Alaska Department of Environmental Conservation

Reuse & Redevelopment Initiative

Brownfield Assessment

Property Assessment and Cleanup Plan

Larsen Bay Old School

Larsen Bay, Alaska

Submitted to:
Department of Environmental Conservation
Reuse and Redevelopment Program

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EXECUTIVE SUMMARY

This Property Assessment and Cleanup Plan (PACP) was prepared for the old school building and property (Old School) in Larsen Bay, Alaska, by Shannon & Wilson, Inc under contract to the Alaska Department of Environmental Conservation. The purpose of this PACP is to prepare one document that can be used to support the planning and corrective actions necessary to return the Old School property to beneficial use. Specifically, the objective is to assist the Larsen Bay Tribal Council with future plans to reuse the site, possibly for a community garden or recycling center. A shareholders teleconference; background and database research; an October 25 to 26, 2010, field visit; and a November 11, 2010, hazardous material inspection were performed to gather the data used to prepare this document.

Based on our inquiries, observations, and limited sampling, the Old School building and property has both potential and confirmed substances that could harm human health and the environment. The recognized environmental conditions our efforts revealed include:

- Asbestos-containing materials, and lead-containing paint in the Old School building;
- Polychlorinated biphenyl (PCB)-containing light fixture ballasts inside the structure;
- Soil impacted with diesel-range petroleum hydrocarbons in the southeastern portion of the site;
- 55-gallon drums with unknown contents;
- An underground storage tank (UST) in the ground between the Old School and the active Larsen Bay School;
- The possibility that used oil and used antifreeze may have been stored in the southeast portion of the site;
- A septic system may remain in the subsurface west of the building;
- An above ground storage tank (AST) and a UST on the adjacent property occupied by the active Larsen Bay School.

The extent of soil contamination and the possibility of groundwater contamination have not been fully investigated. In order to put the Property to beneficial reuse, we believe remedial actions will be required. We have recommended demolishing the building, excavating and treating contaminated soil, and decommissioning the UST. Our rough order of magnitude cost estimate for the recommended initial remedial actions is $175,000.

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ACD	Alaska Community Database
ACM	asbestos-containing material
AK	Alaska laboratory method
AST	aboveground storage tank
ASTM	ASTM International
B.S.	Bachelor of Science degree
bgs	below ground surface
BIA	U.S. Department of Interior Bureau of Indian Affairs
BTEX	benzene, ethylbenzene, toluene, and xylenes
CCLR	Center for Creative Land Recycling
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CSM	conceptual site model
CY	cubic yards
DBA	DEC brownfields assessment request
DEC	Alaska Department of Environmental Conservation
DRO	diesel range organics
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
°F	degrees Fahrenheit
GPS	global positioning system
HAZWOPER	Hazardous Waste Operations and Emergency Response
ID	identification number
LBTC	Larsen Bay Tribal Council
LUST	leaking underground storage tank
mg/kg	milligrams per kilogram
M.S.	Master of Science degree
NPL	National Priorities List
NTP	notice to proceed
OBS	oil burning specifications

OSHA	U.S. Occupational Safety and Health Administration
PACP	property assessment and cleanup plan
PAH	polynuclear aromatic hydrocarbon
PCB	poly-chlorinated biphenyl
PID	photo-ionization detector
ppm	parts per million
RA	remedial action
RCRA	Resource Conservation and Recovery Act
RI	release investigation
RRO	residual-range organics
SGS	SGS North America, Incorporated
SW	EPA solid waste method
TAH	total aromatic hydrocarbons
TAqH	total aqueous hydrocarbons
TCLP	Toxicity Characteristic Leachate Procedure
TP	test pit
TSD	treatment, storage, or disposal facility
µg/L	micrograms per liter
U.S.	United States of America
UST	underground storage tank
VOC	volatile organic compounds
WEC	White Environmental Consultants, Incorporated

LARSEN BAY OLD SCHOOL
PROPERTY ASSESSMENT AND CLEANUP PLAN
LARSEN BAY, ALASKA

1.0 INTRODUCTION

This report presents the results of Shannon & Wilson, Inc.'s (Shannon & Wilson's) Property Assessment and Cleanup Plan (PACP) activities conducted for the old school building and property (Old School) in Larsen Bay, Alaska. The City of Larsen Bay is situated at the mouth of Larsen Bay on the western coast of Kodiak Island, within the Kodiak Island Borough. The town is 60 miles southwest of the City of Kodiak and 280 miles southwest of Anchorage, Alaska. The property is Lot 1, Block 11, Tract A of U.S. Survey No. 4872; Larsen Bay Townsite, and has an area of approximately 0.35 acres. The Old School is near the center of the town, north of the active Larsen Bay School. The Larsen Bay Tribal Council (LBTC) submitted an Alaska Department of Environmental Conservation (DEC) Brownfields Assessment (DBA) request in 2010 for assessment of the Old School. The DEC prepared a request for proposal in the summer of 2010. Figure 1 provides an overview of the Larsen Bay vicinity. The DBA request is provided in Appendix A.

1.1 Purpose and Objectives

The overall purpose of this PACP project is to prepare one document that provides the site background; presents known, suspected, or potential environmental conditions that could pose risks to human health and the environment; and provides estimated costs for options to mitigate potential risks. This document is intended to be used to support the planning and corrective actions that may be necessary to return the Old School property (the Property) to beneficial use. Specifically, the project objective is to assist the LBTC with future plans to reuse the Property, possibly for a community garden or recycling center.

1.2 Scope of Services

The work for this project included four primary tasks: (1) participating in a stakeholder scoping and planning meeting; (2) performing a property assessment; (3) conducting a hazardous building-materials assessment; and (4) preparing this property assessment and cleanup plan.

The stakeholder meeting was held by teleconference on September 9, 2010, and brought representatives of DEC and Shannon & Wilson together with representatives of the local Tribal Councils and the City of Larsen Bay to review the objectives of the project and to share

information and resources. The property assessment included compilation of information to document current and historical uses and activities at the site and adjacent parcels. A limited field investigation was conducted to evaluate potential or suspected environmental conditions that could pose a threat to human health or the environment or hinder the safe redevelopment of the Property. The scope of work for this PACP includes meeting the requirements of an ASTM International (ASTM) Phase 1 Environmental Assessment per method ASTM E 1527-05. The hazardous building-materials assessment included an inspection of the Old School building and collection and analysis of building material samples, and was subcontracted to White Environmental Consultants, Inc. (WEC) of Anchorage, Alaska.

The work was performed for the DEC Division of Spill Prevention and Response under Term Contract 18-4002-09. The scope of work was based on the DEC's July 2, 2010 request for proposal and performed in material accordance with Shannon & Wilson's July 20, 2010 proposal. Initial authorization to proceed with the PACP effort was provided by the DEC in the form of Notice to Proceed (NTP) 18-4002-12-015, dated July 29, 2010. The NTP was modified in consultation with the DEC project manager to 18-4002-12-015B on November 2, 2010 to include limited soil sampling and analysis.

2.0 COMMUNITY OVERVIEW

Larsen Bay is incorporated as a Second Class City under Alaska state law. A federally-recognized tribe, the Native Village of Larsen Bay, is located in Larsen Bay, and is a member of the Kodiak Island Inter-tribal Council. The economy of Larsen Bay is largely based on fishing and tourism. A seafood processing facility, currently operated by Icicle Seafoods, Inc., is located on the shore of Larsen Bay. In 2009, six lodges provided tourist guide services. Most of the residents are active in subsistence fishing and hunting. Background community information is available over the internet from the Alaska Community Database (ACD) online, and in the 1984 Comprehensive Development Plan for Larsen Bay.

Larsen Bay is accessible by air and water. Kodiak is the regional air hub, and regular and charter flights serve the community, using a state-owned gravel airstrip and a seaplane base. Transportation within the village is by foot, four-wheeler, and automobile. Cargo barge operators provide bulk shipping services. No roads connect the village with other towns on Kodiak Island.

A brief history is included in the ACD. Numerous artifacts uncovered in the area indicate that it may have been inhabited for over 2000 years. Russian fur traders visited the area frequently during the mid-1700s. A tannery was located in Uyak Bay (east of Larsen Bay) in the

early 1800s, and the cannery in Larsen Bay was built in the village by the Alaska Packers Association in 1911. The seafood processing facility in Larsen Bay still operates seasonally. The city was incorporated in 1974.

2.1 Location, Climate, Geological Setting

The City of Larsen Bay is located near the mouth of Larsen Bay off the western shore of Uyak Bay on the west coast of Kodiak Island as shown in Figure 1. The community lies at approximately 57.54° North Latitude and -153.98° West Longitude, and lies primarily within Sections 31 and 32, of Township 30 South, Range 29 West, Seward Meridian. The bay bounds the village to the north, and the airport is located along the southern edge of the village. The city is surrounded by the Kodiak National Wildlife Refuge.

The climate of Kodiak Island is dominated by a strong marine influence. The Larsen Bay area lies in the rain shadow of Kodiak Island and receives moderate precipitation with frequent cloud cover and occasional fog. Average annual precipitation is 23 inches. According to National Weather Service records, average daily temperatures range from around 30 degrees Fahrenheit (°F) in January to 55°F in August, with extremes seldom falling below 20°F or climbing above 70°F.

The City of Larsen Bay encompasses 5.4 square miles of land and 2.2 square miles of water on Larsen Bay at its entrance to Uyak Bay, according to the ACD. Larsen Bay is a fiord which was once filled with glacial ice. The village is located along a terrace-like area roughly paralleling gravelly, moderately sloping beaches. South of the village, the land rises to a 2000-foot peak. The hills are generally smooth and rounded because of glacial activity on the island. The underlying bedrock consists of slate of the Kodiak formation. Glacial till overlies bedrock up to 30-feet thick in the area, and the till is overlain by up to four feet of organic silt and volcanic ash (1984 Development Plan). The maximum range between high and low tides in Larsen Bay is between 12.0 and 14.9 feet.

2.2 Community Demographics

The 2010 United States (U.S.) Census reports that Larsen Bay has a population of 87 people. According to the ACD, U.S. Census data for 2000 showed 35 residents as employed, an unemployment rate of 10.3 percent, and 20.5 percent of the residents were living below the poverty level. Forty of the 70 homes in the village were occupied. According to the ACD, approximately 79 percent of the population is Alaska Native or part native, primarily Alutiiq (Russian-Aleuts).

2.3 Community Resources and Infrastructure

2.3.1 Water and Sewer

Water is supplied by a gravity feed from a hydroelectric plant, constructed in the late 1980s on Humpy Creek, south of town. The water is treated with chlorine and fluoride at the treatment plant after it is collected through an infiltration gallery. A water well serves as emergency backup. The water system is registered with the State of Alaska (Number AK2250134), and supplies water to the majority of homes within the city boundary. Water is reportedly stored in a 200,000-gallon steel tank near the treatment plant. The seafood processing plant has its own water supply, also from Humpy Creek.

According to the ACD, a community septic tank with an outfall to Larsen Bay serves about half of the residences. A permit for the system was not found on the DEC Division of Water databases. The remaining homes are on individual septic systems.

2.3.2 Energy Supply

Electrical service to the town is provided by the Larsen Bay Utility Company. A hydroelectric facility owned by the Alaska Energy Authority began operation in 1991. The system operated unreliably for a number of years, and the City was awarded a grant to upgrade and improve the facility in collaboration with the Alaska Energy Authority. Diesel-powered generators provide a portion of the electricity for Larsen Bay. The Icicle Seafoods seafood processing plant maintains its own generating facility, but purchases additional electricity from Larsen Bay.

The City of Larsen Bay maintains a bulk fuel storage facility located near the west end of the village. We also understand that fuel may be purchased by individuals at the seafood processing plant.

2.3.3 Solid Waste

The town landfill is located approximately 1.5 miles west of the town center at the end of a gravel road. Household garbage is collected weekly by a private hauler contracted to the City. Solid waste is handled by first burning it in a screened, open-pan type incinerator, and then burying the ashes in unlined pits adjacent to the incinerator. An electrified fence around the landfill is intended to keep bears out. The landfill is not permitted according to the DEC Solid Waste Program database. Larger items such as appliances, automobiles, scrap metal, and construction debris are staged at a gravel pit for separation and recycling. The gravel pit is

located along the south side of the road to the landfill. An older out-of-use landfill and incinerator are also located along the road to the active landfill. The old landfill area has open space with potential to be used for land farming petroleum-contaminated soil.

2.3.4 Projects

At the time of our site visit, a project to upgrade the hydroelectric and diesel power generation facilities at Larsen Bay was underway. The ACD lists a number of other capital projects and grants that include repair and resurfacing of existing roads, runway rehabilitation, water system improvements, and freezer storage and processing equipment for the cannery. The status and timelines for these potential projects are not clear.

2.4 Community Involvement

This section discusses the community of Larsen Bay's concerns with respect to the Old School site and their general interest in reusing the site.

2.4.1 Stakeholder Meeting Summary

A stakeholder meeting was held by teleconference on September 9, 2010. The LBTC was represented by President/Administrator, Mary Nelson; Environmental Coordinator, Alexander Panamaroff, Jr.; and Environmental Assistant, Richard Hansen. The City of Larsen Bay was represented by (now former) Mayor Valen Norell, and Alice Aga of the City and Tribal Councils. The Woody Island Tribal Council (which assisted LBTC in preparing the DBA) was represented by Administrator, Melissa Berns; and Environmental Coordinator, Emily Captain. DEC representatives Deborah Williams, John Carnahan, and Sonja Benson facilitated the meeting. Shannon & Wilson was represented by Haydar Turker and Randy Hessong.

Topics discussed included funding and objectives of DECs Reuse and Redevelopment program. Program funding is through a grant from the Environmental Protection Agency (EPA) State and Tribal Response Program. The objective of the program is to move sites with environmental issues back into beneficial use. The roles of the community and the DEC contractor (Shannon & Wilson) were also discussed.

Community members summarized that Larsen Bay has an out-of-use school building with potential lead-based paint, likely asbestos, and possibly an underground fuel-storage tank (UST). The community would like to demolish the building and potentially use the Property for a community garden, with opportunities for educating children. Other topics discussed included

alternative funding sources, property ownership documentation, property access, and local points of contact for the project.

