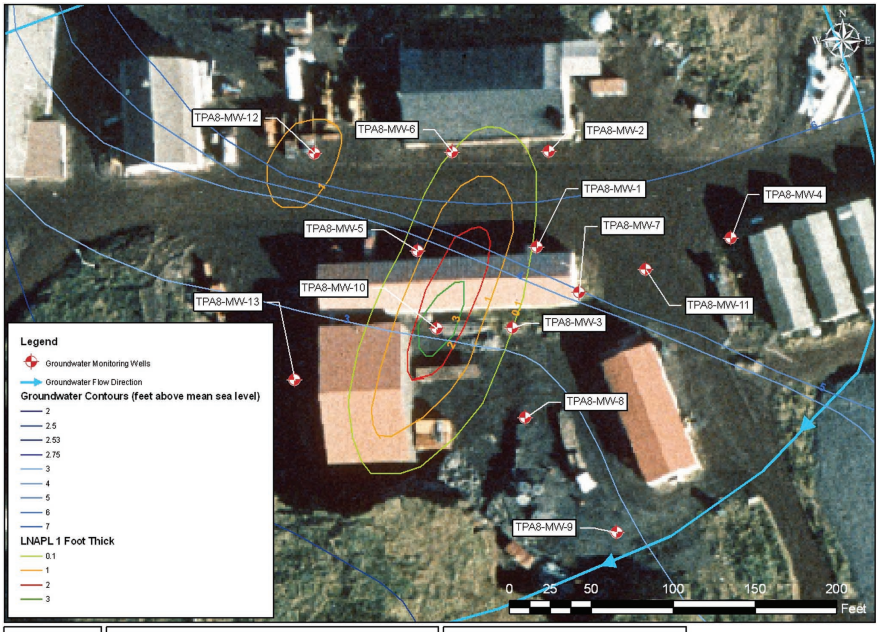

Figure 5	Groundwater Characterization Active Power Plant TPA Site 8/NOAA Site 8 St. George Island, Alaska	Source: Aeromap U.S. 9/28/96 Aerial Photograph; Tetra Tech EM Field Investigation Report, St. George Island, June 23, 2005.	Pribilof Islands Restoration Project

CC

A L A S K A

2008-000390-0

Recording Dist: 305 - Aleutian Islands
8/11/2008 2:35 PM Pages: 1 of 8

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT TWO PARTY AGREEMENT SITE 8
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the City of St. George (the City) as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property west of the City's power plant and on the south side of the City's municipal building on St. George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Lot 14, Tract 43
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 10.19" North Latitude, 169° 32' 47.33" West Longitude

This property, hereafter referred to as Site 8 (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135439; File ID 2643.38.014.

This site was identified as *Site 8, Active Power Plant* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 8 and NOAA Site 8. Following corrective action, NOAA submitted a request for conditional closure for Site 8 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 8 cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2005a).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: City of St. George
PO Box 929
St. George, AK 99591

Recording District: Aleutian Islands

8

Remedial Actions and Residual Contamination

Two 4,000-gallon underground storage tanks (USTs) were located at Site 8 and operated under ADEC UST Facility Identification Number 3047. The USTs provided fuel storage for the island's power plant from the early 1960s until 1997. Improper system connections and overflows during UST filling operations resulted in heavy diesel fuel contamination of the site (Polarconsult 1997). In 1997, the USTs and approximately 1,128 cubic yards of diesel range organics (DRO) contaminated soil were removed from Site 8 (Polarconsult 1997). Contaminated soil removal continued until further excavation was not practicable due to reaching equipment refusal at bedrock or endangering the foundation of the City's municipal building on the north side of the excavation. The excavation was backfilled with clean material. DRO contaminated soil remains adjacent to and beneath the City's municipal building and at refusal to the south of the building. Attached is a diagram (Figure 3) drawn to scale that shows the areas that were cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

Groundwater beneath Site 8 is contaminated with free-phase (non-aqueous) diesel fuel (Tetra Tech 2005). Groundwater in this area is monitored for contaminant concentration trends and migration in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b). In 2007, NOAA began operation of a product recovery system at Site 8, and anticipates using the system for removing diesel fuel from the water table for several years (ChemTrack 2008). Figure 4 depicts area groundwater monitoring well locations and estimated groundwater flow directions; Figure 5 depicts the location of the product recovery system.

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil or water from the site or use of the groundwater at or near the contaminated area requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

References:

ChemTrack, LLC (ChemTrack). 2008. *Draft System Installation Report, Free Phase Product Removal from Groundwater at TPA 8, NOAA Office of Response & Restoration, St. George, Alaska, ORDER # AB133C-07-NC-0723*. February.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

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2008-000390-0

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NOAA. 2005b. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

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Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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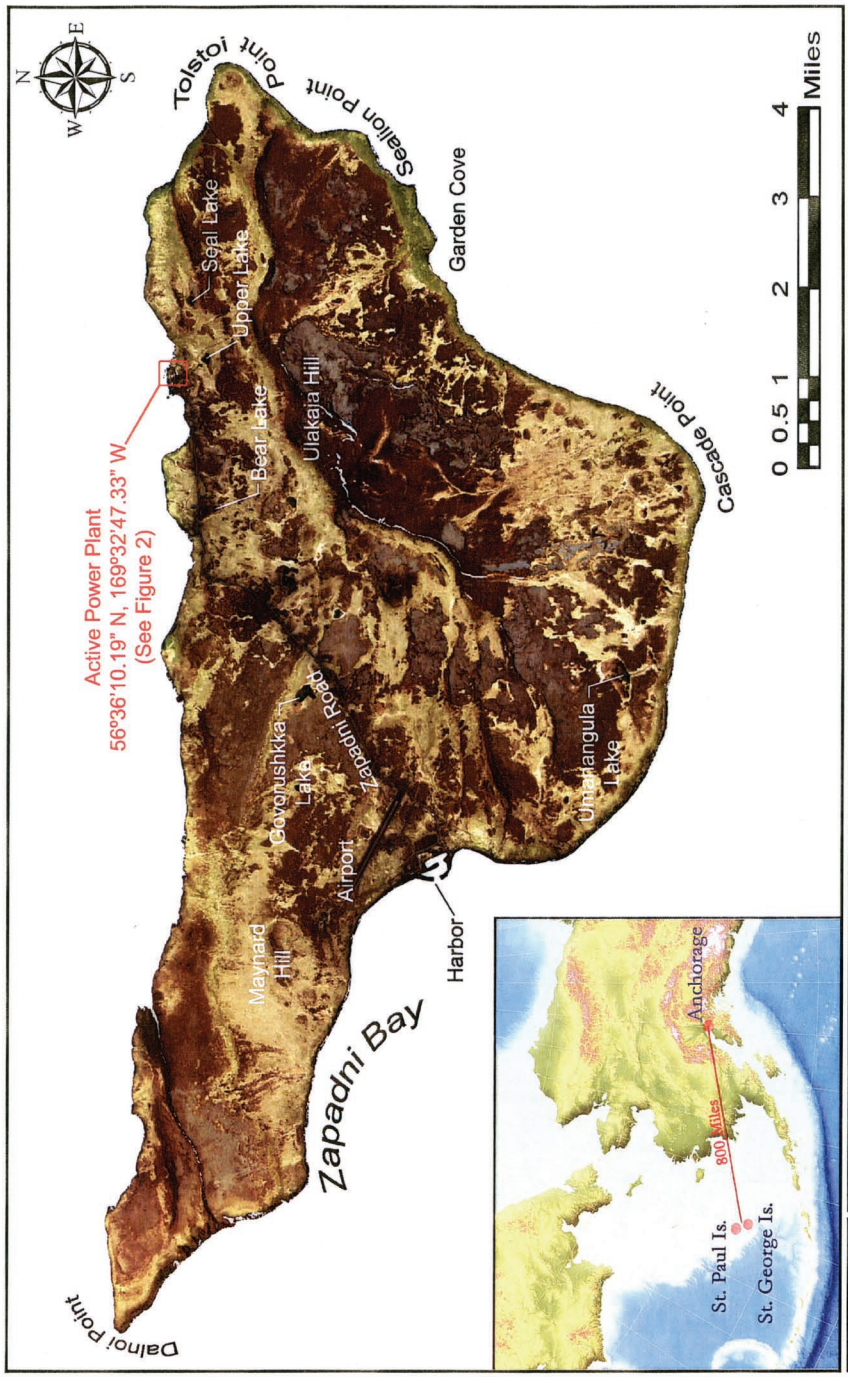

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Pribilof Islands Restoration Project

Figure 1

St. George Island Vicinity Map
Active Power Plant
NOAA Site 8/TPA Site 8
St. George Island, Alaska

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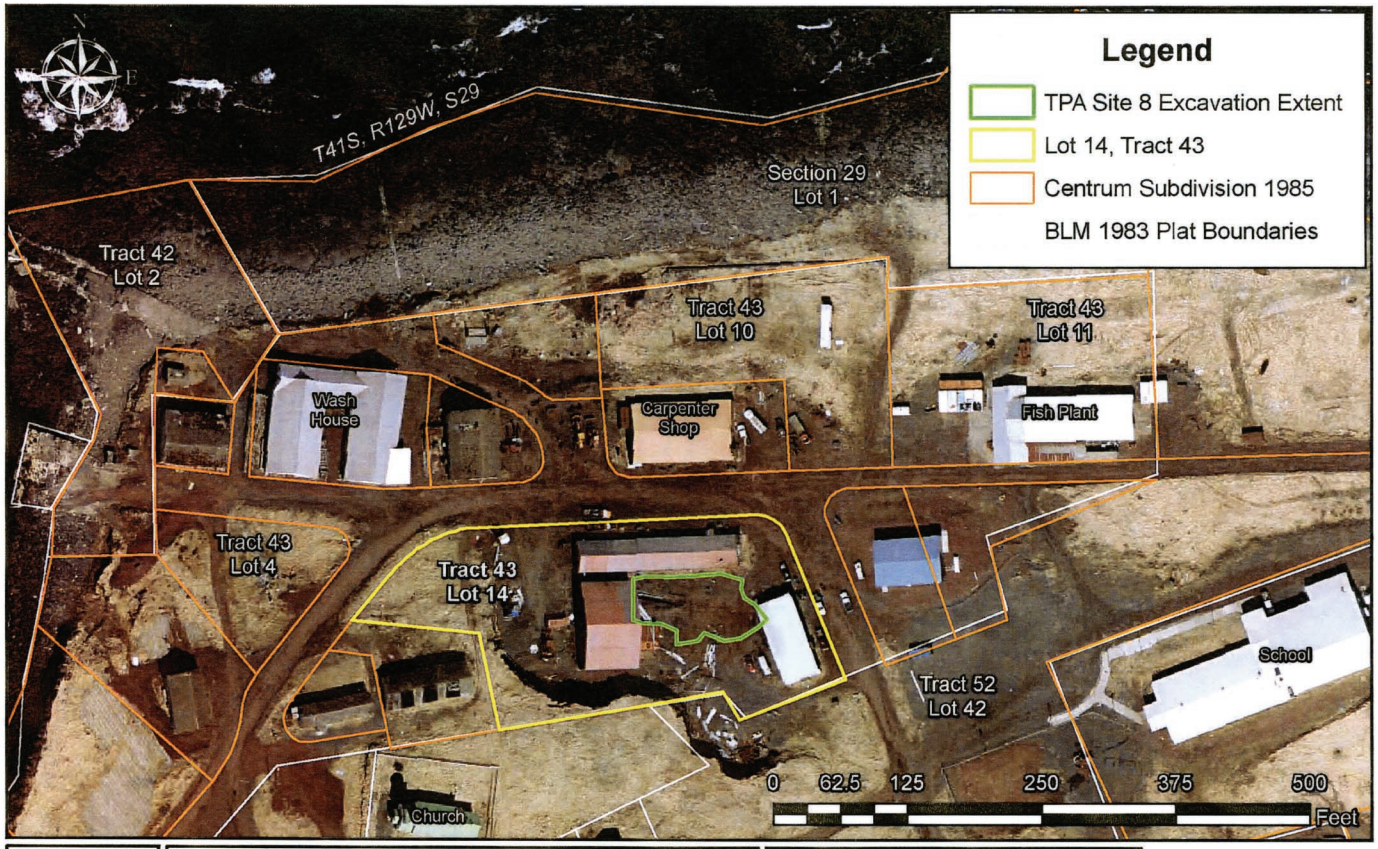

Figure 2	Legal Property Description Map Lot 14, Tract 43 of T41S, R129W, S29 Active Power Plant NOAA Site 8/TPA Site 8 St. George Island, Alaska	Sources: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985. Centrum Subdivision 10/31/85. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Active Power Plant\Fig2_TPA8_PropDescription.mxd Date: 7/29/2008 @ 4:46:00 PM

Pribilof Islands Restoration Project

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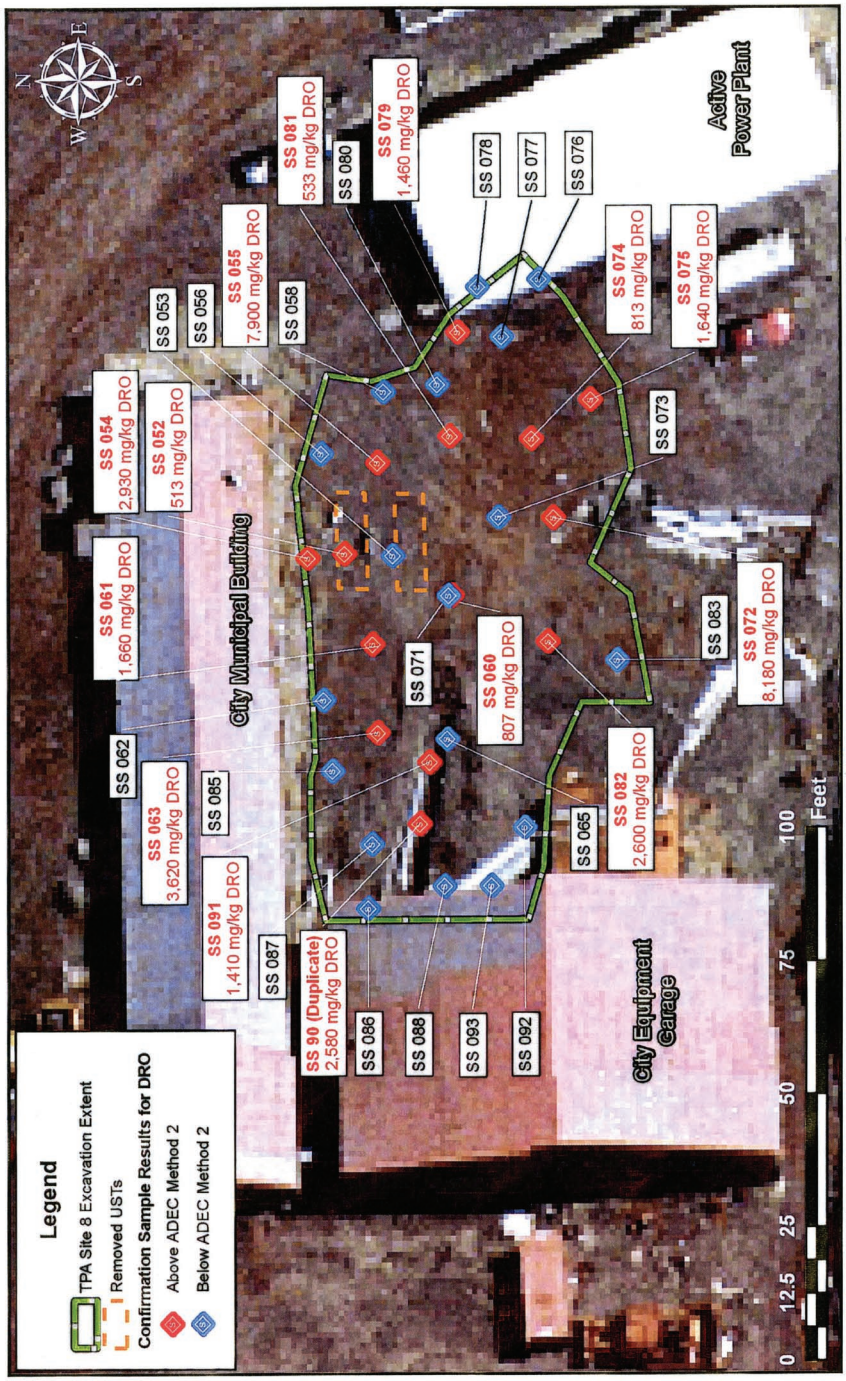

Figure 3

Final Excavation Extent & Confirmation Sampling Results
Active Power Plant
NOAA Site 8/TPA Site 8
St. George Island, Alaska

Sources: TPA Site 8 layers (NOAA PPO GIS)
Environmental Site Investigation St. George
Debris Cleanup & UST Decommissioning, Polarconsult
Alaska, Inc. 11/97. Aero-Metric 1 ft 2006 Aerial Photo.
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Pribilof Islands Restoration Project

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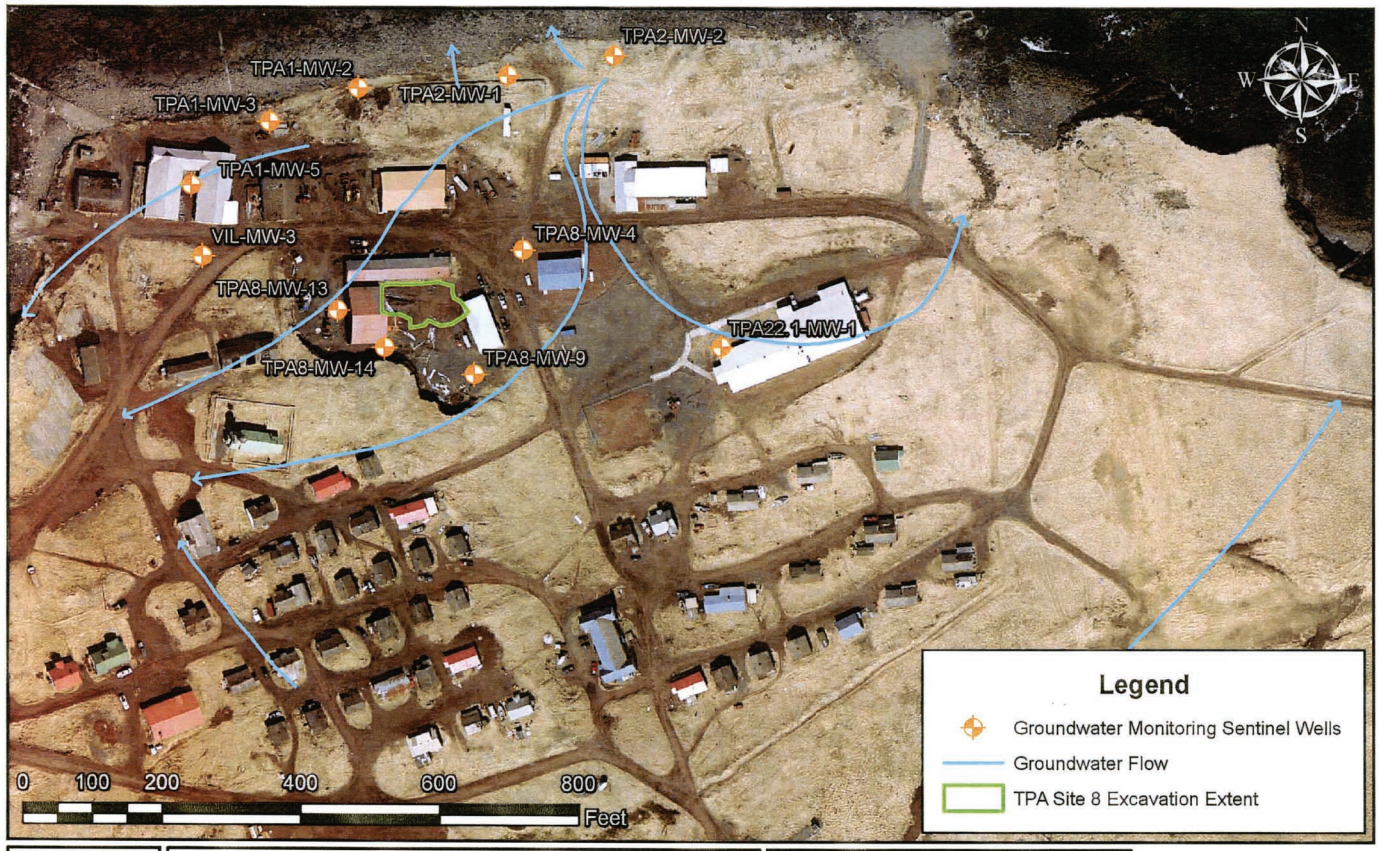

Figure 4	Location of Groundwater Wells & Gradient Active Power Plant NOAA Site 8/TPA Site 8 St. George Island, Alaska	Sources: Excavation, GW Wells, (NOAA PPO GIS Database), GW Flow (TTEMI 2005), Aero-Metric 2006 1 ft Aerial Photo Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Active Power Plant\Fig4_TPA8_Wells&Gradient.mxd Date: 7/29/2008 @ 4:19:34 PM

Pribilof Islands Restoration Project

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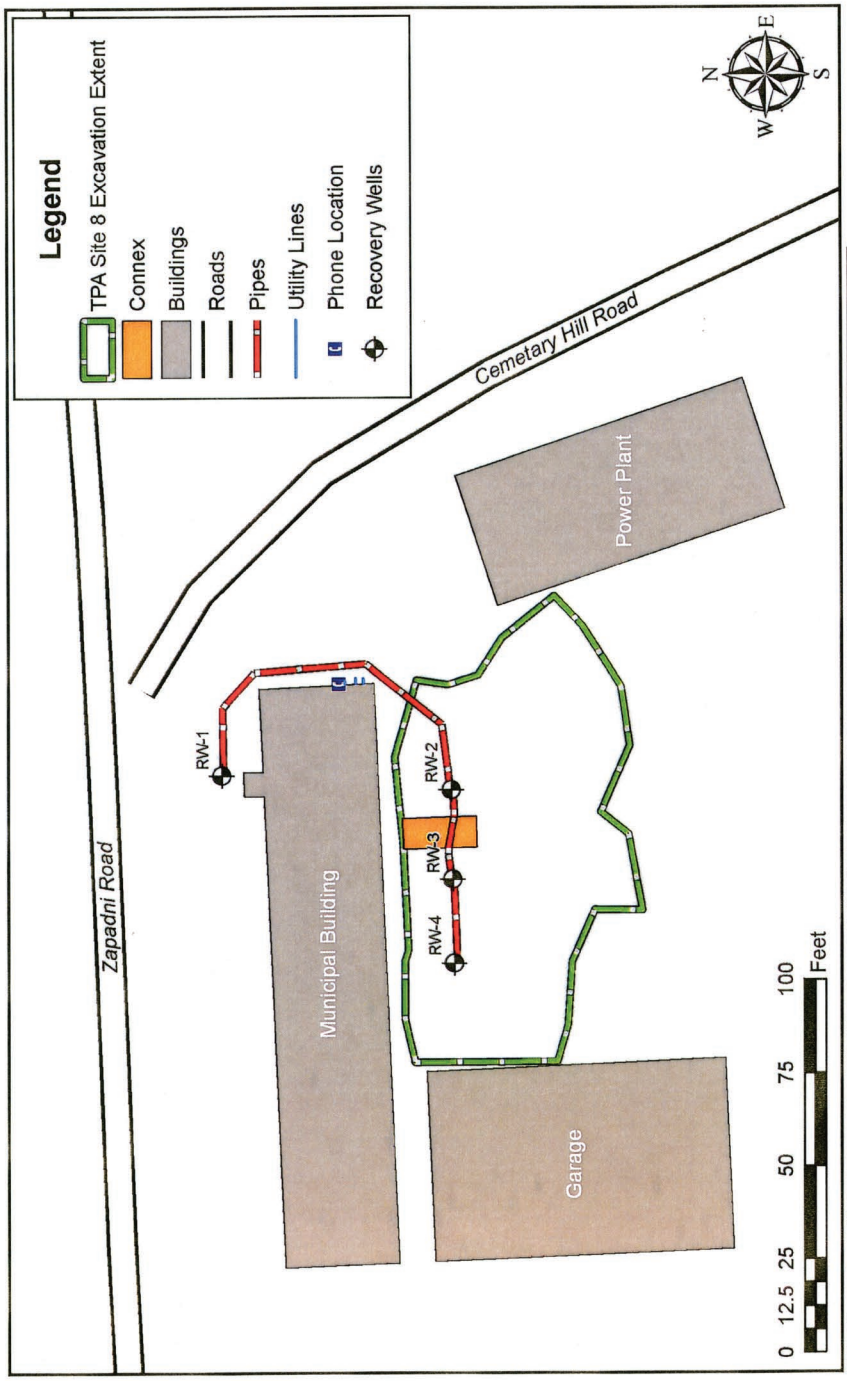

Source: TPA Site 8 Layers (NOAA PPO GIS), Free Product Features (Active PP Free Phase (TPA 8b)) folder (NOAA PPO GIS)
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Pribilof Islands Restoration Project

Free Product Recovery System
Active Power Plant
NOAA Site 8/TPA Site 8
St. George Island, Alaska

Figure 5

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NOAA Site 9
TPA Site 9: Old Power Plant

Conditional Closure Request, Old Power Plant, TPA Site 9/NOAA Site 9, St. George Island, Alaska 247

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 9, St. George Island, Alaska
(Lot 2, Tract 43) 259

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 9, St. George Island, Alaska
(Lot 3, Tract 43) 269

Conditional Closure Request
Old Power Plant
TPA Site 9/NOAA Site 9
St. George Island, Alaska

Site: Old Power Plant (OPP) site, also known as St. George Island Two Party Agreement (TPA) Site 9 and as National Oceanic and Atmospheric Administration (NOAA) Site 9.

Location: St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea (Figure 1). TPA Site 9 is in the northwestern portion of the City of St. George at 56° 36' 9.53'' N latitude, 169° 32' 56.31" W longitude (Figure 2).

Legal Property Description: TPA Site 9 is in Lot 3 of Tract 43, Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska, as shown on the plat of the Qawax Subdivision, officially filed October 31, 1985. Excavation of contaminated soil extended to the southwest of Lot 3 into Lot 2 (Figure 2). St. George Tanaq Corporation owns the site.

Type of Release: The primary release was diesel fuel that spilled or leaked from a fuel storage and supply system associated with a former power plant's diesel generators. Also present at the site, to a lesser degree, is soil contaminated with possible lubricating oil, transformer dielectric fluid, and/or waste crankcase oil as a result of purported past disposal practices and leakage. Lead above the Alaska Department of Environmental Conservation (ADEC) soil cleanup criterion was found at two locations; the source is unknown.

History and Background: A diesel generator-driven power plant was constructed at TPA Site 9 between 1936 and 1937 (USBF 1936, 1937). The plant facilities included 11 aboveground storage tanks (ASTs) used to store diesel fuel, gasoline, and lubricating oil, as well as a wood-framed building that housed the generators. The ASTs were located on wooden platforms along the west and southwest sides of the building (Figure 3). Fuel was supplied to the ASTs, via a gravity fed pipeline, from drums staged at the Former Fuel Storage Area (TPA Site 18), located south of the power plant (Scheffer 1948). By 1964, a new power plant was generating the island's electricity, and the TPA Site 9 power plant was shut down (Bureau of Commercial Fisheries 1964). Aerial photographs indicate that by 1967 the 11 ASTs and appurtenances had been removed from the site (Bureau of Land Management 1967). The TPA designated this site the "Old Power Plant" (NOAA 1996). Currently, the OPP building is vacant.

Site Investigations:
In 1992, Ecology & Environment, Inc. (E&E) conducted a preliminary assessment of various sites on St. George Island, including the OPP. Findings from this investigation indicated that ASTs had been removed from the OPP during the 1960s (E&E 1993).

In 1995, Hart Crowser, Inc. (Hart Crowser) conducted an expanded site inspection of the OPP. The inspection included the collection of surface and subsurface soil samples to characterize the potential extent of contamination. Analytical results from these samples indicated that diesel-range organic compounds (DRO) and residual-range organic compounds (RRO) were present at concentrations above cleanup levels established by ADEC. In addition, Hart Crowser inspected the beach area below the cliff located north of the OPP building for indications of contaminant migration. The inspection revealed two groundwater seeps along the cliff, but no signs of contamination were noted (Hart Crowser 1997).

In 2001, Tetra Tech EM Inc. (Tetra Tech) conducted a site characterization at the Former Fuel Storage Area (TPA Site 18), which included the collection of soil samples within an area later included in TPA Site 9 remedial actions. Analytical data from this investigation indicated the presence of DRO contamination, and two locations where lead was found at concentrations above the ADEC Method Two residential land use cleanup criterion of 400 milligrams per kilogram (mg/kg) (Tetra Tech 2002, ADEC 2004).

