Request for No Further Remedial Action Planned

Site: AST Saddle Complex, also known as Two Party Agreement (TPA) Site 9k, National Oceanic and Atmospheric Administration (NOAA) Site 26, and the AST Saddles Complex. The site will be referred to as the "site" herein.

Location: St. Paul Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On the island, the site is situated in St. Paul Village on the eastern slopes of Village Hill (Figures 1 and 2), south of the Machine Shop building (57°07'21.09" North Latitude, 170°16'53.32" West Longitude).

Legal Property Description: The area of excavation is located in Lot 1, Block 1A, U.S. Survey Number 4943, Alaska Tract "A", St. Paul Townsite, accepted by the Bureau of Land Management August 2, 1968 (Figure 2). Within the area of excavation, Tanadgusix Corporation (TDX) owns the property. [Note: TPA site boundaries are not defined in the TPA. At its discretion, NOAA established a boundary for this TPA site based on site characterization data and historic information.]

Type of Release: Potential release mechanisms include: 1) leaks associated with the storage of diesel fuel in up to 33 aboveground fuel storage tanks; and 2) leaks associated with fuel transfers between fuel pipelines and the ASTs.

History and Background:
The site is located on the slope of Village Hill between Short Street and Church Street, about 80 feet (ft) south of the Machine Shop (Figures 3 and 4). TDX currently owns this property. Previously, up to 33 ASTs were located on concrete saddles at the site, with the ASTs used to store fuel for nearby facilities like the Former Power Plant (TPA Site 9b) to the south of the site (Figures 3 and 4). A 1959 map created by the Department of Interior (DoI 1959) depicts an above ground pipeline extending from the Former Gasoline/Diesel Fuel Drum Storage Site (DSS, also known as TPA Site 9o) located on the northeastern prominence of Village Hill above the site (Figures 3 and 4). According to Hart Crowser (1997), 55-gallon drums of gasoline and diesel fuels were reportedly stored at the DSS. Based upon an interview with a former island employee, Hart Crower stated that a funnel fabricated from a 55-gallon drum facilitated the transfer of diesel via the pipeline to the ASTs at the site prior to the 1960s (Figure 4).

The actual construction date of the saddles at the site is not known although the saddles can be seen in a 1948 aerial photograph, as well as in a circa 1950s side view photograph (Figure 5). The site was abandoned when a new power plant was put into operation in the 1960s (Hart Crowser 1995). The PCS found at the site (Hart Crowser 1997 and CESI 2001) is thought to have resulted from spillage or leakage during transfer operations and storage.

The site is currently unused and lies in close proximity to residences and the industrial area of St. Paul Village (Figure 4).

Summary of Site Investigations:
In 1995, Hart Crowser collected soil samples to assess the potential nature and extent of chemical contamination in soils at several locations on St. Paul Island, including the AST Saddle Complex site (Hart Crowser 1997). Samples (Figure 3) were collected from five hand auger borings (HA-11 to HA-13, HA-25, and HA-26) and four test pits (TP-18, TP-19, TP-22, and TP-23) at depths ranging from 0-10 ft below ground surface (bgs). All samples were analyzed for petroleum hydrocarbons and benzene, toluene, ethylbenzene, and xylenes (BTEX) in the field laboratory, and a subset of samples were sent to the project laboratory for confirmation analysis for the same constituents. Additionally, the project laboratory analyzed one sample from each location for lead.

Hart Crowser detected diesel-range organics (DRO) above the State of Alaska Department of Environmental Conservation (ADEC) Method Two cleanup level of 250 mg/kg in five samples (Figure 3) with a maximum concentration of 8,400 mg/kg. Three of these samples also exceeded the Alternative Cleanup Standard of 2,500 mg/kg DRO (Mitretek 2002, NOAA 2003) discussed below. The maximum concentration of gasoline-range organics (GRO) detected was 160 mg/kg, which is below the ADEC Method Two cleanup level of 300 mg/kg. Benzene was detected in one sample (HA-13) at 4.1 mg/kg, above the Method Two cleanup level of 0.02 mg/kg. However, the project laboratory data for this sample was inconsistent with the data from the field laboratory, which detected no benzene, and the presence of benzene is also inconsistent with the nature of the fuels detected at the site (Hart Crowser 1997).

One Hart Crowser sample (HA-13) exceeded the lead cleanup level of 400 mg/kg for ADEC regulatory limit for residential land use (Figure 3). This sample contained 1,400 mg/kg lead, which is also above the ADEC regulatory limit of 1,000 mg/kg for industrial land use. Lead was detected at lower levels in all other samples with concentrations ranging from 4.6 mg/kg to 140 mg/kg.

In 2000 and 2001, Columbia Environmental Sciences Inc. (CESI) installed monitoring wells and took soil borings in the City of St. Paul as part of a site characterization effort (CESI 2001). Soil samples were collected from five locations (AST-1, SBA-14, SBA-15, SBA-19, and SBA-29) at this site by CESI (Figure 3). The samples were analyzed at a fixed laboratory for petroleum hydrocarbons, volatile organic carbons (VOCs), semi-volatile organic carbons (SVOCs), and heavy metals.

Three CESI soil samples exceeded the ADEC Method Two cleanup level of 250 mg/kg for DRO (Figure 6). These samples also exceeded the Alternate Cleanup Standard for DRO, with a maximum detection of 12,000 mg/kg.