Shannon & Wilson discussed their scope of work. The scope includes performing historical research, and visiting the site and the community to evaluate both the potential resources available and remediation needs for the project. Shannon & Wilson noted that the hazardous-building-materials survey would be subcontracted to WEC. The stakeholder meeting minutes are included in Appendix B.

2.4.2 Proposed Community Development and Land Reuse

The LBTC feels that the Old School structure presents a safety hazard. They are concerned about the potential presence of contaminants such as asbestos and lead-based paint on a site directly adjacent to areas of high public use. They would like to determine the extent of contamination and receive recommendations for remediation so they may address the environmental issues and reuse the Property for Tribal and community access. The Council would like to remove the Old School building, and host a community garden space on the Property. Currently, no garden site exists in Larsen Bay. According to the DBA, the Council would like to use the space for their environmental program, and offer local agriculture opportunities to the community due to the high cost of importing groceries. The Council is also searching for a space to place shipping containers for a recyclables sorting and collection site.

2.4.3 Interviews and Input

Several stakeholders provided invaluable input and information during preparation of this PACP. Alex Panamaroff, Jr. was Shannon & Wilson's point of contact, and helped fill out our environmental site assessment questionnaire during an interview at the LBTC office. Mary Nelson answered questions, provided transportation, and arranged for an interview with Virginia Stanton and Marlene Kenoyer. Richard Hansen, with the LBTC Environmental program, provided a tour of the city, discussed solid waste handling, and provided tools and labor for the assessment. Sam Kenoyer, health aide and Mayor of Larsen Bay, provided lodging at the clinic, and general information about the operation of the city.

Virginia Stanton (Mary Nelson's mother) and Marlene Kenoyer both attended the Old School in the early 1960s before the 1964 Good Friday earthquake. They sat down to visit with Shannon & Wilson's representative for approximately 25 minutes. They remember that heating oil and fuel for the generator were obtained from the cannery, transported down the beach by skiff, and rolled up the hill to the school in barrels. An electrical generator was in a shed behind

(southeast of) the school and there were usually a number of barrels around the generator shed. They also remember the school had a water well with a pressure tank in the furnace room. After they were out of school, they remember a trailer placed to the south of the school for teachers, and a barrel on a stand outside the trailer for heating fuel storage. Once the new school was built, the Old School was out of use.

Ms. Stanton and Ms. Kenoyer also discussed some of the potential re-uses of the Old School that have been considered over the years. At one time, the community considered making the Old School into a museum, but costs for heating and lighting were thought to be too high.

3.0 SITE OVERVIEW

The Larsen Bay Old School is located on Lot 1, Block 11, Tract A of U.S. Survey No. 4872; Larsen Bay Townsite, according to Plat 87-37. The Property lies within the northwest ¼ of Section 32, Township 30 South, and Range 29 West. The lot was platted as a rectangle of 110 feet by 140 feet, covering an area of 15,400 square feet or 0.35 acres. The Old School structure has a footprint of approximately 1,640 square feet. As shown on Figure 2, the building is located about 60 feet north of the "new" school, and about 200 feet south of the shoreline of Larsen Bay. City offices and maintenance buildings are on adjoining properties to the west of the school buildings. A few residential buildings are east and north of the Property. A clinic, firehouse, post office, and the airport are located south of the new school, across Third Street.

Old School building in Larsen Bay, Alaska, looking south 10/25/2010.

3.1 Subsurface Conditions

The Old School site appears to lie on the same slopping terrace-like area that underlies the bulk of Larsen Bay. Subsurface soils are thought to consist of volcanic ash and silt over colluvium and glacial till. Shannon & Wilson's field investigation did not expose soil to depths greater than 2.3 feet below the surface. Dark sandy organic silt (topsoil), reddish brown silt (likely volcanic in origin), gravelly sand (beneath the silt), and sandy gravel (thought to be fill) were identified visually in test pits during our October 2010 site visit.

3.2 Current Use

The Old School building now stands vacant and boarded up. The Property is partially fenced, but is easily accessible on foot. Institutional controls are not known to be placed on the Property. The placement of the new school building and short segment of fence minimize the amount of travel across the Property.

3.3 Historical Use

The building was used as a school for primary education until the 1980s. The date of construction of the Old School is not clear. The 1981 *Inventory and Condition Survey of Public Facilities* estimated that it was probably constructed in the 1940s. The construction materials and style of the older portion of the building appear to be consistent with the 1940s estimate. The earliest aerial photograph found for Larsen Bay is from 1960, and the building appears to have been in place for some time in the photograph. In 1980, a high school was constructed to the south of the Old School. An addition with class rooms for elementary students was added to the high school, and the Old School was taken out of service around 1986 or 1987. Some comments from community members suggest that the south end of the Old School may have continued to be used as a library for a few years after 1987.

A review of aerial photographs provides additional insight into the historical use of the site and surrounding properties that may have environmental consequences. Aerial photographs are included in Appendix C. Based on the 1960 aerial photograph, the school was accessed via a road from the shoreline of Larsen Bay to the north. No other roads were present near the school, although some paths or tracks north and east of the school are visible in the photograph. A second structure was present about 50 feet south of school building. This structure is thought to have been the generator building. Between the school building and the potential generator building, appear to be numerous barrels or drums. On the west appears a neatly stacked row of horizontal drums, and on the east appears a scattering of dozens of drums, mostly vertical. A few residences and other structures were scattered near the shoreline north of the Property. Most of the areas south, east, and west of the Property were undeveloped and covered with vegetation.

In a 1976 aerial photograph that was reviewed but not printed for inclusion in this PACP, two vertical above-ground storage tanks (ASTs) were present roughly 200 feet south of the Old School. The library addition and two out buildings at the Old School appeared to be much the same as in the 1984 photograph discussed below. The high school was not present.

The 1984 aerial photograph, included in Appendix C, shows the new high school present on Third Street. An addition had been added to the south end of the Old School, and the generator building from the 1960 photograph is no longer present. A boardwalk connected the two schools. Between the Old School and the high school, three sheds, a mobile home, and two vertical ASTs were present. The vertical ASTs are within a fenced area, and their location appears to be north and west of the ASTs in the 1976 photograph. The shed to the east of the addition on the Old School is thought to be an electrical generator. The mobile home is thought to be teacher housing. An AST is visible along the southern wall of the mobile home. The shed near the new high school appears to have a day tank located near the eaves on the south side. Overhead electrical lines to the mobile home are visible. The area east of the Old School building, north of the generator, appears to be a playground. A network of streets was present, and increased development in the form of residences and other structures appeared on "G" Street, a block west of the Property.

The 1992 aerial photograph shows the classroom addition to the north end of the high school. The addition overlays the former locations of the ASTs, high school outbuilding, and mobile home observed in the 1984 photograph. The boardwalk to the Old School is not visible, and the Old School appears to be out-of-use. Two sheds remained in the southeast corner of the Property. A new building housing the city offices is present along Third Street, west of the new school. The wooded areas east and west of the Old School were still present, although reduced in size.

The school properties in the 2008 aerial photograph appear to be much as observed during the October 2010 site visit. The remnants of the storage shed are visible, and the generator shed is gone. Since 1992, a north-south road has been cut through the wooded tract east of the Old School. A horizontal AST is visible at the south end of the new school building. The electrical transformer located between the old and new school buildings is visible.

3.4 Ownership

The school was originally constructed and operated by the United States Bureau of Indian Affairs (BIA). Various programs led to the transfer of schools from the BIA to the Territory of Alaska, State of Alaska, or local boroughs between the 1950s and the 1980s. Ownership and transfer records for the Larsen Bay School before 1987 were not encountered in our research. The building and property were owned by the Kodiak Island Borough until 1987. Borough ownership of the school likely began in the 1970s. Ownership of the Property was transferred to the City of Larsen Bay in December of 1987 by a quitclaim deed. Prior to the property transfer,

the City of Larsen Bay passed a resolution to vacate "F" Street, which ran along the west edge of the school property, and "the exchange of land owned by the City of Larsen Bay for land owned by the Kodiak Island Borough" to allow school expansion. The plat map and available ownership records are included in Appendix D. According to the DBA, the Property was transferred in 2007 to the Native Village of Larsen Bay via quit claim. Documentation for the 2007 transfer has not been located, and may have been lost in a fire before being filed with the Recorders Office.

3.5 Records Review

The scope of work for this PACP includes meeting the requirements of an ASTM Phase 1 Environmental Assessment per method ASTM E 1527-05. Additional subsections are included in this section to address regulatory database search requirements. Federal and state database records were researched for pertinent information regarding the environmental condition of the Property and adjacent parcels. Data was also requested from local agencies. This database search complies with ASTM E 1527-05, with the exceptions noted in Section 10.0. Environmental database records are included in Appendix E.

3.5.1 Federal Records Sources

The National Priorities List (NPL) specifies those properties assigned the EPA's highest cleanup priority. The EPA web site was reviewed for NPL sites in Alaska. There are currently no listed NPL sites in the Larsen Bay area.

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) is also compiled by the EPA and includes sites the EPA has investigated or is currently investigating for potential hazardous substance contamination for possible inclusion on the NPL. According to the CERCLIS list, viewed on the EPA website September 13, 2010, there are no CERCLIS sites located in the Larsen Bay area.

According to the EPA Region 10 report, there are no active Resource Conservation and Recovery Act (RCRA) treatment, storage, or disposal (TSD) facilities within Larsen Bay. There are no listed hazardous materials TSD facilities in the Larsen Bay area.

The Emergency Response Notification System (ERNS) lists report hazardous substance releases in reportable quantities. Six ERNS incidents were reported for the City of Larsen Bay between 1982 and 2010. The incidents involved fuel-related spills or releases. Five of the six

incidents involved boats, and one involved a pipeline. None of the ERNS incidents affected the Old School property or adjoining properties.

Larsen Bay does not appear on the EPA Brownfield Assessment, Cleanup, and Revolving Loan Fund Grantees list.

The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. This register does not show cultural resource sites or cultural resource districts to be on the Property.

According to the National Wetlands Inventory online map, the wooded areas adjacent east (2.3 acres) and west (1.05 acres) of the Old School property are classified as "Freshwater Forested/Shrub Wetlands". The Property itself, which is situated on a ridge between the two wetland areas, is not included in that designation.

According to U.S. Fish and Wildlife Service, 15 threatened and/or endangered animal species and one endangered plant species exist in Alaska. Five animal species are considered endangered by the Alaska Department of Fish and Game, Division of Wildlife Conservation. The island of Kodiak does not fall within the Eskimo Curlew, Aleutian Shield Fern, and Wood Bison ranges. The remaining species are marine animals that do not utilize the Property.

3.5.2 State Records Sources

The DEC Spills List was reviewed for information regarding spills on or adjacent to the Property. According to the database, there are no reported spills on the Property.

The State Landfill/Solid Waste Disposal Site List was reviewed on November 29, 2010. According to the DEC's list, no active DEC-recognized landfills are identified within Larsen Bay.

Registered Underground Storage Tank Database

The DEC UST records, available on the DEC website, lists an UST site with Facility Identification (ID) Number 3351 for the Larsen Bay School. The owner is listed as the Kodiak Island Borough, and the closure status is listed as "closed in place". The date of installation of 1/1/1988 suggests that the registered UST was installed at the new school when the classroom addition was added to the Larsen Bay high school. The DEC UST program was contacted to determine if more information was available. Although the tank registration fee was paid in

1991, the tank was listed as a heating oil tank at the time of closure (possibly 2004), and a closure assessment was not requested or received by the DEC.

Leaking Underground Storage Tank (LUST) Database

No LUST sites were listed for Larsen Bay in the DEC Leaking Underground Storage Tank Database.

Contaminated Sites Database

The DEC Contaminated Sites database was reviewed on January 25, 2011, for sites within 1 mile of the Property. This list is assumed to be equivalent to a State Hazardous Waste Sites list, as required by ASTM E 1527-05. One entry, listed as informational, was found for Larsen Bay. The Old School site was added to DEC's Contaminated Sites Database in April 2010, following submittal of the DBA Request by the Larsen Bay Tribal Council. The Property was assigned Hazard ID 25511. The entry noted that notice to proceed on this Brownfield assessment was awarded to Shannon & Wilson in July 2010. The site will be administered under the DEC Reuse and Redevelopment Program.

Alaska State Historic Preservation Office

In July 2010, DEC received a response from the Alaska State Historic Preservation Office that no historic properties are affected for this assessment work.

3.5.3 Local Agency Sources

The City of Larsen Bay and the Native Village of Larsen Bay are the most relevant local agencies for this environmental assessment. Both have been involved with this PACP, and their input has been incorporated in the body of text. The 1981 *Inventory and Condition Survey of Public Facilities* provided by the Kodiak Island Borough School District and included with the DBA request, included a 1981 site sketch depicting a 2000-gallon UST located in the southwest portion of the Property. The sketch is included in the Hazardous Material Inspection Report in Appendix I.

3.6 Adjoining Properties

North of the Property, one residential dwelling with an out building is present between the school and the shoreline of Larsen Bay. The structure was present and appeared to be in use in the 1960 aerial photograph. The now out-of use dwelling is said to be the former home of Mr. Breton, a past school janitor. East of the Property is an undeveloped wooded valley classified as

"Freshwater Forested/Shrub Wetlands" by the National Wetlands Inventory. The platted F Street right-of-way is within the wooded area. The hillside sloping away from the Old School to the west is undeveloped land also classified as "Freshwater Forested/Shrub Wetlands." The E Street right of way is approximately at the bottom of the hill. The Smith residence is west of E Street.

The active Larsen Bay School is located on the adjoining property to the south, fronting on Third Street. The Old School property and the active school property were not managed as separate properties until the parcels were re-platted in 1987. To the east of the new school is the City of Larsen Bay office building. A clinic, firehouse, post office, and the airport are located across Third Street, south of the new school.