In 2003, NOAA collected six subsurface soil samples from the north side of the OPP to investigate anecdotal reports of waste oil and transformer dielectric dumping at this location. Samples were analyzed for DRO, RRO

and polychlorinated biphenyl (PCB). Analytical results indicated that all six samples exceeded the ADEC Method Two cleanup level for DRO; RRO was detected, but did not exceed the ADEC criterion; and PCB was not detected in any of the samples (NOAA 2004).

In 2004, Tetra Tech collected PCB confirmation samples from the north side of the OPP. PCB was not detected in any of the confirmation samples (Tetra Tech 2005a).

From 2001 to 2004, Tetra Tech conducted groundwater sampling in the vicinity of the OPP; samples were analyzed for DRO, gasoline range organics (GRO), volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and metals. Analytical results indicated that DRO concentrations, at 2.2 milligrams per liter (mg/L), had exceeded the ADEC Table C cleanup criterion of 1.5 mg/L (ADEC 2004) in the perched, non-tidally influenced groundwater found in monitoring well TPA9-MW1A; however, all contaminant levels were found below ADEC cleanup criteria in the tidally influenced groundwater aquifer monitored by wells TPA9-MW1, TPA9-MW2, TPA18 MW1, and TPA18-MW2 (Figure 3, Tetra Tech 2005b).

Corrective Actions:
NOAA performed corrective actions in accordance with 18 AAC 75, Articles 3, 6, and 9. In June 2004, approximately 17 cubic yards of soil was excavated from the two locations where the 2001 Tetra Tech investigation found lead above the ADEC cleanup criterion. Confirmation sampling verified that remaining lead concentrations in the soil where below ADEC requirements (Tetra Tech 2005a).

Excavation of petroleum-contaminated soil (PCS) at the OPP began on July 22, 2004 and was completed on August 4, 2004 (Tetra Tech 2005a). Initial areas of excavation were selected based on contamination identified during previous investigations, while the extent of excavation was determined based on thin-layer chromatography (TLC) screening sample analyses as well as visual and olfactory observations. During this corrective action, PCS was removed in three noncontiguous excavations because of the presence of an active sewer line and the OPP building (Figure 4). Excavation was conducted to the maximum extent practicable. The extent of each excavation was expanded vertically and laterally in all directions until TLC screening sample analyses indicated that concentrations of contaminants were below ADEC Method Two cleanup levels, or until the presence of obstructions (e.g., utilities, structures, or equipment refusal) prevented further excavation.

The south excavation extended southwesterly from the southwest portion of the OPP building and was bordered to the northwest by the active sewer line, to the northeast by the OPP building, and to the southeast by Zapadni Road (Figures 4 and 5). Depths of excavation in this area varied from approximately 1 foot below ground surface (bgs) in the southwest portion to 10 feet bgs closer to the OPP building. Refusal was encountered throughout the area because of bedrock and large boulders. Twenty-four confirmation samples were collected from the south excavation; this total includes 11 samples collected from the bottom and 13 samples collected from the sidewalls.

The northwest excavation extended from north of the OPP building to the southwest, and was bordered to the north by a cliff and to the southeast by the active sewer line (Figures 4 and 6). Depths of excavation in this area varied from 1 to 5 feet bgs. Refusal was encountered throughout the excavation because of bedrock and large boulders. In addition, excavation in the northernmost portion of this area was limited because of erosion and stability concerns associated with the cliff that slopes steeply down to the Bering Sea. Thirty-two confirmation samples were collected from the northwest excavation; this total includes 14 samples collected from the bottom and 18 samples collected from the sidewalls.

The northeast excavation extended along the north and east sides of the OPP building. This area was bordered to the south and west by the OPP building, to the north by the active sewer line and to the east by Zapadni Road (Figures 4 and 7). Depths of excavation in this area varied from 1.5 to 3 feet bgs. Refusal was encountered throughout the excavation because of bedrock and large boulders. Thirteen confirmation samples were collected from the northeast excavation; this total includes 4 samples collected from the bottom and 9 samples collected from the sidewalls.

Confirmation samples were analyzed for DRO, RRO, benzene, toluene, ethylbenzene, xylene, polynuclear aromatic hydrocarbons and PCB. Analytical results indicated that DRO remained in soils at concentrations above its ADEC Method Two cleanup levels in each of the excavations, primarily within the immediate vicinity of the OPP

building. RRO contamination above its ADEC Method Two cleanup level remains in one location. No other contaminants were found above applicable cleanup requirements. Figures 5 through 7 show the sampling locations, analytical results above ADEC cleanup criteria, and excavation limiting factors.

Approximately 1,230 cubic yards of PCS was excavated from the OPP site, and transported directly to the ADEC-approved NOAA petroleum-contaminated soil stockpile located off Zapadni Road to the west of the City of St. George (Figure 1). Thirteen characterization samples were collected from PCS hauled to the stockpile for fixed laboratory analyses.

The excavations were backfilled with clean material when either TLC screening sample analyses indicated contaminant concentrations below ADEC Method Two cleanup levels, or further excavation was not practicable (Tetra Tech 2005a). Fill material was compacted by using the excavator bucket and track-walking the excavator over the area, or by using a bulldozer to spread and compact the material. The OPP site was restored to its original grade, erosion control matting was placed over the disturbed areas, and a mixture of native seed and fertilizer was spread to promote the re-growth of vegetation. Backfilling and site restoration activities were completed on August 5, 2004.

Conclusion: The ADEC Method Two, Table B2, Under 40 Inch Zone, cleanup criteria for DRO and RRO are as follows:

	Inhalation (mg/kg)	Ingestion (mg/kg)	Migration to groundwater (mg/kg)
DRO	10,250	12,500	250
RRO	10,000	22,000	11,000

As indicated in Figures 5 through 7, most remaining soil contamination at TPA Site 9 exists in concentrations well below the ADEC inhalation and ingestion criteria, and only moderately above the migration to groundwater criterion. Various obstructions make further excavation of contaminated soil impracticable. Groundwater sampling has indicated that perched groundwater (approximately 10 ft bgs, Tetra Tech 2003) in the area has been impacted by DRO; the main groundwater aquifer has not been contaminated (Tetra Tech 2005b). Potential future impact to groundwater has been mitigated with the excavation of approximately 1,230 cubic yards of PCS.

Recommended Action: In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate and corrective action, to the maximum extent practicable, at the Old Power Plant, TPA Site 9/NOAA Site 9 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

References:

ADEC 2004. Title 18 of the *Alaska Administrative Code* 75, Articles 3, 6, and 9. Oil and Hazardous Substances Pollution Control Regulations. State of Alaska. Amended through January 30, 2005.

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NOAA 1996. *Pribilof Islands Environmental Restoration Two-Party Agreement, Attorney General's Office File No. 66-1-95-0126*. January 26.

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Scheffer, Dr. Victor B. 1948. *Aerial Photographs, Village of St. George Island*. July 15.

Tetra Tech 2002. *Draft Site Characterization Report, Former Fuel Storage Area, Two-Party Agreement Site No. 18, Pribilof Islands Site Restoration, St. George Island, Alaska*. April 19.

Tetra Tech 2003. *Draft Field Investigation Report, Pribilof Islands Environmental Restoration Project, St. George Island, Alaska*. May 6.

Tetra Tech 2005a. *Final Corrective Action Report, Site 9/TPA Site 9 – Old Power Plant, St. George Island, Alaska*. July 6.

Tetra Tech 2005b. *Final Field Investigation Report, Pribilof Islands Environmental Restoration Project, St. George Island, Alaska*. June 23.

U.S. Bureau of Fisheries (USBF) 1936. *Annual Report, 1936, Alaska Fishery and Fur Seal Industries*.

USBF 1937. *Annual Report, 1937, Alaska Fishery and Fur Seal Industries*.

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

9-15-05
Date

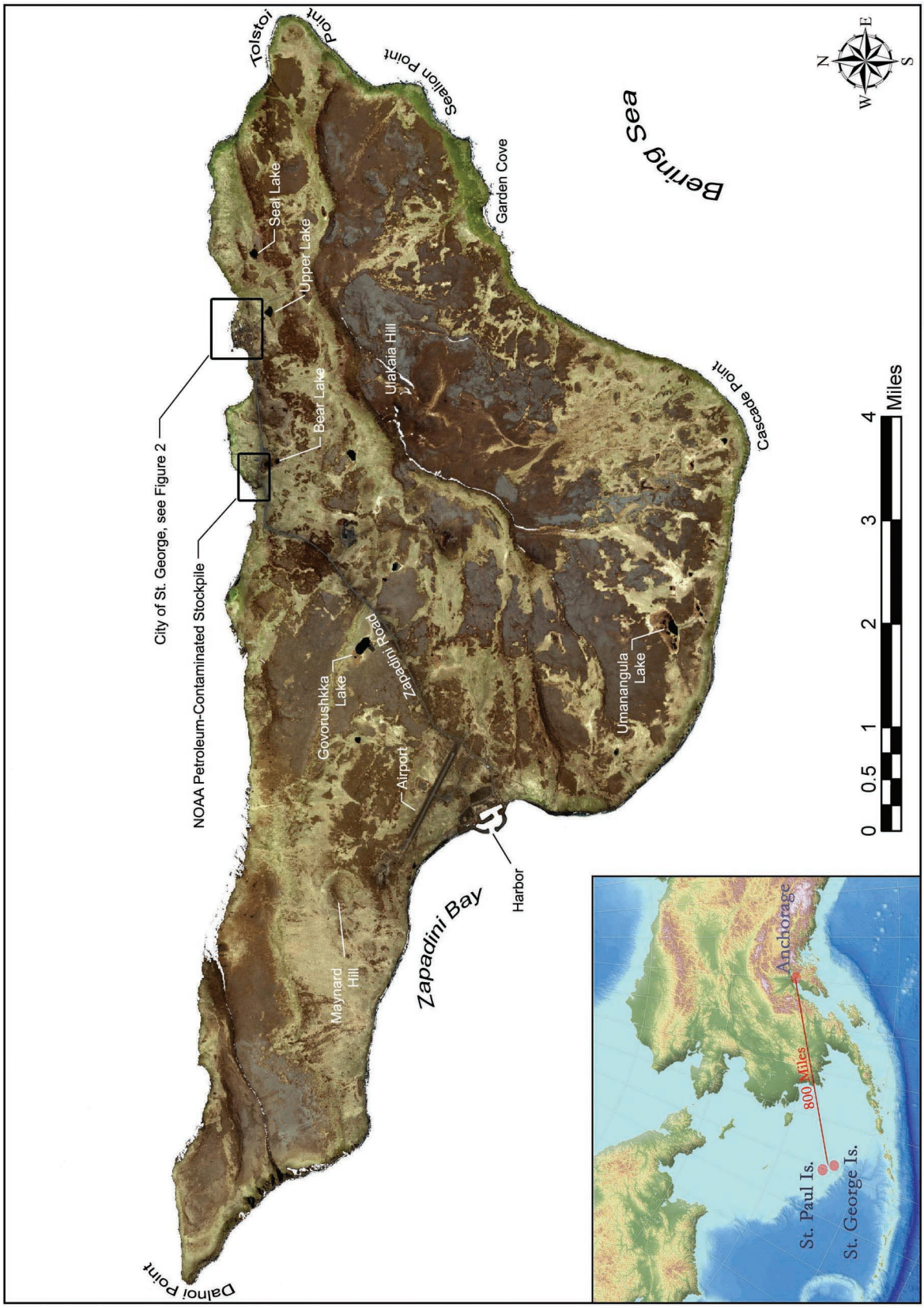
Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at the Old Power Plant, St. George TPA Site 9/NOAA Site 9, in accordance with the Agreement and that no plan for further remedial action is required.

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

9/22/05
Date

Figures



Source: Ikonos 2001 Satellite Image

Island Vicinity Map
Old Power Plant
TPA Site 9/NOAA Site 9
St. George Island, Alaska

Figure 1

Figure 2	**Property Description Map** **Old Power Plant** **TPA Site 9/NOAA Site 9** **St. George Island, Alaska**	Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985

Pribilof Islands Restoration Project

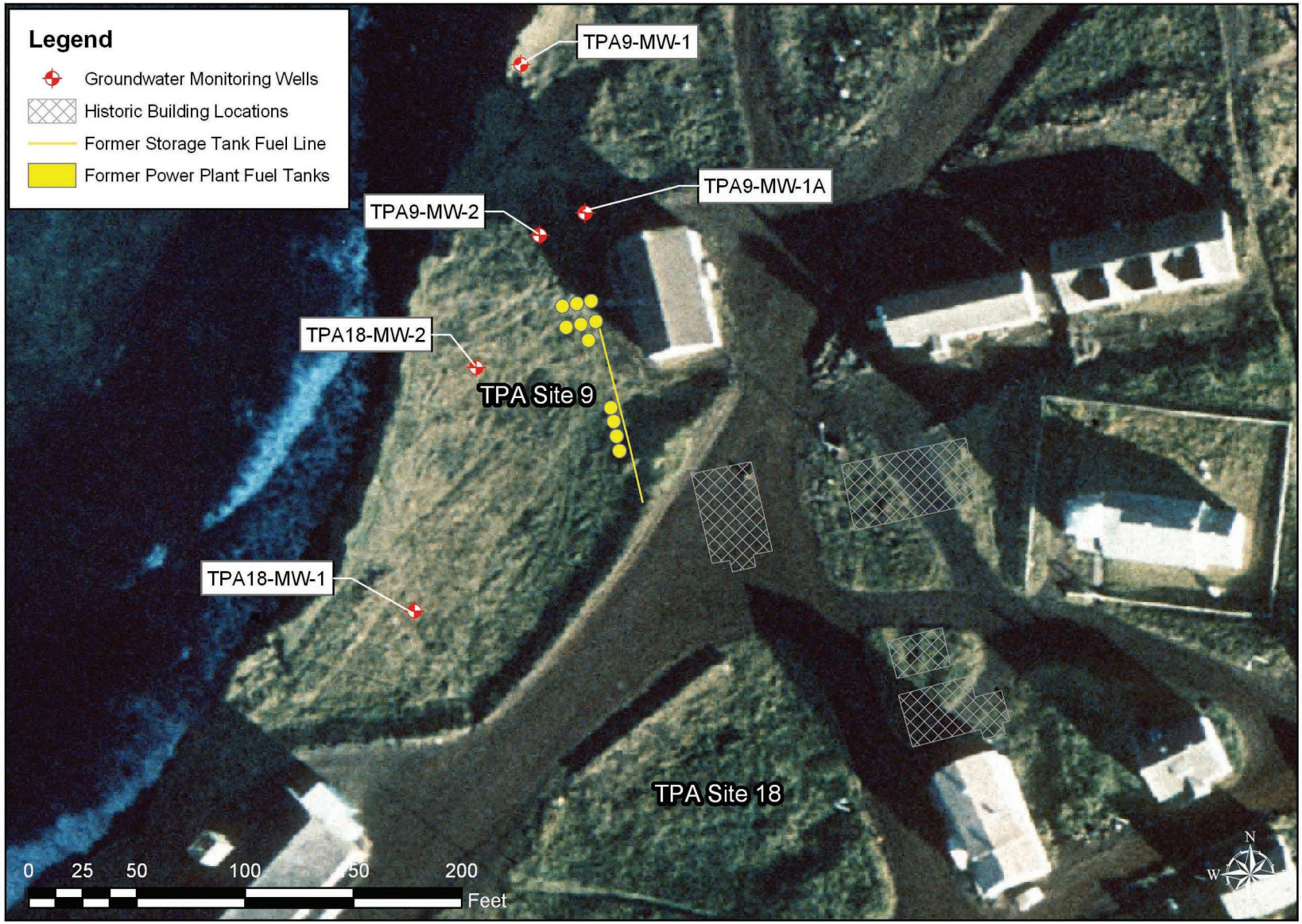


Figure 3

Historic Fuel Supply System
Old Power Plant, TPA Site 9
Former Fuel Storage Area, TPA Site 18
St. George Island, Alaska

Source: AeroMap U.S. Aerial Photograph 9/28/96; Hart Crowser 1996 Expanded Site Inspection; Historic Aerial Photos; Pribilof Project Database

Pribilof Islands Restoration Project

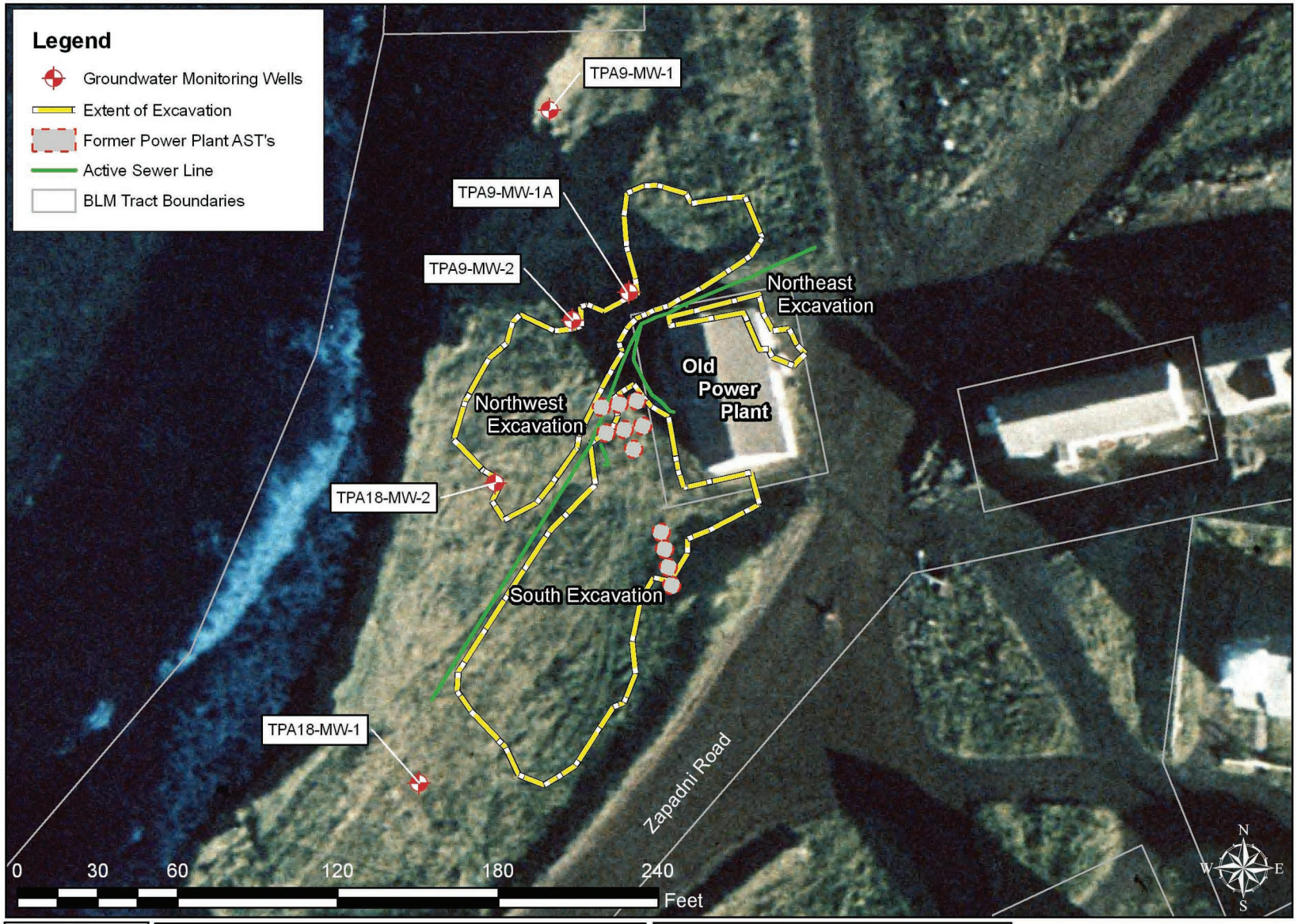


Figure 4	Areas of Petroleum Contaminated Soil Excavation Old Power Plant TPA Site 9/NOAA Site 9 St. George Island, Alaska	Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985

Pribilof Islands Restoration Project

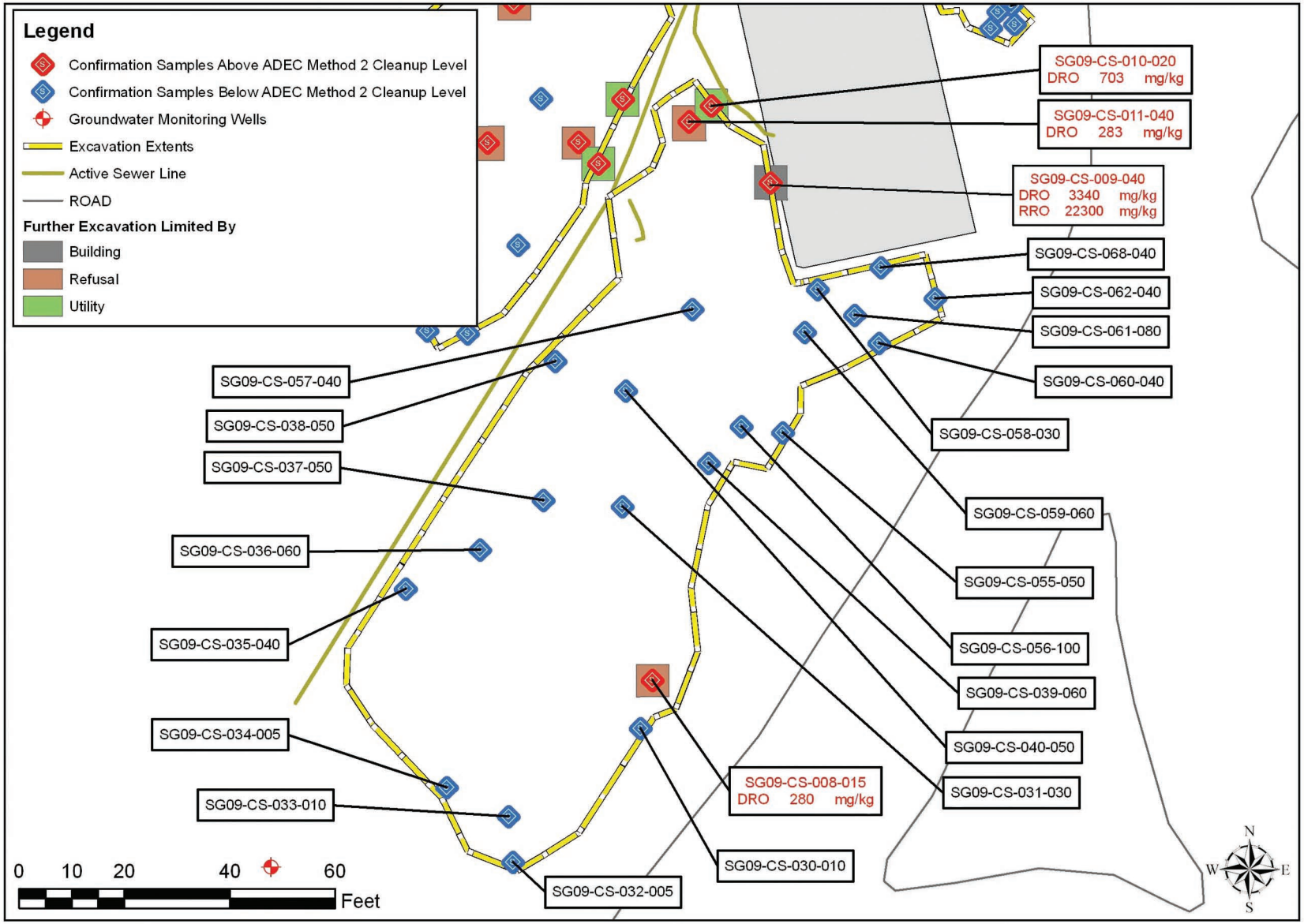


Figure 5

South Excavation Sampling Location Map
Old Power Plant
TPA Site 9/NOAA Site 9
St. George Island, Alaska

Source: Survey Data Collected by Pribilof Project Staff July 2004

Pribilof Islands Restoration Project

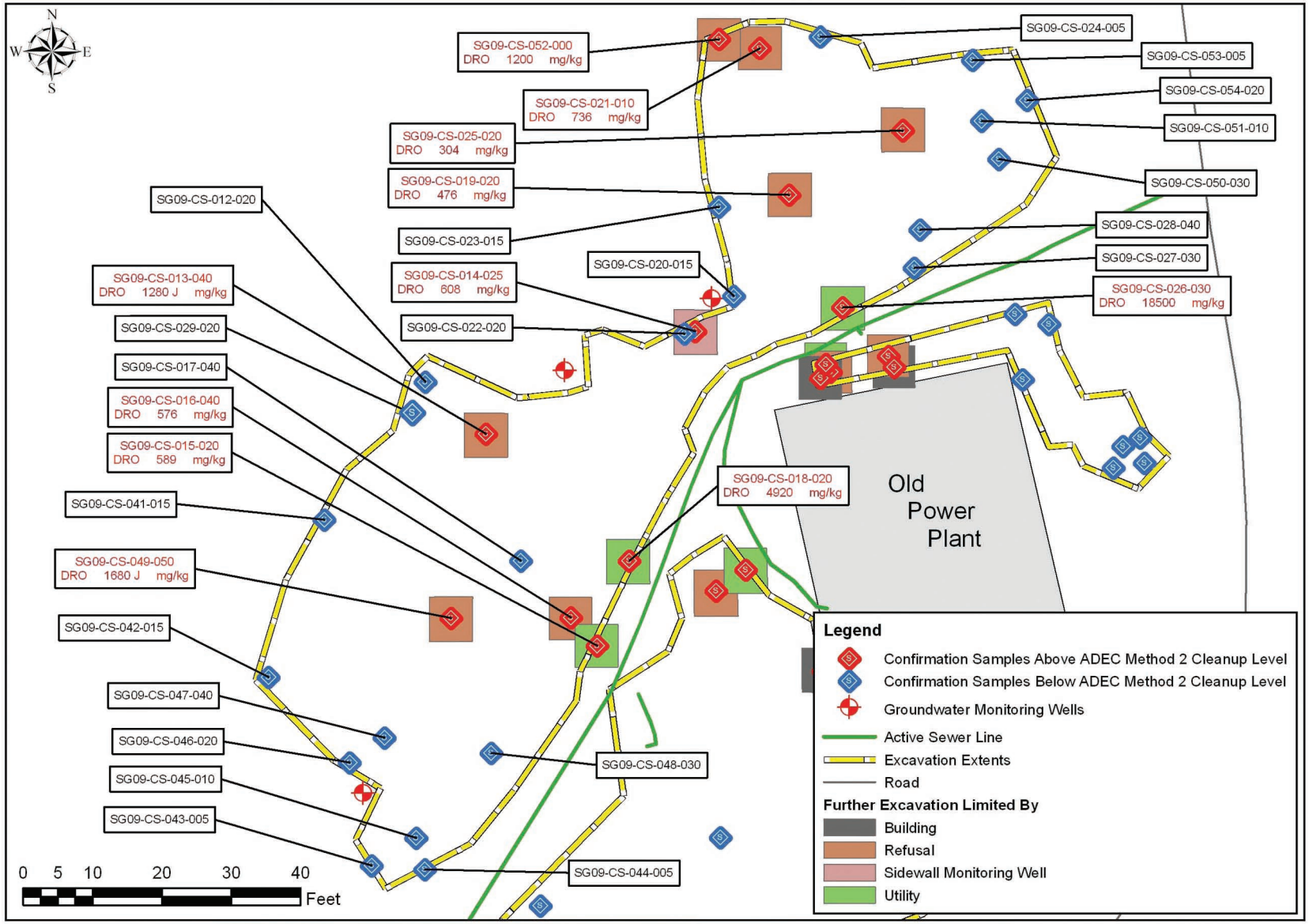


Figure 6

Northwest Excavation Sampling Location Map
Old Power Plant
TPA Site 9/NOAA Site 9
St. George Island, Alaska

Source: Survey Data Collected by Pribilof Project Staff July 2004

Note: J - Analyte was positively identified, but the numerical value is an estimated concentration.