Arsenic exceeded its ADEC Method Two cleanup level of 2.0 mg/kg in four CESI soil samples, with a maximum concentration of 6.3 mg/kg. Total chromium exceeded its ADEC Method Two cleanup level of 26 mg/kg at all five sampling locations, with a maximum concentration of 66 mg/kg. No known anthropogenic sources of arsenic or chromium exist on St. Paul Island. In accordance with ADEC guidance (ADEC 1998), arsenic and chromium concentrations are within background concentrations for St. Paul Island as determined in previous studies by Tetra Tech EM Inc. (Tetra Tech 2000) and Hart Crowser (1997). For these reasons, arsenic and chromium are not contaminants of concern. No other constituents exceeded their ADEC Method Two regulatory limits.

NOAA contractors conducted quarterly groundwater monitoring from September 2000 to September 2001 and from October 2003 to July 2004 in the vicinity of the site. During the sampling events, Monitoring well MWA-2, located at the downgradient portion of the site, did not reveal any contamination above Table C levels of concern (Figure 4). The depth to groundwater at MWA-2 is approximately 24 ft bgs.

Groundwater in the vicinity of the site is thought to flow northerly away from the site, toward St. Paul Harbor (Figure 6), according to Mitretek Systems (Mitretek 2002). DRO were detected above their ADEC Table C cleanup level of 1,500 micrograms per liter (µg/L) in upgradient well MWA-1 with a maximum detected concentration of 4,000 µg/L (Figure 4). No other contaminants were encountered in MWA-1 above their ADEC Table C cleanup levels. The depth to groundwater at MWA-1 is approximately 80 ft. Downgradient well MWA-2 DRO concentrations did not exceed the Table C criterion in the 2000 to 2004 samples (Figure 4).

Monitoring well MWA- 1 and MWA-3 (upgradient), and MW46-7 and MW46-8 (downgradient) demonstrated contaminants above ADEC Table C levels of concern. At MWA-3, DRO were found at a maximum concentration of 17,000 µg/L (Figure 4); no other contaminants were found at MWA-3 above their ADEC Table C cleanup levels. At MW46-8, DRO were found at a maximum concentration of 2,400 µg/L in 2000 and 2001, though recent monitoring events (2003 and 2004) found the DRO concentration no greater than 630 µg/L. Lead was also found in MW46-8 in 2000 and 2001 up to 106 µg/L, which exceeds the ADEC Table C cleanup level of 15 µg/L. Lead was not detected in MW46-8 in the recent monitoring events. No other contaminants were found at MW46-8 above their ADEC Table C cleanup levels (Figure 4). At MW46-7, DRO were found at a maximum concentration of 5,500 µg/L; no other contaminants were found at MW46-7 above their ADEC Table C cleanup levels (Figure 4). One should note that MW46-7 and MW46-8, while downgradient of the site (Figure 6), are also within or potentially downgradient of other source areas including TPA Site 9g (Former Fouke Bunkhouse), TPA 9b (Former Power Plant), and TPA Site 9o (Former Gasoline/Diesel Drum Storage Area).

Mitretek Systems (2002) evaluated the 2000-2001 groundwater data for the St. Paul Village area, which includes the site. The Mitretek report demonstrated that groundwater in the vicinity of St. Paul Village has high total dissolved solids and can be brackish. Consequently, the groundwater in the area is not suitable for drinking water. The evaluation, in part, provided a rationale for using alternative groundwater cleanup levels that are protective of human health and the environment where the groundwater is not potable. Mitretek concluded in accordance with 18 AAC 75.350 (ADEC 2003) that groundwater in the Village area is not currently used and does not afford any potential future use as a drinking water source.

These findings provided the basis for the application of the Ten Times Rule discussed below.

Summary of Applied Cleanup Levels:

NOAA employed ADEC Method Two cleanup criteria, discussed at 18 AAC 75.341(c) (ADEC 2003). Alternative cleanup levels were also applied for some compounds. For benzene, under the TPA, NOAA had the option to cleanup to the less stringent State of Alaska cleanup level in effect in 1991 (ADEC 1991). Additionally, NOAA proposed and ADEC approved the use of alternative cleanup levels under 18 AAC 75.345 and 18 AAC 75.350, commonly referred to as the Ten Times Rule (ADEC 2002, Mitretek Systems 2002). According to these regulations, if groundwater beneath a site contains contaminant concentrations above the cleanup levels provided in ADEC Table C, then the soil may be remediated to levels ten times higher than those provided in Method Two Tables B1 and B2 for the migration to groundwater pathway for those contaminants found in groundwater at concentrations above the cleanup levels provided in ADEC Table C; however, if the inhalation or ingestion pathway values are more stringent than the migration to groundwater pathway, then the more stringent value is to be applied. ADEC uses 15 feet below ground surface (bgs) to define subsurface soil to which residents will have a reasonable potential to be exposed through the inhalation or ingestion pathways (ADEC 2003; 18 AAC 75.340 (j)(2)). Therefore, NOAA is not obligated to excavate contaminated soil occurring at depths deeper than 15 feet to address the inhalation and ingestion pathways. Cleanup criteria were applied to the maximum extent practicable (18 AAC 75.325 (f), 18 AAC 75.990).

Summary of Cleanup Actions:

Corrective action activities for the site were initiated on October 28, 2003 and completed on November 12, 2003 (NOAA 2003, Tetra Tech 2004a). Initial areas of excavation were selected based on contamination identified during previous investigations (Figure 3), while the extent of excavation was determined based on thin layer chromatography (TLC) screening sample analyses as well as visual and olfactory observations.

Prior to removing PCS from this site, personnel conducted excavation in the area between the two southernmost concrete saddles to remove lead-contaminated soil that was identified during a previous investigation (Figure 7). The area of excavation was delineated using Lead Check® test kits to analyze soil samples for total lead. Based on the results obtained from these kits, a subset of the samples was shipped for laboratory confirmation analyses. A total of approximately three cubic yards (yd^3) of lead-contaminated soil was removed from this area and placed in large, plastic tote bags ("Super Sacks") pending laboratory analysis of a soil sample for total and leachable lead using the Toxicity Characteristic Leachate Procedure (TCLP) (EPA 1996).