4.0 SITE RECONNAISANCE AND SOIL SAMPLING

A site visit was conducted by our field representative, Randy Hessong, on October 25 and 26, 2010, in general accordance with Shannon and Wilson's proposal dated July 20, 2010. Mr. Hessong meets the definition of "Environmental Professional" as defined in 40 Code of Federal Regulations (CFR) 312.10. Scheduled commercial flights were used for transportation to Larsen Bay from Anchorage via Kodiak. Upon arrival in Larsen Bay, Mr. Hessong reported to the LBTC office, where he met Mr. Alex Panamaroff, Jr.; LBTC President, Ms. Mary Nelson; and LBTC environmental employee, Mr. Richard Henson. Lodging was provided in an apartment in the health clinic, where Mr. Hessong met Mayor Sam Kenoyer.

On October 25, 2010, the weather in Larsen Bay was rainy in the morning, clearing in the afternoon and sunny in the evening, with temperatures spanning the 40 °F range. Mr. Hessong performed the bulk of the site reconnaissance and sampling on October 25. On October 26, 2010, Mr. Hessong interviewed Ms. Stanton and Ms. Kenoyer, exposed a portion of a UST, collected analytical samples from two test pit locations, and recorded global positioning system (GPS) coordinates before returning to Anchorage in the afternoon. The weather in the morning of October 26, 2010 consisted of rain squalls and sunny breaks with temperatures near freezing. A copy of the field notes and a table of GPS coordinates are included in Appendix F.

4.1 Methodology and Deviations

The general methodology was to walk through the site, become familiar with the layout, and then identify potential areas of environmental concern. Once a general feel for the site was obtained, a narrated video recording of the site was made. Soil screening was then performed at selected areas of concern. Based upon initial observations of potentially contaminated locations on the Property, Shannon & Wilson was authorized by DEC to modify the work scope to include

collection of soil samples for analyses. Two analytical samples were obtained at two locations. A hand-held GPS device was used to record the test pit locations and other site features, and still photographs were taken. Note that the still camera had problems losing its settings, so the automatic date has been blacked out on the photos. Additional site photographs are included in Appendix G.

4.2 Field Observations

The wood-frame Old School building sits at the crest of a low ridge running north-northeast from the current school building. A run of chain-link fence separates the new school from the Old School. The vegetation on the lot was not mown, and vegetation was trampled along a lightly used path passing from the western end of the chain link fence, along the west side of the building, to the old road. The old road leads north-northeast from the school to the shore of Larsen Bay, a distance of approximately 200 feet. The road is well vegetated, but appears to see some 4-wheeler traffic. The thickness of the brush on the sides of the ridge minimizes human traffic from the east and west.

Old School building looking north toward bay from end of fence, 10/25/2010.

Items observed on the Property included the sanitary cap of a water well near the northeast corner of the building, and a variety of construction debris near the southeast corner of the building. The water well did not appear to be decommissioned. Eight 55-gallon steel drums, 5 of which were empty, were in the southeastern portion of the Property. Three of the drums may have contained some residual fluid, but were settled into the vegetation too tightly to tell without risking damage. The old wood floor of a collapsed sheet metal shed, and the scraps of sheet metal were also east of the southern end of the school building. A depression east of the building and old shed had stunted vegetation and creosote timber blocks that were thought to be the supports for the former generator shed. An electrical

Looking north across former generator shed location, TP5 on the right, TP4 in background, 10/25/2010.

transformer is on the south side of the 8-foot-tall chain-link fence separating the old and new schools.

The Old School structure itself measures approximately 80 feet by 20 feet. The roof and exterior walls of the northern two-thirds of the building are wood frame with steel siding, galvanized steel roof, and wood framed windows that are now boarded up. The southern third of the structure appears to be a later addition, and is sheathed with T-111 plywood and has asphalt shingle roofing. The building sits on wood timber posts, and the 1.5 to 3-foot space beneath the building is skirted with plywood, cement board or sheet metal, and some skirting is missing. Three doors are located on the west side of the structure. The wooden stoops for the north and south entries are rotted and collapsing. The main central entry has a partially enclosed portico and is relatively solid. The building was secured with plywood panels attached with screws over the doors and windows.

Some observations of the utilities at the Old School could be made. A broken 4-inch plastic sewer pipe in an insulated conduit shell is exposed in an old trench on the south side of the building. This suggests that the building was connected to the city sewer system at one time. Ms. Stanton and Ms. Kenoyer thought the Old School had a septic system located near the main door. Steel divining rods suggested that there was a subsurface anomaly of roughly septic tank size just to the northwest of the main entrance. The water well suggests that the school used well water, however a plastic pipe connecting to the steel water piping just under the northeast corner of the building suggests that the school was later connected to city water. Galvanized steel duct work beneath the building suggests that a forced-air heating system was used. Copper tubing running beneath the building suggests that liquid fuel was supplied to the north, central, and southern ends of the building.

The interior of the Old School building is divided into three main rooms. Several community members called the newer southern room the library. Between the two classrooms in the old portion of the building are two restrooms (sink and toilet), a small kitchen area, and a mechanical room. The walls of the classrooms in the old portion of the structure are painted plywood. The interior walls and ceilings of the restrooms, mechanical room, and newer

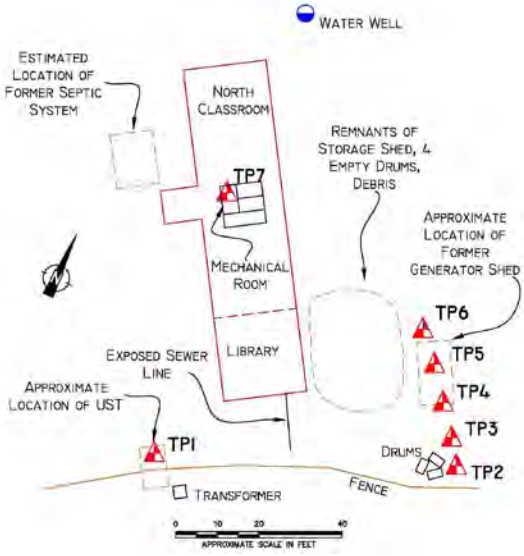
Interior of northern classroom, looking southeast on 10/25/2010.

classroom/library space are gypsum wall board. The dismantled kitchen area had a mix of gypsum wall board and plywood walls. The restroom walls have hard-board wainscoting. The ceilings of the old classrooms had 11-inch composite ceiling tiles. The floors of the old classrooms appeared to be covered with square vinyl-asbestos tiles. The floor covering in the library appeared to be vinyl. A leak in the roof above the northern classroom had caused damage to the ceiling and floor tiles. Fluorescent lighting fixtures were in the classrooms and library, and incandescent lighting was in the restrooms and mechanical room.

The mechanical room included an oil-fired force-air furnace, a small electrical hot water heater, and a slop sink. More recent plastic plumbing was connected to the slop sink drain.

4.3 Site Sampling

Based on field observations and historic site layout, Shannon & Wilson's field representative selected seven locations of potential concern for near-surface screening and sampling. Sample locations, screening results, and visual soil descriptions are summarized in Table 1 (See Appendix F for GPS coordinates).



Site sketch inset from Figure 2

4.3.1 Sampling Methodology

A hand shovel and a rock-bar were used to expose soil in shallow test pits dug to depths of 0.2 to 2.3 feet below ground surface (bgs) at seven locations selected for soil screening. New, disposable nitrile gloves were worn by the sampler, and the exposed soil was placed into containers using clean stainless steel spoons. Soil was screened for volatile organic compounds using a Thermo-Environmental OVM 580B photo-ionization detector (PID). Following DEC's UST Procedures Manual protocol, semi-quantitative headspace screening was performed by placing soil in a one-quart polyethylene bag, and warming the soil in the apartment for approximately 60 minutes. The bag was then shaken to release trapped soil vapor, and the PID probe was inserted into the bag. The field-screening results were recorded in a field notebook. Following screening and photographs, the test pits were backfilled with the excavated soil.

4.3.2 Soil Screening Locations

Test pit locations are shown above and on the Site Plan depicted in Figure 2. Table 1 contains a summary of visual soil classifications and screening results for each test pit.

Test Pit TP1 was advanced at the suspected UST location, as depicted in a 1981 site sketch. Steel divining rods were used to aid in locating the tank position. On October 25, 2010, hand excavation with a shovel was found difficult in the gravelly soil, and the test pit was stopped at approximately 2 feet bgs. On October 26, a rock bar was borrowed from the city of Larsen Bay and Test Pit TP1 was reopened. The top of the UST was encountered at 2.3 feet bgs in the test pit. A screening sample was obtained near the surface of the tank. The tank surface was rusty. No contaminant odors were observed. The granular soil encountered in Test Pit TP1 did not have well developed soil horizons, and was dense enough that it may have been mechanically compacted. As Test Pit TP1 was backfilled, a length of 4-inch plastic pipe was left in the hole to mark the location of the UST for future reference.

Top of steel underground storage tank located south-southwest of the Old School building, with table spoon for scale, looking south on 10/26/2010.

Test Pits TP2 and TP3 were located adjacent to rusty 55-gallon drums that had some evidence of oily staining on the outside. The drums were located south of the former generator shed location. The mixed silty soils encountered in Test Pits TP2 and TP3 had developing soil horizons under a thick vegetation mat. Test Pits TP4 through TP6 were located along a transect across the former generator shed location southeast of the Old School. The reddish-brown silt encountered in the top foot of Test Pit TP4 appeared to be a volcanic ash soil horizon with low permeability. Test Pit TP4 was extended deeper after collecting analytical Sample TP4S1 on October 26, 2010 to investigate the

Test Pit TP2, screening Sample TP2S1, and 55-gallon drums, looking west on 10/25/2010.

thickness of this silt layer. Gravelly sand was encountered at 1.2 feet bgs, and water began entering the test pit at 1.4 feet bgs. A second screening sample was collected from this layer in Test Pit TP4. Beneath a thin (0.1 to 0.2 feet) vegetation mat, wet gravelly sand was encountered in Test Pit 5. Test Pit TP5 was located at the lowest elevation within the former generator shed footprint. Test Pit TP6 was located at a higher elevation than Test Pits TP4 or TP5 in mixed soil outside (north) of the generator footprint. Test Pit TP7 was located beneath the Old School, approximately under the mechanical room where copper fuel lines were joined at a "T". Soil at Test Pit TP7 appeared to be similar to the silt encountered in Test Pit TP4.

TABLE 1 - SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet)	Headspace (ppm) ^	Sample Classification**
Test Pit TP1		Underground storage tank location			
TP1S1	10/25/2010	Test Pit 1, Sample 1	2.0 - 2.1	1.8	Brown, silty, sandy GRAVEL; moist; no odor noted
TP1S2	10/26/2010	Test Pit 1, Sample 2	2.3	2.4	Brown, silty, gravelly SAND; moist; no odor noted
Test Pit TP2		Beneath group of three drums			
TP2S1	10/25/2010	Test Pit 2, Sample 1	0.6 - 0.8	2.7	Brown, silty SAND, with roots; moist; fuel odor possibly from nearby drums
Test Pit TP3		Beneath oily stained drum			
* TP3S1	10/25/2010	Test Pit 3, Sample 1	0.7 - 0.8	47	Dark brown, sandy organic SILT, trace gravel; with roots; moist; diesel odor
Test Pit TP4		Inside south edge of former generator shed			
* TP4S1	10/25/2010	Test Pit 4, Sample 1	0.7 - 0.9	160	Reddish brown SILT; moist; diesel odor
TP4S2	10/26/2010	Test Pit 4, Sample 2	1.35-1.45	210	Gray, silty, gravelly SAND; wet; diesel odor and sheen; water at 1.4 feet bgs
Test Pit TP5		Inside west edge of former generator shed			
TP5S1	10/25/2010	Test Pit 5, Sample 1	0.2 - 0.35	15	Gray, gravelly SAND; wet; faint petroleum odor; water entered pit
Test Pit TP6		Immediately north of former generator shed			
TP6S1	10/25/2010	Test Pit 6, Sample 1	0.5 - 0.7	3.9	Mixed silty, gravelly SAND and organic SILT; moist; creosote odor from nearby piles
Test Pit TP7		Beneath school under fuel-line junction			
TP7S1	10/25/2010	Test Pit 7, Sample 1	0.3 - 0.5	2.0	Reddish-brown, slightly sandy SILT; moist; no odor noted

KEY	DESCRIPTION
*	Sample analyzed by the project laboratory. Analytical sample portion collected 10/26/2010
^	Field screening instrument was a ThermoInstruments 580B photoionization detector (PID)
**	Sample classification applies to the portion of the specified sample interval from which the sample was collected
^^	Hand-held global positioning system instrument, coordinates are Alaska State Plane - NAD83
mg/kg	Milligrams per kilogram
ppm	parts per million
bgs	below ground surface

4.3.3 Analytical Sampling

Analytical samples were not included in the initial project scope. Shannon & Wilson received approval to collect analytical samples on October 26, 2010, after relaying the findings of the field screening to the DEC. Two laboratory–provided containers were available in the field. Two analytical samples, Sample TP3S1 from Test Pit TP3 and Sample TP4S1 from Test Pit TP4, were collected by re-opening the test pits with a shovel, exposing fresh soil using stainless steel spoons, then filling the sample containers. The sampler wore a new pair of disposable nitrile gloves to collect each sample. Each laboratory container was labeled with a unique sample number, date and time of sampling, initials of collector, laboratory analysis, and preservation method. The samples were then placed in a cooler with gel ice packs.

The cooler containing analytical samples and a completed chain-of-custody was transported by Shannon & Wilson's representative to the analytical laboratory, SGS North America, Inc. in Anchorage, Alaska (SGS). Both samples were analyzed for diesel-range organics (DRO) by Alaska Method (AK) 102, residual-range organics (RRO) by AK103, and polychlorinated biphenyls (PCBs) by EPA method SW8082A.

4.4 Sample Results and Discussion

As shown in Table 1, headspace screening results from Test Pits TP3, TP4, and TP5 were over 10 parts per million (ppm). Petroleum odors were noted at each of these locations. Analytical samples were collected at the Test Pits TP3 and TP4 locations.

