

Request for Conditional Closure

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 Schmitt, 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:

Ecology and Environment, Inc. – Preliminary Assessment (1992)

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.

Woodward-Clyde – Expanded Site Inspection (1994)

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.

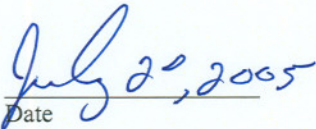
Woodward-Clyde. 1995. *Expanded Site Inspection St. George Island, Alaska*. Woodward-Clyde, Anchorage, Alaska. March.

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

For the National Oceanic and Atmospheric Administration



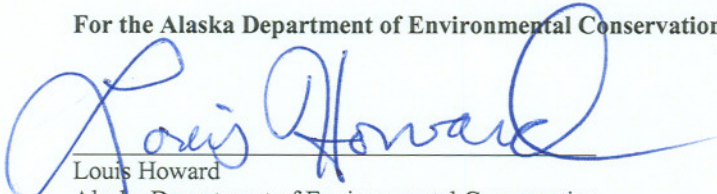
John Lindsay
NOAA, Pribilof Project Office



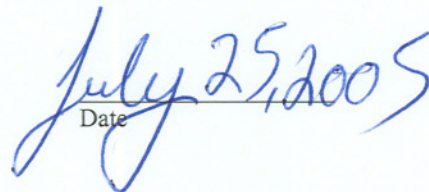
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Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the Inactive Gas Station, TPA Site 3/Site 3 in accordance with the Agreement 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



Date

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

Tables and Figures

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

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
<i>ADEC Method Two Cleanup Level</i>	<i>400 ^c</i>	<i>5 ^d</i>

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

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.