Following removal of the lead-contaminated soils, personnel began demolishing and removing the concrete saddles that formerly supported the ASTs. Each saddle, which extended to a depth of approximately 4 feet bgs, was broken into sections as necessary, and loaded onto a flatbed truck. The saddles were then transported to NOAA's Tract 42 landfill for staging prior to beneficial reuse.

After the lead-contaminated soil and all concrete saddles were removed, PCS excavation activities were initiated in the northern portion of the site, and progressed to the south, east, and west based on TLC screening sample analyses as well as visual and olfactory observations. Signs of contamination, including petroleum staining and odors, were noted throughout the excavation. If contaminant concentrations remained above ADEC Method Two cleanup levels based on TLC screening sample analyses, additional excavation was conducted even if the concentrations were below alternative cleanup levels unless further excavation was prevented by the presence of obstructions. The excavation was advanced vertically to a maximum depth of 17 feet bgs, where rocks and large boulders were encountered; shallower depths were attained in the northern portion of the excavation because of the presence of shallow rocks and large boulders. In addition, one test pit was excavated to a depth of 5 feet bgs in the middle of Short Street, immediately east of monitoring well MWA-2, to investigate potential contamination in this area. No signs of contamination were observed in the test pit (Figures 7 and 8).

Excavation was limited at this site by the presence of obstructions, including the steep slopes of Village Hill, rocks and large boulders, and the main road east of the site. The excavation could not be expanded any further to the west because of safety concerns related to the steep slope of Village Hill. In addition, access to the City of St. Paul ambulance stored in the Machine Shop just north of the site had to be maintained, thereby precluding further excavation into the road along the east side of the site.

The excavation was backfilled after TLC screening sample analyses indicated contaminant concentrations below Method Two cleanup levels, or further excavation was prevented by the presence of obstructions including boulders, and the collection of fixed laboratory confirmation samples. If remaining contamination was suspected but further excavation was prevented by the presence of obstructions including boulders. Backfill operations involved transporting clean fill material from portions of the Telegraph Hill quarry owned by NOAA to the site (Tetra Tech 2004c), dumping the material into the excavation, and compacting the fill material with the excavator bucket or by track-walking the excavator over the area. The area of excavation was restored to its original grade. Backfilling and site restoration activities were completed on November 12, 2003.

During this corrective action, approximately 1,370 yd^3 of PCS was removed from the site.

Fifteen confirmation samples were collected from the bottom and sidewalls of the excavation and the test pit for laboratory analyses including benzene, toluene, ethylbenzene, and total xylenes (BTEX); DRO; select polynuclear aromatic hydrocarbons (PAHs); and total lead (Figure 8). In addition, one confirmation sample was collected from the suspected lead-contaminated soil that was removed from the area prior to excavation of PCS; this sample was analyzed only for total lead and leachable lead.

Table 1 provides a summary of the confirmation sample data, excluding PAH analytes. PAHs are not presented in Table 1 as no samples contained PAHs above their ADEC Method Two cleanup levels. Numeric PAHs results can be found in the corrective action report for this site (Tetra Tech 2004a). Stockpile samples were not collected during the corrective action. The lack of stockpile samples for this site does not impact data usability (Tetra Tech 2004b).

Confirmation samples collected from the excavation at the site indicated DRO concentrations varying from not detected to 9,100 mg/kg. Samples collected from 8 of the 15 sampling locations contained concentrations of DRO above the ADEC Method Two cleanup level of 250 mg/kg, and seven of these samples exceeded the alternative cleanup level of 2,500 mg/kg. The elevated concentrations of DRO were identified at the bottom and along the west sidewall, where excavation was halted because maximum depths (up to 17 feet bgs) were obtained, large boulders were encountered, and stability of the steep wall of the excavation posed health and safety concerns.

Concentrations of all other contaminants, including lead, were below the ADEC Method Two cleanup levels in the confirmation samples.

Stockpile samples collected from PCS transported directly to Tract 42 stockpile indicated DRO concentrations varied from 180 mg/kg to 1,800 mg/kg. All other contaminants were below ADEC Method Two cleanup levels. A summary of PCS stockpile activities conducted during the 2003 field season was provided under separate cover by Tetra Tech (2004b).

The stockpile sample (SP26-SS-001) collected from lead-contaminated soil contained DRO at a concentration of 10,000 mg/kg and total lead at a concentration of 995 mg/kg, above the ADEC Method Two cleanup levels. Leachable lead analysis by TCLP indicated a concentration of 2.5 milligrams per liter (mg/L), below the federal Resource Conservation and Recovery Act (RCRA) limit of 5 mg/L for leachable lead. Based on these analyses, the lead-contaminated soil was transported off-island for disposal in August 2004 as a solid waste. The soil will ultimately be disposed in a RCRA Subtitle D solid waste landfill in Oregon.

Laboratory reporting limits were below ADEC Method Two cleanup levels for all contaminants except benzene. For benzene, reporting limits of 0.05 mg/kg or lower were achieved, which is above the ADEC Method Two cleanup level of 0.02 mg/kg, but below the alternative cleanup level of 0.5 mg/kg. Concentrations of all other contaminants in confirmation samples collected were below the ADEC 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 at the AST Saddle Complex, TPA Site 9k/NOAA Site 26 in accordance with the Agreement and that ADEC requires no further remedial action plan from NOAA.