Table 2, below, summarizes the analytical results for the tested samples. As shown on the table, DRO was detected in both samples at concentrations greater than the cleanup level of 250 milligrams per kilogram (mg/kg) established by DEC for migration to groundwater. The DRO results also exceed the DEC maximum allowable concentration of 12,500 mg/kg. RRO was detected in both samples but did not exceed the cleanup level. According to the laboratory case narrative, the exhibited chromatogram patterns in the samples were consistent with a "weathered middle distillate," suggesting diesel fuel. PCBs were not detected in the samples.

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Levels (mg/kg)*			Sample Source, ID Number^, and Collection Depth in Feet (See Table 1, Figure 2, and Appendix H)	
		Under 40 Inches**		Migration to Ground-water	TP3S1	TP4S1
		Contact / Ingestion	Outdoor Inhalation		0.7 - 0.8	0.7 - 0.9
PID Headspace Reading - ppm	580B PID	-	-	-	47	160
Percent Solids	SM20 2540G	-	-	-	71.5	53.8
Diesel Range Organics (DRO) - mg/kg	AK 102	10,250	12,500	250	**47,200**	**73,000**
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	22,000	11,000	4,150	1,800
Polychlorinated Biphenyls (PCBs) - mg/kg	SW8082A	1.0	NA	NA	<0.069	<0.0913

KEY	DESCRIPTION
*	Soil cleanup levels are from DEC Tables B1 and B2 of 18 AAC 75.341 (October 2008)
**	Cleanup levels established for areas with less than 40-inches of annual precipitation
^	Sample ID No. preceded by "17376-" on the chain of custody form
ppm	Parts per million
mg/kg	Milligrams per kilogram
<0.069	Analyte not detected; laboratory reporting limit of 0.069 mg/kg
-	Not applicable or sample not tested for this analyte
47,200	Reported concentration exceeds the most stringent of the applicable cleanup levels

4.5 Quality Assurance Summary

The soil samples were submitted to SGS for analysis. In addition to providing the analytical data for our project samples, SGS follows on-going quality assurance/quality control procedures to evaluate conformance to applicable DEC and EPA data quality objectives (DQO). Internal laboratory quality controls for this project include surrogates, method blanks, laboratory control sample/laboratory control sample duplicates, and matrix spike/matrix spike duplicates. If a DQO for one of the controls is not met, the laboratory provides a brief explanation in the case narrative of their report. Shannon & Wilson reviewed the SGS data deliverables for the soil samples included in Work Order 1105811, and completed the DEC Laboratory Data Review Checklist. The laboratory report and the data review checklist are included in Appendix H. No discrepancies were found that impact the usability of the data for this report.

External quality controls include field records. Trip blank, equipment blank, and field duplicate samples were not analyzed for this project. Field logs and records were checked for completeness and accuracy. No discrepancies were identified that would impact the reliability of the data.

5.0 HAZARDOUS BUILDING MATERIALS SURVEY

Shannon & Wilson subcontracted the hazardous building materials survey to WEC. WEC performed the survey of the Larsen Bay Old School on November 2, 2010. The interior and exterior of the school were inspected and/or sampled for asbestos-containing materials (ACM) and suspected lead-containing paint to determine disposal activities required if these materials are present. WEC analyzed the samples in-house in their Anchorage laboratory. A limited number of fluorescent light fixtures were visually inspected for PCB-containing ballasts.

5.1 Asbestos-Containing Materials

Suspected ACM materials identified and sampled included:

Cove base mastic	Joint compound
Drywall	Heating and ventilation system tape
Gasket	Wanes coat mastic
Ceiling tile	Floor tile
Floor mastics	Window glazing
Cement Board	

Twenty-seven discrete sample layers of ACM were analyzed using polarized light microscopy by EPA Method 600/R-93/116. Fourteen of the sample layers were found to contain asbestos (defined as having over 1% asbestos content). They included floor tiles, floor-tile mastic, cement board, joint compound, window glazing, and gasket material. WEC's Hazardous Materials Inspection Report dated November 15, 2010, is provided in Appendix I. Table 1 of the report contains a summary of the asbestos-containing materials and where they are located in the building. Note that ordinal directions used by WEC are rotated to the east 90 degrees from those used by Shannon & Wilson, i.e. directions describe as north by Shannon & Wilson are described as west by WEC.

The detected ACM materials present in the school are classified as non-friable Category II asbestos-containing material by the EPA, and are subject to Class II removal procedures as described by the U.S. Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.1011. EPA regulations allow the asbestos-containing material to remain in place during demolition of the building. However, Alaska-certified asbestos workers will be required to perform demolition activities, and the entire waste stream must be disposed of as asbestos-containing waste. Cement board may become friable if broken, and removal before demolition is recommended.

5.2 Lead-Containing Paint

WEC personnel collected seven samples from suspected lead-containing painted surfaces on the interior and exterior of the Larsen Bay Old School. The samples were analyzed by EPA Method SW846-7420. Six of the samples had detectable concentrations of lead. Two of the samples were considered "lead-based" paint, based on the U.S. Department of Housing and Urban Development/EPA's definition of "paint with lead concentrations equal to or greater than 5,000 ppm". Samples from exterior trim and the west (north) classroom wall each contained 17,000 ppm lead. A lead analysis summary is provided in the table in Section 2.2 of the WEC report.

OSHA Lead-in-Construction standard 29 CFR 1926.62 applies to all construction work where an employee may be occupationally exposed to any detectable level of lead. Based on the analytical results, OSHA lead compliance measures should be implemented during the demolition of the school. These measures include: (1) employee training; (2) employee exposure assessments; and (3) a lead compliance plan.

WEC collected a composite sample of building materials for analysis of lead by the EPA Toxicity Characteristic Leaching Procedure (TCLP) Method SW846-1311. Lead was not

detected at a reporting limit of 0.40 milligrams per liter in the composite sample of building materials. This suggests that, for disposal purposes, the building as a whole is not hazardous waste due to lead.

5.3 PCB Ballasts and Mercury Thermostats

No mercury-containing thermostat switches were observed in the Larsen Bay Old School. A limited visual inspection of fluorescent light fixture ballasts identified suspected PCB-containing ballasts.

The 21 fluorescent light fixtures identified throughout the school should be suspected of having PCB-containing ballasts. Lighting ballasts should be inspected, and those containing PCBs will need to be removed prior to demolition and be properly disposed of in accordance with local, state, and federal regulations. Prior to removal and disposal of fluorescent light bulbs from the building, a Mercury TCLP test should be performed on the waste stream to determine disposal requirements.

6.0 ENVIRONMENTAL REVIEW AND SUMMARY OF FINDINGS

Potential environmental concerns on the Property are discussed based on our review of databases, historical data, field observations, and laboratory results.

6.1 Historical Environmental Review

Records of reported spills, cleanup activities, or corrective actions at the Old School property were not found in our research. The DEC UST database has a record that one 2,000 gallon UST was closed in place. This UST is thought to be on the adjacent school property to the south (See Figure 2). The above-ground fittings of a UST were observed at the northeast corner of the new school addition during our site visit. The fittings did not suggest that the UST had been closed.

Underground storage tanks fittings at active Larsen Bay School, looking northwest to Old School, 10/25/2010.

6.2 Potential and Identified Source Areas

The handling of fuel for heating and for generation of electricity was identified as a significant potential source of environmental contamination at the Property. Two former generator sheds and drum storage areas south and east of the school building are locations where releases of fuel may have occurred. The presence of a diesel-fired generator and drums suggest that motor oil, antifreeze, and used oil may also have been handled at the site. A possible accident while transporting fuel drums from the beach to the school before the 1970s presents a potential for a release. The UST depicted on a 1981 site sketch was located during the site investigation. This UST likely held heating oil for the Old School, and releases from USTs are not uncommon. ASTs south of the Old School that likely held fuel for former teacher housing and for the high school were identified in aerial photographs. Releases from these locations could have potentially impacted the Property. A 1,000 gallon AST at the northwest corner, and a UST at the northeast corner of the new school were observed during our October 2010 site visit. Releases from these existing tank locations have the potential to impact the Old School property.

Based on the limited number of samples collected from hand-excavated test pits at select locations across the site, fuel appears to have been released into the soil beneath the former eastern generator shed and drum storage areas. The elevated levels of DRO remain in the soil as a secondary contaminant source. Table 1 summarizes soil screening results and Table 2 presents analytical results for tested samples. Screening results from soil above the remaining UST southwest of the Old School did not suggest the presence of fuel contamination. However, the lack of fill and vent pipes above ground and the gravelly soil encountered in Test Pit TP1 suggest that the soil above the UST had been disturbed since the UST was installed. The possibility of a release from the UST or associated piping remains.

Hazardous construction materials, including lead-based paint and ACM, were detected in samples collected from the exterior and interior of the Old School building. For the purposes of this PACP, hazardous construction materials in the interior of the building are not considered as environmental concerns. Lead-containing paint and asbestos on the exterior of the building are potential environmental concerns. Flaking, weathered paint may release lead into the environment, and weathered or damaged ACM may release asbestos into the environment.

6.3 Data Gaps

The limited soil sampling was not intended to fully characterize the vertical and lateral extent of impacted soil. The depth to which petroleum contamination has penetrated the soil, and the precise horizontal boundaries of contaminated soil have not been determined. The

concentrations of DRO detected suggest that polynuclear aromatic compounds (PAHs) may be contaminants of concern, however PAH analyses were not performed. The potential for used oil (or antifreeze) to have been released has not been fully assessed. It is not known whether the remaining UST and associated piping were properly closed. The presence of lead or asbestos in near surface soil has not been assessed. Groundwater has not been evaluated for potential contamination. The on-site septic system is a potential conduit to the subsurface for environmentally hazardous substances that has not been investigated. Property ownership remains a sort of data gap. The intention of transferring ownership from the City of Larsen Bay to the Native Village of Larsen Bay via quit claim in 2007 has been expressed, however documentation of the transfer has not been located.

Filling many of these data gaps may be incorporated into aspects of a corrective action. If the corrective action includes excavation and treatment of the known petroleum impacted soil in the southeastern portion of the Property, the extent of impacted soil can be characterized as part of the excavation activities. The excavator or backhoe could then be used to advance test pits and investigate subsurface conditions at the UST location and associated piping. Assessing potential impacts from building materials may be incorporated into the completion of building demolition activities. Groundwater data may be gained by removing the sanitary cap on the water well and determining if water level measurement and groundwater sampling can be performed in the well without removing the existing pump and piping. Deeper test pits may be advanced to access shallow groundwater.

6.4 Conceptual Site Model

A conceptual site model (CSM) was prepared to identify known and potential exposure pathways associated with identified and potential contaminants at the project site. The CSM was developed using the DEC's October 2010 *Policy Guidance on Developing Conceptual Site Models*, and the results are presented in the CSM Graphic Form and the CSM Scoping Form included in Appendix J. A potential or potentially complete exposure pathway is a way by which a receptor such as a human, plant or animal could be exposed to contamination. Discussions of the potential exposure pathways for each impacted medium are provided below. The narrative includes descriptions of site-specific considerations that increase or decrease the viability of each pathway at this site.

6.4.1 Potential Contaminants of Concern

Base on the assessment activities performed for this PACP, potential contaminants of concern include diesel/heating oil fuel, used oil, antifreeze, lead from paint, asbestos from

building materials, and PCBs from electrical equipment. Diesel range organics were measured in the soil in the southeastern portion of the Property. The ratio of DRO to RRO and the laboratory chromatograms did not suggest the presence of used motor oil. Lead was measured in paint from the outside of the structure. Class II non-friable asbestos-containing material was identified on the outside of the structure. PCBs were not measured in the two soil samples from the vicinity of the generator shed. PCB-containing light ballasts were identified in the interior of the structure.

6.4.2 Exposure Pathways

Soil

Incidental ingestion of impacted soil is a potentially complete exposure pathway for site visitors/trespassers, construction workers, subsistence harvesters, and future site users. Concentrations of DRO have been measured in near-surface soils that exceed the DEC ingestion criteria. Dermal absorption of contaminants from soil is considered a potentially complete pathway for the same potential receptors because the magnitude of the DRO concentrations suggests that elevated PAH concentrations are possible. Inhalation of fugitive dust is considered a potentially complete exposure pathway because lead from weathered paint, asbestos, and DRO could be within the top two centimeters of soil, and could be released if the site is disturbed during dry or windy weather.

Groundwater

Groundwater at the Property has not been tested. Fuel contamination has been measured in the near-surface soil and the potential exists for fuel contamination to migrate to groundwater. Ingestion and dermal absorption of contaminants in groundwater are considered potentially complete exposure pathways. An out-of-use water well at the Old School suggests that groundwater in the area can be used as a water source. There is also a potential for the well to be refitted and reused. Receptors may potentially be affected in the future. Currently, the majority of drinking water in Larsen Bay comes from the City water system, and contaminants from the site are unlikely to migrate to the city water supply.

Air

Inhalation of outdoor air is considered a potentially complete exposure pathway because DRO has been measured at concentrations that exceed the DEC outdoor inhalation cleanup levels for soil. Inhalation of indoor air may be a potential exposure pathway because the aged diesel fuel may contain some volatile constituents that were not included in the testing.

However, it is not considered a potentially complete pathway because the DEC does not require evaluation of DRO for the indoor air vapor intrusion pathway. Inhalation of fugitive dust is considered a potentially complete exposure pathway because weathered lead-based paint may release lead to the environment, damaged asbestos-containing cement board or weathered glazing compound may release asbestos to the environment, and elevated DRO concentrations were measured in near-surface soil. Currently, the site is well vegetated and the climate is moist, site conditions that help mitigate the exposure risk.

Surface Water

Surface water ingestion is considered a potentially complete exposure pathway because near-surface soil samples contained DRO concentrations that exceed DEC migration to groundwater standards. Surface water runoff channels were not observed on site; however, the former generator location is a small basin, and shallow perched water was encountered while soil sampling. This basin could pond during larger precipitation events, and a DRO-contaminated soil sample was collected from within the basin. Dermal contact with contaminated water in the basin represents a potentially complete exposure pathway.