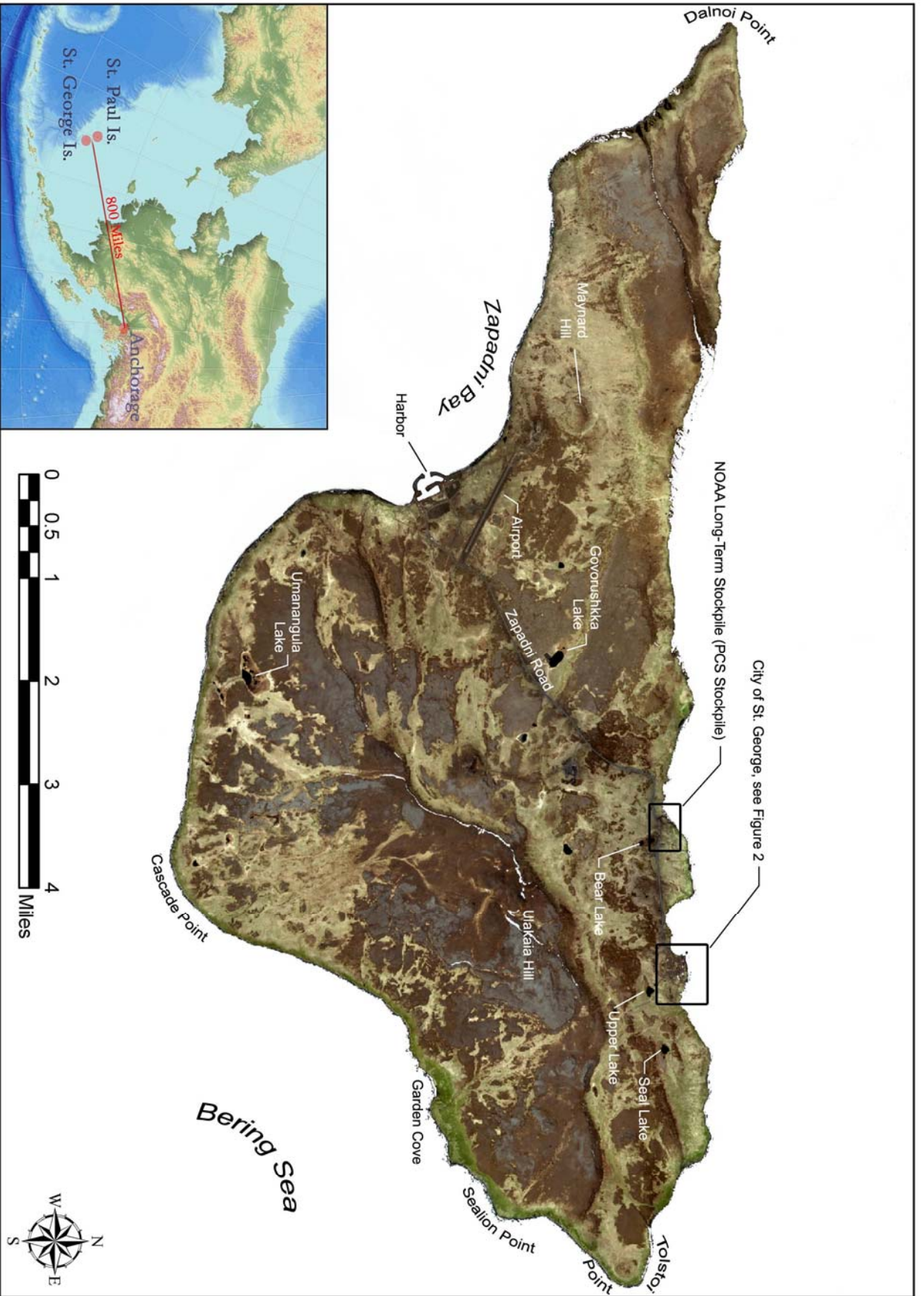


Figure
1

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

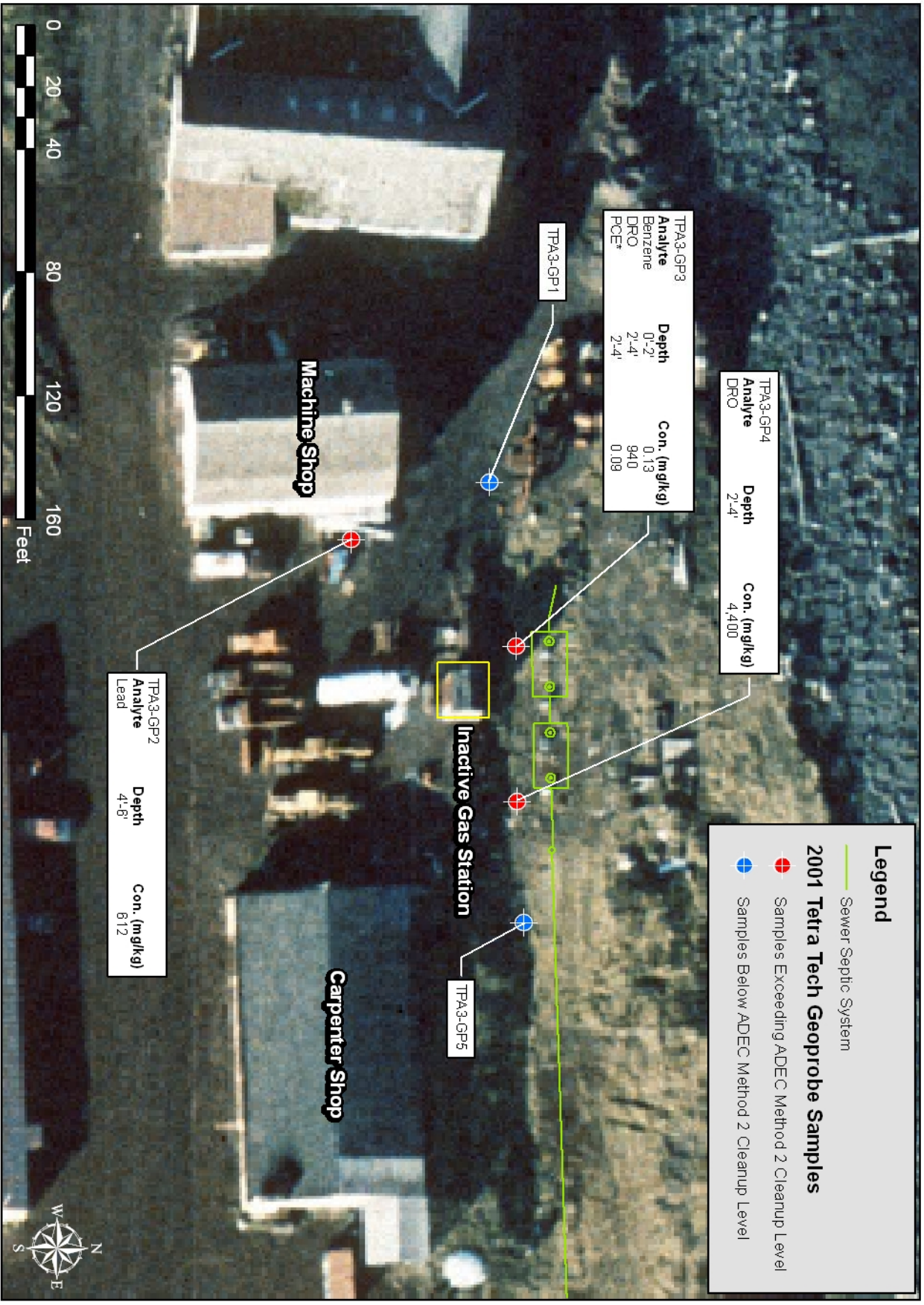
Source: Ikonos 2001 Satellite
Image



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
February 15, 1985



Legend

- Sewer Septic System
- 2001 Tetra Tech Geoprobe Samples
- Samples Exceeding ADEC Method 2 Cleanup Level
- Samples Below ADEC Method 2 Cleanup Level

TPA3-GP4	Depth	Con. (mg/kg)
Analyte	2-4'	4,400
DRO		

TPA3-GP3	Depth	Con. (mg/kg)
Analyte	0'-2'	0.13
Benzene	2'-4'	940
DRO	2'-4'	0.09
PCE*		

Inactive Gas Station

TPA3-GP2	Depth	Con. (mg/kg)
Analyte	4'-8'	612
Lead		

Tetra Tech Site Characterization
Sampling Results
 Inactive Gas Station
 TPA Site 3/NOAA Site 3
 St. George Island, Alaska

Figure
3

Source: Aeromaps U.S. 9/29/96 Aerial Photograph, Tetra Tech EM Site Characterization Report Oceanfront Sites Two-Party Agreement Sites No. 1, 2, & 3
 Note: Only data for Method 2 Exceedances are shown on map.
 *PCE also known as Tetrachloroethene.