Pribilof Islands Restoration Project

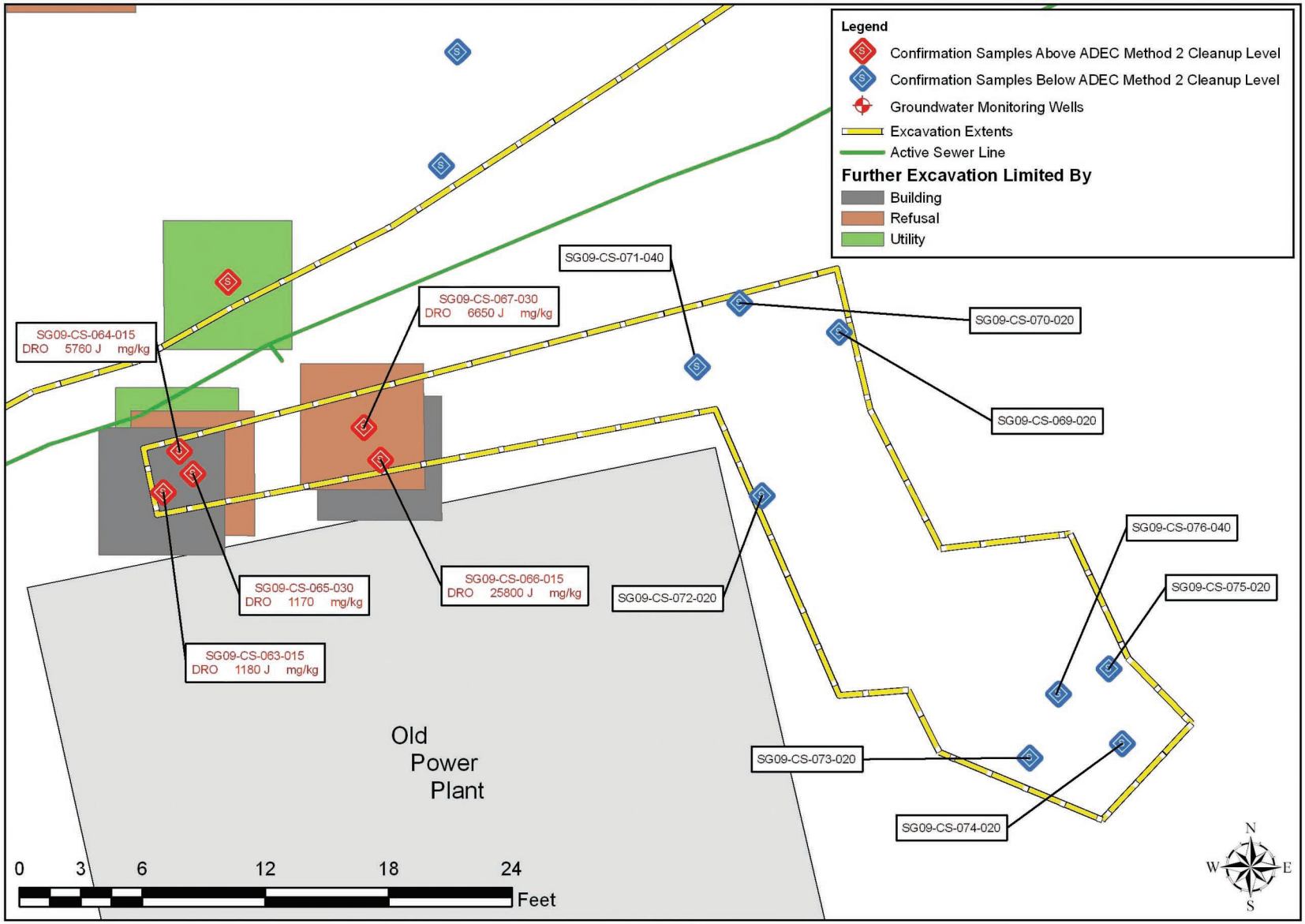


Figure 7

Northeast Excavation Sampling Location Map
Old Power Plant
TPA Site 9/NOAA Site 9
St. George Island, Alaska

Source: Survey Data Collected by Pribilof Project Staff July 2004

Note: J - Analyte was positively identified, but the numerical value is an estimated concentration.

Pribilof Islands Restoration Project

CC

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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT TWO PARTY AGREEMENT SITE 9
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Community Council as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that property on the west and north sides of the Old Power Plant, otherwise known as Cottage G, in the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Lot 2, Tract 43
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 9.44" North Latitude, 169° 32' 55.89" West Longitude

This property, hereafter referred to as Site 9 (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge, or release and subsequent cleanup of oil or other hazardous substances, regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #2006250913802; File ID 2643.57.001.

This site was identified as *Site 9, Old Power Plant* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 9 and NOAA Site 9. Following corrective action, NOAA submitted a request for conditional closure for Site 9 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 9 cleanup has been performed to the maximum extent practicable even though residual petroleum-contaminated soils remained on the property (NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2005a).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: St. George Community Council
PO Box 940
St. George, AK 99591

Recording District: Aleutian Islands

10

Remedial Actions and Residual Contamination

A diesel generator-driven power plant was constructed at Site 9 in the mid 1930s. The facility included eleven aboveground storage tanks (ASTs) used to store diesel fuel, gasoline, and lubricating oil and a wood-framed building that housed the generators. The ASTs were located on wooden platforms along the west and southwest sides of the building. Fuel was transferred to the ASTs, via a gravity fed pipeline, from drums staged at the Former Fuel Storage Area (TPA Site 18) located south of the power plant (NOAA 2004). The Site 9 power plant was taken out of operation in 1964 when a new power plant came on-line.

Environmental investigations conducted in 1995 (Hart Crowser 1997) and 2001 (Tetra Tech 2002) found evidence of diesel range organics (DRO) and residual range organics (RRO) at Site 9. The Tetra Tech investigation also identified two Site 9 locations where lead was found at concentrations above the ADEC Method Two residential land use cleanup criterion of 400 milligrams per kilogram (mg/kg) (Tetra Tech 2002, ADEC 2006). In 2003, NOAA collected six subsurface soil samples from the north side of the power plant building to investigate anecdotal reports of waste oil and transformer dielectric dumping at this location. Samples were analyzed for DRO, RRO and polychlorinated biphenyl (PCB). Analytical results indicated that all six samples exceeded the ADEC Method Two cleanup criterion for DRO; RRO was detected, but did not exceed the ADEC criterion; and PCB was not detected in any of the samples (NOAA 2004). In 2004, Tetra Tech collected PCB confirmation samples from the north side of the building; PCB was not detected in any of the confirmation samples (Tetra Tech 2005a).

In 2004, approximately 17 cubic yards of soil was excavated from the two locations where the 2001 Tetra Tech investigation found lead above the ADEC cleanup criterion. Confirmation sampling verified that remaining lead concentrations in the soil where below ADEC requirements (Tetra Tech 2005a). The lead-contaminated soil was subsequently shipped off-island for disposal. Excavation of petroleum-contaminated soil (PCS) at Site 9 was conducted after removal of the lead-contaminated soil. Initial areas of excavation were selected based on contamination identified during previous investigations, while the extent of excavation was guided by thin-layer chromatography (TLC) field screening as well as visual and olfactory observations (Tetra Tech 2005a). During this corrective action, PCS was removed in three non-contiguous excavations because of the presence of an active sewer line and the power plant building (Figure 3). PCS removal was accomplished to the maximum extent practicable. The extent of each excavation was expanded vertically and laterally in all directions until TLC field screening indicated that concentrations of contaminants were below ADEC Method Two cleanup levels, or until the presence of obstructions (e.g., utilities, structures, or equipment refusal) prevented further excavation. Approximately 1,230 cubic yards of PCS was excavated and removed from Site 9. The excavations were backfilled with clean material; erosion control matting was placed over the disturbed areas, and a mixture of native seed and fertilizer was spread to promote the re-growth of vegetation (Tetra Tech 2005a).

Cleanup confirmation samples were analyzed for DRO, RRO, benzene, toluene, ethylbenzene, xylene, polynuclear aromatic hydrocarbons and PCB (Tetra Tech 2005a). Analytical results indicated that DRO remains in concentrations above its ADEC Method Two cleanup criterion in each of the excavations. RRO contamination above its ADEC Method Two cleanup criterion remains in one location next to and under the building's west foundation. No other contaminants were found above applicable cleanup requirements. Figures 4 through 6 are drawn to scale and show the areas that have been cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2001 and 2003, NOAA installed a total of five groundwater monitoring wells in the vicinity of Site 9. Groundwater samples collected from these wells from 2001 through 2004 were analyzed for DRO, gasoline range organics, volatile organic compounds, semivolatile organic compounds, and metals.

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Analytical results indicated that groundwater had not been adversely impacted by contaminant migration from Site 9 (Tetra Tech 2005b). These monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b).

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

References:

Alaska Department of Environmental Conservation (ADEC). 2006. 18 AAC 75, Articles 3 and 9. *Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through December 2006.

Hart Crowser. 1997. *Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska.* January.

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Tetra Tech EM Inc. (Tetra Tech). 2002. *Draft Site Characterization Report, Former Fuel Storage Area, Two-Party Agreement Site No. 18, Pribilof Islands Site Restoration, St. George Island, Alaska.* April 19.

Tetra Tech. 2005a. *Corrective Action Report (Final), Site 9/TPA Site 9 – Old Power Plant, St. George Island, Alaska.* Prepared for National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration, 7600 Sand Point Way NE, Seattle, WA. 98115. July 6.

Tetra Tech. 2005b. *Field Investigation Report (Final), St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

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Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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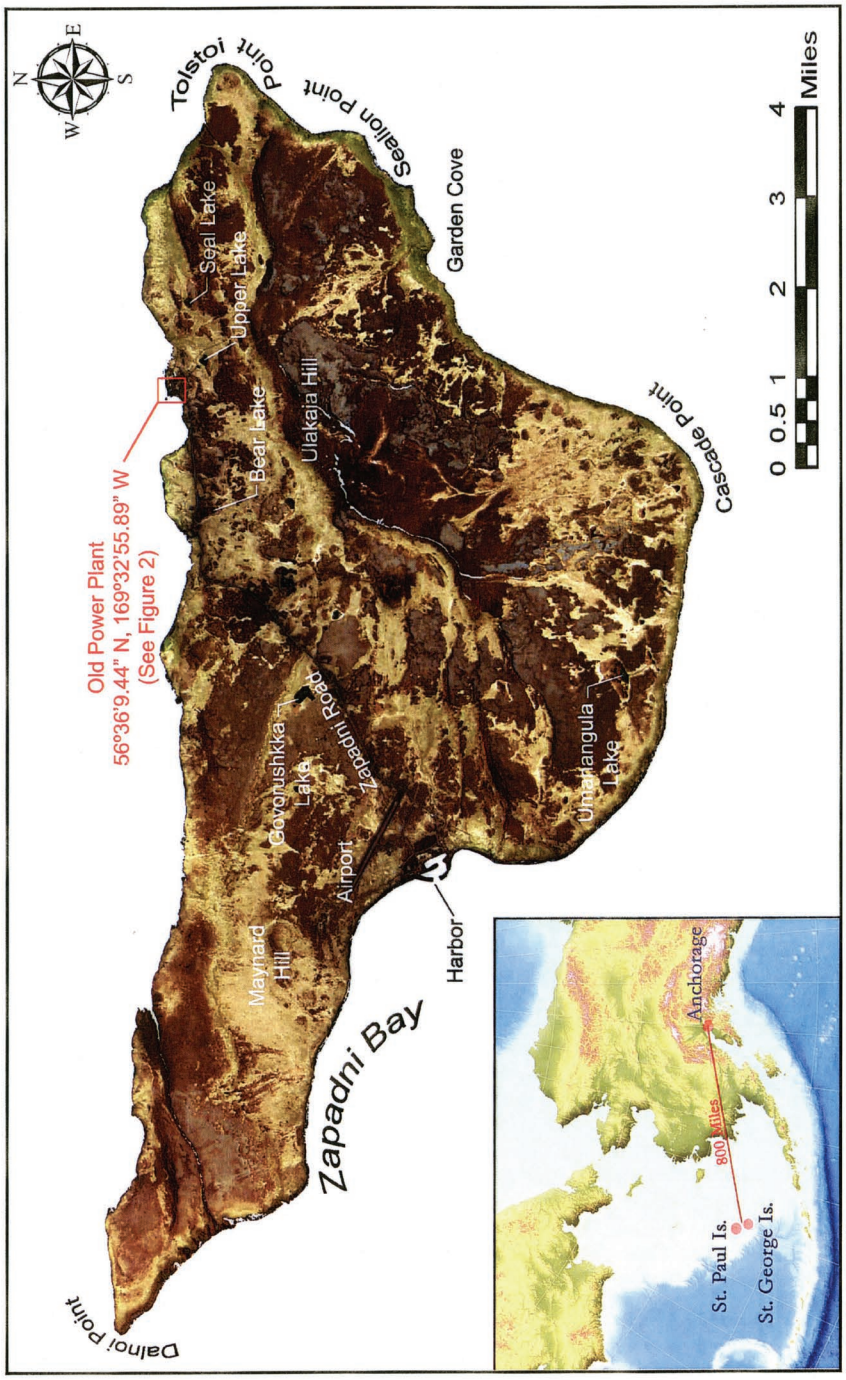

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St. George Island Vicinity Map
Old Power Plant
NOAA Site 9/TPA Site 9
St. George Island, Alaska

Figure
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Figure 2	Legal Property Description Map Tract 43, Lot 2/Tract 43, Lot 3 Old Power Plant NOAA Site 9/TPA Site 9 St. George Island, Alaska	Sources: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985. Centrum Subdivision 10/31/85. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Old Power Plant\Fig2_TPA9_PropDescription.mxd Date: 7/30/2008 @ 11:24:19 AM

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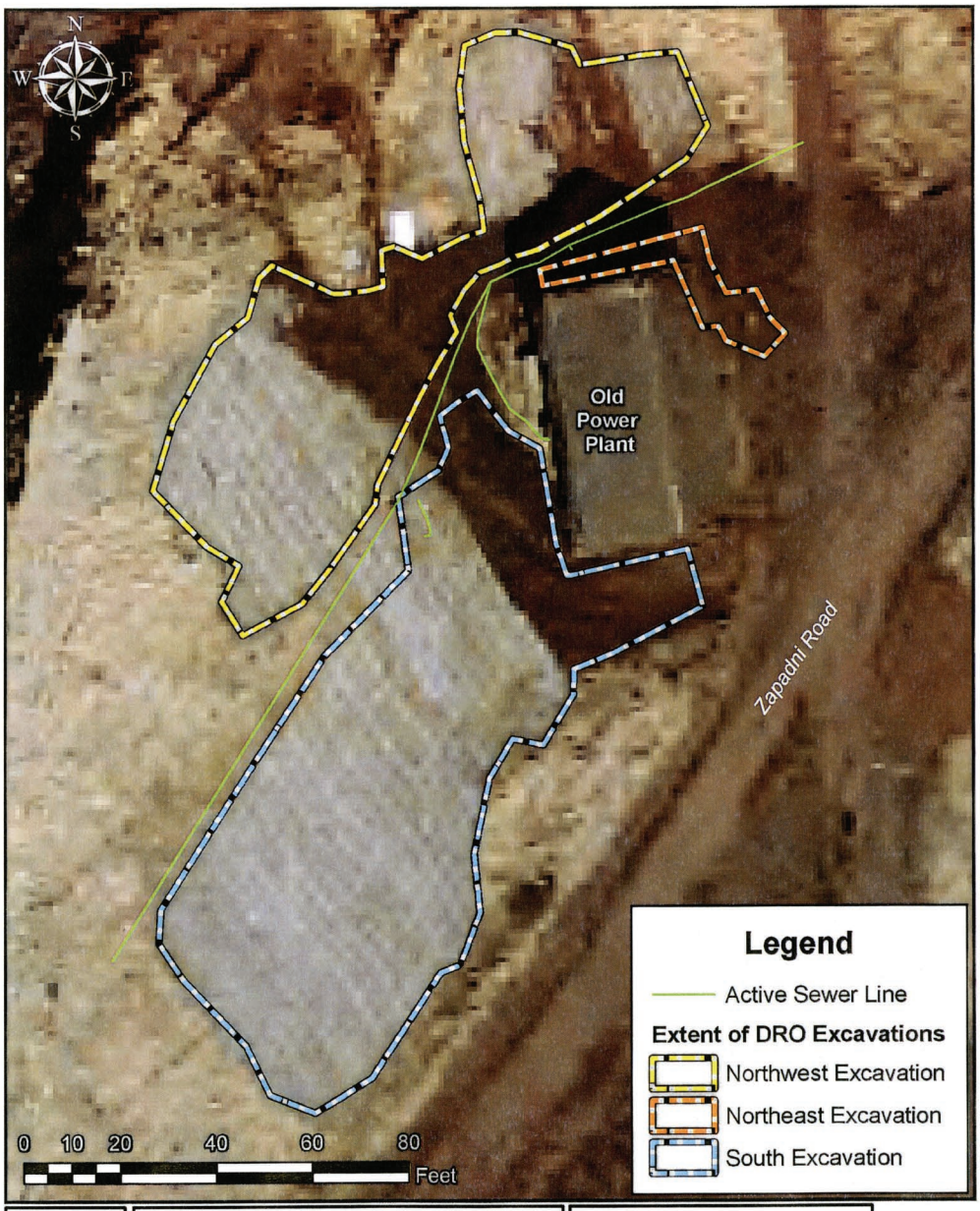

Figure 3	Old Power Plant Site Overview Old Power Plant NOAA Site 9/TPA Site 9 St. George Island, Alaska	Sources: TPA Site 9 Layers (NOAA PPO GIS), Aero-Metric 1 ft 2006 Aerial Photo Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Old Power Plant\Fig3_TPA9_Overview.mxd Date: 7/30/2008 @ 12:34:15 PM

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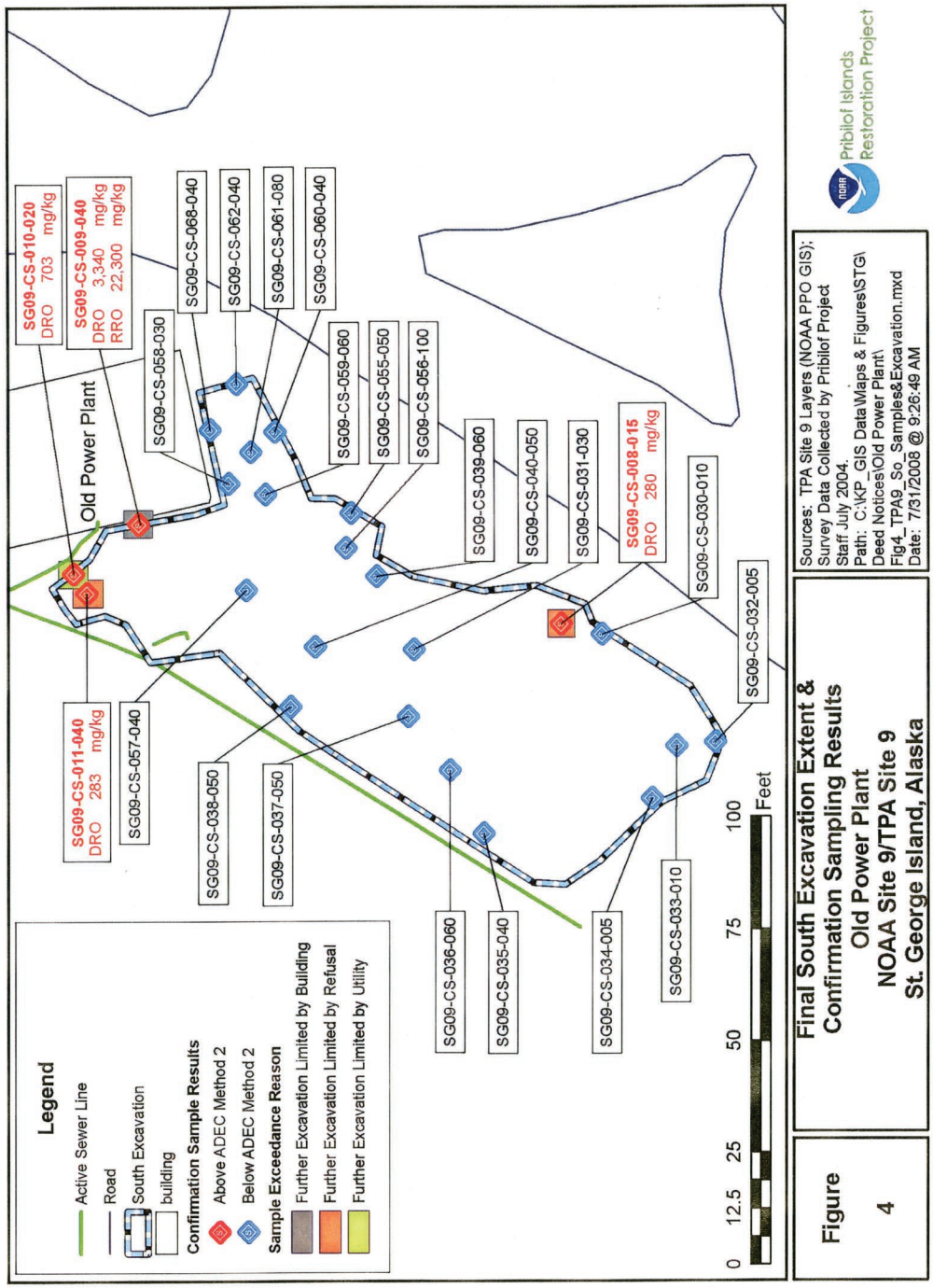

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Pribilof Islands Restoration Project

Figure 4

Final South Excavation Extent & Confirmation Sampling Results
Old Power Plant
NOAA Site 9/TPA Site 9
St. George Island, Alaska

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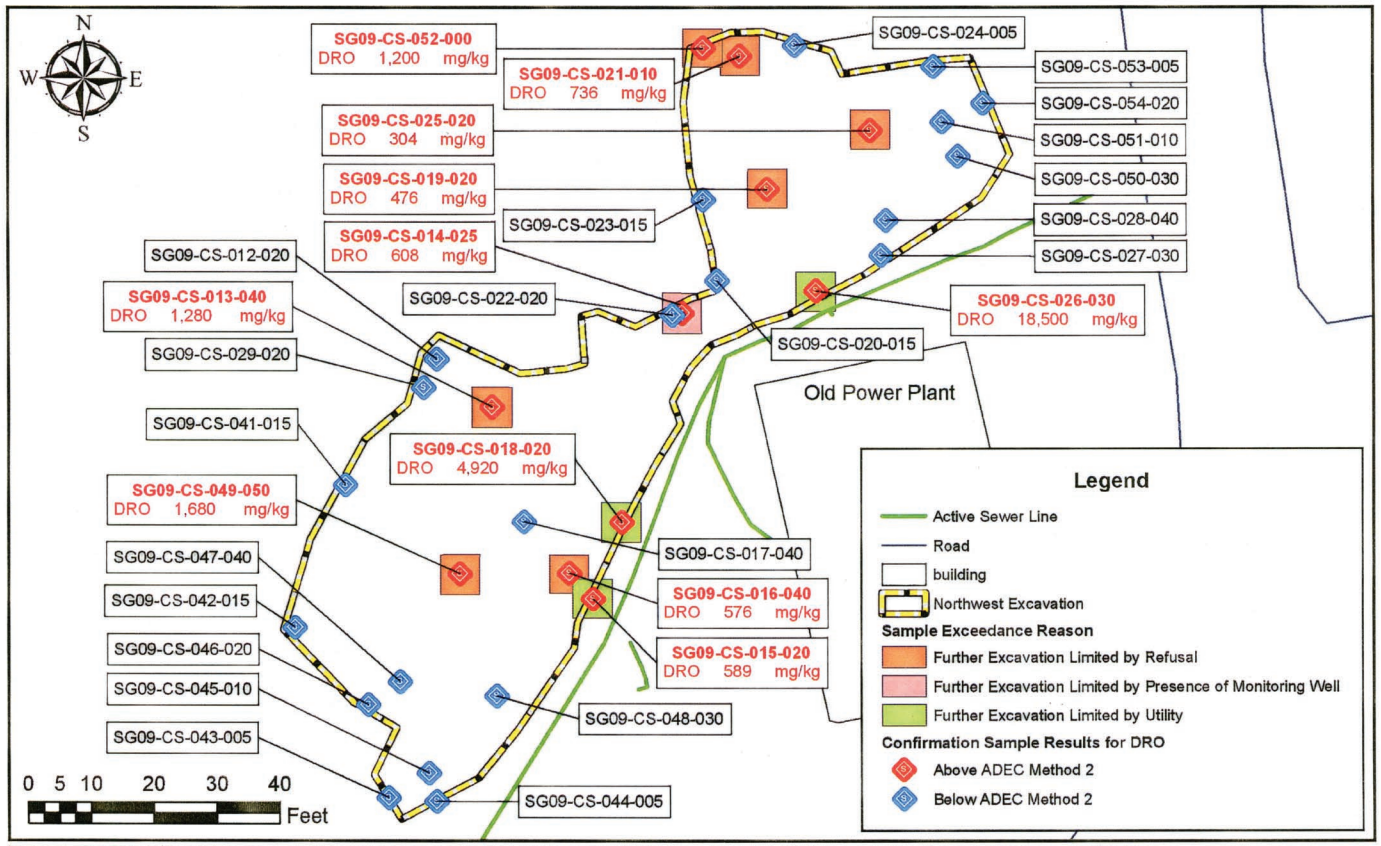

Figure 5	Final Northwest Excavation Extent & Confirmation Sampling Results Old Power Plant NOAA Site 9/TPA Site 9 St. George Island, Alaska	Sources: TPA Site 9 Layers (NOAA PPO GIS); Survey Data Collected by Pribilof Project Staff July 2004. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Old Power Plant\Fig5_TPA9_NW_Samples&Excavation.mxd Date: 7/31/2008 @ 11:31:05 AM

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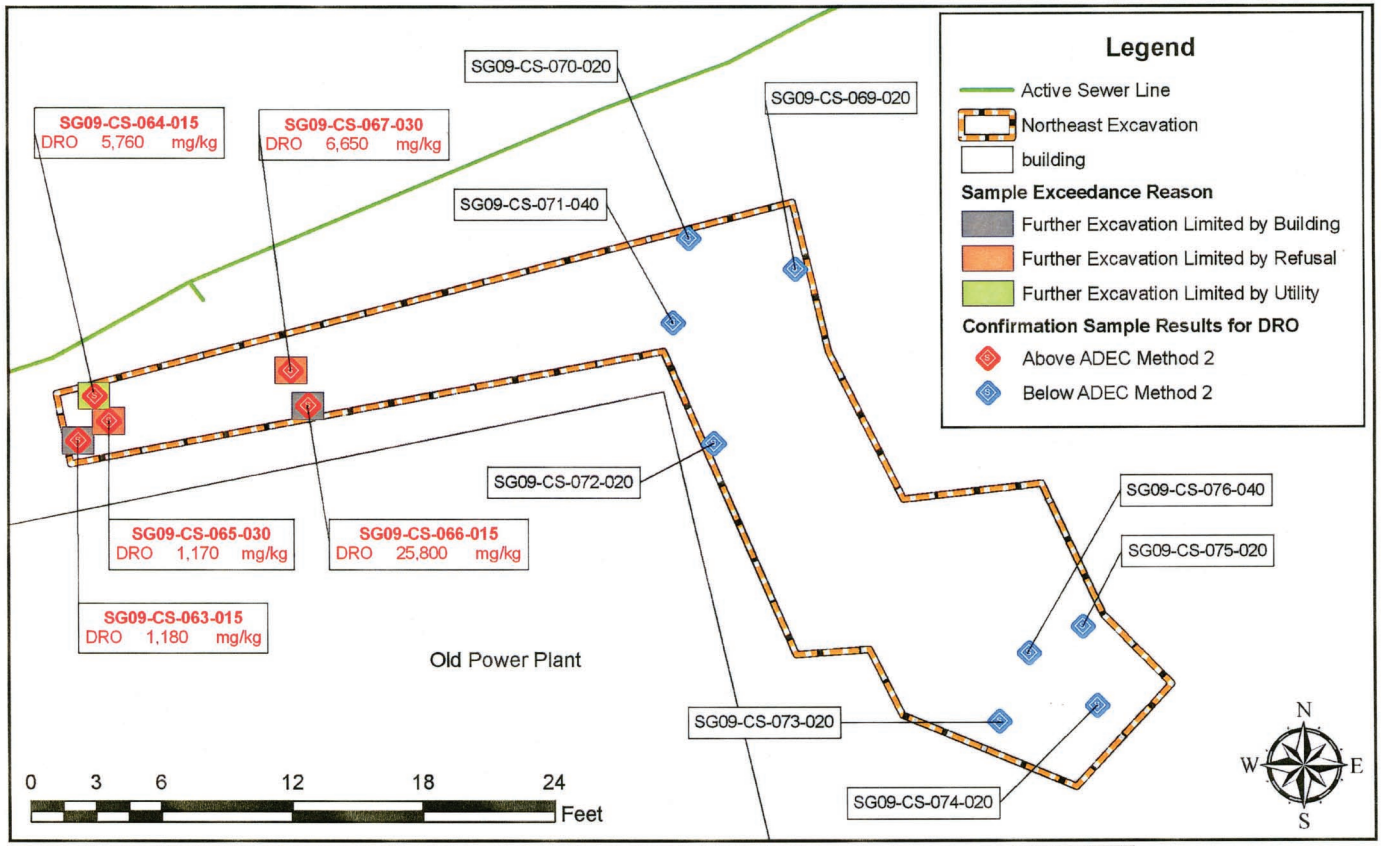

Figure 6	Final Northeast Excavation Extent & Confirmation Sampling Results Old Power Plant NOAA Site 9/TPA Site 9 St. George Island, Alaska	Sources: TPA Site 9 Layers (NOAA PPO GIS); Survey Data Collected by Pribilof Project Staff July 2004. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Old Power Plant\Fig6_TPA9_NE_Samples&Excavation.mxd Date: 7/31/2008 @ 10:13:42 AM

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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 9
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Community Council as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that property on the west and north sides of the Old Power Plant, otherwise known as Cottage G, in the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Lot 3, Tract 43
Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.
56° 36' 9.44" North Latitude, 169° 32' 55.89" West Longitude

This property, hereafter referred to as Site 9 (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge, or release and subsequent cleanup of oil or other hazardous substances, regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #2006250913802; File ID 2643.57.001.