Other

Ingestion of wild or farmed foods is considered a potentially complete exposure pathway. Plants were observed growing in soil with identified DRO contamination. Trespassers may harvest the plants, or wild game could consume the plants, and subsequently be harvested. If the site is utilized as a community garden, and contaminants are not removed first, farmed foods may be impacted. DRO is not listed as bioaccumulative in the DEC guidance, however lead is. There is potential for lead to be released from weathered paint and enter the biomass. Evidence of surface water runoff and sedimentation was not observed on the site, and sediment was not considered an exposure media. However, if the site is re-graded, vegetation is removed, or other disturbances occur, runoff and sedimentation may occur. Inhalation and contact with asbestos and lead-based paint during demolition and disposal activities is a potentially complete exposure pathway. Certified asbestos and lead workers should be required to perform these activities.

6.5 Cleanup Criteria

For soil contamination, the risk-based DEC soil cleanup levels of Method Two for the under 40-inch precipitation zone, as established in 18 Alaska Administrative Code (AAC) 75.341, are thought to be the most applicable to the Larsen Bay Old School site. The Method Two Under 40-Inch soil cleanup levels are included in Table 2. 18 AAC 75.990 defines “Under 40-Inch zone” as areas outside the Arctic Zone that receive less than 40 inches of precipitation

annually. Average annual precipitation in Larsen Bay has been variously reported at 15 to 23 inches. Alternate cleanup levels could be established with the DEC by using a risk management-based approach and site-specific data. Alternative cleanup levels could potentially allow for less conservative cleanup levels or for contamination to be left in place. Neither the DEC or the EPA have established guidance or cleanup levels for asbestos contamination in soil.

For surface water that might accumulate on the Property, the water quality standards of 18 AAC 70 for fresh water uses are applicable. For petroleum hydrocarbons, the standards are 15 micrograms per liter (µg/L) total aqueous hydrocarbons (TAqH), and 10 µg/L total aromatic hydrocarbons (TAH). For groundwater, the Groundwater Cleanup Levels listed in Table C of 18 AAC 75.345 are applicable to the site. The Method Two soil cleanup levels for Migration to Groundwater in 18 AAC 75.341 may be used to provide some measure of whether contaminant concentrations in soil might impact water that comes in contact with the soil.

Demolition and disposal of buildings containing hazardous building materials are controlled under a variety of regulations and guidelines. The *Hazardous Materials Inspection Report* in Appendix H, prepared by WEC, references these various regulations. The contents of drums, tanks, or other solid waste are regulated under RCRA.

6.6 Environmental Overview

Based on the information gathered for this PACP, environmental conditions have been identified that exceed risked-based cleanup criteria for the Old School property and potentially complete exposure pathways have been identified.

The Old School property in Larsen Bay has an out-of-use building with class II non-friable ACM, lead-containing paint, and PCB-containing ballasts. Past handling of fuel oil for heating and electrical generation appears to have released petroleum hydrocarbons to the soil. A UST remains in the ground, and it is not known if the vessel was properly closed or if fuel was released from the tank or piping. Steel 55-gallon drums are present on the Property, and three of the drums have unknown contents.

The hazardous building materials present a potential health risk to occupants if the building were returned to use, and a potential risk to construction workers who might remodel or demolish the structure. If lead-containing paint or ACM on the outside of the building has weathered and fallen to the soil, it could present an environmental risk to those using the soil for something such as gardening or subsistence harvesting.

Analytical sampling indicates that diesel-range fuel has been released to the soil in the southeastern portion of the site. Concentrations of DRO in excess of the DEC Method Two maximum allowable concentration were measured and present risks through contact, ingestion, and inhalation exposure pathways. While the area of impacted soil has not been fully delineated, initial observations suggest that the area of near-surface petroleum contamination is not likely to exceed 800 square feet in the vicinity of the former generator. The contamination presents an environmental risk to those who might reuse the site, particularly for something that would involve handling soil, such as gardening. The released fuel could have potentially migrated vertically to the extent of impacting groundwater, although this has not been investigated. Groundwater from the region that could have been impacted is not thought to be in use currently, however there is a potential that it could be used in the future. The most likely contaminants of concern if used oil or used antifreeze from operation of an electrical generator were potentially released are heavy metals.

The UST may be a contaminant source if fuel remains in the vessel or piping. It may also present a physical hazard if it has not been filled with sand and collapses due to corrosion. Soil may have been contaminated from releases of petroleum from the UST or piping. Released fuel has the potential to migrate to groundwater. Based on field observations, it appears likely that imported soil has been placed over the top of the UST.

7.0 RECOMMENDED ACTIONS/OPINION

The recommended actions outlined below are based on the assumption that the desired re-use for the site is a community garden and educational center. Other options may exist, and our opinions may be different if additional characterization indicates the presence of additional contaminants or significantly larger extents.

7.1 Recommended Remedial Actions by Source Area

Because the extent of the confirmed release is not well delineated, and there are potential source areas that have not been investigated, we are recommending a mix of remedial action (RA), release investigation (RI), and additional site characterization for the Property. Combining remedial actions to eliminate or control exposure pathways with investigation and characterization activities will reduce the costs of mobilizing personnel and equipment to the site.

7.1.1 Former Generator and Drum Storage Area

The site cleanup rules of 18 AAC 75.325 apply based on the DRO concentrations in soil samples collected to date. Under 18 AAC 75.325, a responsible party is required to investigate, contain, and perform cleanup of a release of a hazardous substance. Initial or emergency spill response actions are not recommended because the release to the environment appears to have happened sometime in the past, is not likely to be spreading rapidly, and does not appear to pose an immediate danger to life or health. The basic approach is to excavate and treat the DRO-impacted soil present within 5 feet of the ground surface. The excavation area is expected to extend beneath the southern group of drums. Specific steps would include:

- Prepare a Corrective Action/Work Plan for DEC approval in accordance with 18AAC 78.250 and the Landfarming Checklist in the DEC's Underground Storage Tank Procedures Manual.
- Construct a soil treatment cell off site for landfarming up to 220 cubic yards (CY) of diesel-impacted soil.
- Excavate one test pit near the southern edge of the former generator pad to the maximum depth of the available equipment, bedrock, or groundwater, whichever comes first, to explore potential migration to groundwater.
    - Collect soil screening samples every two feet during excavation of the test pit to help characterize contaminant distribution.
    - Collect one analytical sample set from the maximum depth of the test pit or the zone of seasonal water table fluctuation, and one analytical sample from between five feet bgs and the bottom of the test pit based on field screening. Analyze the samples for DRO, benzene, toluene, ethylbenzene, and toluene (BTEX), and if concentrations in excess of 500 mg/kg DRO are suspected, PAHs.
    - Transport contaminated soil from test pit to landfarming cell based on field screening.
- Excavate soil from the former generator pad and drum storage area, based on field screening, with the goal of removing the upper five feet of impacted soil. For planning purposes, a maximum volume of 200 CY has been assumed.
    - Haul soil to treatment cell coincident with excavation.
    - Collect soil screening and laboratory samples to characterize the excavation sidewalls and bottom after completion based on DECs *Draft Field Sampling Guidance*. Select analysis of used oil parameters at the highest two screening locations, and PAH analysis at the highest screening location.
    - Backfill the excavation with soils imported from City of Larsen Bay pit or other acceptable source.

- For cost estimation purposes, 10 DRO and BTEX soil analyses, and 3 DRO/RRO, volatile organic compounds (VOCs), used oil metals, and PAH analyses have been assumed (including duplicates).
- Open the sanitary cap on the existing water well, measure depth to water, and collect a groundwater sample using either a bailer or a small submersible pump.
    - For cost estimation purposes, 2 DRO and BTEX groundwater samples (including one duplicate) and one BTEX trip blank have been assumed.

7.1.2 Existing UST

It is possible that the UST encountered on the Property has been closed in place. It is also possible that the UST was installed after electricity was being supplied to the school by the City. If the UST was used only for heating oil, and not for fueling an electrical generator, it would not be a regulated UST under 18 AAC 78. While the same cleanup criteria apply, the registering, planning, monitoring, and reporting processes for regulated USTs are different. We recommend the more conservative approach of handling the tank as if it were a regulated UST under 18 AAC 78. Our proposed approach is to perform a closure assessment on the UST, and if contamination is present, remove the tank from the ground, at the same time the RA/RI is being performed for the generator/drum storage area.

- Roll back the chain-link fence that appears to cross over the top of the UST.
- Locate the electrical lines associated with the transformer that appears to be near the southeastern corner of the tank.
- Excavate soil from the top of the UST to expose ports or fittings and assess if product remains or if the vessel has been filled with inert material.
- Excavate two test pits to at least two feet below the bottom of the tank. One test pit should be at the northern end of the UST, and the other one along one of the sides of the UST to evaluate potential soil contamination. If contamination is encountered (based on field screening) and the UST has not been filled with inert material, stop test pit excavation and remove the tank from the ground for decommissioning.
    - Collect soil screening samples every two feet during excavation of the test pit to help characterize potential contaminant distribution.
    - If groundwater is expected to be within 5 feet of the bottom of the UST, attempt to extend one test pit to groundwater.
    - Collect one analytical sample set from the maximum depth of each test pit or the zone of seasonal water table fluctuation, and one soil sample from between five feet bgs and the bottom of the test pit based on field screening. Analyze the samples for DRO, BTEX, and if concentrations in excess of 500 mg/kg DRO are suspected, PAHs.

- Investigate potential piping runs.
    - Screen soil every ten feet and/or at joints if a piping run is found. Collect at least one analytical sample from beneath piping for DRO and BTEX analysis.
- If contamination is encountered within the top five feet of soil, excavate up to 20 CY of soil and transport it to the landfarming cell discussed in the previous section.
    - Collect soil screening and laboratory samples to characterize the UST/contaminated soil excavation sidewalls and bottom after completion based on DECs Draft Field Sampling Guidance.
- For cost estimation purposes we assume that excavation of contaminated soil will not be necessary, the UST excavation size will be less than 250 square feet, and piping will be characterized with 2 samples. Eight DRO and BTEX soil analyses (including a duplicate) and one PAH analysis are estimated for characterization.

7.1.3 Drums

Of the eight 55-gallon steel drums remaining on site, three may not be empty. These drums could present a potential source of contamination. Additional drums may be encountered during cleanup work.

- Use qualified personnel to move, containerize and open the drums.
- Characterize potential drum contents through sampling, field screening, and laboratory analysis.
    - Analyze petroleum products for the "oil burning specifications" (OBS) analytes of 40 CFR 266.40 (three analyses have been assumed).
- Determine disposal options based on the results of testing.
- For cost estimation purposes we have assumed that that there will be less than 50 gallons of fluids and the fluid will be a petroleum product that meets the OBS. We have also assumed that the City of Larsen Bay will accept adding the anticipated volume to the used oil they generate from equipment maintenance. We understand that the City has a used oil burner; however it was not functional at the time of the assessment.

7.1.4 Hazardous Building Materials

We have assumed that the Old School building will be demolished and removed from the Property. Based on discussions with experienced abatement and demolition workers, the labor to separate hazardous materials from other building materials, and disposing the non-hazardous materials locally is likely to be more expensive than containerizing the whole structure and shipping it out.

- Use qualified personnel to remove cement board skirting, demolish building, and containerize building materials.
- Excavate 4 to 6 inches of soil from a 3 to 4-foot wide strip at places around the perimeter of the former building where paint or asbestos might likely accumulate. The soil removal will focus on locations where paint flakes or pieces of potential ACM are visible. Place excavated soil in containers with building materials.
- Ship material to a permitted landfill.
- Characterize soil remaining in place around the perimeter of the former structure. We have assumed that 7 samples will be collected for total lead and asbestos analyses.

7.1.5 Contaminated Soil Treatment

We recommend treating petroleum-impacted soil from the Property by landfarming the soil in Larsen Bay at a site (to be selected) west of town near the City landfill. This would require a commitment by the City and/or Native Village to see that the soil is tilled regularly by employees with the proper training. A city-owned backhoe or excavator would be used for turning the soil. A qualified sampler, likely a consultant from Anchorage, would sample the soil after one year to evaluate the progress of the treatment. Treatment may take more than one year.

- Spread excavated soil in treatment cells to a depth not to exceed 1.5 feet.
- Maintain soil treatment cells.
    - Maintain berms to prevent runoff from precipitation events.
    - Collect precipitation/leachate water in a holding tank if excess water accumulates in cells.
    - Use water from holding tank to irrigate soil if it becomes too dry or dusty.
    - Possibly cover treatment cells during large precipitation events and winter.
- Till soil at least once a week.
- Sample soil to assess treatment progress one year after initiating treatment. For 220 CY, we have assumed 5 DRO and BTEX samples and 2 PAH samples, including one duplicate set.
- Once concentrations are below cleanup criteria, and DEC approval has been received, the soil could be land-spread at the old landfill site or anther acceptable location.

7.2 Remediation Strategies or Alternatives

The remedial actions discussed above include demolishing the Old School building, excavating impacted soil to reduce the contaminant mass near the ground surface, and treating excavated soil by off-site landfarming. Other approaches may be considered. For example, the

building may be renovated for re-use after abating the hazardous building materials. The building may also be demolished and disposed locally after removing the hazardous building materials. This option might become financially viable if an inexpensive source of qualified labor becomes available, such as using the structure for a regional lead and asbestos abatement training class, and a local disposal site is permitted. Soil and water alternatives are discussed below.

7.2.1 Soil Management Strategies

Soil may be remediated in-situ with natural attenuation, in-situ with active remediation, or by removal and treatment. Leaving the soil in place without performing remediation may be possible with institutional and engineering controls if the results of a RI show that the contaminants are not moving off site. This could significantly restrict potential re-use of the Property, however. Institutional controls may consist of easements, restrictive covenants (e.g. land-use restrictions), deed notices, access control, zoning ordinances, and/or monitoring programs. Engineering controls may include barriers such as an impermeable cap and fencing. DEC requires that Institutional Controls be applied to a site where current or potential future exposure to contaminated soil or groundwater does not allow for unrestricted land and groundwater use.

Excavation of soil is typically the quickest way to reduce potential exposure risks to human health and the environment. Reduction of contaminant concentrations to below the applicable DEC cleanup levels may not be achieved at one or more locations or depths by excavation alone. Natural attenuation is a slow process, and may require institutional controls and long-term monitoring for periods in excess of 30 years. Active in-situ remediation has been performed in a variety of ways, and remediation rates and costs are highly variable depending on the selected technology, the soil, and the contaminants.