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

ADEC. 2002. Letter from Louis Howard, Project Manager, Alaska Department of Environmental Conservation, to John Lindsay, Project Manager, NOAA Pribilof Project Office regarding ADEC conditional approval for applying the Ten Times Rule. May 30.

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.

Columbia Environmental Sciences, Inc. 2001. Draft Site Characterization Report, Tract 46 and Vicinity (TPA Site 9), St. Paul Island, Alaska. Version 2.1. CESI. Kennewick, WA. December 16.

Hart Crowser, Inc. 1997. Expanded Site Inspection of St. Paul Island, Pribilof Islands, Alaska. January.

IT Alaska Corporation. 2002. Draft Annual Groundwater Monitoring Report 2001, St. Paul Island, Alaska. March.

Mitretek. 2002. Groundwater Use and Classification in the Vicinity of Tract 46, St. Paul Island, Pribilof Islands, Alaska. Prepared by Mitretek Systems, for the National Oceanic and Atmospheric Administration. June 5.

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. Final Corrective Action Plan for Petroleum Contaminated Soil Removal at the Former Gasoline/Diesel Drum Storage Site (Site 9o), St. Paul Island, Alaska. June 3.

Tetra Tech EM Inc. (Tetra Tech). 2004a. Draft Corrective Action Report, Site 26/TPA Site 9k, St. Paul Island, Alaska. August 23.

Tetra Tech. 2004b. Letter Report, Summary of 2003 Field Season Stockpile Activities, St. Paul Island, Alaska. July 23.

Tetra Tech. 2004c. Letter Report, Summary of 2003 Field Season Backfill Activities, St. Paul Island, Alaska. July 23.

U.S. Department of the Interior (DoI). 1959. Plan, St. Paul Island, Diesel Fuel and Gasoline Storage and Distribution System. Sheet 10 of 15, signed by D.D. Powell (1959), approved by C.R. Lucas (1961).

U.S. Environmental Protection Agency (EPA). 1996. Test Methods for Evaluating Solid Waste. EPA/SW-846. Third Edition and Updates. December.

Woodward-Clyde Consultants, Inc. 1994. Site Inspection Report, St. Paul Island, Alaska. Contract No. DACA67-92-D-1017. Delivery Order No. 36. November.

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

10/6/04
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 AST Saddle Complex, TPA Site 9k/NOAA Site 26, 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

Nov 5, 2004
Date

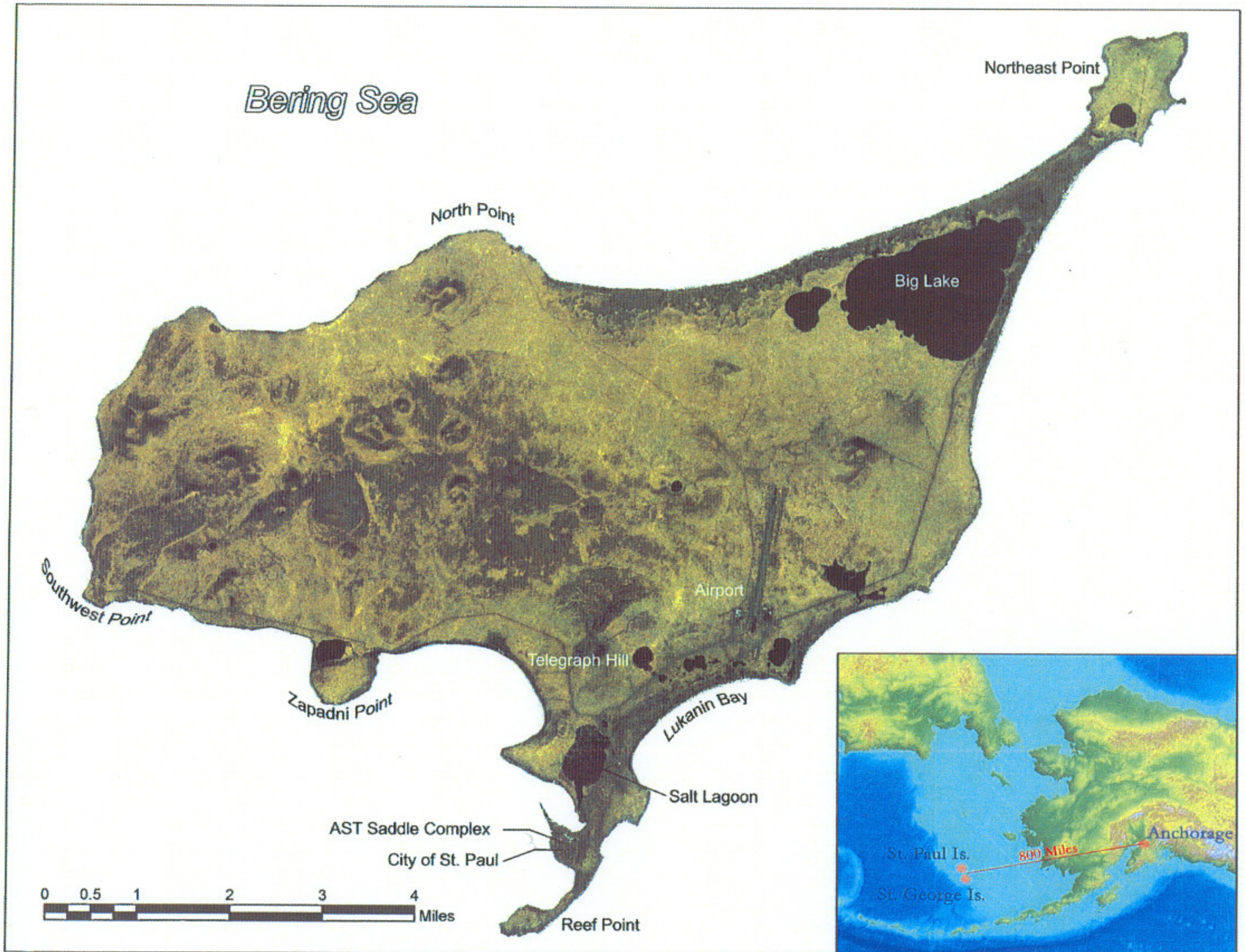

Figure 1	St. Paul Island Vicinity Map AST Saddle Complex NOAA Site 26/TPA Site 9k St. Paul Island, Alaska	Source: Ikonos Satellite Imagery, 2001	Pribilof Islands Restoration Project

figure02.jpg (1700x2200x24b jpeg)