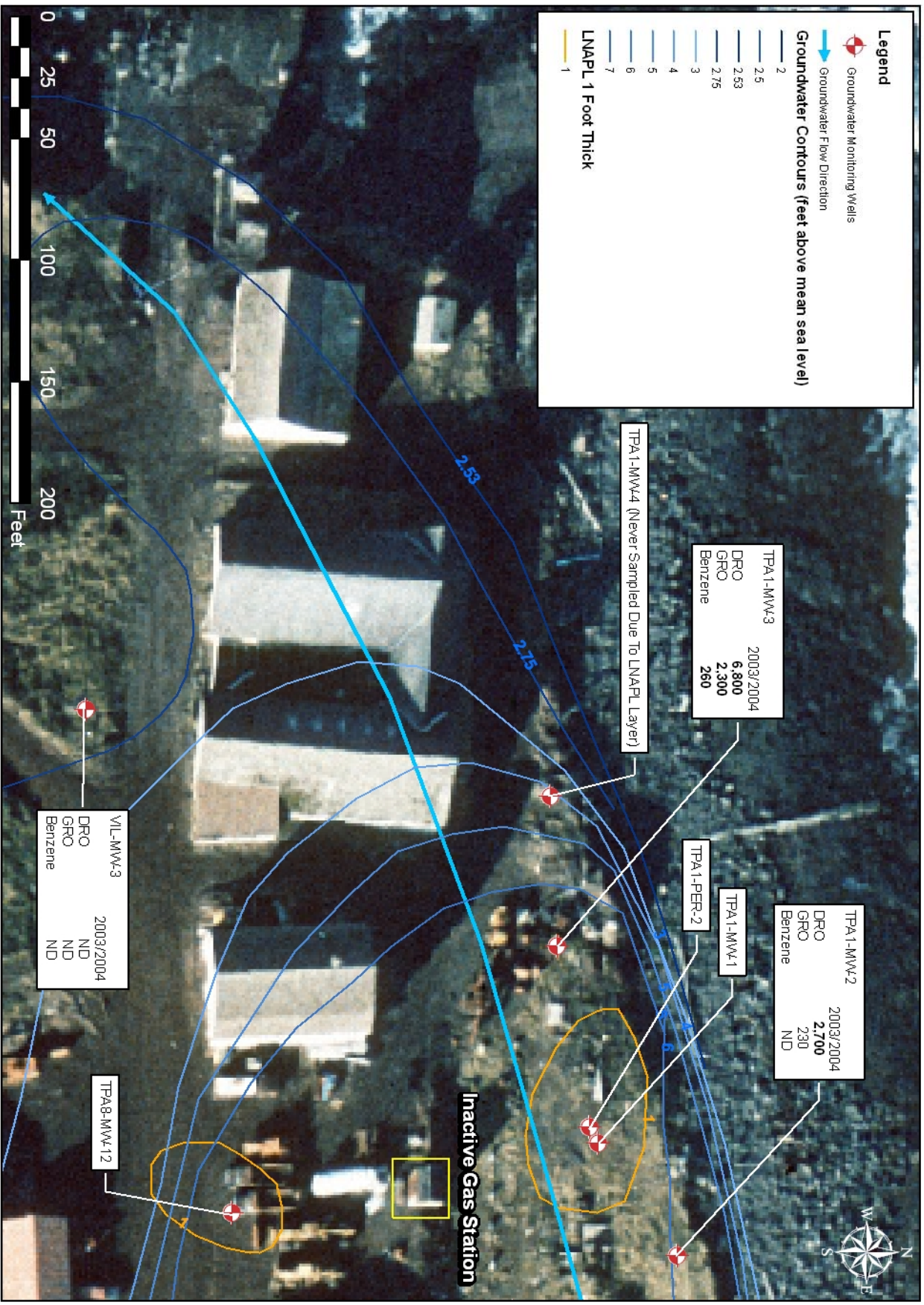


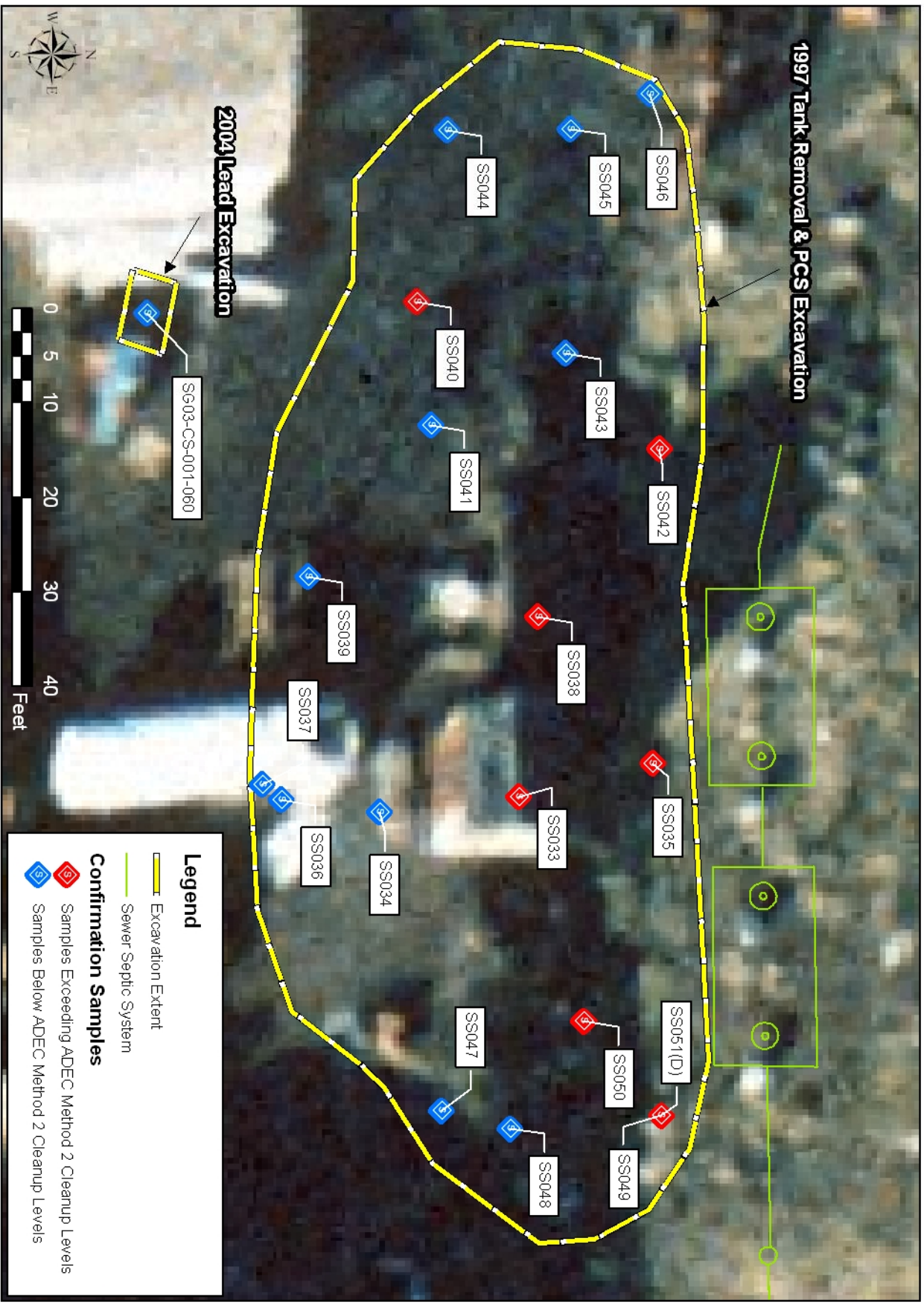
Figure 4

Groundwater Sampling Results & Groundwater Flow Direction Inactive Gas Station TPA Site 3/NOAA Site 3 St. George Island, Alaska

Source: Aeronap U.S. 9/28/98 Aerial Photograph, Tetra Tech EM Field Investigation Report, St. George Island, April 26, 2005.

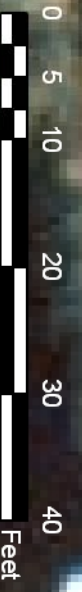
Note: Results in µg/L (Micrograms per liter). ND (analyte was analyzed for but was not detected). Results presented represent the maximum detection in the four quarters of sampling during 2003-2004.





1997 Tank Removal & PCS Excavation

2004 Lead Excavation



Legend

- Excavation Extent
- Sewer Septic System

Confirmation Samples

- Samples Exceeding ADEC Method 2 Cleanup Levels
- Samples Below ADEC Method 2 Cleanup Levels

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, Polarcousult 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.