This site was identified as *Site 9, Old Power Plant* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 9 and NOAA Site 9. Following corrective action, NOAA submitted a request for conditional closure for Site 9 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 9 cleanup has been performed to the maximum extent practicable even though residual petroleum-contaminated soils remained on the property (NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2005a).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: St. George Community Council
PO Box 940
St. George, AK 99591

Recording District: Aleutian Islands

10

Remedial Actions and Residual Contamination

A diesel generator-driven power plant was constructed at Site 9 in the mid 1930s. The facility included eleven aboveground storage tanks (ASTs) used to store diesel fuel, gasoline, and lubricating oil and a wood-framed building that housed the generators. The ASTs were located on wooden platforms along the west and southwest sides of the building. Fuel was transferred to the ASTs, via a gravity fed pipeline, from drums staged at the Former Fuel Storage Area (TPA Site 18) located south of the power plant (NOAA 2004). The Site 9 power plant was taken out of operation in 1964 when a new power plant came on-line.

Environmental investigations conducted in 1995 (Hart Crowser 1997) and 2001 (Tetra Tech 2002) found evidence of diesel range organics (DRO) and residual range organics (RRO) at Site 9. The Tetra Tech investigation also identified two Site 9 locations where lead was found at concentrations above the ADEC Method Two residential land use cleanup criterion of 400 milligrams per kilogram (mg/kg) (Tetra Tech 2002, ADEC 2006). In 2003, NOAA collected six subsurface soil samples from the north side of the power plant building to investigate anecdotal reports of waste oil and transformer dielectric dumping at this location. Samples were analyzed for DRO, RRO and polychlorinated biphenyl (PCB). Analytical results indicated that all six samples exceeded the ADEC Method Two cleanup criterion for DRO; RRO was detected, but did not exceed the ADEC criterion; and PCB was not detected in any of the samples (NOAA 2004). In 2004, Tetra Tech collected PCB confirmation samples from the north side of the building; PCB was not detected in any of the confirmation samples (Tetra Tech 2005a).

In 2004, approximately 17 cubic yards of soil was excavated from the two locations where the 2001 Tetra Tech investigation found lead above the ADEC cleanup criterion. Confirmation sampling verified that remaining lead concentrations in the soil where below ADEC requirements (Tetra Tech 2005a). The lead-contaminated soil was subsequently shipped off-island for disposal. Excavation of petroleum-contaminated soil (PCS) at Site 9 was conducted after removal of the lead-contaminated soil. Initial areas of excavation were selected based on contamination identified during previous investigations, while the extent of excavation was guided by thin-layer chromatography (TLC) field screening as well as visual and olfactory observations (Tetra Tech 2005a). During this corrective action, PCS was removed in three non-contiguous excavations because of the presence of an active sewer line and the power plant building (Figure 3). PCS removal was accomplished to the maximum extent practicable. The extent of each excavation was expanded vertically and laterally in all directions until TLC field screening indicated that concentrations of contaminants were below ADEC Method Two cleanup levels, or until the presence of obstructions (e.g., utilities, structures, or equipment refusal) prevented further excavation. Approximately 1,230 cubic yards of PCS was excavated and removed from Site 9. The excavations were backfilled with clean material; erosion control matting was placed over the disturbed areas, and a mixture of native seed and fertilizer was spread to promote the re-growth of vegetation (Tetra Tech 2005a).

Cleanup confirmation samples were analyzed for DRO, RRO, benzene, toluene, ethylbenzene, xylene, polynuclear aromatic hydrocarbons and PCB (Tetra Tech 2005a). Analytical results indicated that DRO remains in concentrations above its ADEC Method Two cleanup criterion in each of the excavations. RRO contamination above its ADEC Method Two cleanup criterion remains in one location next to and under the building's west foundation. No other contaminants were found above applicable cleanup requirements. Figures 4 through 6 are drawn to scale and show the areas that have been cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2001 and 2003, NOAA installed a total of five groundwater monitoring wells in the vicinity of Site 9. Groundwater samples collected from these wells from 2001 through 2004 were analyzed for DRO, gasoline range organics, volatile organic compounds, semivolatile organic compounds, and metals.

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Analytical results indicated that groundwater had not been adversely impacted by contaminant migration from Site 9 (Tetra Tech 2005b). These monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b).

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

References:

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Tetra Tech. 2005b. *Field Investigation Report (Final), St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

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Please return original copy of this notice to the (operator) address below:

Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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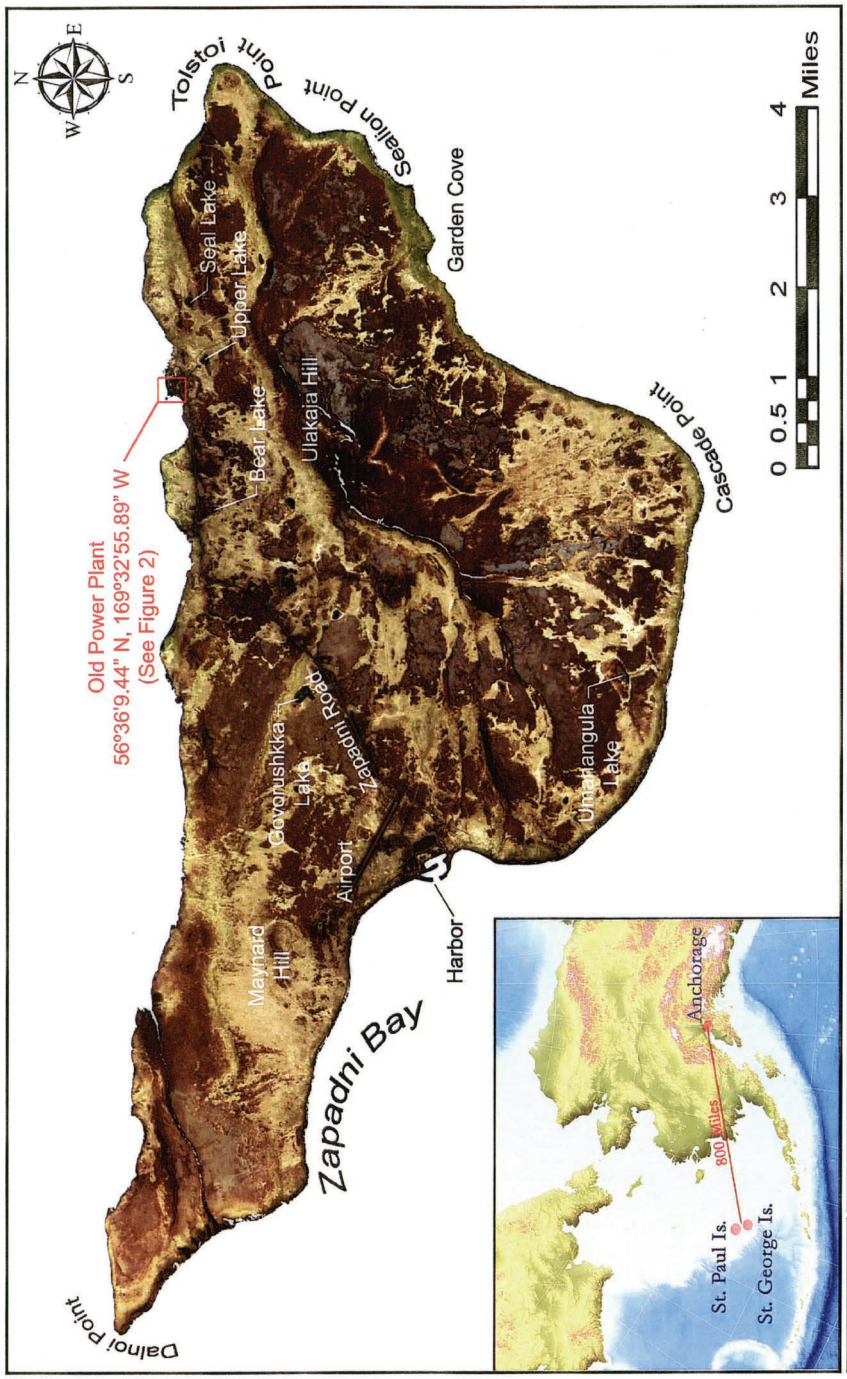

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Pribilof Islands Restoration Project

Figure 1

St. George Island Vicinity Map
Old Power Plant
NOAA Site 9/TPA Site 9
St. George Island, Alaska

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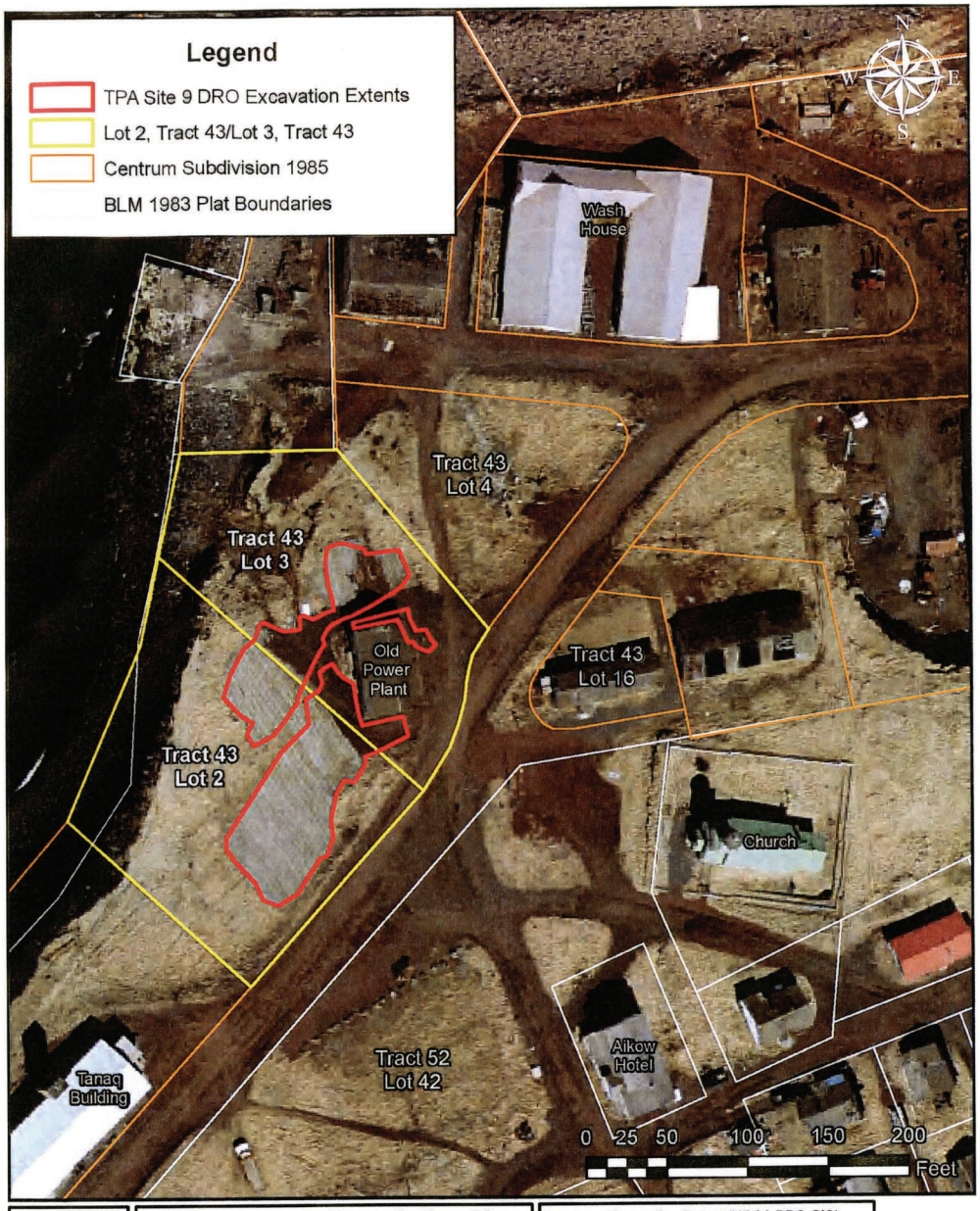

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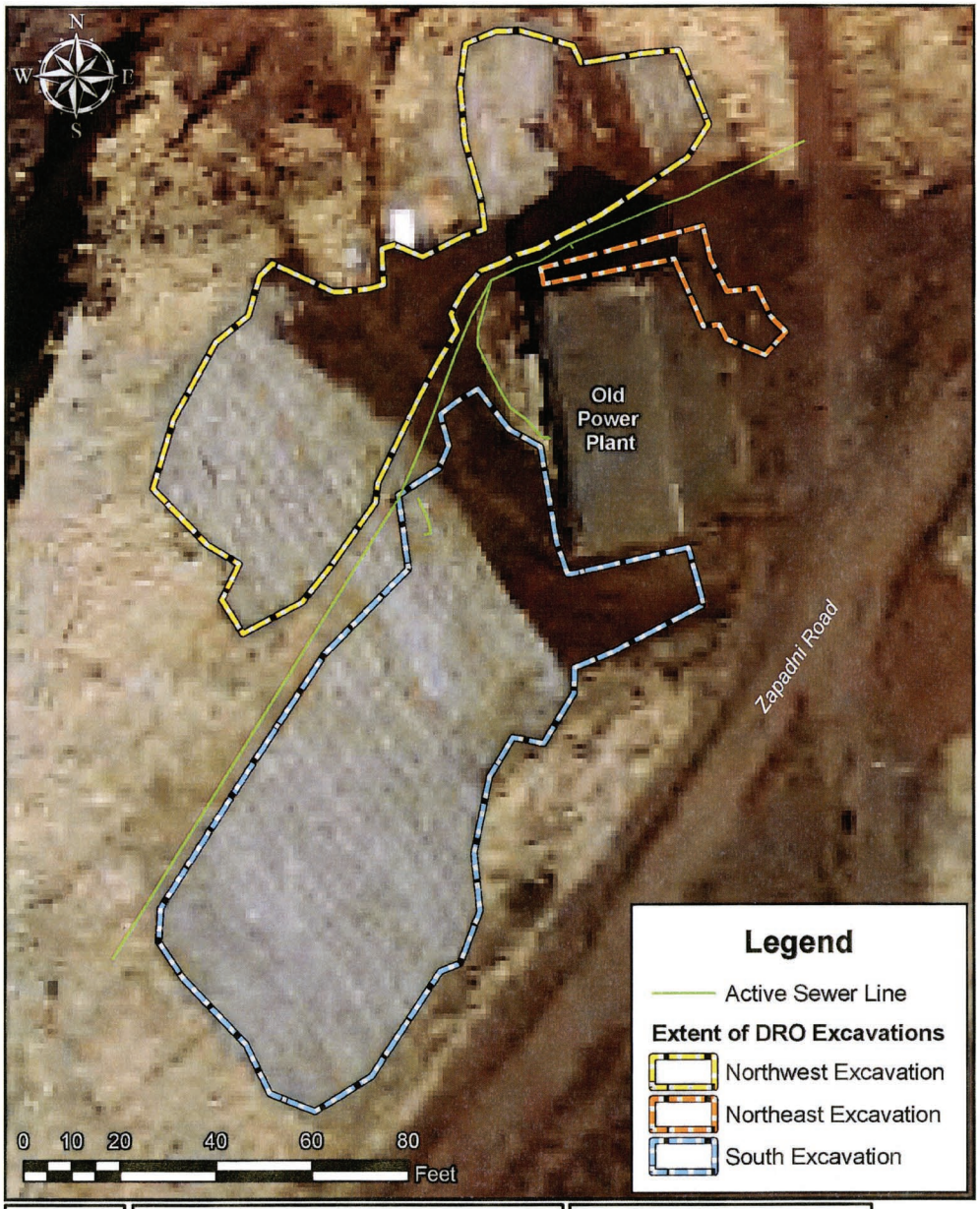

Figure 3	Old Power Plant Site Overview Old Power Plant NOAA Site 9/TPA Site 9 St. George Island, Alaska	Sources: TPA Site 9 Layers (NOAA PPO GIS), Aero-Metric 1 ft 2006 Aerial Photo Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Old Power Plant\Fig3_TPA9_Overview.mxd Date: 7/30/2008 @ 12:34:15 PM

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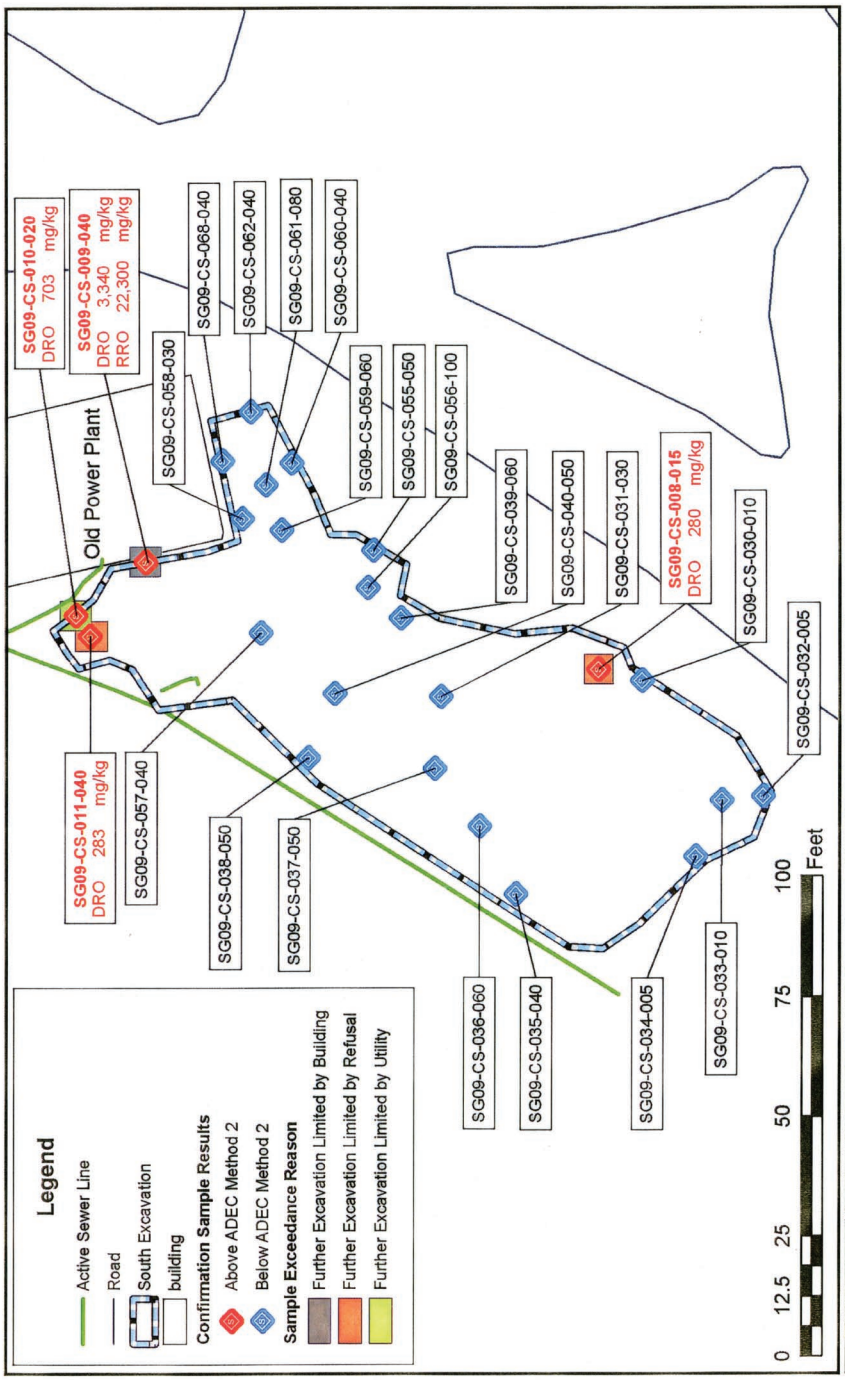

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Pribilof Islands Restoration Project

Figure 4

Final South Excavation Extent & Confirmation Sampling Results
Old Power Plant
NOAA Site 9/TPA Site 9
St. George Island, Alaska

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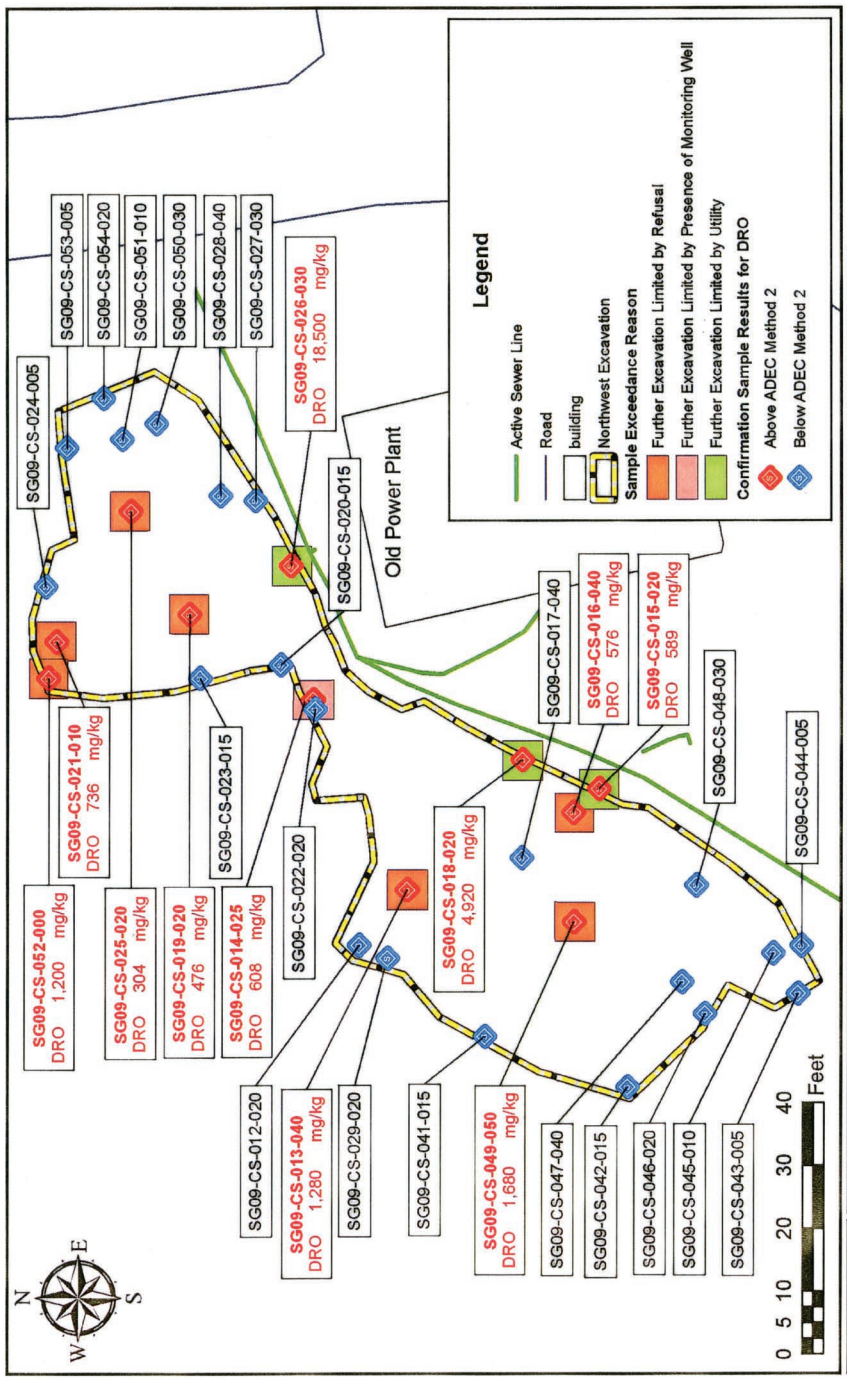

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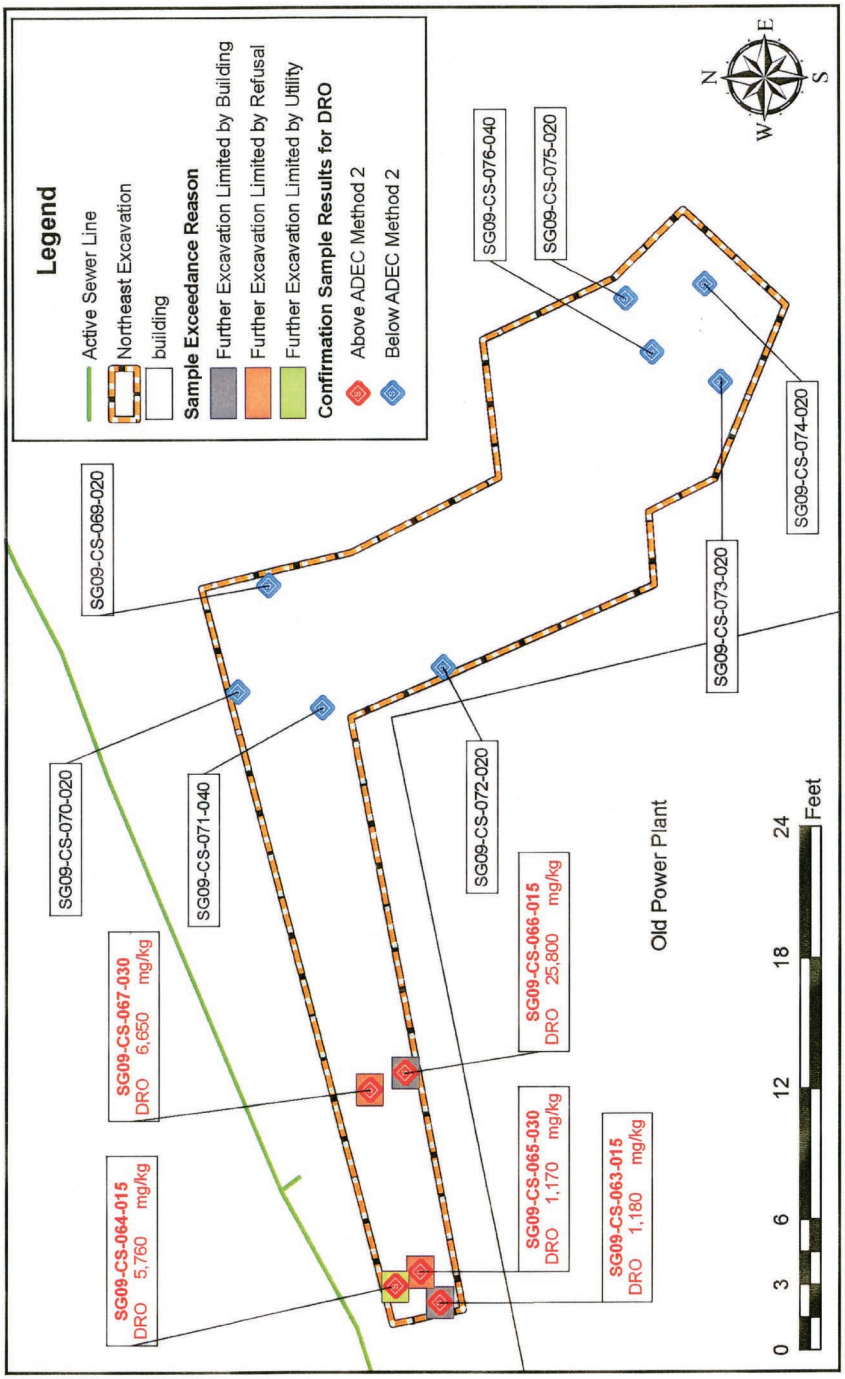

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Pribilof Islands Restoration Project

Figure 6

Final Northeast Excavation Extent & Confirmation Sampling Results
Old Power Plant
NOAA Site 9/TPA Site 9
St. George Island, Alaska

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NOAA Site 10
TPA Site 10: Former Drum/ AST Storage Area

Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska, Volume 1 281

Letter from Mary Moloseau Goetz, P.E. to Ray Dronenburg RE: St. George Island, Former Kerosene/AST Storage Area. Dated July 15, 1997 301

Letter from Ray Dronenburg to Mary Moloseau Goetz, P.E RE: Approval to close Former Kerosene/AST Storage Area, St. George Island. Dated August 18, 1997.....303

Expanded Site Inspection
St. George Island
Pribilof Islands, Alaska

Volume I

January 1997

Prepared for
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Seattle District
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1910 Fairview Avenue East
Seattle, Washington 98102-3699

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ACRONYMS

ADEC	Alaska Department of Environmental Conservation
ANCSA	Alaska Native Claims Settlement Act
AOI	Area of Investigation
ARARs	applicable or relevant and appropriate requirements
AST	Above-ground Storage Tank
ASTM	American Society for Testing and Materials
ATI	Analytical Technologies, Inc.
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
CCV	continuing calibration verification
CDAP	Chemical Data Acquisition Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Register
CLP	Contract Laboratory Program
Corps	U.S. Army Corps of Engineers
cPAH	carcinogenic polycyclic aromatic hydrocarbons
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
ESI	Expanded Site Inspection
FS	Feasibility Study
GC/ECD	gas chromatograph/electron capture detector
GC/FID	gas chromatograph/flame ionization detector
GRO	gasoline-range organics
HSP	Health and Safety Plan
IEUBK	Integrated Exposure Uptake Biokinetic Model
LCS	laboratory control sample
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NWS	National Weather Service
OSWER	Office of Solid Waste and Emergency Response
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PE	performance evaluation
PID	photoionization detector
PPE	personal protective equipment
QA/QC	Quality Assurance/Quality Control
RBCs	Risk-based Concentrations
RRO	residual-range organics
SARA	Superfund Amendments and Reauthorization Act
TBC	To be considered
TSCA	Toxic Substances Control Act
USGS	U.S. Coast Guard

UST	Underground Storage Tank
WASC	Western Administrative Support Center
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
μg/kg	micrograms per kilogram
μg/L	micrograms per liter

EXECUTIVE SUMMARY

The United States Army Corps of Engineers (Corps), Seattle District, on behalf of the U.S. Department of Commerce, Western Administrative Support Center (WASC), directed Expanded Site Inspections (ESIs) on soils at several sites on St. George Island, Alaska (see Figure 1-1). These sites are generally associated with National Oceanic and Atmospheric Administration (NOAA) activities at the island. NOAA managed the island prior to 1979 when the Alaska Native Claims Settlement Act (ANCSA) provide for transfer of property and management of the island to native corporations.