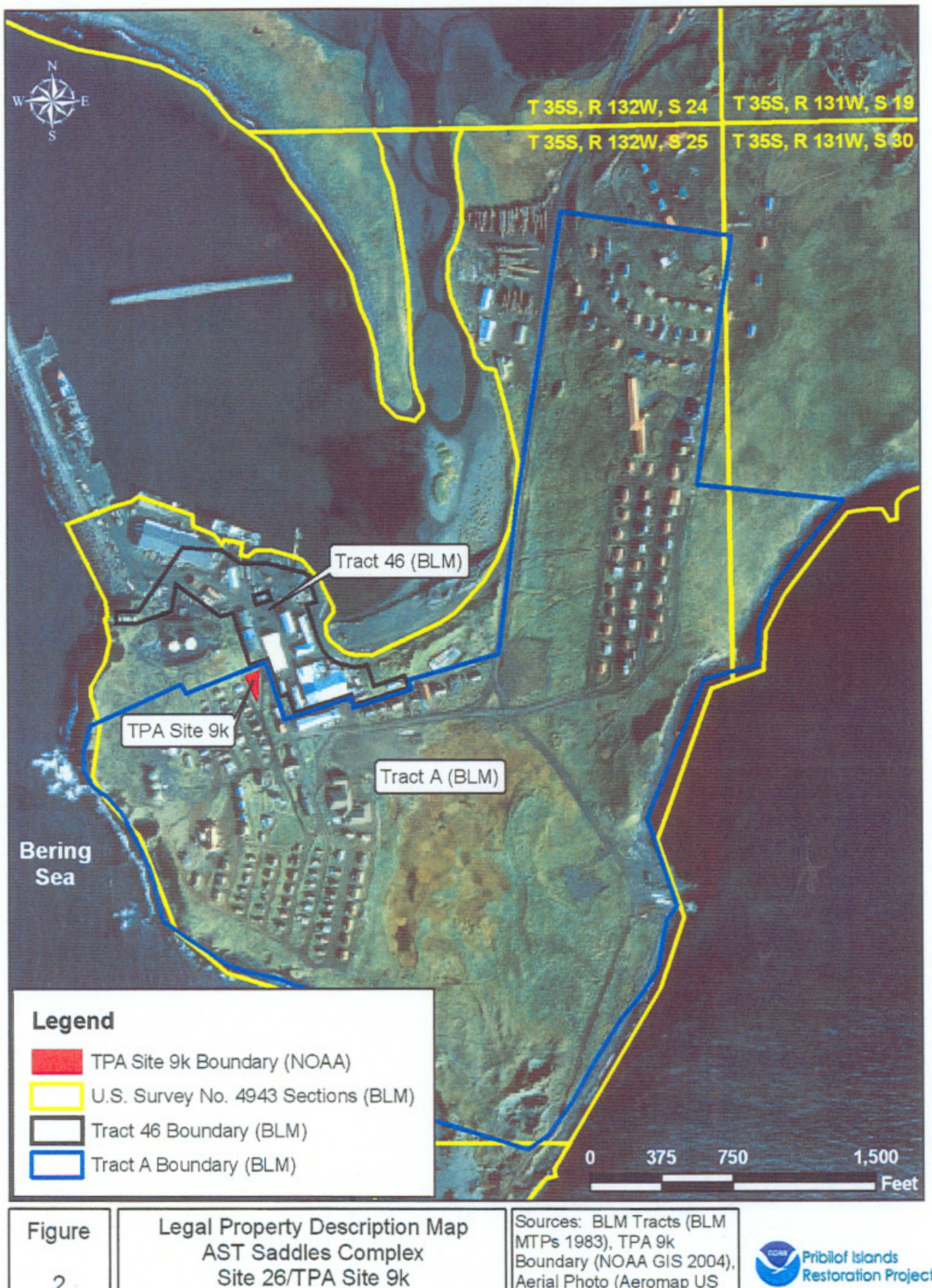

Figure 2	Legal Property Description Map AST Saddles Complex Site 26/TPA Site 9k St. Paul Island, Alaska	Sources: BLM Tracts (BLM MTPs 1983), TPA 9k Boundary (NOAA GIS 2004), Aerial Photo (Aeromap US 1996).