Soil removal and treatment is relatively expensive initially, but highly effective. Removed soil will require some form of remedial treatment or disposal in an approved landfill, and there are several alternative treatment methods. Soil impacted with diesel fuel/heating oil may be effectively treated with natural attenuation/biodegradation techniques such as landfarming or biopiles. These treatment options can take from one to several seasons. Landfarming is relatively inexpensive, and consists of spreading the soil to a depth of one to one and one-half feet, and turning the soil periodically. Natural degradation processes reduce contaminant concentrations over time. Biological degradation is enhanced with biopiles by blending nutrient amendments into the soil and placing it in a treatment cell that includes a

leachate collection and a blower-operated aeration system. In some cases, soil from heating oil/diesel, releases can be treated with landfarming on one portion of a property as redevelopment activities occur in another portion.

Petroleum-impacted soil may be treated with thermal desorption (essentially vaporizing and burning the petroleum with heat), either on site or off site. Thermal desorption is performed by screening out large particles, breaking up large agglomerations of soil, and feeding the soil into a heated rotary kiln. The emitted gasses are passed through an afterburner to oxidize unburned hydrocarbons. This treatment option is rapid, but is not applicable to soils contaminated with metals. High concentrations of long-chain hydrocarbons such as asphalt can be difficult to remediate when using thermal desorption. Typically, setting up an on-site thermal desorption unit on the road system in Alaska is not cost effective for less than roughly 10,000 tons of soil. Off the road system it may be cost effective for less soil depending on the site. Off site thermal desorption by a reputable firm quickly removes contaminants from the environment and provides a paper trail of the fate of the soil.

For the Larsen Bay Old School site, we have recommended remediation of petroleum-contaminated soil by off-site landfarming. Leaving contaminated soil in place within 5 feet of the ground surface would not be compatible with the proposed re-use as a community garden. Institutional controls could be used for soil left in place at depths greater than 5 feet bgs. Landfarming contaminated soil on-site would take up a significant portion of the flat area available for gardens or other uses. The site is also adjacent to an active school. On-site thermal desorption would be very expensive for the volume of contaminated soil anticipated. Off-site thermal desorption or landfilling would also be expensive due to transportation costs. There appears to be land suitable for a landfarming cell west of the community, and the City has heavy equipment that could be used to transport and till the soil. While we have recommended performing landfarming on a petroleum resistant liner due to DRO concentrations exceeding the Maximum Allowable Concentration, landfarming may be performed without a liner with DEC approval if certain conditions are met. The conditions may include additional laboratory analysis, and installation of a groundwater monitoring well. The design of the landfarming cell could take into account whether the City's tracked excavator or rubber-tired backhoe would be the preferred equipment for tilling. The down-side of landfarming is that the contaminated soil remains in the community for a longer period of time, diligent maintenance and tilling is required, and the process may take several seasons. More frequent tilling typically reduces treatment time. Soil removed from the site will likely need to be replaced with imported fill to meet reuse objectives in a timely manner.

For soil potentially impacted by lead or asbestos contamination that may have fallen off the building, we have recommended disposal at an off-site permitted landfill. Encapsulating the material (such as in concrete) is a potential option. Biodegradation is not an option for soil containing lead or asbestos. If building demolition is performed by breaking up the structure and placing it in sealed shipping containers, extra room will likely remain for up to 10 CY of soil scraped up from the perimeter of the building. Since the building material must be shipped to a permitted facility, the cost for including some soil will be limited to the extra mass of the containers.

Raised-bed gardening techniques may be desirable or, potentially required, to reuse the Old School site for a community garden. Constructing raised beds would allow separation of fertile gardening soil from the in-situ soil and potentially allow the soil to warm more quickly in the spring. Contaminant-resistant liners beneath the raised beds may allow reuse of the Property without achieving the most stringent cleanup goals. We recommend that soil and amendments used for garden plots be tested for potential bioaccumulative compounds or come from tested sources.

7.2.2 Water Management Strategies

There may be petroleum–impacted water perched on the low-permeability silt near the ground surface based on water entry into two shallow test pits at the location of the former generator. This water could enter the contaminated soil excavation to the extent that dewatering will be necessary. It is not typically a problem; however, contingency should be made for the possibility. Dewatering would likely involve pumping the water from the excavation, allowing coarse particle to settle from the water, filtering the water, passing the water through activated carbon, and discharging the water on site.

Based on the concentrations of DRO measured in near-surface soil, petroleum contaminants could have migrated to groundwater. The recommended remedial actions include recommendations for a preliminary investigation of the potential for groundwater to be impacted. Depending on the findings, additional groundwater investigation, including installation and sampling of groundwater monitoring wells may be required.

Groundwater may be remediated in-situ with natural attenuation and institutional controls, enhanced natural attenuation, or active treatment. We recommend initially characterizing the extent of groundwater impacts vertically and horizontally, removing soil with high concentrations of petroleum that may act as a source for groundwater contamination, and monitoring natural attenuation. In excavations where petroleum hydrocarbons are present in the

soil within the zone of water table fluctuation, we recommend enhancing natural attenuation by blending soil remaining below the water table with a chemical oxidant and an oxygen-supplier.

If contaminated soil is left in place near the ground surface, exposure pathways from surface water runoff and infiltration will need to be controlled. A vegetated cap of low permeability soil, sloped for gentle drainage, could be place over contaminated soil left near the surface.

7.2.3 Other Materials Management

Other materials that may be generated include non-hazardous building materials, empty 55-gallon drums, a decommissioned UST and associated piping, and investigation-derived waste. If acceptable to the City and Village, clean steel such as tanks, drums, and sheet metal could be transported to their material separation area at the gravel pit for future recycling. However, for the closure of a regulated UST, a receipt showing the fate of a properly cleaned and disabled vessel is desired. Non-hazardous building materials could be disposed in a DEC-approved landfill. Investigation-derived waste may include sampling supplies, decontamination water, and purged groundwater. Sampling supplies such as gloves, spoons, bailers, and baggies are not typically hazardous and may be disposed in a municipal solid waste landfill. Decontamination and purge water could be treated through the dewatering system if dewatering is required. If dewatering is not required, the water may be mixed with the contaminated soil in the landfarming cell for remediation.

7.3 Community Resources

The City of Larsen Bay owns earth-moving equipment, including a backhoe, excavator, and dump truck, which may be available for lease for remedial actions at the Old School site. There is property west of town that would be suitable for landfarming petroleum- impacted soil. The various properties are owned by Koniag, Inc. Native Corporation or the City of Larsen Bay, and permission to use the selected area would be required. Labor and in-kind staff services from the LBTC and City environmental staff are potential resources. The presence and availability of laborers and equipment operators with the qualifications required for work on contaminated sites has not been determined. Hazardous waste operations and emergency response (HAZWOPER)-trained and state-certified asbestos and lead workers will likely need to be brought in to Larsen Bay to perform remediation, demolition, and disposal work. HAZWOPER-trained workers would be required for landfarming operations.

7.3.1 Resource Leveraging Opportunities

The on-going upgrade of the City hydroelectric facility may provide opportunities sharing transportation and equipment resources. Materials being shipping into Larsen Bay may leave a barge with back-haul space for materials from the Old School building. Heavy equipment needed intermittently for the hydroelectric project may be available for short–term leases on the Old School project.

7.3.2 Potential Funding Sources

Because the Larsen Bay Old School was initial built and operated by the BIA, Federal funds and grants may be available to assist with returning this site to beneficial use. Consultation with the BIA Alaska Regional Environmental Scientist to determine if the Property qualifies as a Location of Concern is recommended. The State of Alaska may have operated the school between the BIA and the Kodiak Island Borough. State funding through the Brownfield program is a possibility. The Borough also operated the Old School, and Borough assistance may be available. The Center for Creative Land Recycling (CCLR) provides summaries of potential grants available to Alaska communities. CCLR can be found on the internet at http://www.cclr.org/resources/AK. The available resources viewed on the CCLR website in February 2011 focused on forming collaborative partnerships to assist in developing an understanding of and a management program for environmental concerns.

7.4 Rough Order of Magnitude Cost Estimate

The rough order of magnitude cost estimate presented in Appendix K was developed for the remedial actions outlined in Section 7.1 based on estimates and assumptions made from limited sampling and observation data. We have assumed that building demolition, containerizing the building materials, and soil characterization for lead and asbestos will be completed in one site visit, and that the soil excavation, additional subsurface characterization, UST closure assessment, and drum handling will be completed in another single site visit. We have also assumed that soil treatment by landfarming will be completed over the course of one year, a local operator will perform landfarming maintenance and tilling, and the treated soil will be land-spread in the vicinity of the treatment cells. It is likely that a second year of tilling the soil will be required, but costs have not been included. With these assumptions, our rough order of magnitude cost estimate is $175,000.

The intent of this rough order of magnitude cost estimate is to provide preliminary costs associated with site cleanup activities. These cleanup activities are limited to the tasks and

assumptions outlined above, and are based on the assessment data collected to date. Following completion of each task, it may be necessary to modify the project scope and associated costs as site-specific information is acquired. Additional undocumented areas of impacted soil and/or groundwater may be present at the site. Therefore, we recommend adding a contingency to the attached ballpark cost estimate. Based on our past experiences, a contingency ranging from 10 to 30 percent is appropriate.

8.0 CONCLUSIONS

As part of this PACP plan we have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527 of Lot 1, Block 11, Tract A of U.S. Survey No. 4872; Larsen Bay Townsite, the Property. Any exceptions to, or deletions from, this practice are described in Section 10.0 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the Property except for the following:

- The Old School building has asbestos-containing materials, and lead-containing paint;
- PCB-containing light fixture ballasts are present inside the structure;
- Soil in the southeastern portion of the site has been impacted with diesel-range petroleum;
- 55-gallon drums with unknown contents are on the Property;
- The possibility that used oil and used antifreeze may have been stored in the southeast portion of the site exists;
- An UST remains in the ground between the Old School and the active Larsen Bay School;
- A septic system potentially remains in the subsurface;
- An AST and a UST were observed on the adjacent property occupied by the active Larsen Bay School.

The Old School building and property in Larsen Bay, Alaska has both potential and confirmed substances that could harm human health and the environment. The extent of soil contamination and the possibility of groundwater contamination have not been fully investigated. In order to put the Property to the proposed beneficial reuse, remedial actions will be required. We have recommended demolishing the building, excavating and treating contaminated soil, and decommissioning the UST. Initial remedial actions are estimated to cost roughly $175,000.

9.0 PERSONNEL QUALIFICATIONS

This PACP and incorporated Phase I Environmental Site Assessment was prepared by Mr. Randy Hessong under the supervision of Mr. Haydar Turker, and Mr. Matt Hemry, P.E. Mr. Hessong, an Environmental Engineer IV, received a Bachelor of Science (B.S.) degree in Environmental Conservation from the University of Colorado in 1986 and a Master of Science (M.S.) degree in Agricultural Engineering from Colorado State University in 1993. Project Manager, Mr. Turker received a B.S. in Engineering Geology from University of Selcuk, Turkey, in 1986 and a M.S. in Environmental Science from University of Houston in 1995. Mr. Hemry, Vice President, received a B.S. in Engineering Sciences from Dartmouth College in 1990 and a M.S. in Environmental Engineering from Duke University in 1992. We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of this part. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

10.0LIMITATIONS AND EXCEPTIONS

The following elements constitute deviations, exceptions, and/or data gaps, with respect to the standard requirements of ASTM E 1527-05 Phase 1 Environmental Assessments. In our opinion, none of these considerations impacts our ability to identify recognized environmental conditions at the subject property.

- The DEC List of Contaminated Sites is assumed to be equivalent to a hazardous waste sites list and includes voluntary cleanup sites.
- Tribal lists of environmental concerns were not reviewed. The tribal lists are identified as “standard environmental sources” in ASTM Section 8.2.1. To our knowledge, such databases do not exist for the State of Alaska.
- Historical use of the Larsen Bay Old School property is identified back to 1960, not to 1940, as required by ASTM E 1527-05. The oldest historical record is an aerial photo taken in 1960 and shows the school building before an addition was added to its south end. In our opinion, our findings are consistent with local historical record searches.
- All of the Standard Historical Sources listed in ASTM Section 8.3.4 were not researched because they were not reasonably ascertainable and likely to be useful. For example, fire insurance maps, local street directories, building department records, and property tax files were not researched.

11.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our clients and their representatives in the study of this site. The findings we have presented within this report are based on the limited research, sampling, and analyses that we conducted. They should not be construed as definite conclusions regarding the site's soil or groundwater. It is possible that our subsurface tests missed higher levels of petroleum hydrocarbon constituents, although our intention was to sample areas likely to be impacted. As a result, the sampling and analysis performed can only provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur with time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised. Shannon & Wilson has prepared the attachments in Appendix L, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our reports.

You are advised that various state and federal agencies (DEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore, has not, and will not, disclose the results of this study, except with your permission or as required by law.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact the undersigned.

We appreciate this opportunity to perform these services. Please call the undersigned at (907) 561-2120 with questions or comments concerning the contents of this report.

SHANNON & WILSON, INC.