The work was conducted according to the Final Management Plan (Hart Crowser, 1995). The Management Plan was reviewed and commented upon by the Corps, NOAA, Alaska Department of Environmental Conservation (ADEC), the City of St. George, and the Aleut Corporation.

Twelve individual sites (Figures 1-2 and 1-3) were included in this ESI:

- ESIs were performed at the following ten sites: Open Pits, Inactive/Abandoned Diesel Tank Farm, Inactive Gasoline Tank Farm, Old Power Plant, Former Kerosene/AST Storage Area, Cross Hill Drum Dump, Former Fuel Storage Area, Old Carpenter Shop, Old Coal House, and the Port Fuel Supply Line which includes four subareas.

- Samples were also obtained at the Active Power Plant to supplement data collected during a prior investigation.

- At the Makushin Pit, samples were collected to verify that soil quality does not indicate that releases have occurred.

Surface and subsurface soil samples were collected at the sites to assess potential contamination resulting from past practices. The samples were analyzed in a field laboratory established on the island. As appropriate, the analytical results were used to direct additional sampling to assess the potential extent of affected soils. Confirmation samples were submitted for analysis to the project laboratory in Anchorage, Alaska, along with samples for metals and semivolatile organics analysis.

Site-Specific Results

For each site, Table ES-1 presents a summary of the analytical results, along with ADEC cleanup levels and, as appropriate, an estimate of the volume of soil exceeding the ADEC level. Recommendations for future action are also presented. In general, the results were as follows:

No Further Action. Based on the field laboratory analytical results and consideration of potential contaminant exposure risks, no further action is recommended for the following five sites and one Port Fuel Supply Line subarea: Former Kerosene/AST Storage Area, Cross Hill Drum Dump, Old Carpenter Shop, Old Coal House, and Makushin Pit sites, and Port Fuel Supply Line—West Oceanfront Subarea.

Recommendations regarding "no further action" are based on the absence of significant risks to human health or the environment derived from exposure to chemical constituents present in site soils. However, it is possible that physical hazards or other site issues are present and may need to be addressed. The need for addressing physical hazards and impediments for future development was not part of the ESI scope of work.

Exceedences of ADEC Matrix Cleanup Levels. The field laboratory analytical sample results for five sites and three subareas of the Port Fuel Supply Line indicate exceedences of the ADEC non-UST soil matrix cleanup levels, including: Open Pits, Inactive/Abandon Diesel Tank Farm, Inactive Gasoline Tank Farm, Old Power Plant, and Former Fuel Storage Area sites; and the East Oceanfront, North Cargo Line, and South Cargo Line subareas of the Port Fuel Supply Line. The following recommendations are made for these sites/subareas:

- Excavation and removal of soils exceeding cleanup levels are recommended at Open Pits, Inactive Gasoline Tank Farm, and Old Power Plant sites, and the South Cargo Line subarea.

- Removal of accessible and/or hotspot soils exceeding cleanup levels and backfilling is recommended at the Inactive/Abandon Diesel Tank Farm and Former Fuel Storage Area sites, and the East Oceanfront and North Cargo Line subareas.

Active Power Plant. A previous study indicates an area of petroleum hydrocarbon-affected soils near the northwest corner of the Active Power Plant building. Additional investigation was completed during this ESI to supplement previous work at the Active Power Plant. The results of this recent ESI work indicate that the petroleum-affected area identified in the previous study does not extend farther to the south. In conjunction with the removal of two USTs located at the Power Plant, it is recommended that accessible contaminated soil near the northwest corner of the building also be removed.

Recommendations for future actions provided in this ESI report are the result of a qualitative assessment of available information and criteria and did not involve a feasibility study evaluation. The selection and design of remedial actions for the St. George sites addressed in this report will be evaluated in greater detail prior to implementation of the remedial action. The final remedy selections will involve negotiations with ADEC and members of the Restoration Advisory Board (RAB).

Table ES-1. St. George Island Summary of Results and Recommendations

Site Subarea	Summary of Field Laboratory Analytical Results	ADEC Cleanup Level in mg/kg	Estimated Soil Volume Exceed. Cleanup Level in CY	Recommendations
Open Pits	Gasoline to 80 mg/kg Kerosene/diesel to 6,800 mg/kg Oil to 2,100 mg/kg Non-detect BTEX and PCB/Pest.	Category B GRO 100 DRO 200 RRO 2,000 BTEX 15	620	Excavation and Removal
Inactive/Abandoned Diesel Tank Farm	Non-detect gasoline Kerosene/diesel to 11,000 mg/kg Oil to 92 mg/kg Non-detect BTEX	Category B GRO 100 DRO 200 RRO 2,000 BTEX 15	1,580	Excavation and Removal except in vicinity of TP-3
Inactive Gasoline Tank Farm	Non-detect gasoline Diesel to 2,300 mg/kg Oil to 240 mg/kg Total Xylenes to 0.68 mg/kg	Category C GRO 500 DRO 1,000 RRO 2,000 BTEX 50	80	Stockpile Overburden for Reuse as Backfill Excavation and Removal
Old Power Plant	Non-detect gasoline and PCB/Pest. Diesel to 3,700 mg/kg Oil to 13,000 mg/kg	Category C GRO 500 DRO 1,000 RRO 2,000	410	Excavation and Removal
Former Kerosene/ AST Storage Area	Non-detect gasoline Diesel/kerosene to 180 mg/kg Oil to 200 mg/kg Non-detect BTEX	Category C GRO 500 DRO 1,000 RRO 2,000 BTEX 50	None	No further action
Cross Hill Drum Dump	Non-detect gasoline Non-detect diesel Non-detect oil	Category D GRO 1,000 DRO 2,000 RRO 2,000	None	No further action
Former Fuel Storage Area	Non-detect gasoline Diesel to 10,000 mg/kg Oil to 1,400 mg/kg	Category B GRO 100 DRO 200 RRO 2,000	2,000	Excavation and Removal of Accessible Soil
Old Carpenter Shop	Non-detect gasoline Diesel/kerosene to 50 mg/kg Oil to 87 mg/kg Non-detect BTEX	Category D GRO 1,000 DRO 2,000 RRO 2,000 BTEX 100	None	No further action
Old Coal House	(Slightly elevated cPAHs)	N/A	None	No further action
Port Fuel Supply Line West Oceanfront	Non-detect gasoline Non-detect diesel/kerosene Oil to 240 mg/kg	Category C GRO 500 DRO 1,000 RRO 2,000	None	No further action
East Oceanfront	Non-detect gasoline Diesel to 1,300 mg/kg Oil to 240 mg/kg Non-detect BTEX	Category B GRO 100 DRO 200 RRO 2,000 BTEX 15	700	Excavation and Removal around EO-SS-5 Maintenance of vegetation

Table ES-1. St. George Island Summary of Results and Recommendations

Site Subarea	Summary of Field Laboratory Analytical Results	ADEC Cleanup Level in mg/kg	Estimated Soil Volume Exceed. Cleanup Level in CY	Recommendations
Port Fuel Supply Line North Cargo Line (North)	Gasoline to 1,400 mg/kg Diesel/kerosene to 19,600 mg/kg Non-detect oil TEX to 210 mg/kg; Non-detect B	Category B GRO 100 DRO 200 RRO 2,000 BTEX 15	300	Excavation and Removal
North Cargo Line (South)	Gasoline to 1,800 mg/kg Diesel/kerosene to 11,000 mg/kg Non-detect oil TEX to 28 mg/kg; Non-detect B	Category C GRO 500 DRO 1,000 RRO 2,000 BTEX 50	230	Limited Excavation and Removal
South Cargo Line (North)	Non-detect gasoline Diesel/kerosene to 5,800 mg/kg Oil to 64 mg/kg	Category D GRO 1,000 DRO 2,000 RRO 2,000	1	No further action
South Cargo Line (South)	Non-detect gasoline Diesel/kerosene to 5,600 mg/kg Non-detect oil Non-detect BTEX	Category C GRO 500 DRO 1,000 RRO 2,000 BTEX 50	440	Stockpile Overburden for Reuse as Backfill Excavation and Removal
Active Power Plant	Non-detect gasoline Non-detect diesel Non-detect oil	Category B GRO 100 DRO 200 RRO 2,000	150*	Excavation and Removal of Accessible Soil
Makushin Pit	Non-detect gasoline Non-detect diesel Non-detect oil Non-detect BTEX	Category D GRO 1,000 DRO 2,000 RRO 2,000 BTEX 100	None	No further action

* Volume based on existing Woodward-Clyde data.

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5.5 Former Kerosene/AST Storage Area Site

The Former Kerosene/AST Storage Area Site is located immediately west of the Tanaq Corporation Office and Store near the west end of the City (Figure 1-3). It is a flat, graded area measuring about 50 feet (northeast/southwest) by 65 feet (northwest/southeast). Ocean cliffs are located about 40 feet from the northern boundary of the graded area (Figure 5.5-1). A small stream is located about 60 feet west of the Tanaq Office. This stream is about 10 feet lower in elevation than the graded area. The main road into the City borders the south side of the site.

5.5.1 Background

Little is known about the history of this site. Reportedly, kerosene drums and/or ASTs were stored in this area and spills occurred (Merculief, 1995, personal communication). The period of operation is not known.

During Hart Crowser's 1995 site visit, an emergency generator building and nominal 500-gallon AST were located at the southwest corner of the graded area. The generator was installed to provide emergency power for the freezers and coolers located in the Tanaq Store.

Visible petroleum-like sheens were observed on puddles and on the ground in the vicinity of the fuel truck (Hart Crowser, 1995). Vegetation was not present in the graded area but adjacent vegetated areas just north and west of the graded area appeared healthy with no signs of distress. Water in the small stream showed no visible signs of adverse impacts and no seeps were observed between the graded area and the stream.

5.5.2 ESI Objectives

The objectives of the ESI were to determine whether reported kerosene releases from past storage activities may have occurred, and to evaluate the nature and extent of kerosene releases to surface and subsurface soil at the reported location of the kerosene storage area.

5.5.3 Field Activities

Four test pits (TP-1 through TP-4) were excavated at the site at the locations indicated on Figure 5.5-1. From each test pit samples were collected at the surface, 4-foot depth, and the bottom of the pit. Excavations reached depths of from 7 to 9 feet in the four test pits prior to refusal. Twelve samples were submitted to the field laboratory for analysis of petroleum hydrocarbons and BTEX. In addition, one sample from each test pit (four total) was submitted to the project laboratory for analysis of DRO, GRO, and BTEX.

5.5.4 Site Geology

Silt, sand, or gravel fill was encountered at the surface of the four test pits. Generally there was some sort of wood or metal debris mixed with the fill material. At test pit TP-1, the surficial fill overlaid gravel and then silt layers. Sand and gravel fill was encountered throughout the

entire depth of test pits TP-2, TP-3, and TP-4. An 8-inch abandoned utility pipe was encountered at a 3-foot depth. Refusal was reached in the four test pits at depths between 7 and 9 feet when basalt bedrock was encountered. Seepage was observed at the bottom of TP-1 and TP-4.

5.5.5 Soil Quality

This site is in ADEC matrix Category C with cleanup levels for GRO, DRO, RRO, benzene, and total BTEX of 500, 1,000, 2,000, 0.5, and 50 mg/kg, respectively. Figure 5.5-1 presents the field laboratory analytical results. Table 5.5-1 presents a statistical summary of the field laboratory results, indicating the frequency and magnitude of detections exceeding the Category C cleanup levels. The following is noted:

- Gasoline and BETX were not detected.
- Diesel/Kerosene/Arctic Diesel was detected in two of twelve samples at a maximum concentration of 180 mg/kg, below the Category C cleanup level.
- Oil was detected in three of twelve samples at a maximum concentration of 200 mg/kg, below the Category C cleanup level.
- Based on a review of chromatograms, biogenic compounds were identified in eight of the samples.

None of these exceeded Category C cleanup levels; therefore they are not contaminants of concern.

5.5.6 Potential Human Health and Ecological Considerations

Petroleum products in the arctic diesel/kerosene/diesel and oil ranges were the only constituents detected at the site. Petroleum hydrocarbons were detected in four of the twelve samples collected. Arctic diesel/kerosene/diesel detections, identified in only two samples, were 180 and 150 mg/kg. Oil, detected in three samples, ranged from 40 to 200 mg/kg. No BTEX compounds were detected in the twelve soil samples analyzed.

No universally accepted procedures exist for quantitatively assessing human health and environmental risks from petroleum hydrocarbon mixtures. The State of Alaska's soil Matrix cleanup level approach is currently used as the standard for evaluating the need for cleanup in the state based on protection of human health and the environment. None of the soil samples exceed Category C cleanup levels. Because no exceedences were detected, no quantitative or qualitative risks are apparent at the Former Kerosene/AST Storage Area Site.

5.5.7 Conclusions and Recommendations

Based on the analytical results, soils at the Former Kerosene/AST Storage Area Site do not exceed Category C cleanup levels. No potential risks to human health and the environment have been identified. Therefore, no further action is recommended for this site.

Table 5.5-1 - Statistical Summary of Soil Quality Data
St. George Island- Former Kerosene/AST Storage Area Site

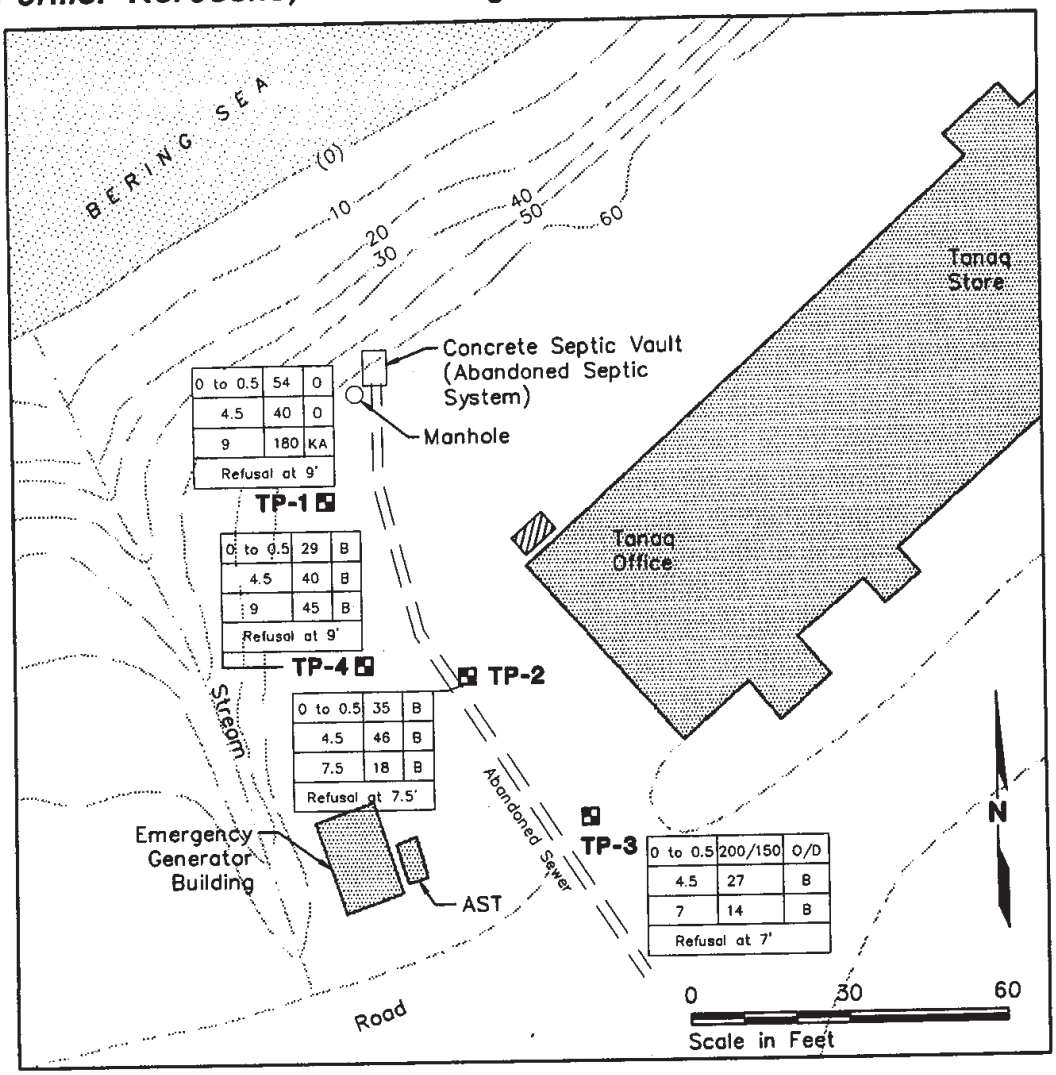
Analyte	Detection Frequency	Concentration Range	Maximum Detection	Location of Maximum	Screening Level	Exceedence Frequency	Percent Exceedence
Fuels in mg/kg							
Diesel	2/12	20 U to 180	180	TP-1/S-3	1000	0/12	0
Gasoline	0/12	10 U to 10 U	NA		500	0/12	0
Oil	3/12	14 U to 200	200	TP-3/S-1	2000	0/12	0
Volatiles in mg/kg							
Benzene	0/12	.05 U to .05 U	NA		0.5	0/12	0
Ethylbenzene	0/12	.05 U to .05 U	NA		NA	0/12	0
Toluene	0/12	.05 U to .05 U	NA		NA	0/12	0
Total Xylenes	0/12	.05 U to .05 U	NA		NA	0/12	0
Total BTEX	0/12	.05 U to .05 U	NA		100	0/12	0

Notes: TPH, PCB, and BTEX data derived from Field Laboratory,
Metals and Semivolatile data derived from Project Laboratory
NA - Not Applicable
U - Not detected at detection Limit Indicated

442105/STGEORGE/T-5-5-1.XLS

Site and Exploration Plan Showing TPH Concentrations

Former Kerosene/AST Storage Area Site



10 — Elevation Contour in Feet (10-Foot Contour Interval Contours based on Approximate Elevation Above Sea Level)

TP-1 — Test Pit Location and Number

UST (Approximate Location)

Depth in Feet below GS	Total TPH Conc. in ppm	Product Type
7	1,860	O/O

KA – Kerosene or Arctic Diesel
D – Diesel
O – Oil
B – Biogenic

Note: 1. TPH data based on EPA Modified 8015 testing perfomed by field laboratory.
2. Selected underground utilities presented on this map are only shown for purposes of discussion. Refer to Site Utility map for accurate location of utilities.

HC.PCP
CVD 5/9/96
44210508

HARTCROWSER
J-4421-05G 5/96
Figure 5.5-1

National Oceanic and Atmospheric Administration,
Host Agency serving:
Bureau of the Census
Economic Development Administration
International Trade Administration
Minority Business Development Agency
Office of the Inspector General
Bureau of Export Administration

U.S. DEPARTMENT OF COMMERCE
Western Administrative Support Center
7600 Sand Point Way N.E.
BIN CI5700
Seattle, Washington 98115-0070

1200-02

July 15, 1997

Mr. Ray Dronenburg
Contaminated Site Remediation Program
Site Remediation Section
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

Subject: St. George Island, Former Kerosene/AST Storage Area

Dear Ray,

Paragraph 59 of the NOAA and ADEC Two-Party Agreement allows us to request written confirmation that all corrective action has been completed at a site. I am requesting written confirmation that no further action is required for the Former Kerosene/AST Storage Area on St. George Island. It is numbered as Site 10 in the Two-Party Agreement.

This site was investigated, and the results are documented in the St. George Expanded Site Investigation of January 1997. This report reviewed the findings and associated regulations, and recommended no further action be taken on the site.

I appreciate your assistance in this matter, and look forward to your response. If you have any questions, I can be reached at (206)526-6295.

Sincerely,

Mary Moloseau Goetz

Mary Moloseau Goetz. P.E.
Pribilof Project Manager

cc: NOAA General Counsel

120

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION & RESPONSE
CONTAMINATED SITES REMEDIATION PROGRAM
555 CORDOVA STREET, SECOND FLOOR
ANCHORAGE, AK 9950 1-26 17

TELEPHONE: (907) 269-7659
FAX: (907) 269-7649
http://www.state.ak.usdec/home/htm

August 18, 1997

Ms. Mary Moloseau Goetz, P.E.
U.S. Department of Commerce
Western Administrative Support Center
7600 Sand Point Way, NE
BIN Cl5700
Seattle, Washington 98 115-0070

Re: Approval to close Former Kerosene/AST Storage Area, St. George Island

Dear Ms. Goetz:

The Department has reviewed your letter request of July 15, 1997 and has the following comments:

- The Department concurs that this site qualifies as a level C site
- The Department has, by previous correspondence, accepted the Expanded Site Investigation conducted by Hart Crowser (dtd June 1996) as acceptable data and representative for soil contamination.

In accordance with paragraph 59 of the NOAA/ADEC Two-party Agreement, this Department accepts site number 10 (Former Kerosene/AST Storage Area) as a site having met the criteria established for determination as a "No Further Action" site. Levels of contamination at this site are below maximum contamination levels for a level C site and the Department does not require further analyses. This letter constitutes approval to list site 10 as a "No Further Action Site" only and should not be construed or implied for any other site.

Sincerely,

Ray Dronenburg
Project Manager

R D : e l

cc: Attorney General's Office, Anchorage
Tanaq Corporation

260

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NOAA Site 11
TPA Site 11: Cottage C UST

Letter from John Lindsay to Louis Howard RE: Cottage C (TPA Site 11), St. George Island. Dated January 20, 2004 307

Letter from Louis Howard to John Lindsay RE: Cottage C (TPA Site 11) St. George Island, January 20, 2004. Dated February 5, 2004.....309

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE
Seattle, WA 98115-6349
January 20, 2004

Mr. Louis Howard
Project Manager
Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501-2617

Subject: Cottage C (TPA Site 11), St. George Island

Dear Mr. Howard:

The National Oceanic and Atmospheric Administration (NOAA) entered into the 1996 Two-Party Agreement (TPA) with the Alaska Department of Enviromental Conservation (ADEC) in furtherance of NOAA's obligations under Public Law 104-91 to clean up contaminants and debris from lands which NOAA or its predecessor agencies abandoned, quitclaimed, transferred or are obligated to transfer, to local entities or residents on the Pribilof Islands. In developing the TPA, NOAA and ADEC inadvertently included in the list of sites needing cleanup on St. George Island (TPA Attachment A) the underground storage tank for Cottage C (TPA Site 11, Lot 5, Tract 47). Cottage C is an active federal facility that NOAA is not obligated to transfer and has no plans to transfer to local entities. Since the site in question is not slated for transfer, and is therefore not covered by Public Law 104-91, NOAA requests that the site be removed from Attachment A.

While the site should be removed from the TPA, NOAA does intend to address any potential contamination issues that may exist at this site. The NOAA Office of Environmental Compliance, Health and Safety will undertake necessary measures, including but not limited to site investigations and corrective action, as appropriate to clean up any contamination on site. The agency currently plans to undertake the needed actions during the 2004/2005 time frame.

Through this correspondence, NOAA seeks your concurrence with this request. If you have any questions, please contact me at (206) 526-4560.

Sincerely,

John A. Lindsay
Pribilof Project Manager

STATE OF ALASKA

FRANK H. MURKOWSKI, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

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Anchorage, AK 99501
PHONE: (907) 269-7552
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http://www.state.ak.us/dec/home.htm

RECEIVED
APR 13 2004

February 5, 2004

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE BIN C15700
Seattle, WA 98115-6349

RE: Cottage C (TPA Site 11) St. George Island, January 20, 2004

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document on January 23, 2004. The Department concurs with the request to remove the Cottage C site otherwise known as Two-Party Agreement (TPA) Site 11 located on Lot 5, Tract 47.

The Department's concurrence on the request does not relieve the National Oceanic and Atmospheric Administration (NOAA) from its responsibility to properly address releases of pollutants, hazardous substances, petroleum products and oil within the meaning of AS 46.03.826[1], AS 46.03.740[2] and 18 AAC 75.990(35) which have occurred or may have occurred at the Cottage C site regardless if it is on the TPA or not.

The Department will require a workplan to be submitted for its review and comment, prior to any work being conducted, which shall outline the course of the site investigation to properly

---

[1] "hazardous substance" means (A) an element or compound which, when it enters into the atmosphere or in or upon the water or surface or subsurface land of the state, presents an imminent and substantial danger to the public health or welfare, including but not limited to fish, animals, vegetation, or any part of the natural habitat in which they are found; (B) oil; or (C) a substance defined as a hazardous substance under 42 U.S.C. 9601(14). "oil" means a derivative of a liquid hydrocarbon and includes crude oil, lubricating oil, sludge, oil refuse or another petroleum-related product or by-product

[2] A person may not discharge, cause to be discharged, or permit the discharge of petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or a residuary product of petroleum, into, or upon the waters or land of the state except in quantities, and at times and locations or under circumstances and conditions as the department may by regulation permit or where permitted under art. IV of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended.

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delineate the nature and extent of contamination in soil and groundwater at Cottage C. Implementation of this workplan shall comply with 18 AAC 75, 78 and the Underground Storage Tank Procedure Manual, where applicable. Field work will be conducted or directly supervised by a qualified[3] person as defined in 18 AAC 78.995. The Department expects the workplan to incorporate existing data in the possession of NOAA or its consultants to the maximum extent practicable.

Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard
Project Manager

2004 TPA transfer to Compliance.doc NOAA St. George Island genl corr

cc: Thanh Minh Trinh, NOAA Office of Environmental Compliance (M/S WC4)

[3] "qualified person" or "qualified third party" means a person who actively practices environmental science or engineering, geology, physical science, hydrology, or a related field and has the following minimum education and experience: (A) a bachelor's degree or equivalent from a nationally or internationally accredited postsecondary institution in environmental science or engineering, geology, hydrology, physical science, or a related field; for purposes of this subparagraph, "equivalent" means that the person earned at least 128 semester hours, 168 trimester hours, or 192 quarter hours at an accredited postsecondary institution, and with at least 18 percent of those hours in a science major and at least 13 percent of those hours in upper division-level courses; and (B) at least one year of professional experience in environmental science or engineering, geology, physical science, or a related field, completed after the degree described in (A) of this paragraph was obtained.

NOAA Site 12
TPA Site 12: Former Hangar Building

St. George Island, Alaska, Request for No Further Action, Former Hangar Building TPA Site No. 12.....313

Letter from to John Lindsay RE: St. George Island Request for No Further Action Former Hangar Building Site No. 12, dated February 19, 2003. Dated March 11, 2003.....321

St. George Island, Alaska
Request for No Further Action
Former Hangar Building
TPA Site No. 12

Site: Former Hangar Building, Two-Party Agreement (TPA) Site Number 12

Location: St. George Island, Alaska (located between latitude 56°30' and 57°40' north and longitude 169°25' and 169°50' west). The site is located at Tract V, Airport Subdivision, Seward Meridian, Alaska. The Former Hangar Building is approximately 1 mile west of the City of St. George and is immediately to the north of Zapadni Bay Road (Fig. 1).