Pribilof Islands Restoration Project

figure03.jpg (1700x2200x24b jpeg)

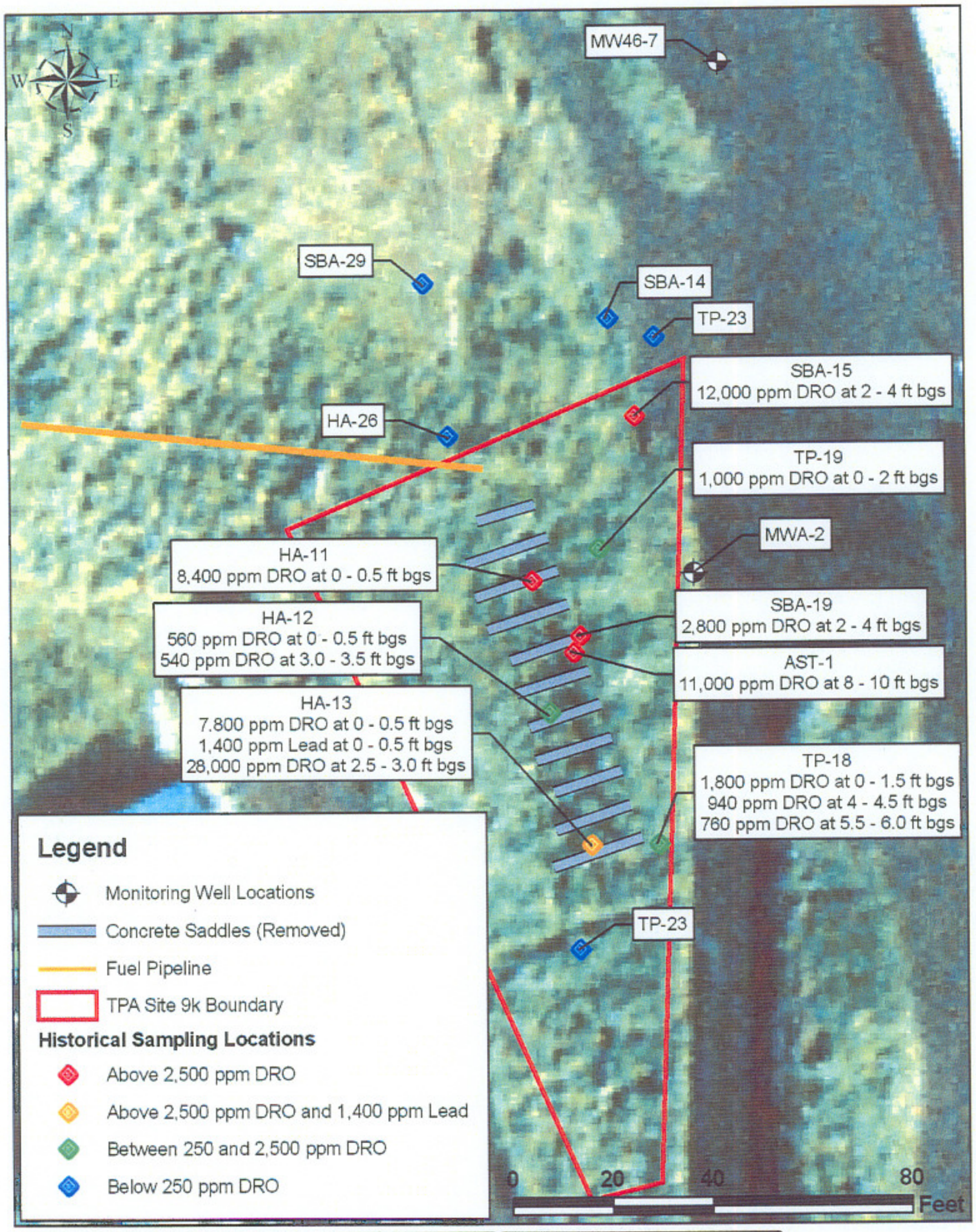

Figure 3

Historical Sampling Locations
AST Saddle Complex
NOAA Site 26/TPA Site 9k
St. Paul Island, Alaska

Sources: Concrete Saddles (NOAA GPS 2003), Well locations, TPA Site Boundary, and Historical Sampling Locations (Pribilof Project GIS), Aerial Photo (Aeromap US 1996).