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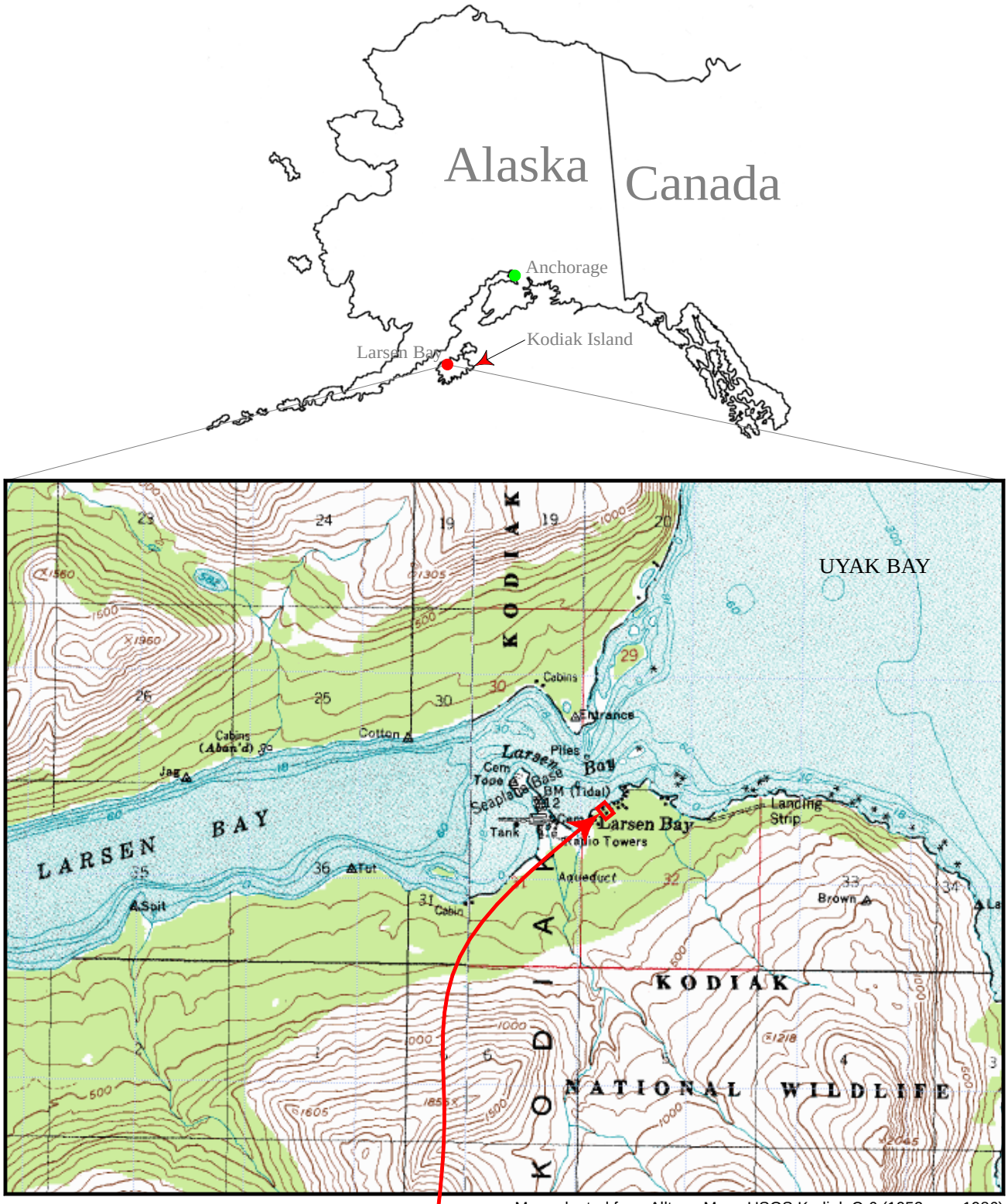


Map adapted from Alltopo Maps USGS Kodiak C-6 (1952, rev. 1986) and Karluk C-1 (1952, rev. 1967) 63K Quadrangle maps.

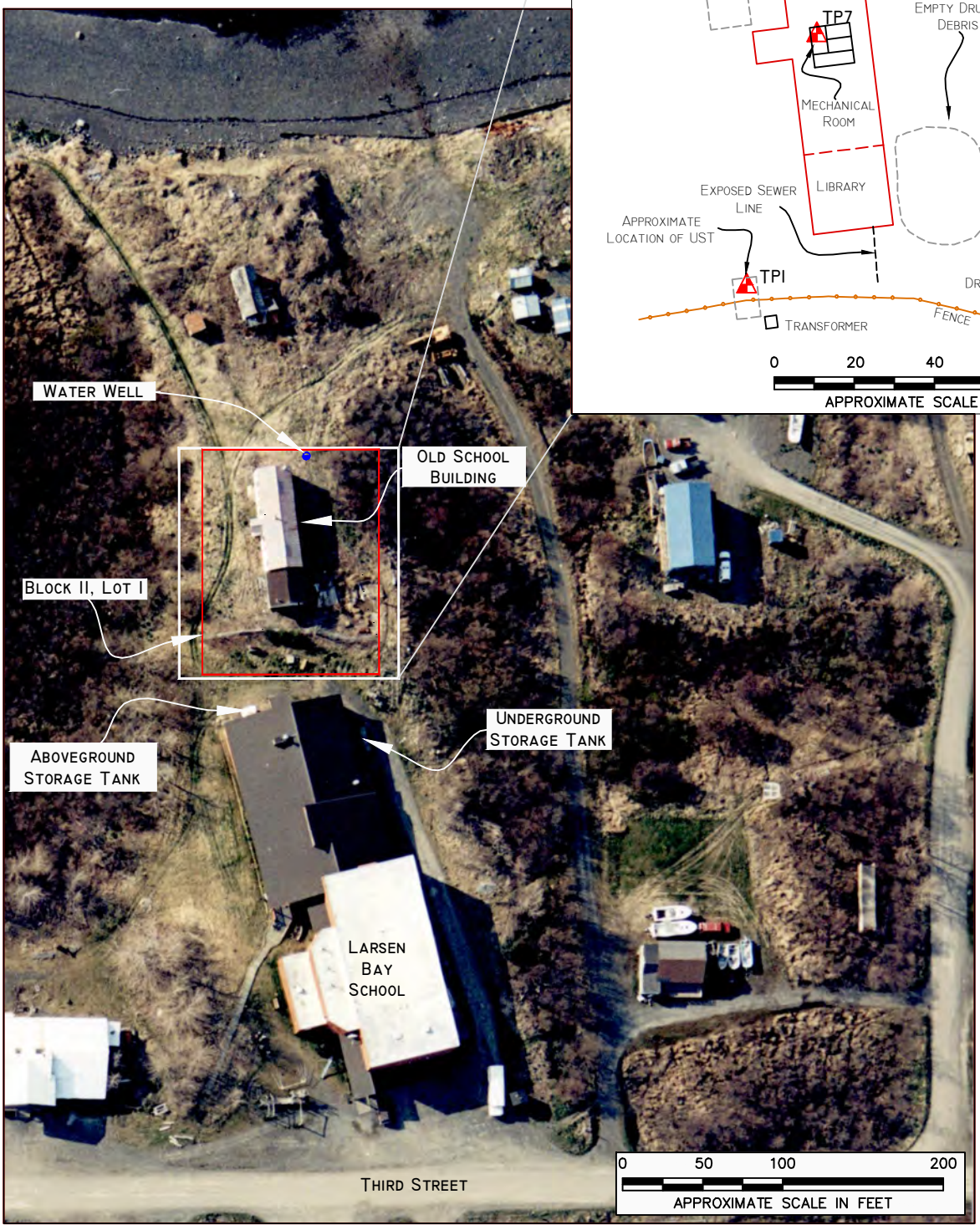
Larsen Bay Old School PACP
Larsen Bay, Alaska

VICINITY MAP

April 2011 32-1-17376

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 1



LEGEND

TP1 — APPROXIMATE LOCATION OF TEST PIT TP1, EXCAVATED BY SHANNON & WILSON, OCTOBER 25, 2010

APPROXIMATE PROPERTY BOUNDARY

LARSEN BAY OLD SCHOOL PACP
LARSEN BAY, ALASKA

SITE PLAN

APRIL 2011 — 32-1-17376

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. 2

APPENDIX A

DBA REQUEST FORM

DEC's Reuse and Redevelopment Program

DEC Brownfields Assessment Request Form – 2010

Please check the appropriate box for each question at the top of this page, and then answer questions 1–7 by inserting text in the blank area under each question, using as much space as you need. Forms with questions left blank will be returned to the applicant. The deadline for receipt of requests is February 19, 2010.

Site Name: Larsen Bay Old School

Eligibility Determination—General Questions:

Is the site federally owned?

☐ Yes X No

Has the site or facility received funding for remediation from the Leaking Underground Storage Tank (LUST) Trust Fund?

☐ Yes X No ☐ Unknown

Is the applicant in any way responsible for the potential contamination at the site, or related to those who may be responsible?

☐ Yes X No

If you answered "yes" to any of the above questions, we recommend that you please call DEC to discuss the specifics of your eligibility determination.

To the best of your knowledge, is the *owner* of the property in question:

☐ Private ☐ City/Public ☐ State ☐ Native Corp X Tribe ☐ Unknown

Known or suspected contaminant(s) (check one):

Hazardous Substances ☐ Petroleum Only X Hazardous Substances and Petroleum

Is this site currently listed on DEC's *Contaminated Sites* database?

☐ Yes X No ☐ Unknown

If yes, please list the project name:

RANKING CRITERIA

1. **Project Summary -** Explain in your own words what you are hoping to obtain through this effort (what would you like to see *in place* of the site for which you are requesting assessment, and how will this project help you achieve your goals for the site?):

   Larsen Bay Tribal Council would like the site to be assessed for presence and extent of suspected contaminants (asbestos, lead-based paint, possible petroleum), and would appreciate recommendations for remediation.

2. **Applicant/Owner**

   a) ***Applicant*** - Who is applying for this service? Provide the name and address of the **organization** applying for the DBA, the name of the contact person, email, telephone, and fax numbers.

Larsen Bay Tribal Council
Mary Nelson, President
Alex Panamaroff, Jr. Environmental Coordinator
P.O. Box 50
Larsen Bay, AK 99624
907-847-2207
907-847-2307 (fax)
larsenbayigap@yahoo.com
larsenbaytribe@gmail.com

b) ***Property Owner*** **-** The owner of the property must allow DEC access to the site. If the applicant is different from the owner, include *written consent* for access from the owner. (*Note: the applicant must be able to secure access for DEC and its contractors to conduct the assessment.*)

Larsen Bay Tribal Council

If Applicant is IGAP staff, please provide name and contact of EPA Project Officer:

Katherine Brown: (206) 553-7263

3. **Project Team** - We request that you form a *project team* (three or more individuals or organizations) to ensure continuity beyond this DBA and coordination for success of the overall project. Attach a letter of support from each team member. (Team members may include: city or village government representatives, tribal council members, environmental managers, elders or other community leaders, local non-profit or community development organizations, and other interested parties.)

Larsen Bay Tribal Council
Lisa Hupp, Woody Island Tribal Council Brownfields Program Manager

4. **Site Information**

a) ***Current Site Condition and Use*** **-** Provide the common name of the site, address, approximate acreage, zoning, and types of buildings. Please attach a site map or aerial photograph showing the site's location in the community and adjacent land use. Identify any areas of known or suspected contamination (for Question 5). Identify approximate property boundaries.

Current Site Condition: Vacant, with access restricted by boarded windows, doors, and a chain-link fence.
Approximate size: .35 acres
Zoning: PL
Use: former school
Site location: 57.32328, -153.58765
Adjacent Land: Municipal offices (west), current school (south), abandoned building (north). Site is located near the center of the Village, within areas of high public use.
Suspected contamination: Asbestos and lead-based paint. Possible underground storage tank, have not been able to verify.

b) ***Historical Site Use*** **-** Describe, to the best of your ability, the previous known uses of the site since development, and when the different activities occurred. Summarize any historic or cultural

significance of the property. Identify when and how the site became or may have become contaminated, with what substance(s), and where any contamination is likely to be found.

BIA built the school in 1968 and Kodiak Island Borough owned the building and parcel until 1987. A new school was built directly adjacent to the property in 1980. Property ownership transferred to City of Larsen Bay in 1988. Building now stands vacant and is boarded up; parcel is fenced but easily accessible and there are no institutional controls in place. Property was transferred in 2007 to the Native Village of Larsen Bay via quit claim.

5. Environmental Information

a) ***Prior Environmental Assessments*** - Please describe any prior site assessment or cleanup activities at the site and briefly state what you know about the findings of that work. Provide an electronic copy of the report if possible, or the summary or conclusion sections of the reports if available. If reports are not available, provide the consultant, client, approximate date of the study, and any other pertinent information.

No prior assessments.

b) ***Reason for Concern*** - What is the reason for concern? Please discuss community concerns in general, and identify any specific problems if possible.

The potential contaminants of asbestos and lead based paint pose a concern to the community. The site is directly adjacent to areas of high public use, and there may be multiple pathways of exposure. The building itself presents a safety hazard and the Tribe would like to understand the extent of contamination and recommendations for remediation so that they may address the site and reuse it for Tribal and community access.

c) ***Project Need*** - Describe to the best of your ability what your project team believes are the needed environmental assessment activities, and what result you would like to see from this project. Indicate any constraints as to when this work must be completed (e.g., to meet construction timeline, property transaction pending, etc.).

An assessment of potential contaminants present at the site, and an estimate of contaminant extent and remediation options would benefit the Tribe in pursuing funding for cleanup and reuse.

6. Community Planning and Reuse

a) ***Reuse or Redevelopment Plans*** - Does the community have well defined plans for reuse of this site if it were not for the environmental problems? Is this site affecting the use of adjacent properties, subsistence habitat, or other resources? Do reuse plans include the incorporation of greenspace or sustainable, green building practices? If so, please describe.

The Tribal Council would like to remove the building and host a community garden space on the property. Currently, no garden site exists in Larsen Bay, and the Council would like to utilize this space for their environmental program and offer local agriculture opportunities to the community, due to the high cost of importing groceries. The Tribal Council is also searching for space to place Connex Containers for a recycling sorting and collection site. This property may be ideal for both a garden and recycling center.

b) ***Other Community Plans or Projects*** - It is helpful to know if other state or federal agencies are planning work in your community. List any community *plans* that may exist or are in development, such as: economic development plans, hazard mitigation plans, or erosion studies. Describe any other community *projects* that may be scheduled or pending, such as: water and sewer upgrades, a new landfill, road or airport construction, a new school or addition, fuel-storage tank farms, new housing, or other facilities.

City has plans to upgrade water system, exact timeline unknown. Tribal Council may expand current building or find new office space.

7. Public Involvement

a) ***Public Benefit*** - Briefly discuss how your proposed reuse or redevelopment plans for the property will provide a benefit to the public. Why is this important to your community? (Things to consider: creation of jobs, preservation of historically or culturally significant property, preservation of subsistence habitat, reuse or recycling of materials or infrastructure, cost savings to the community, or increased property values.)