Type of Release: cleaning solvents, paint-related materials, stained soil, propane tanks, abandoned vehicles

History:
The Former Hangar Building is badly deteriorated. The state Department of Transportation currently owns the building, and the site is used by the community as a disposal site for propane tanks. Prior to cleanup and removal actions, the building contained miscellaneous containers of cleaning solvents and paint-related materials. The soil surrounding the building was stained, and there were abandoned federal vehicles on the property.

Summary of Site Investigations:
An assessment conducted during the fall of 1993 inventoried a total of 142 drums, 63 of which contained waste material (Fig. 2). Some drums were actively leaking. The soil surrounding these was stained, and several areas were completely saturated with oil. Six drums were found inside the hangar along with five 5-gallon and two 1-gallon containers of wastes. Fifty-six propane cylinders, seven automotive batteries, four vehicles, two compressor units, and one generator were also found on the site.

In 1996 and 1997, an investigation was conducted to characterize and remove the contaminated soil previously identified. A soil sample was collected from an area saturated with oil and analyzed for metals, diesel-range organics (DRO), residual-range organics (RRO), gasoline-range organics (GRO), benzene, toluene, ethylbenzene, and total xylenes (BETX), and polychlorinated biphenyls (PCB) constituents. DRO and RRO were found at concentrations above their preliminary cleanup levels. Following excavation of soil, confirmation samples were collected from the perimeter of the excavation and analyzed for DRO and RRO. Results indicated that concentrations were within the preliminary cleanup levels for these contaminants.

Summary of Cleanup Actions:
All drums and other waste containers, propane cylinders, automotive batteries, compressors, vehicles, and the generator identified during the 1993 assessment were removed from the site (Fig. 3). In 1997, discolored soil was excavated to a depth of approximately five feet.

Recommend Action:
In accordance with paragraph 59 of the Two Party Agreement (1996), NOAA requests written confirmation that all corrective action has been completed at the site in accordance with the Agreement and that no further action is required ("No Further Action Letter").

References:
Polarconsult Alaska, Inc. Environmental Site Investigation, St. George Debris Cleanup and UST Decommissioning, Pribilof Islands Environmental Restoration Project. November 1997.

Woodward-Clyde Consultants, Inc. Phase 1B Environmental Assessment, St. George Island, Alaska. March 1994.

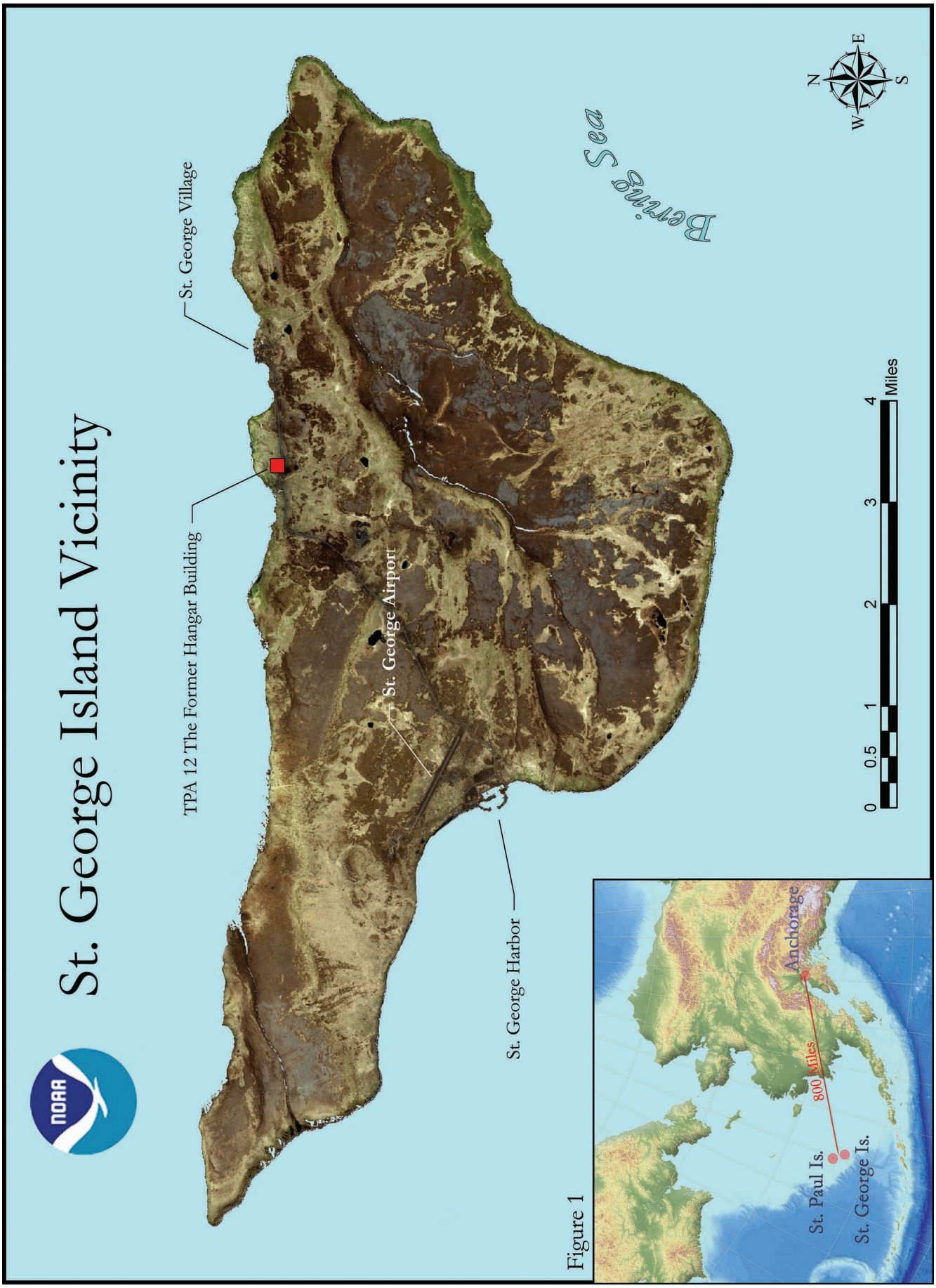
St. George Island Vicinity
St. George Village
TPA 12 The Former Hangar Building
St. George Airport
St. George Harbor
Bering Sea
N
E
S
W
0
0.5
1
2
3
4
Miles
Anchorage
800 Miles
St. Paul Is.
St. George Is.

Figure 1

TPA 12, The Former Hangar Building
Area of Excavation
Hangar Building
Bear Lake
0
70
140
280
420
560
Feet
N
W
E
S

Figure 2

Figure 3. TPA Site 12, The Former Hangar Building, Before Clean Up

Figure 4. TPA Site 12, The Former Hangar Building, After Clean Up.

New Debris Deposited at TPA Site 12, The Former Hangar Building
as of September 2002

Eastside of Building

South of Building

West of Building

Inside the Former Hangar Building

Figure 5 February 2003

Figure 6.

TPA Site 12, The Former Hanag Building, Soil Saturated with Petroleum Hydrocarbons

Source: Polarconsult Alaska Inc., St. George Island Environmental Site Investigation Report 1997.

Figure 7.

TPA Site 12, The Former Hangar Building, Final Extent of Excavation

Source: Polarconsult Alaska Inc., St. George Island Environmental Site Investigation Report 1997.

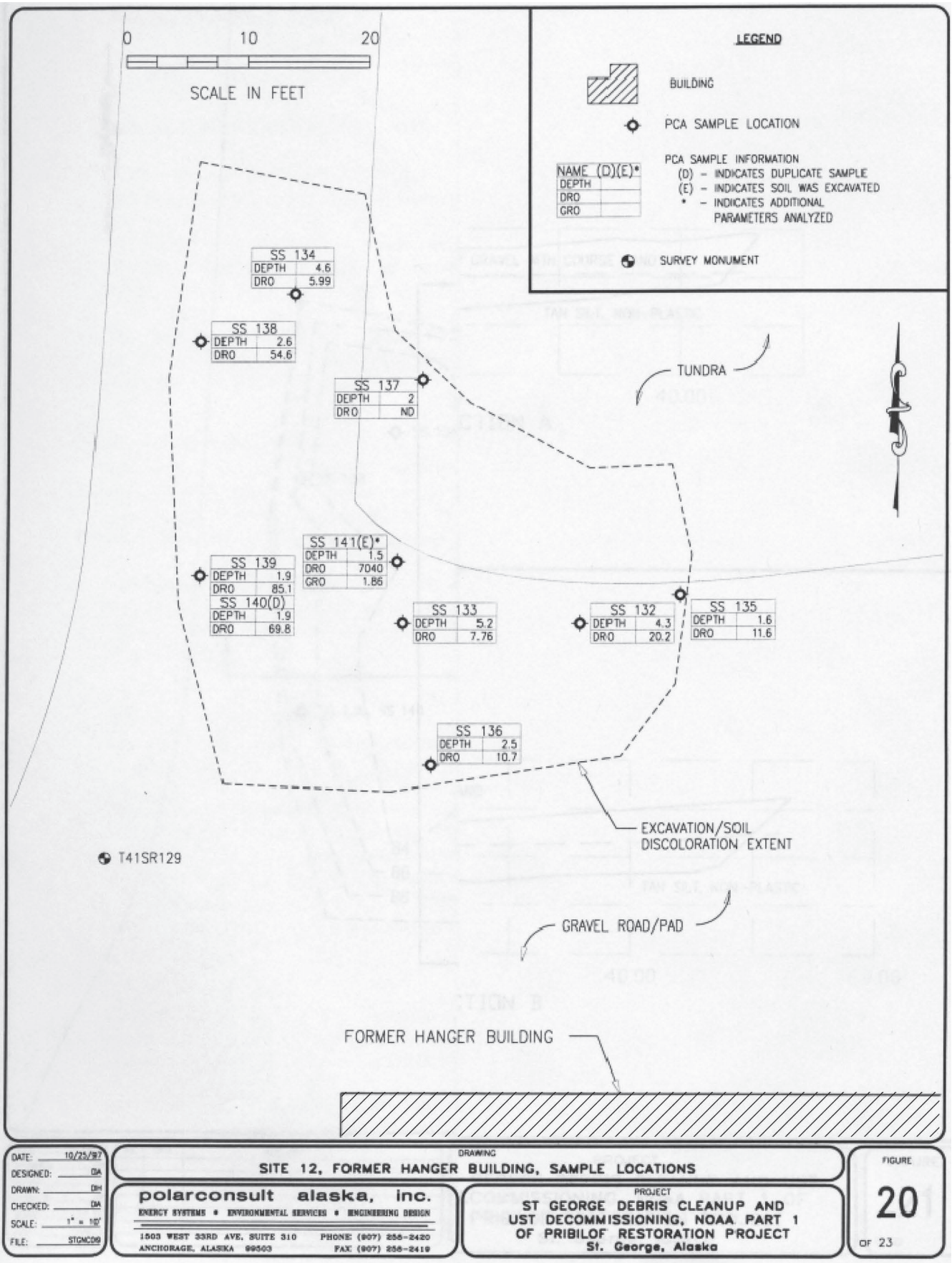
0 10 20
SCALE IN FEET
LEGEND
BUILDING
PCA SAMPLE LOCATION
NAME (D)(E)*
DEPTH
DRO
GRO
PCA SAMPLE INFORMATION
(D) - INDICATES DUPLICATE SAMPLE
(E) - INDICATES SOIL WAS EXCAVATED
* - INDICATES ADDITIONAL PARAMETERS ANALYZED
SURVEY MONUMENT
SS 134 DEPTH 4.6 DRO 5.99
SS 138 DEPTH 2.6 DRO 54.6
SS 137 DEPTH 2 DRO ND
TUNDRA
SS 141(E)* DEPTH 1.5 DRO 7040 GRO 1.86
SS 139 DEPTH 1.9 DRO 85.1
SS 140(D) DEPTH 1.9 DRO 69.8
SS 133 DEPTH 5.2 DRO 7.76
SS 132 DEPTH 4.3 DRO 20.2
SS 135 DEPTH 1.6 DRO 11.6
SS 136 DEPTH 2.5 DRO 10.7
EXCAVATION/SOIL DISCOLORATION EXTENT
T41SR129
GRAVEL ROAD/PAD
FORMER HANGER BUILDING
DATE: 10/25/97
DESIGNED: DIA
DRAWN: DIH
CHECKED: DIA
SCALE: 1" = 10'
FILE: STGMC09
DRAWING
SITE 12, FORMER HANGER BUILDING, SAMPLE LOCATIONS
polarconsult alaska, inc.
ENERGY SYSTEMS • ENVIRONMENTAL SERVICES • ENGINEERING DESIGN
1503 WEST 33RD AVE, SUITE 310
ANCHORAGE, ALASKA 99503
PHONE (907) 258-2420
FAX (907) 258-2419
PROJECT
ST GEORGE DEBRIS CLEANUP AND UST DECOMMISSIONING, NOAA PART 1 OF PRIBILOF RESTORATION PROJECT
St. George, Alaska
FIGURE
20
OF 23

Figure 8.

For the National Oceanic and Atmospheric Administration

for

John Lindsay
NOAA, Pribilof Project Office

2/24/03
Date

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at TPA Site Number 12, the Former Hangar Building, in accordance with the Agreement and that no further action is required.

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

3/10/03
Date

*with conditions, see attached letter

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

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March 11, 2003

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE BIN C15700
Seattle, WA 98115-6349

RE: St. George Island Request for No Further Action Former Hangar Building Site TPA Site No. 12, dated February 19, 2003

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document on February 26, 2003. Based on our review of the information provided, the Department finds the Former Hangar Building Site listed in the Two Party Agreement (TPA) as Site No. 12, does not pose a significant threat to human health or safety, or the environment and will not require further remedial action or investigation.

The Department is basing its decision on the most current and complete information provided by NOAA. The Department reserves its rights, under 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations and AS 46.03 to require the National Oceanic and Atmospheric Administration to perform additional investigation, cleanup, or containment if subsequent information indicates that

(1) the cleanup is not protective of human health, safety, or welfare, or of the environment; or

(2) the information the Department relied upon for its decision was invalid, incomplete, or fraudulent.

The Department requests NOAA attach a copy of this letter with the document. Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard

Louis Howard
Project Manager

G:\SPAR\EQ-CLER\Howard_Louis\ 2003 TPA 12 Former Hangar Building.doc

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NOAA Site 13
TPA Site 13: Makushin Pit

Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska, Volume I 325

Letter from Mary Moloseau Goetz, P.E. to Ray Dronenburg RE: St. George Island, Makushin Pit Site. Dated July 15, 1997 345

Letter from Ray Dronenburg to Mary Moloseau Goetz, P.E. RE: Closure for Makushin Pit Site, St. George Island. Dated August 18, 1997. 347

Expanded Site Inspection
St. George Island
Pribilof Islands, Alaska

Volume I

January 1997

Prepared for
U.S. Army Corps of Engineers
Seattle District
4735 East Marginal Way South
Seattle, Washington 98124-2255

Hart Crowser
1910 Fairview Avenue East
Seattle, Washington 98102-3699

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ANALYTICAL TECHNOLOGIES, INC.

ACRONYMS

ADEC	Alaska Department of Environmental Conservation
ANCSA	Alaska Native Claims Settlement Act
AOI	Area of Investigation
ARARs	applicable or relevant and appropriate requirements
AST	Above-ground Storage Tank
ASTM	American Society for Testing and Materials
ATI	Analytical Technologies, Inc.
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
CCV	continuing calibration verification
CDAP	Chemical Data Acquisition Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Register
CLP	Contract Laboratory Program
Corps	U.S. Army Corps of Engineers
cPAH	carcinogenic polycyclic aromatic hydrocarbons
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
ESI	Expanded Site Inspection
FS	Feasibility Study
GC/ECD	gas chromatograph/electron capture detector
GC/FID	gas chromatograph/flame ionization detector
GRO	gasoline-range organics
HSP	Health and Safety Plan
IEUBK	Integrated Exposure Uptake Biokinetic Model
LCS	laboratory control sample
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NWS	National Weather Service
OSWER	Office of Solid Waste and Emergency Response
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PE	performance evaluation
PID	photoionization detector
PPE	personal protective equipment
QA/QC	Quality Assurance/Quality Control
RBCs	Risk-based Concentrations
RRO	residual-range organics
SARA	Superfund Amendments and Reauthorization Act
TBC	To be considered
TSCA	Toxic Substances Control Act
USGS	U.S. Coast Guard

UST	Underground Storage Tank
WASC	Western Administrative Support Center
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
μg/kg	micrograms per kilogram
μg/L	micrograms per liter

EXECUTIVE SUMMARY

The United States Army Corps of Engineers (Corps), Seattle District, on behalf of the U.S. Department of Commerce, Western Administrative Support Center (WASC), directed Expanded Site Inspections (ESIs) on soils at several sites on St. George Island, Alaska (see Figure 1-1). These sites are generally associated with National Oceanic and Atmospheric Administration (NOAA) activities at the island. NOAA managed the island prior to 1979 when the Alaska Native Claims Settlement Act (ANCSA) provide for transfer of property and management of the island to native corporations.

The work was conducted according to the Final Management Plan (Hart Crowser, 1995). The Management Plan was reviewed and commented upon by the Corps, NOAA, Alaska Department of Environmental Conservation (ADEC), the City of St. George, and the Aleut Corporation.

Twelve individual sites (Figures 1-2 and 1-3) were included in this ESI:

- ESIs were performed at the following ten sites: Open Pits, Inactive/Abandoned Diesel Tank Farm, Inactive Gasoline Tank Farm, Old Power Plant, Former Kerosene/AST Storage Area, Cross Hill Drum Dump, Former Fuel Storage Area, Old Carpenter Shop, Old Coal House, and the Port Fuel Supply Line which includes four subareas.

- Samples were also obtained at the Active Power Plant to supplement data collected during a prior investigation.

- At the Makushin Pit, samples were collected to verify that soil quality does not indicate that releases have occurred.

Surface and subsurface soil samples were collected at the sites to assess potential contamination resulting from past practices. The samples were analyzed in a field laboratory established on the island. As appropriate, the analytical results were used to direct additional sampling to assess the potential extent of affected soils. Confirmation samples were submitted for analysis to the project laboratory in Anchorage, Alaska, along with samples for metals and semivolatile organics analysis.

Site-Specific Results

For each site, Table ES-1 presents a summary of the analytical results, along with ADEC cleanup levels and, as appropriate, an estimate of the volume of soil exceeding the ADEC level. Recommendations for future action are also presented. In general, the results were as follows:

No Further Action. Based on the field laboratory analytical results and consideration of potential contaminant exposure risks, no further action is recommended for the following five sites and one Port Fuel Supply Line subarea: Former Kerosene/AST Storage Area, Cross Hill Drum Dump, Old Carpenter Shop, Old Coal House, and Makushin Pit sites, and Port Fuel Supply Line—West Oceanfront Subarea.

Recommendations regarding "no further action" are based on the absence of significant risks to human health or the environment derived from exposure to chemical constituents present in site soils. However, it is possible that physical hazards or other site issues are present and may need to be addressed. The need for addressing physical hazards and impediments for future development was not part of the ESI scope of work.

Exceedences of ADEC Matrix Cleanup Levels. The field laboratory analytical sample results for five sites and three subareas of the Port Fuel Supply Line indicate exceedences of the ADEC non-UST soil matrix cleanup levels, including: Open Pits, Inactive/Abandon Diesel Tank Farm, Inactive Gasoline Tank Farm, Old Power Plant, and Former Fuel Storage Area sites; and the East Oceanfront, North Cargo Line, and South Cargo Line subareas of the Port Fuel Supply Line. The following recommendations are made for these sites/subareas:

- Excavation and removal of soils exceeding cleanup levels are recommended at Open Pits, Inactive Gasoline Tank Farm, and Old Power Plant sites, and the South Cargo Line subarea.

- Removal of accessible and/or hotspot soils exceeding cleanup levels and backfilling is recommended at the Inactive/Abandon Diesel Tank Farm and Former Fuel Storage Area sites, and the East Oceanfront and North Cargo Line subareas.

Active Power Plant. A previous study indicates an area of petroleum hydrocarbon-affected soils near the northwest corner of the Active Power Plant building. Additional investigation was completed during this ESI to supplement previous work at the Active Power Plant. The results of this recent ESI work indicate that the petroleum-affected area identified in the previous study does not extend farther to the south. In conjunction with the removal of two USTs located at the Power Plant, it is recommended that accessible contaminated soil near the northwest corner of the building also be removed.

Recommendations for future actions provided in this ESI report are the result of a qualitative assessment of available information and criteria and did not involve a feasibility study evaluation. The selection and design of remedial actions for the St. George sites addressed in this report will be evaluated in greater detail prior to implementation of the remedial action. The final remedy selections will involve negotiations with ADEC and members of the Restoration Advisory Board (RAB).

Table ES-1. St. George Island Summary of Results and Recommendations

Site Subarea	Summary of Field Laboratory Analytical Results	ADEC Cleanup Level in mg/kg	Estimated Soil Volume Exceed. Cleanup Level in CY	Recommendations
Open Pits	Gasoline to 80 mg/kg Kerosene/diesel to 6,800 mg/kg Oil to 2,100 mg/kg Non-detect BTEX and PCB/Pest.	Category B GRO 100 DRO 200 RRO 2,000 BTEX 15	620	Excavation and Removal
Inactive/Abandoned Diesel Tank Farm	Non-detect gasoline Kerosene/diesel to 11,000 mg/kg Oil to 92 mg/kg Non-detect BTEX	Category B GRO 100 DRO 200 RRO 2,000 BTEX 15	1,580	Excavation and Removal except in vicinity of TP-3
Inactive Gasoline Tank Farm	Non-detect gasoline Diesel to 2,300 mg/kg Oil to 240 mg/kg Total Xylenes to 0.68 mg/kg	Category C GRO 500 DRO 1,000 RRO 2,000 BTEX 50	80	Stockpile Overburden for Reuse as Backfill Excavation and Removal
Old Power Plant	Non-detect gasoline and PCB/Pest. Diesel to 3,700 mg/kg Oil to 13,000 mg/kg	Category C GRO 500 DRO 1,000 RRO 2,000	410	Excavation and Removal
Former Kerosene/ AST Storage Area	Non-detect gasoline Diesel/kerosene to 180 mg/kg Oil to 200 mg/kg Non-detect BTEX	Category C GRO 500 DRO 1,000 RRO 2,000 BTEX 50	None	No further action
Cross Hill Drum Dump	Non-detect gasoline Non-detect diesel Non-detect oil	Category D GRO 1,000 DRO 2,000 RRO 2,000	None	No further action
Former Fuel Storage Area	Non-detect gasoline Diesel to 10,000 mg/kg Oil to 1,400 mg/kg	Category B GRO 100 DRO 200 RRO 2,000	2,000	Excavation and Removal of Accessible Soil
Old Carpenter Shop	Non-detect gasoline Diesel/kerosene to 50 mg/kg Oil to 87 mg/kg Non-detect BTEX	Category D GRO 1,000 DRO 2,000 RRO 2,000 BTEX 100	None	No further action
Old Coal House	(Slightly elevated cPAHs)	N/A	None	No further action
Port Fuel Supply Line West Oceanfront	Non-detect gasoline Non-detect diesel/kerosene Oil to 240 mg/kg	Category C GRO 500 DRO 1,000 RRO 2,000	None	No further action
East Oceanfront	Non-detect gasoline Diesel to 1,300 mg/kg Oil to 240 mg/kg Non-detect BTEX	Category B GRO 100 DRO 200 RRO 2,000 BTEX 15	700	Excavation and Removal around EO-SS-5 Maintenance of vegetation

Table ES-1. St. George Island Summary of Results and Recommendations Sheet 2 of 2

Site Subarea	Summary of Field Laboratory Analytical Results	ADEC Cleanup Level in mg/kg	Estimated Soil Volume Exceed. Cleanup Level in CY	Recommendations
Port Fuel Supply Line North Cargo Line (North)	Gasoline to 1,400 mg/kg Diesel/kerosene to 19,600 mg/kg Non-detect oil TEX to 210 mg/kg; Non-detect B	Category B GRO 100 DRO 200 RRO 2,000 BTEX 15	300	Excavation and Removal
North Cargo Line (South)	Gasoline to 1,800 mg/kg Diesel/kerosene to 11,000 mg/kg Non-detect oil TEX to 28 mg/kg; Non-detect B	Category C GRO 500 DRO 1,000 RRO 2,000 BTEX 50	230	Limited Excavation and Removal
South Cargo Line (North)	Non-detect gasoline Diesel/kerosene to 5,800 mg/kg Oil to 64 mg/kg	Category D GRO 1,000 DRO 2,000 RRO 2,000	1	No further action
South Cargo Line (South)	Non-detect gasoline Diesel/kerosene to 5,600 mg/kg Non-detect oil Non-detect BTEX	Category C GRO 500 DRO 1,000 RRO 2,000 BTEX 50	440	Stockpile Overburden for Reuse as Backfill Excavation and Removal
Active Power Plant	Non-detect gasoline Non-detect diesel Non-detect oil	Category B GRO 100 DRO 200 RRO 2,000	150*	Excavation and Removal of Accessible Soil
Makushin Pit	Non-detect gasoline Non-detect diesel Non-detect oil Non-detect BTEX	Category D GRO 1,000 DRO 2,000 RRO 2,000 BTEX 100	None	No further action

* Volume based on existing Woodward-Clyde data.

442105/STGEORGE/TBL-ES-1.xls

5.15 Makushin Pit Site

The Makushin Pit Site, a former borrow pit, is located about 2.5 road miles from the City of St. George, at the northeast corner of the intersection of Zapadni Road and the access road to the current landfill and Boneyards B and C (Figure 1-2). It is about 60 feet in diameter and 15 feet deep and is a former borrow pit used to obtain scoria for various construction activities (Figure 5.15-1).

5.15.1 Background

In October and November 1993, Woodward-Clyde conducted a drum, propane tank, and battery inventory, bulking and staging operation on St. George Island (Woodward-Clyde, 1995). Woodward-Clyde observed one empty drum in the bottom of the Makushin Pit and two additional empty drums located across Zapadni Road, to the north of the pit. The text of the Woodward-Clyde report is inconsistent with the inventory table, which indicates that five drums were located in the vicinity of the pit. The Phase 1B report does not identify the exact locations of drums observed outside the pit and there is no indication of what may have originally been in the drums. No other debris was observed at the site.

Empty drums were removed from the Makushin Pit area and staged in the vicinity of Zapadni Harbor, near the airport. Because the drums were empty, no samples of drum contents were collected.

During the April 1995 site visit, Hart Crowser observed runoff water from the ditch along Zapadni Road entering the pit. The flow into the pit was estimated to be around 1 cfs. Standing water was observed at the bottom of the pit. During the site investigation in October/November of 1995 water was not flowing to the pit.

5.15.2 ESI Objectives

ADEC and the local community requested that confirmation sampling be conducted to verify that the site does not pose a threat. The objectives of this ESI were to evaluate whether the single drum removed from the pit may have released chemical constituent to the underlying soil.

5.15.3 Field Activities

Initially a surface sample was collected from the bottom of Makushin Pit. A hand-auger boring (HA-1) was then advanced; however, refusal was reached at a depth of 1.5 feet. Soil samples were collected from depths of 0 to 0.5 foot and 1.5 feet.

Both samples were analyzed in the field laboratory for petroleum hydrocarbons using method 8015. The near-surface sample was also analyzed for BTEX. Similarly the near-surface sample was submitted to the project laboratory for confirmation analysis of DRO, RRO, and BTEX.

5.15.4 Site Geology

Approximately 0.5 foot of silt was encountered overlying a sandy, silty, gravel. Roots and scoria cobbles were also encountered. Refusal was reached at a depth of approximately 1.5 feet on rocks/cobbles within the soil matrix.

5.15.5 Soil Quality

Figure 5.15-1 presents the basic TPH sample results. Results were as follows:

- No petroleum hydrocarbons were detected in any of the samples
- Based on a review of the chromatograms, biogenic compounds were identified in both samples.