Pribilof Islands Restoration Project

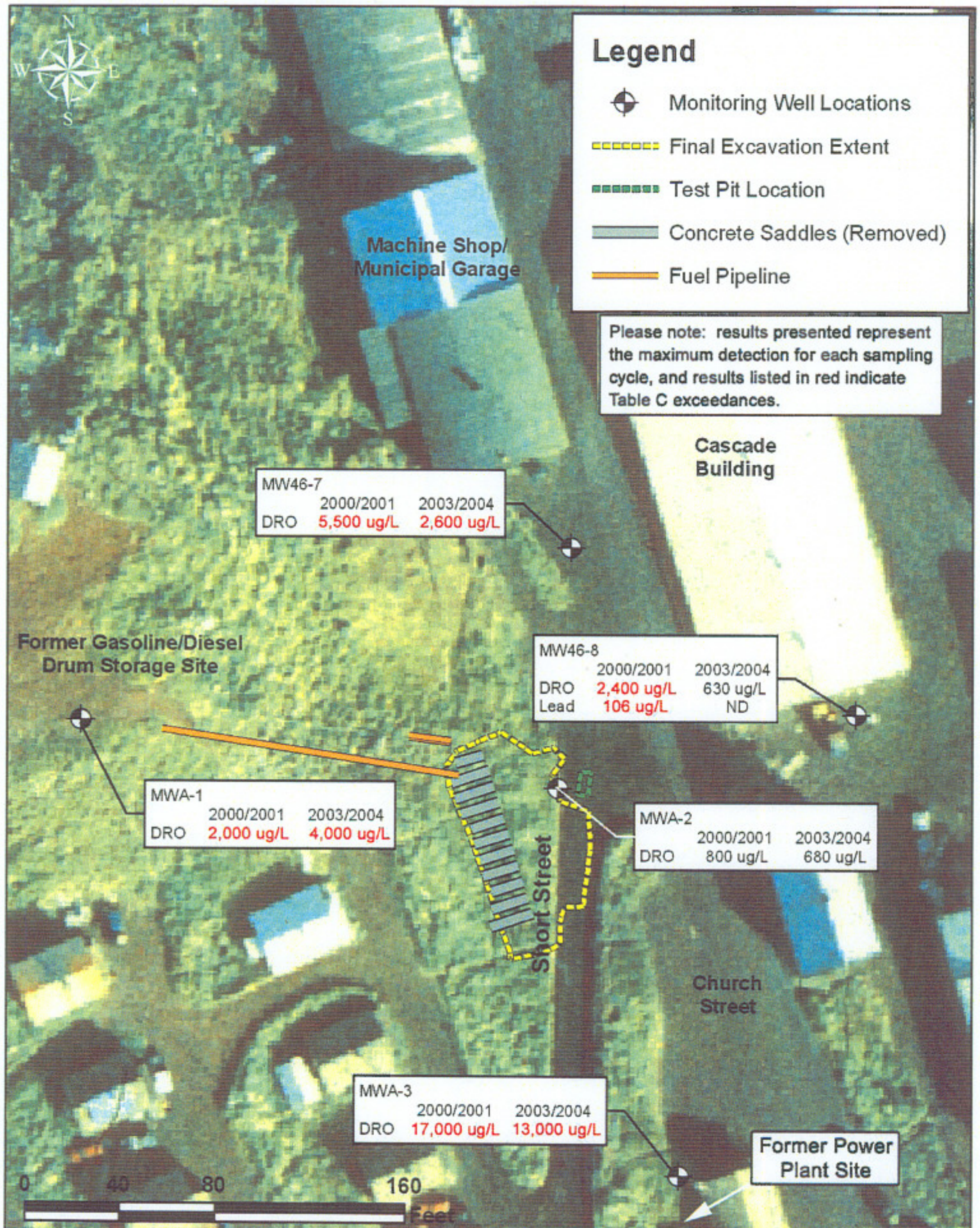

Figure 4

Groundwater Sampling Results
AST Saddle Complex
NOAA Site 26/TPA Site 9k
St. Paul Island, Alaska

Sources: Final excavation extent, test pit location, and concrete saddle locations (NOAA GPS 2003), Well locations (NOAA GPS 2002), Aerial photo (Aeromap US 1996).

Pribilof Islands Restoration Project

Figure 5	View of AST Saddle Complex Site and Former Gasoline/Diesel Drum Storage Site from the north side of the Fur Seal Plant, circa 1950s. NOAA Site 26/TPA Site 9k St. Paul Island, Alaska	Source: Historical Photo (NOAA).	Pribilof Islands Restoration Project

From CESI 2001b

Figure 6	Mean Groundwater Level Contours and Flow Direction AST Saddle Complex NOAA Site 26/TPA Site 9k St. Paul Island, Alaska	Source: Mitretek, 2002.

Pribilof Islands Restoration Project

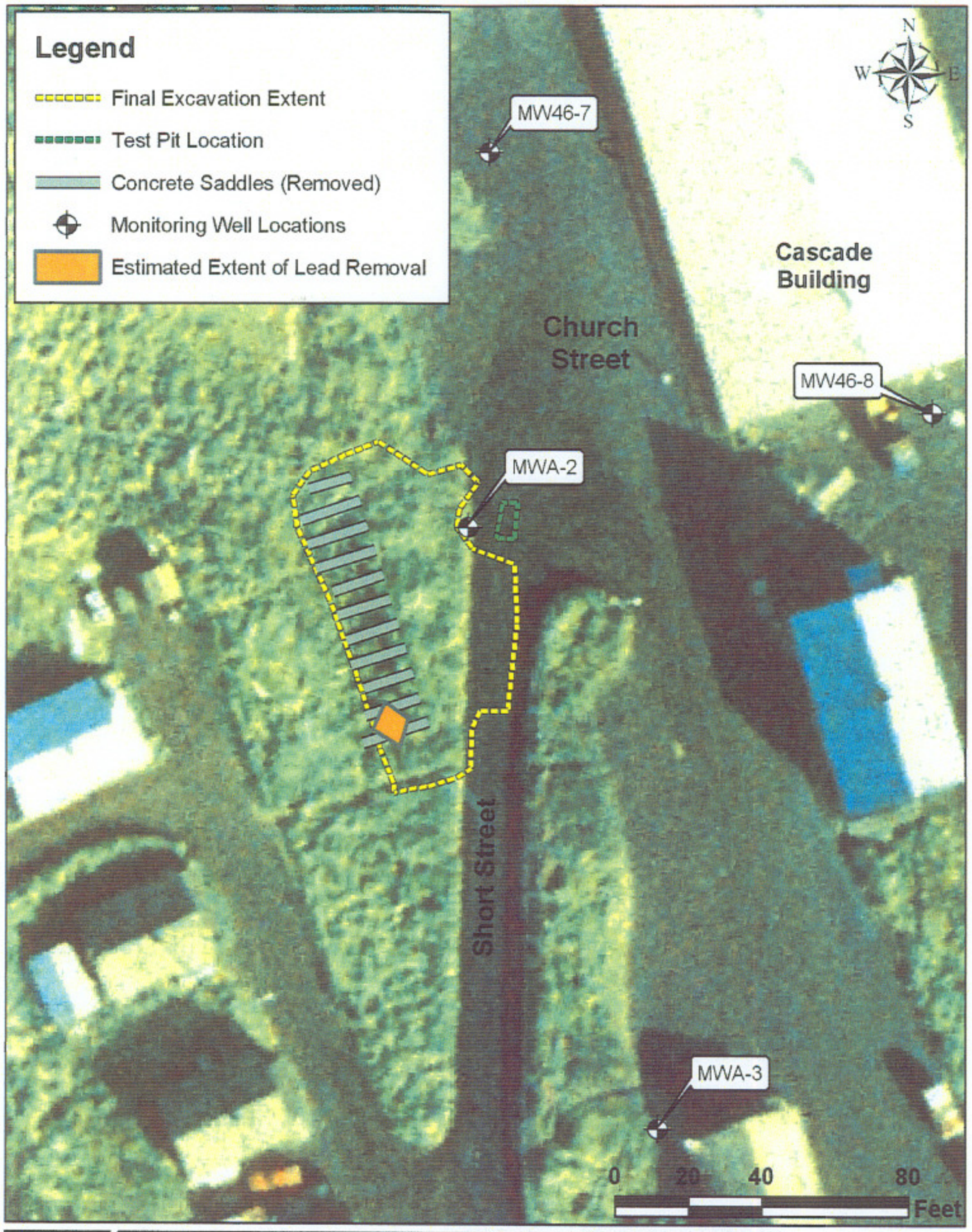

Figure 7	Area of Excavation AST Saddle Complex NOAA Site 26/TPA Site 9k St. Paul Island, Alaska	Sources: Final excavation extent, test pit location, concrete saddle locations, and area oflead removal (NOAA GPS 2003), Well locations (NOAA GPS 2002), Aerial photo (Aeromap US 1996).

Pribilof Islands Restoration Project

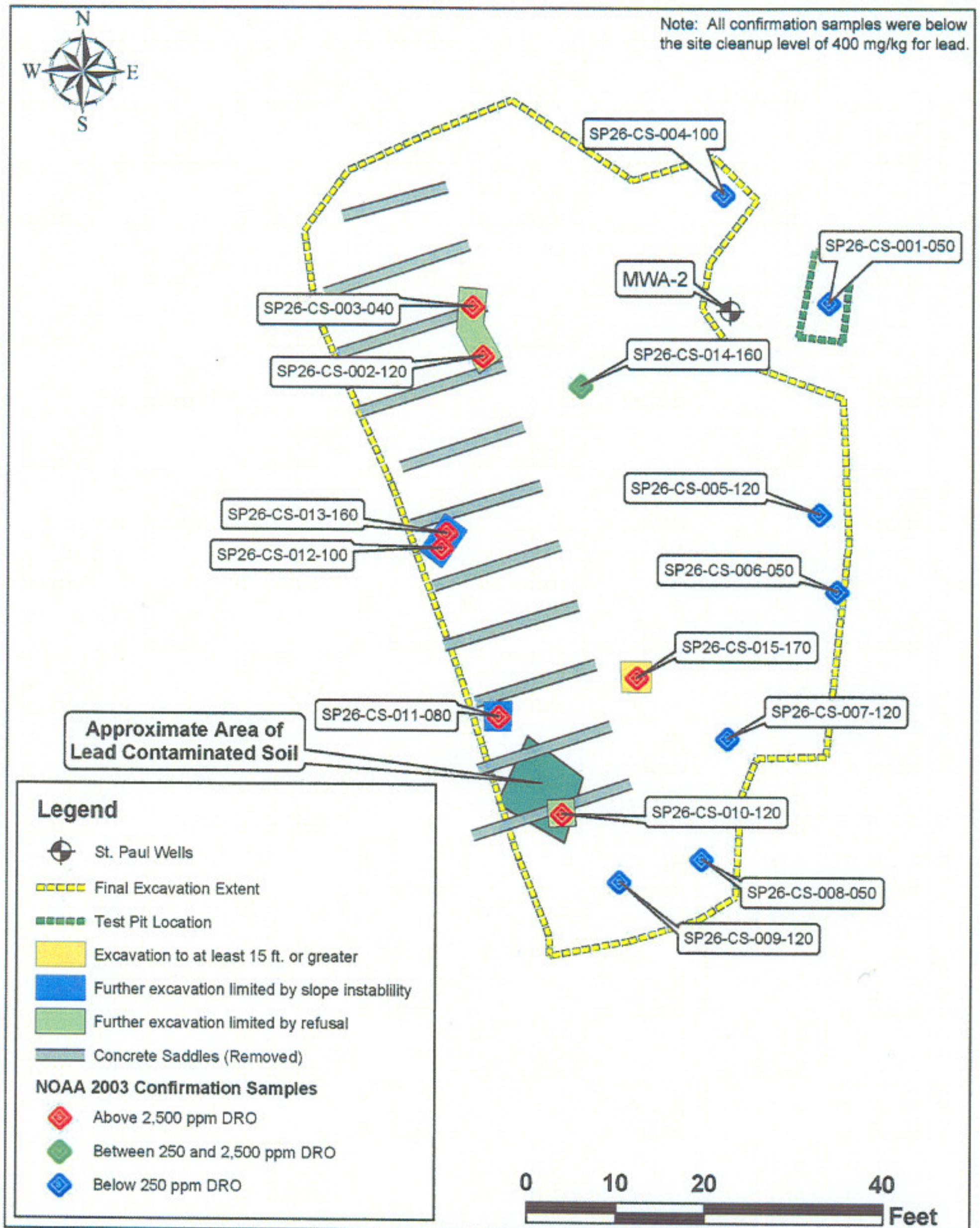

Figure 8	Sampling Location Map AST Saddle Complex NOAA Site 26/TPA Site 9k St. Paul Island, Alaska	Sources: Final excavation extent, test pit location, concrete saddle locations, and confirmaiton sample locations, (NOAA GPS 2003). Well locations (NOAA GPS 2002). Aerial photo (Aeromap US 1996).	Pribilof Islands Restoration Project