5.15.6 Potential Human Health and Ecological Considerations

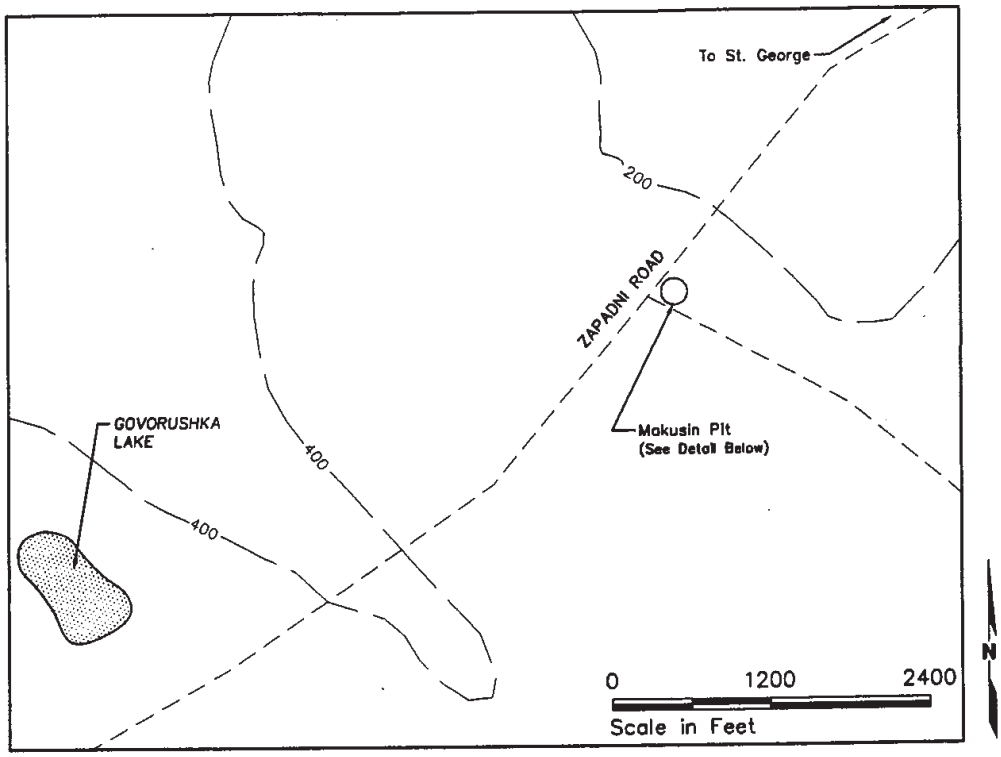
No petroleum hydrocarbons were detected at the site. No potential risks to human health and the environment have been identified.

5.15.7 Conclusions and Recommendations

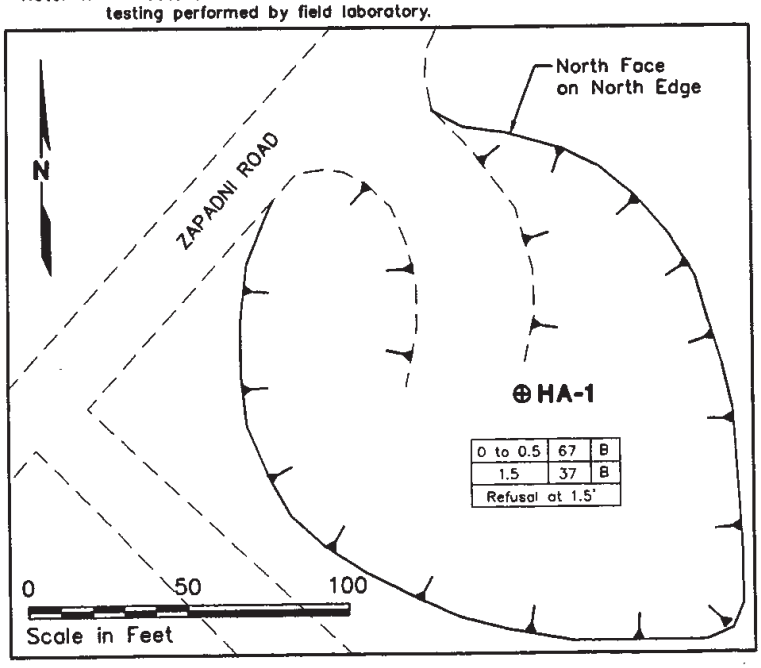
Petroleum hydrocarbons were not encountered in the soils samples collected from the Makushin Pit Site. No human health or ecological risks were identified. Based on these results, no further action is recommended for this site.

Site and Exploration Plan Showing TPH Concentrations

Makushin Pit



Note: 1. TPH data based on EPA Modified 8015 testing performed by field laboratory.



—200— Elevation Contour in Feet (200-Foot Contour Interval Contours Based on Approximate Elevation above Sea Level)

⊕HA-1 Hand-Auger Boring Location and Number

Depth in Feet below GS	Total TPH Conc. in mg/kg	Product Type
0 to 0.5	67	B

B – Biogenic

HARTCROWSER

J-4421-05G 5/96

Figure 5.15-1

CVD 5/9/96 HC.PCP 44210521

National Oceanic and Atmospheric Ad. .istration,
Host Agency serving:
Bureau of the Census
Economic Development Administration
International Trade Administration
Minority Business Development Agency
ffice of the Inspector General
reau of Export Administration

U.. DEPARTMENT OF COMMERCE
Western Administrative Support Center
7600 Sand Point Way N.E.
BIN C15700
Seattle, Washington 98115-0070

RECEIVED
JUL 21 1997
DEPT. OF ENVIRONMENTAL CONSERVATION

July 15, 1997

Mr. Ray Dronenburg
Contaminated Site Remediation Program
Site Remediation Section
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

Subject: St. George Island, Makushin Pit Site

Dear Ray,

Paragraph 59 of the NOAA and ADEC Two-Party Agreement allows us to request written confirmation that all corrective action has been completed at a site. I am requesting written confirmation that no further action is required for the Makushin Pit site on St. George Island. It is numbered as Site 13 in the Two-Party Agreement.

This site was investigated, and the results are documented in the St. George Expanded Site Investigation of January 1997. This report reviewed the findings and associated regulations, and recommended no further action be taken on the site.

I appreciate your assistance in this matter, and look forward to your response. If you have any questions, I can be reached at (206)526-6295.

Sincerely,

Mary Moloseau Goetz

Mary Moloseau Goetz. P.E.
Pribilof Project Manager

cc: NOAA General Counsel

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION & RESPONSE
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TELEPHONE: (907) 269-7659
FAX: (907) 269-7649
http://www.state.ak.us/dec/home/htm

August 18, 1997

REC'D AUG 211997

Ms. Mary Moloseau Goetz, P.E.
U. S. Department of Commerce
Western Administrative Support Center
7600 Sand Point Way, NE
BIN Cl5700
Seattle, Washington 98 1154070

Re: Closure for Makushin Pit Site, St. George Island

Dear Ms. Goetz:

The Department has reviewed your letter request of July 15, 1997 requesting closure for the above referenced site and has the following comments:

- Sampling as conducted by Hart Crowser and reported in the Expanded Site Investigation report of June 1996 indicates that no petroleum contamination was detected at this site (Site 13, Attachment A to the Two Party Agreement)

The Department agrees that "No Further Action" is required at this site and hereby assigns site 13 that status. This assignment is specifically for site 13 and no implication that any other site would be covered by this assignment should be taken.

Sincerely,

for RRa Dronenburg
Project Manager

RD:el

cc: Attorney General's Office, Anchorage
Tanaq Corporation

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NOAA Site 14
TPA Site 14: Oil Drum Dump

Request for Conditional Closure, Oil Drum Dump, TPA 14/Site 14, St. George, Alaska 351

Notice of Residual Soil Contamination at Two Party Agreement Site 14, St. George Island, Alaska
(Lot 2) 361

Notice of Residual Soil Contamination at Two Party Agreement Site 14, St. George Island, Alaska
(Section 36, Township 41 South, Range 130 West of the Seward Meridian, Alaska) 367

Request for Conditional Closure
Oil Drum Dump
TPA 14/Site 14
St. George Island, Alaska

Site: Oil Drum Dump, also known as Two-Party Agreement (TPA) Site 14 and National Oceanic and Atmospheric (NOAA) Site 14

Location: St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On the island, the Oil Drum Dump is located 2.5 miles southwest of the City of St. George. The site is located on the landfill access road, approximately 1 mile southeast of Zapadni Road (56° 35' 9.33" N latitude, 169° 35' 49.03 W longitude; Figure 1).

Legal Property Description: The Oil Drum Dump is located in Section 36, Township 41 South, Range 130 West, of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15,1985 (Figure 2). The St. George Tanaq Corporation owns the surface estate, and The Aleut Corporation owns the subsurface estate.

Type of Release: Debris– including fuel storage tanks, propane cylinders, 55-gallon drums, and vehicle skeletons– and stained soil presumed to have resulted from leaking debris contents.

History and Background: This site was used for disposal of debris, including drums, decommissioned fuel storage tanks, and other metallic vessels. Historically, the western portion of the site contained six large aboveground storage tanks from the Former Diesel Tank Farm, TPA Site 1 (Tetra Tech 2000a).

Summary of Site Investigations:
Investigations conducted at the Oil Drum Dump Site include the following.

1992 Preliminary Assessment by Ecology & Environment, Inc. (E&E)
The E&E assessment reported a noticeable amount of surface debris, including propane tanks, drums, abandoned fuel storage tanks, metal debris, and vehicle remains. The report noted soil staining near abandoned tanks and drums. The contents in two of the 14 tanks on site were sampled, and field screening indicated the liquid in the tanks was water (E&E 1993).

1992 Environmental Assessment by Harding Lawson Associates (HLA)
HLA inventoried a total of 14 fuel storage tanks, leaving them in place. One hundred twenty (120) propane tanks also were inventoried and marked with paint for future reference and removal (HLA 1993).

1993 Environmental Assessment by Woodward-Clyde Consultants, Inc. (Woodward-Clyde)
Woodward-Clyde inventoried and removed 72 drums. Soil surrounding one group of 36 drums on the south end of the site was stained and several of the drums were actively leaking. Twenty-eight (28) drums contained waste material. Woodward-Clyde also inventoried 288 propane cylinders, two automotive batteries, three vehicles, and a truck trailer. The propane cylinders and batteries were removed from the site (Woodward-Clyde 1994).

1997 Site Investigation by Polarconsult Alaska, Inc. (Polarconsult)
Polarconsult (1997a) conducted soil sampling to identify potential areas of soil contamination. Twenty-two shallow soil samples were collected, composited into five samples (four project samples and one quality control duplicate sample), and analyzed for heavy metals, diesel-range organics (DRO), and residual-range organics (RRO). Additionally, five discrete samples were analyzed for gasoline-range organics (GRO) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Two of the five discrete samples were collected from locations where organic vapors were detected using an organic vapor monitor. Samples composited from around a former drum cache west of the road (composite group 2) contained 8,160 mg/kg DRO and 39,900 mg/kg RRO (Table 1, Figure 3), exceeding Method One (category B) cleanup levels applied by Polarconsult. Results of a duplicate sample, composite group 5, corroborated these results. None of the discrete samples analyzed for GRO and BTEX exceeded their Method One (category B) cleanup levels.

2000 Environmental Site Investigation by Polarconsult Alaska, Inc.
Test pits sampled in 1997 were located, re-sampled, and individually analyzed (rather than as composites) for DRO, RRO, and BTEX. Other locations were also sampled in an effort to characterize the extent of the contamination (Table 2, Figure 3). According to Polarconsult, soil contamination coincided with test pits excavated in discolored soil (Polarconsult 2001).

Groundwater Characteristics:
No groundwater monitoring wells have been installed at the Oil Drum Dump, but groundwater beneath the site is estimated to occur at a depth of 250 feet (Tetra Tech 2000b). The site is located 2.4 miles from the St. George municipal drinking water wells. Tetra Tech EM Inc. (Tetra Tech) conducted a vadose zone modeling study for the St. George municipal landfill, located only 400 yards northwest of the Oil Drum Dump. In this study, Tetra Tech concluded that the thickness of the fractured basalt portion of the vadose zone and the distance of the landfill to the public water supply wells would be expected to significantly dilute and attenuate groundwater contamination. The City of St. George, which is responsible for the drinking water field, and ADEC accepted this interpretation.

Summary of Applied Cleanup Levels:
NOAA has chosen to apply ADEC Method Two cleanup criteria, discussed at 18 AAC 75.341(c) (ADEC 2000) at this site. The most stringent cleanup level among the ingestion, inhalation, and migration to groundwater pathways has been applied for the site cleanup criteria. Under the TPA, for benzene NOAA had the option to cleanup to the less stringent State of Alaska cleanup level in effect in 1991 (ADEC 1991). Cleanup criteria were met to the maximum extent practicable (18 AAC 75.325 (f), 18 AAC 75.990).

Summary of Cleanup Actions:
Cleanup actions were conducted during site investigations in 1993, 1996, 1997, and 2000. In October 1993, a NOAA contractor removed 72 drums, 288 propane cylinders, and other potentially hazardous items (Woodward-Clyde 1994). Polarconsult removed remaining debris, including several large tanks and small surface debris, during December 1996 and March 1997 (Polarconsult 1997b).

In June 2000, numerous discontinuous patches of visibly stained soil were excavated. Further excavation was conducted in July 2000 using a more powerful excavator (Polarconsult 2001). Soil was excavated to approximately 11 feet below ground surface (bgs) near sample location SS251 before fractured, vesicular red basalt impeded further excavation. Near sample location SS250, contaminated soil was removed to about 4 feet bgs, where refusal was encountered. A total of 101 cubic yards of contaminated soil was removed throughout 2000 excavation activities at the Oil Drum Dump site (Figure 4). The soil was transported to the NOAA petroleum-contaminated soil (PCS) stockpile for on-island treatment in NOAA's enhanced thermal conduction system.

Following excavation, soil samples were collected for field and laboratory (confirmation) analysis (Table 3, Figure 4). In the fixed laboratory, samples were analyzed for DRO, RRO, and BTEX. DRO was detected above its most stringent Method Two cleanup level of 250 mg/kg at two sampling locations. At sample location SS250, DRO was detected at a concentration of 3,350 mg/kg. At sample location SS251, DRO was detected at a concentration of 1,320 mg/kg. RRO was also detected above its most stringent Method Two cleanup level of 10,000 mg/kg in sample SS250, with a concentration of 12,500 mg/kg RRO. These samples were collected from excavation bottoms where refusal (i.e., basalt) was met, and further excavation was not feasible. BTEX did not exceed Method Two cleanup levels.

Recommended Action:
In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action, to the maximum extent practicable, at the Oil Drum Dump, TPA Site 14/Site 14 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

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For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

Nov 12, 2004
Date

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the Oil Drum Dump, TPA Site 14/Site 14 in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

Nov 17, 2004
Date

Tables and Figures

Table 1. Summary of 1997 Site Characterization Results

Sample #	Depth (ft bgs)	Max OVM (ppm)	Pb (mg/kg)	As (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	DRO (mg/kg)	RRO (mg/kg)	GRO (mg/kg)	Benzene (mg/kg)	Total BTEX (mg/kg)
Group 1 [a]	1.7	0	3.09	ND[b]	0.0805	30	ND	ND	NA[e]	NA[e]	NA[e]
Group 2 [a]	1.3	4	4.37	ND[b]	0.168	29.1	8,160	39,900	NA[e]	NA[e]	NA[e]
Group 3 [a]	1.2	0	3.61	ND[b]	0.114	30.8	18.3	83	NA[e]	NA[e]	NA[e]
Group 4 [a]	1.2	0	4.36	ND[b]	0.139	27.9	11.4	ND	NA[e]	NA[e]	NA[e]
Group 5[a,c]	1.3	4	4.04	ND[b]	0.156	29	6,090	30,000	NA[e]	NA[e]	NA[e]
SS 152 [d]	2.0	0	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	ND[b]	ND[b]	ND[b]
SS 153 [d]	1.5	2	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	4.86	ND[b]	ND[b]
SS 154 [d]	1.5	4	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	ND[b]	ND[b]	ND[b]
SS 158 [d]	1.5	0	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	ND[b]	ND[b]	ND[b]
SS 162 [d]	2.0	0	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	NA[e]	ND[b]	ND[b]	ND[b]

Notes:

a Samples are composites of several subsamples analyzed for all constituents but GRO and BTEX.
b Analyte was not detected above its practical quantitation limit.
c Composite sample group 5 is a field duplicate of composite sample group 2.
d Sample was a discrete sample analyzed only for GRO and Benzene/BTEX.
e Sample not analyzed for the listed contaminant.

Table 2. Summary of 2000 Site Characterization Results

Sample ID	Depth (ft bgs)	Benzene (mg/kg)	DRO (mg/kg)	RRO (mg/kg)
SS 234	2.6	ND [a]	ND [a]	ND [a]
SS 235	1.5	ND [a]	ND [a]	109
SS 236	2.7	ND [a]	ND [a]	ND [a]
SS 237	1.5	ND [a]	ND [a]	ND [a]
SS 238	1.9	ND [a]	ND [a]	4,020
SS 239	1.0	ND [a]	ND [a]	ND [a]
SS 240	1.7	ND [a]	898	11,200
SS 241	1.6	ND [a]	ND [a]	175
SS 242	2.5	ND [a]	ND [a]	ND [a]
SS 243	1.8	ND [a]	ND [a]	26
SS 244	4.6	ND [a]	780	14,500
SS 245	2.4	ND [a]	ND [a]	4,000
SS 246	1.1	ND [a]	21	1,160

Notes:

a Sample was not detected above its practical quantitation limit.
Shading indicates that soil at and near the sample location was removed and remediated by NOAA's enhanced thermal conduction system.

Table 3. Summary of 2000 Site Remediation Confirmation Results

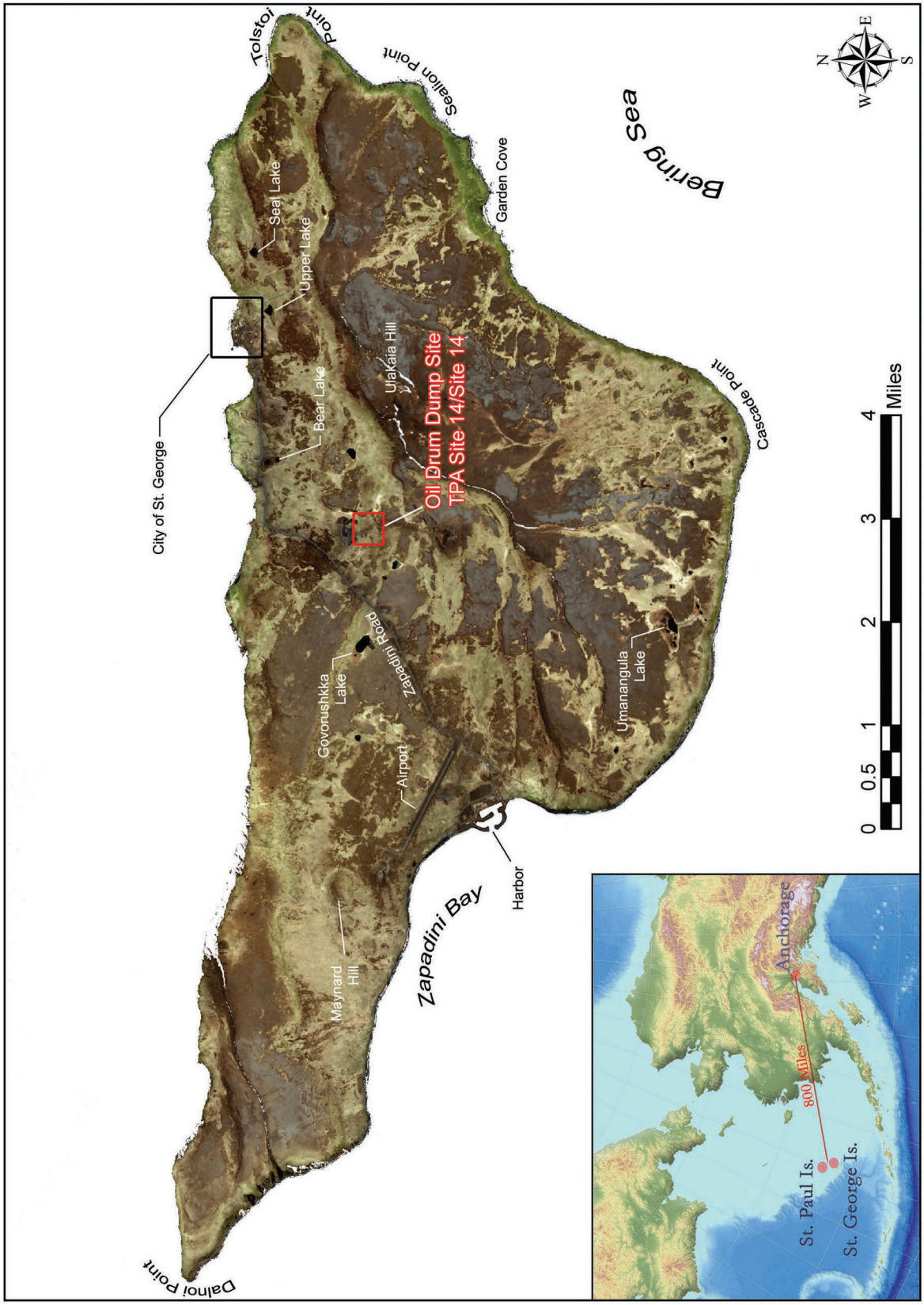
Sample ID	Depth (ft bgs)	Benzene (mg/kg)	DRO (mg/kg)	RRO (mg/kg)
SS 247	2.5	ND[a]	65	472
SS 248	3.0	ND[a]	63	352
SS 249	2.9	ND[a]	117	693
SS 250[b]	4.2	ND[a]	***3,350***	***12,500***
SS 251[b]	10.9	ND[a]	***1,320***	8,360
Cleanup Level	--	0.5	250	10,000

Notes:

a Benzene was not detected above its practical quantitation limit of 0.0155

b Sample collected from excavation bottom at refusal.

Concentrations in ***bold italics*** exceeded the most stringent Method Two cleanup levels.



Source: Ikonos 2001 Satellite Image

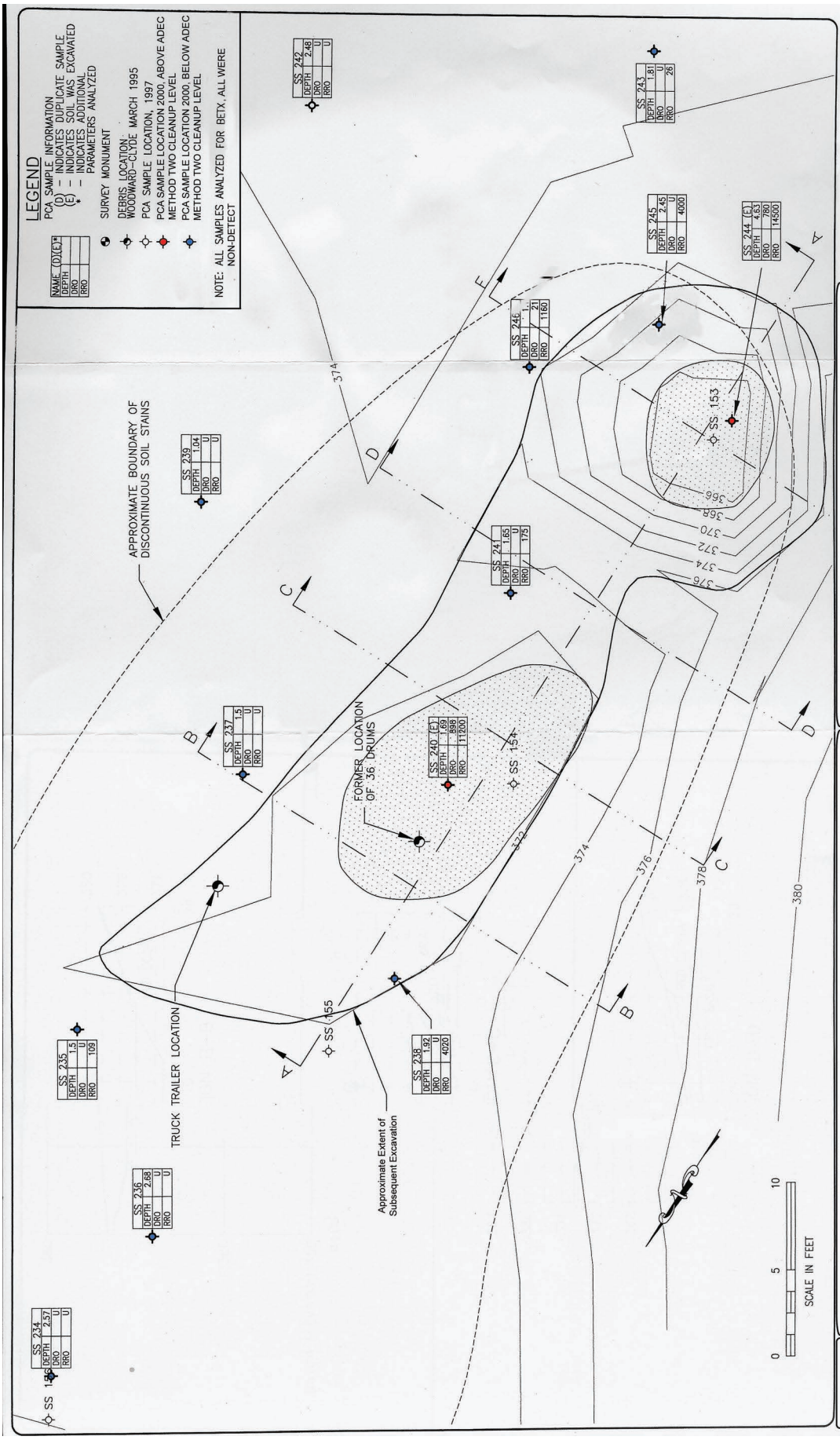
Pribilof Islands Restoration Project

Island and Vicinity Map
Oil Drum Dump Site
TPA Site 14/Site 14
St. George Island, Alaska

Figure 1

Figure 2	**Legal Property Description Map** **Oil Drum Dump** **TPA Site 14/Site 14** **St. George Island, Alaska**	Source: Ikonos 2001 Satellite Image; Bureau of Land Management Land Survey Filed Febuary 15, 1985

Pribilof Islands Restoration Project



Source: Adapted from Polarconsult Draft Environmental Site Investigation
St. George Envitonmental Cleanup
Pribilof Islands Environmental Restoration Project Part II
December 31, 2001

Figure 3

Characterization Sample Locations
TPA Site 14/Site 14, Oil Drum Dump Site
St. George Island, Alaska

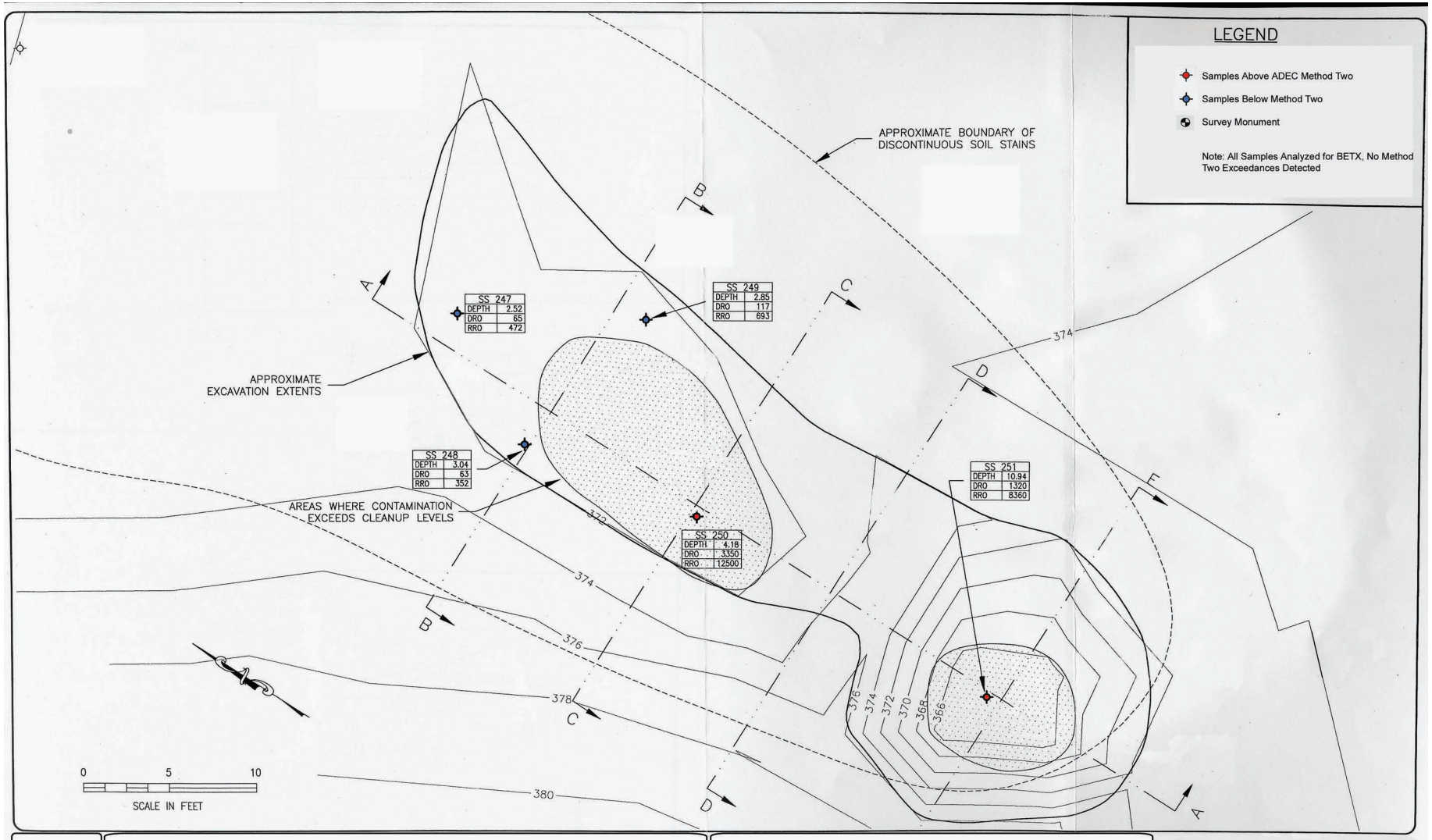


Figure 4

Confirmation Sample Locations
TPA Site 14/Site 14, Oil Drum Dump Site
St. George Island, Alaska

Source: Adapted from Polarconsult Draft Environmental Site Investigation
St. George Envitonmental Cleanup
Pribilof Islands Environmental Restoration Project Part II
December 31, 2001

Pribilof Islands Restoration Project

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2008-000394-0

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NOTICE OF RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 14
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation and The Aleut Corporation as the owners, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator, hereby provide public notice that property located on the landfill access road, one mile southeast of Zapadni Road, on St. George Island, Alaska, 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

Lot 2,
Section 36, Township 41 South, Range 130 West, of the Seward Meridian, Alaska.
56° 35' 8.96" North Latitude, 169° 35' 48.43" West Longitude

This property, hereafter referred to as Site 14 (Figures 1 and 2), has been subject to debris and petroleum contaminated soil from a discharge, or release and subsequent cleanup of oil or other hazardous substances, regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135448; File ID 2643.38.020.

Site 14 was identified as the *Oil Drum Dump* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 14 and NOAA Site 14. Following corrective action, NOAA submitted a request for conditional closure to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2004). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that site cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2004). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further corrective action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2004).

Grantor:	U.S. Bureau of Land Management
Grantee (subsurface estate):	The Aleut Corporation 4000 Old Seward Highway, Suite 300 Anchorage, AK 99503
Grantee (surface estate):	St. George Tanaq Corporation 4141 B Street, Suite 301 Anchorage, AK 99503

Recording District: Aleutian Islands

Remedial Actions and Residual Contamination

Site 14 was used for surface disposal of metal drums, propane tanks, decommissioned fuel storage tanks, vehicle remains and batteries, and other metallic debris. Site investigations in 1992 (E&E 1993), 1993 (Woodward-Clyde 1994), and 1997 (Polarconsult 1997) inventoried, consolidated, and removed the debris for off-island scrapping and disposal. Analytical results from soil sampling performed in 1997 and 2000 indicated Site 14 was contaminated with diesel range organics (DRO) and residual range organics (RRO) in concentrations above the applicable ADEC Method Two criteria; gasoline range organics, benzene, toluene, ethylbenzene and total xylenes were not detected above applicable cleanup requirements (Polarconsult 1997, Polarconsult 2001).

In 2000, approximately 101 cubic yards of petroleum contaminated soil was excavated and removed from several areas within Site 14 (Polarconsult 2001). Contaminated soil was removed to the extent practicable; however, DRO and RRO contamination remains at concentrations above their ADEC Method Two cleanup criteria in areas where equipment refusal occurred due to encountering bedrock. The Site 14 excavations were backfilled with clean material. Attached is a diagram (Figure 3) drawn to scale that shows the areas that were cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2000, NOAA commissioned a contaminant fate and transport modeling study to evaluate contaminant migration from TPA Site 4 (Active Landfill) which is located 400 yards northwest of Site 14 (Tetra Tech 2000). Tetra Tech reported that the water table in this area is about 250 feet below the ground surface, with the public water supply wells located 2.5 miles to the northeast. Based on SESOIL modeling of the area's vadose zone, the report concluded that contaminants were not likely to reach the water table in concentrations exceeding applicable groundwater cleanup levels, and that there was little potential for impact to the island's drinking water supply.

Site Use

In the event that information becomes available which indicates that Site 14 may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from ADEC in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

References:

Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska.* Contract No. DACA85-91-D-0003, Delivery Order No. 0027. Prepared for Alaska District, U.S. Army Corps of Engineers. February.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

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2008-000394-0

NOAA. 2004. *Request for Conditional Closure, Oil Drum Dump, TPA Site 14/Site 14, St. George Island, Alaska.* Signed by John Lindsay, Pribilof Project Manager, U.S. Department of Commerce, National Oceanic and Atmospheric Administration November 12, 2004; signed by Louis Howard, Project Manager, Alaska Department of Environmental Conservation, Division of Spill Prevention and Response November 17, 2004.

Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volumes 1 through 3. December 31.

Polarconsult. 2001. *Draft Environmental Site Investigation, St. George Environmental Cleanup, Pribilof Islands Environmental Restoration Project, Part II, Revision 2.* December 31.

Tetra Tech Environmental Management, Inc. (Tetra Tech). 2000. *Vadose Zone Modeling Report, St. George Municipal Landfill, George Island, Alaska.* Seattle, Washington. April 28.

Woodward-Clyde. 1994. *Phase 1B Environmental Assessment, St. George Island, Alaska.* Woodward-Clyde, Anchorage, Alaska. March 31.

Please return original copy of this notice to the (operator) address below:

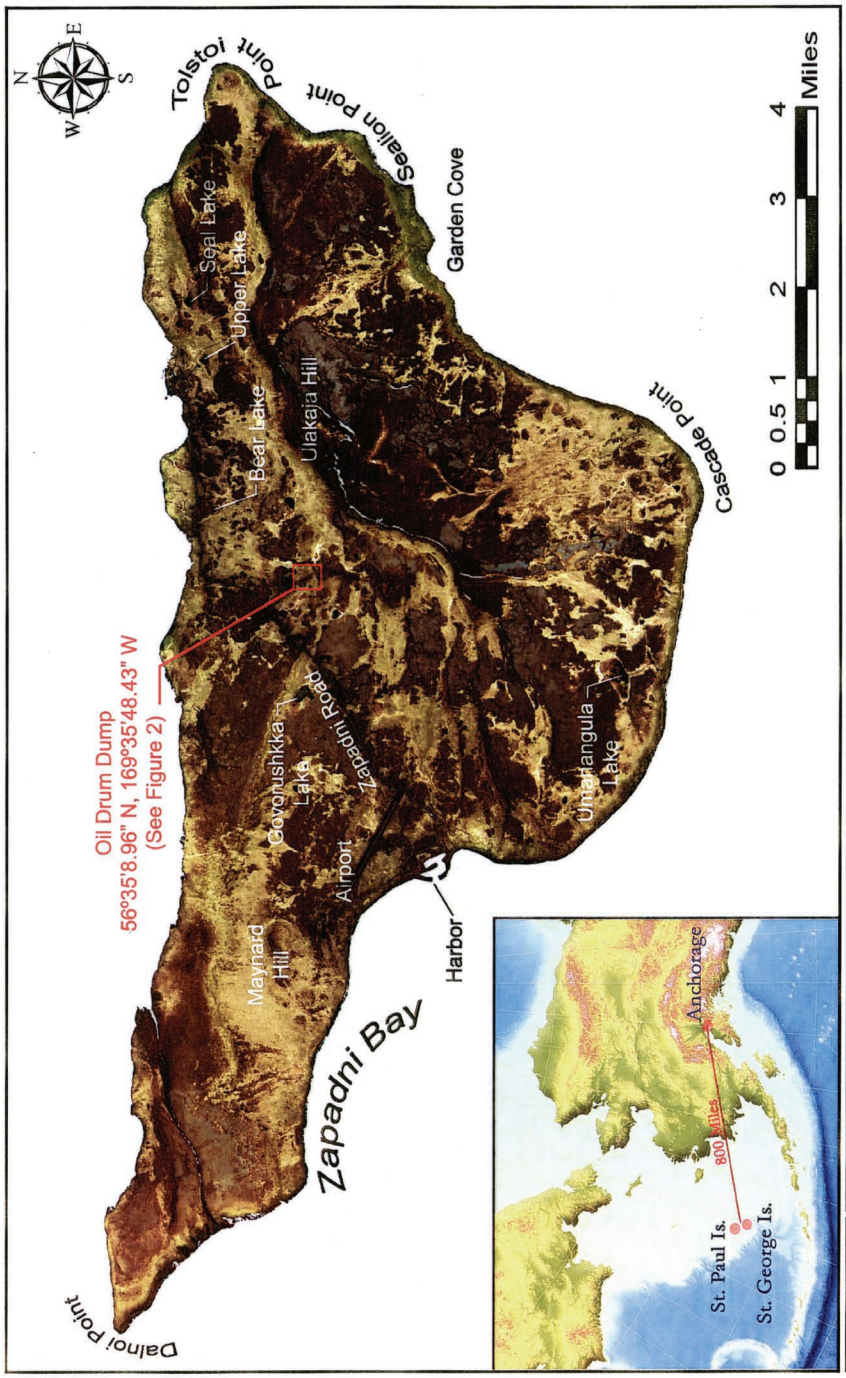
Signature: _____

Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 6
2008-000394-0



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Date: 7/31/2008

Pribilof Islands Restoration Project

Figure 1

St. George Island Vicinity Map
Oil Drum Dump
NOAA Site 14/TPA Site 14
St. George Island, Alaska

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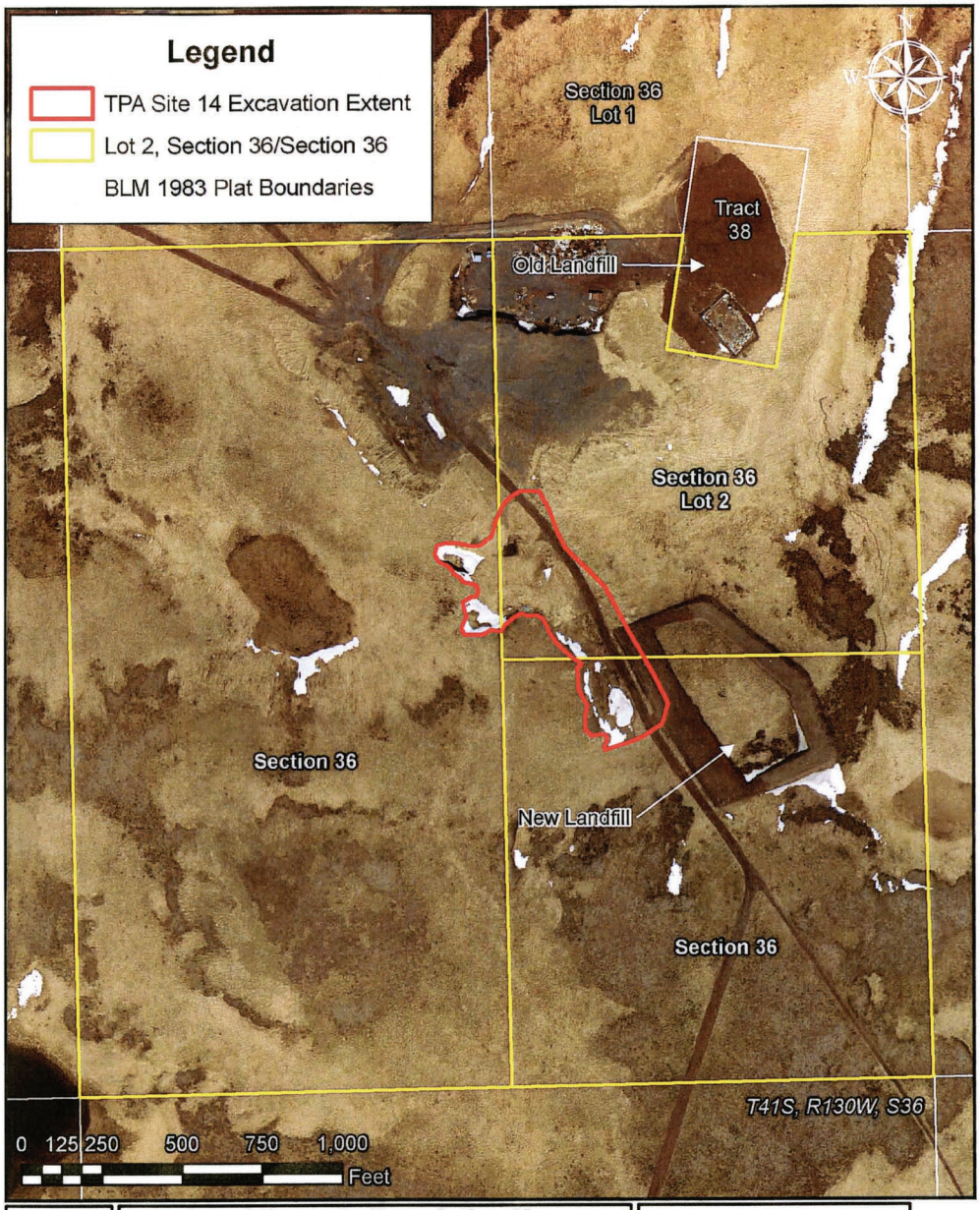

Figure 2	Legal Property Description Map Lot 2 of T41S, R130W, S36 Oil Drum Dump NOAA Site 14/TPA Site 14 St. George Island, Alaska	Source: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially filed February 15, 1985. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Oil Drum Dump\Fig2_TPA14_PropDescription.mxd Date: 7/31/2008 @ 2:37:01 PM

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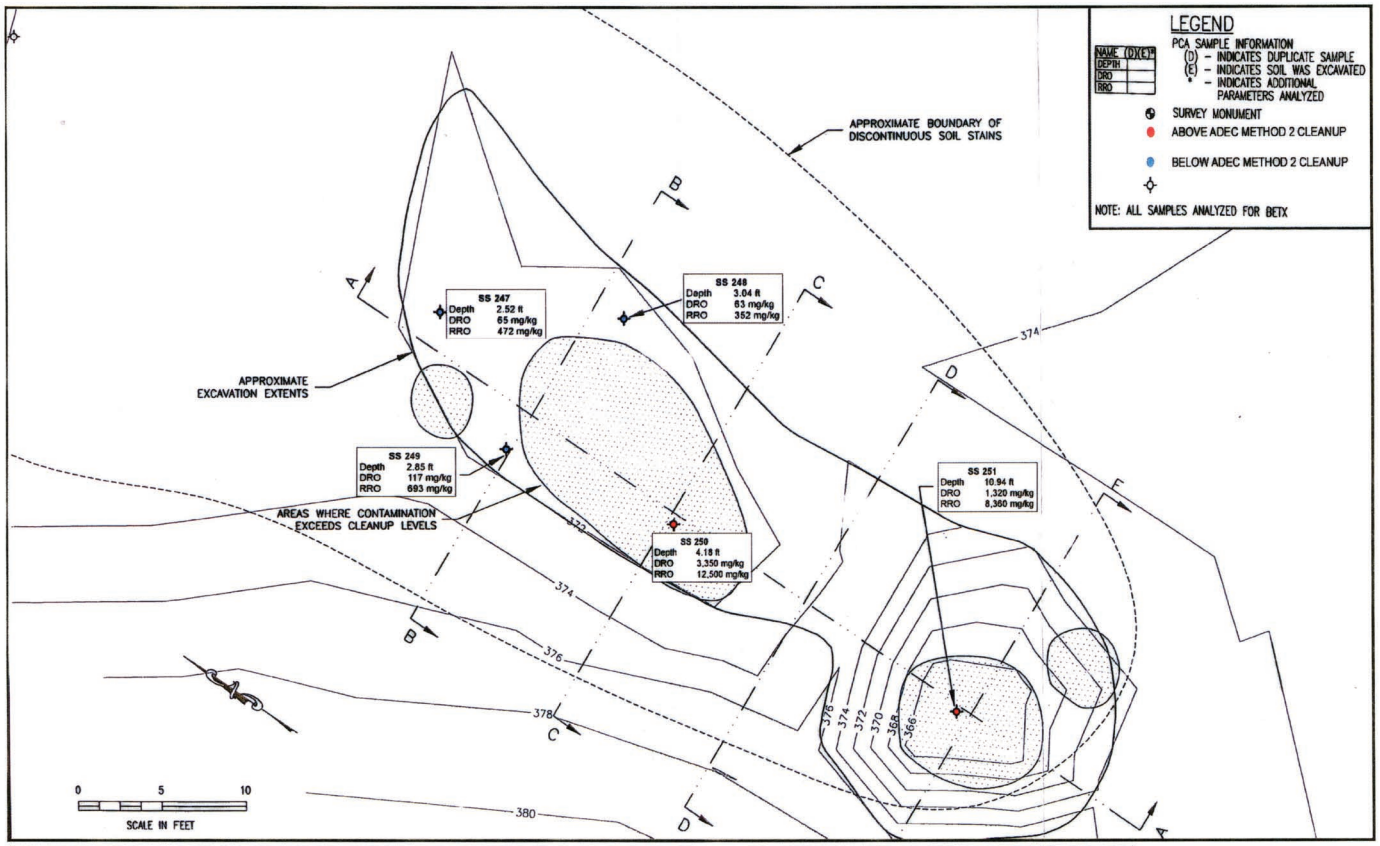

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Pribilof Islands Restoration Project

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Printed Name: _____John A. Lindsay_____

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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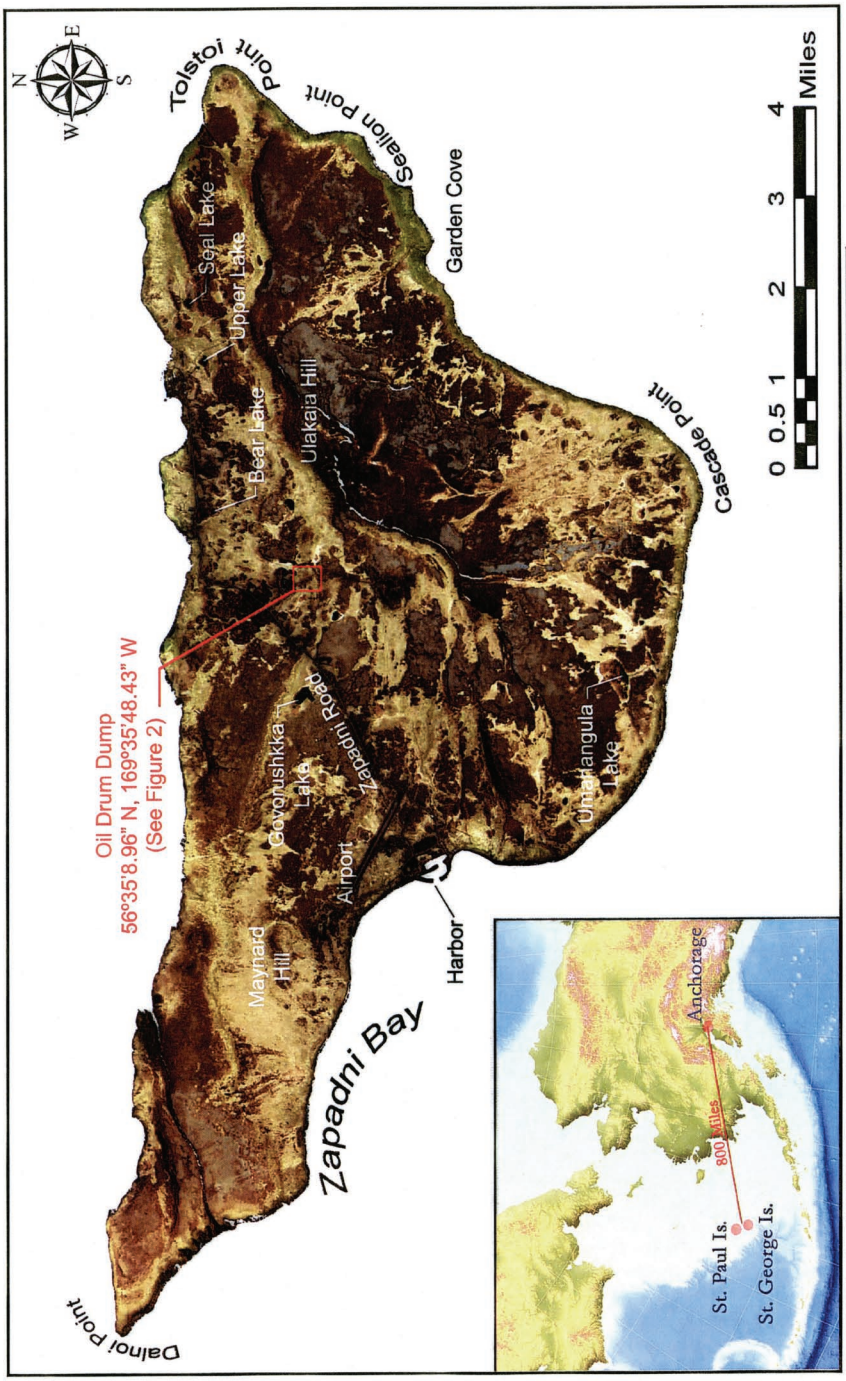
2008-000393-0



Pribilof Islands Restoration Project

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St. George Island Vicinity Map
Oil Drum Dump
NOAA Site 14/TPA Site 14
St. George Island, Alaska

Figure
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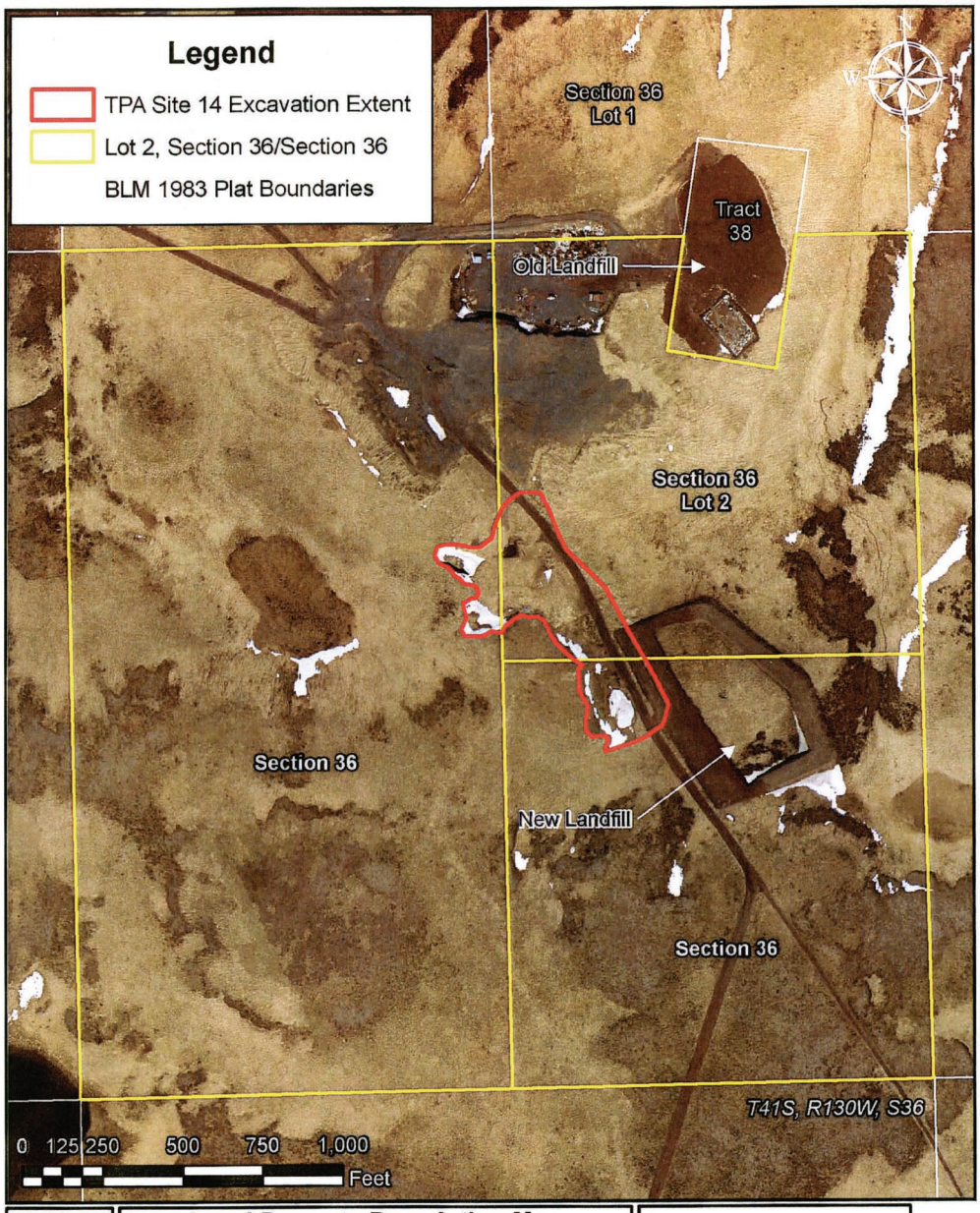

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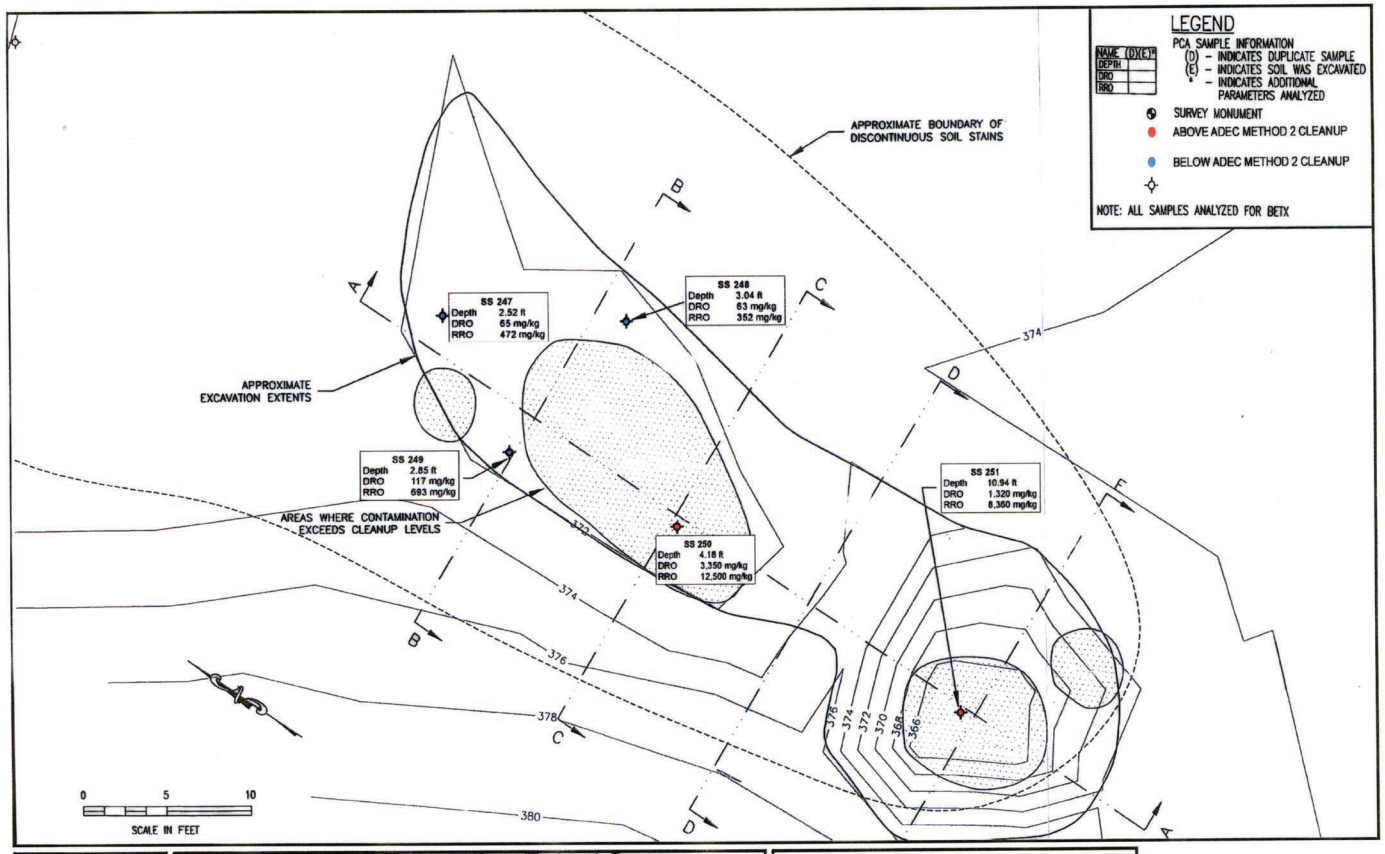

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