Removing the building would potentially remove a significant public health threat to the local school and municipal offices. The building is currently a hazard and the Village would benefit from the cleared property. If the Tribal Council establishes a garden or recycling center, the facility and resources would be available to the entire community and provide valuable services. The Tribal Council would likely also hire a paid position to manage these facilities, expanding the current Environmental Department.

b) ***Community Support and Resources*** - Is the community strongly *supportive* of this project? Have resolutions been approved by city or tribal councils in support of it? Our assessment often requires local assistance with site visits, lodging, excavation equipment, and local transportation. Describe local *resources* that are available to assist with this project. (It is helpful to include copies of resolutions or community letters of support, as well as cost-sheets for equipment and labor that may be needed.)

The Larsen Bay Tribal Council has been seeking resources to address this site for some time. The Council is unanimously in favor of removing the building. Tribal Staff is willing to assist with assessment work. City heavy equipment may be leased. Local trucks may be leased for any transportation needs. Local lodges can provide lodging.

c) ***Community Resources for Other Phases of the Revitalization Project*** - Does the community have financial or other resources for other phases of the project, such as equipment, labor, in-kind services, or funding for cleanup or new construction? Can this DBA be used to leverage other funding or services for the project?

Equipment, labor, in-kind staff services from Tribal Council Environmental Staff are potential resources. The Council is not pursuing additional funding for cleanup at this time, but are very interested in the assessment as a first step.

The selection of a site for a DBA in no way implies that DEC is accepting liability for any contamination that may exist at the site, nor is DEC responsible for any necessary cleanup of hazardous substances that may be found at the site. Liability for contamination on a property is specifically addressed in Alaska Statute (AS) 46.03.822, which outlines those who are liable for the release of a hazardous substance. The general liability categories include: (1) those with an ownership interest in the property; (2) those in control of the substance at the time of the release; or (3) those who arrange for disposal or transport of the substance.

Submit Completed Forms by February 19, 2010, to:

By email: Sonja.Benson@alaska.gov or
By fax: (907) 451-2155 c/o Sonja Benson

Or by regular mail:

DEC Brownfield Assessments
c/o Sonja Benson
Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska 99709

If you have questions, call Sonja Benson at (907) 451-2156, Deborah Williams at (907) 451-5174, or John Carnahan at (907) 451-2166.

Larsen Bay Old School Site DBA: Site Location

IGAP Coordinator Alex Panamaroff at the Old School Site.

APPENDIX B

STAKEHOLDER MEETING MINUTES

LARSEN BAY OLD SCHOOL
PROPERTY ASSESSMENT AND CLEANUP PLAN

Stakeholder Scoping and Planning Meeting
Teleconference Minutes

Date and Time: September 9, 2010, 14:00 to 14:50
Participants:

Alaska Department of Environmental Conservation (DEC):
Deborah Williams, John Carnahan, Sonja Benson - Contaminated Sites Brownfield Program
Larsen Bay Tribal Council:
Mary Nelson, President/Administrator
Alexander Panamaroff, Jr., Environmental Coordinator
Richard Hansen, Environmental Assistant
City of Larsen Bay:
Valen Norell, Mayor
Alice Aga, City and Tribal Councils
Woody Island Tribal Council:
Melissa Berns, Administrator
Emily Captain, Environmental Coordinator
Shannon & Wilson, Inc. (S&W):
Haydar Turker, Project Manager; Randy Hessong, Project Engineer

Deborah Williams, DEC project manager, facilitated the meeting following the agenda outline circulated via e-mail on September 7, 2010. After each participant introduced themselves, John Carnahan provided an overview of the DEC's Re-use and Redevelopment (R&R) Program.

Overview and Objectives

John described R&R (or Brownfield) funding through a grant from the Environmental Protection Agency's (EPA) State and Tribal Response Program. The EPA grant administrator is Mary Goolie. From this grant, the DEC administers assessment work through term contractors. There is typically a submittal period at the beginning of the year, a review period, and initiation of selected projects.

Objective of the R&R Program is to help communities that request assistance clarify environmental issues of concern, provide some quantification of the concerns, identify potential future uses, and outline practical steps for remediation and cleanup. The objective is to end up with a better understanding of the site and facilitate moving to the next step for putting a site back into beneficial use. The DEC's role is to form a partnership to perform an assessment within the funding available.

John explained that the objective of the teleconference was to get everybody together and discuss their role, interests, and goals for the property assessment and cleanup plan (PACP) so that the project gets a good start.

Community Input

Alexander Panamaroff started off by explaining the general nature of the R&R project. Larsen Bay has an old building with potential lead based paint and asbestos, and a possible underground fuel storage tank. The community would like to demolish the building, and potentially use the property for a community garden. The site is well located to provide a training opportunity for children. Emily Captain noted that the project is expected to facilitate general cleanup of the property to allow reuse of the land as a garden.

Deborah asked if there had been any research into grants for assistance with developing the garden. Emily replied that they found BIA agricultural funding applies to land held in trust. Research into USDA agricultural grants has not been completed.

Deborah also asked if it has been established whether the land owner is the Tribal Council, City of Larsen Bay or the Kodiak Island Borough School District. Emily replied that no deed has been found in Larsen Bay and the question has gone back to the Borough. Alex explained that a number of city and tribal records were lost in a fire in 2000.

Action Item: Check with Recorders office for deeds.

John reiterated that while the R&R Program's goal is to achieve cleanup for reuse, this project is to document site history and potential environmental concerns, not perform actual cleanup. The goal of the PACP is to document the vision for the property and provide a remedial action plan. The document will help facilitate finding funding for the actual cleanup.

Sonja Benson commented that there are potential resources from community development block grants and the USDA grants for rural agricultural programs. Details for some of these programs are available on the internet.

Action Item: Provide internet links to possible funding programs to Larsen Bay.

Deborah noted that there was no one from the School District participating in the teleconference, but the District has provided some historical information. She asked if anyone from the city had more historical information regarding the property.

There was a continued discussion of property ownership without resolution. John noted that for the purpose of completing the assessment, approval to access the property is the most important issue. If the Village, City, and Borough all approve, it should not be a problem.

DEC Contractor

Randy Hessong reviewed S&Ws understanding of the project, and summarized their planned scope of work. The work includes historical research, a site visit with limited soil screening, and looking at potential resources for demolition, debris, and remediation needs. Randy explained that While Environmental Consultants is on-board to perform a hazardous building materials survey that includes sampling. The previous survey did not include sampling.

John reminded everybody that personal interviews with community members will be an important part of the site visit.

Local Support

The best community points of contact for the contractor were discussed. Alex Panamaroff Jr. will be the primary contact, and Mary Nelson will be the secondary contact.

Scheduling was discussed. Based on a number of potential conflicts, the best time for the site visit would be the last week in October.

Deborah asked about lodging and Randy asked about transportation. The City of Larsen Bay offered lodging in the clinic, and the use of a vehicle. Alice Aga would be the point of contact for arrangements.

Followup

John reminded everyone to keep Deborah in the loop with communication as progress is being made. Deborah stated she would prepare and circulate a contact list.

John requested that participants in the R&R program provide feedback so that the program can develop, improve, and possibly get more funding. Deborah suggested that the consultant could do some research into funding sources. John reviewed the intent of the PACP report, and noted that it should include a reasonable set of steps for proceeding with the desired reuse.

Prepared by:

SHANNON & WILSON, INC.

Randy Hessong
Engineer IV

APPENDIX C

HISTORICAL AERIAL PHOTOGRAPHS

LARSEN BAY OLD SCHOOL PACP
LARSEN BAY, ALASKA

AERIAL PHOTOGRAPH
JUNE 1, 1960

APRIL 2011 32-1-17376

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. C-1

LARSEN BAY OLD SCHOOL PACP
LARSEN BAY, ALASKA

AERIAL PHOTOGRAPH
SEPTEMBER 20, 1984

APRIL 2011 32-1-17376

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. C-2

LARSEN BAY OLD SCHOOL PACP
LARSEN BAY, ALASKA

AERIAL PHOTOGRAPH
JUNE 9, 1992

APRIL 2011 32-1-17376

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. C-3

LARSEN BAY OLD SCHOOL PACP
LARSEN BAY, ALASKA

AERIAL PHOTOGRAPH
AUGUST 29, 2008

MARCH 2011 32-1-17376

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. C-4

APPENDIX D

OWNERSHIP RECORDS

BOOK 89 PAGE 545

QUITCLAIM DEED

The grantor, KODIAK ISLAND BOROUGH of 710 Mill Bay Road, Kodiak, Alaska 99615, for and in consideration of TEN DOLLARS ($10.00) and other good and valuable consideration, hereby quitclaims any interest it has in the following described real property to the CITY OF LARSEN BAY, Box 8, Larsen Bay, Alaska 99624, together with any improvements thereon:

> Lot One (1), Block Eleven (11), Larsen Bay Townsite, U.S. Survey 4872, according to Plat 87-37 filed in the Kodiak Recording District, Third Judicial District, State of Alaska;

subject to easements, encumbrances, reservations, restrictions, and covenants of record, if any.

DATED this 23rd day of December, 1987 at Kodiak, Alaska.

KODIAK ISLAND BOROUGH

By: Jerome M. Selby
JEROME M. SELBY, BOROUGH ~~MAYOR~~
710 Mill Bay Road
Kodiak, Alaska 99615

STATE OF ALASKA)
) ss:
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on the 23rd day of December, 1987, before me the undersigned, a Notary Public in and for the State of Alaska, duly sworn and commissioned as such, personally appeared JEROME M. SELBY, to me known to be the Mayor of the Kodiak Island Borough, a municipal corporation, and known to me to be the individual who executed the within instrument on behalf of the municipal corporation herein named, and acknowledged to me that the same was signed as a free act and deed of said municipal corporation for the uses and purposes therein stated and pursuant to action of the Borough Assembly.

WITNESS my hand and notarial seal the day and year first above written.

Margaret D. Lisenbe
Notary Public in and for Alaska.
My commission expires: My Commission Expires September 4, 1988

RETURN TO:

KODIAK ISLAND BOROUGH
710 Mill Bay Road
Kodiak, Alaska 99615

88-000027
Pd. 10.—

RECORDED-~~FILED~~
KODIAK RECORDING
DISTRICT
11:30
JAN 6 ~~7 45~~ AM '88
KIB.
FEE
ADDR 710 Mill Bay
Kd., AK 99615

BOOK 89 PAGE 543

QUITCLAIM DEED

The grantor, CITY OF LARSEN BAY of Box 8, Larsen Bay, Alaska 99624, for and in consideration of TEN DOLLARS ($10.00) and other good and valuable consideration, hereby quitclaims any interest it has in the following described real estate to the KODIAK ISLAND BOROUGH of 710 Mill Bay Road, Kodiak, Alaska 99615, together with any improvements thereon:

> Lot Two (2), Block Eleven (11), Larsen Bay Townsite, U.S. Survey 4872, according to Plat 87-37 filed in the Kodiak Recording District, Third Judicial District, State of Alaska;

subject to easements, encumbrances, reservations, restrictions, and covenants of record, if any.

IN WITNESS WHEREOF, the City Council of Larsen Bay, pursuant to Resolution 86-13, attached as Exhibit "A", has authorized the conveyance of said real property.

DATED this 29th day of December, 1987 at Kodiak, Alaska.

CITY OF LARSEN BAY

By: _____
CHARLES CHRISTENSEN, MAYOR

STATE OF ALASKA)
) ss:
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on the 29th day of December, 1987, before me the undersigned, a Notary Public in and for the State of Alaska, duly sworn and commissioned as such, personally appeared CHARLES CHRISTENSEN, to me known to be the Mayor of the City of Larsen Bay, a municipal corporation, and known to me to be the individual who executed the within instrument on behalf of the municipal corporation herein named, and acknowledged to me that the same was signed as a free act and deed of said municipal corporation of the uses and purposes therein stated and pursuant to action of the City Council.

WITNESS my hand and notarial seal the day and year first above written.

DEC 29 1987

_____
Notary Public in and for Alaska
My commission expires: Postmaster

RETURN TO:

KODIAK ISLAND BOROUGH
710 Mill Bay Road
Kodiak, Alaska 99615

BOOK 89 PAGE 544

Exhibit 'A'

CITY OF LARSEN BAY
RESOLUTION NO. 86-13

A RESOLUTION OF THE LARSEN BAY CITY COUNCIL APPROVING VACATION OF "F" STREET AND AGREEING TO THE EXCHANGE OF CERTAIN CITY LANDS WITH THE KODIAK ISLAND BOROUGH FOR EXPANSION OF THE LARSEN BAY SCHOOL.

WHEREAS, the expansion of the Larsen Bay School would utilize properly owned by the City of Larsen Bay; and

WHEREAS, the Kodiak Island Borough has requested the vacation of "F" Street and the exchange of land owned by the City of Larsen Bay for land owned by the Kodiak Island Borough; and

WHEREAS, the vacation and exchange of said properties is of equal size and value, and

WHEREAS, the utilization of the property is for public purposes.

NOW, THEREFORE BE IT RESOLVED, that the City Council of Larsen Bay has reviewed and approves the vacation of "F" Street and exchange of property with the Kodiak Island Borough for the purpose of school expansion.

BE IT FURTHER RESOLVED, the Kodiak Island Borough will incur surveying, platting and recording costs.

APPROVED this 19th day of November, 1986.

CITY OF LARSEN BAY

By _____
Mayor

ATTEST:

By _____
City Clerk

88-000026
Bk. 13.

RECORDED — FILED
KODIAK RECORDING DISTRICT
JAN 5 3 28 PM '89
K.I.B.
AND RETURN TO 710 Mill Bay
Kd., AK. 99615

Exhibit 'A'

USS 4872, LARSEN BAY TOWNSITE: TRACT A - T30S, R29W, S.M.
Vac'n Blk 11 & Lots 1 & 5, Blk. 12, & Portion "F" Street, Replat to Lots 1 & 2, Blk. 11, & Lots 1A & 5A, Blk. 12. SEC. 12.

PLAT NO. 87-37

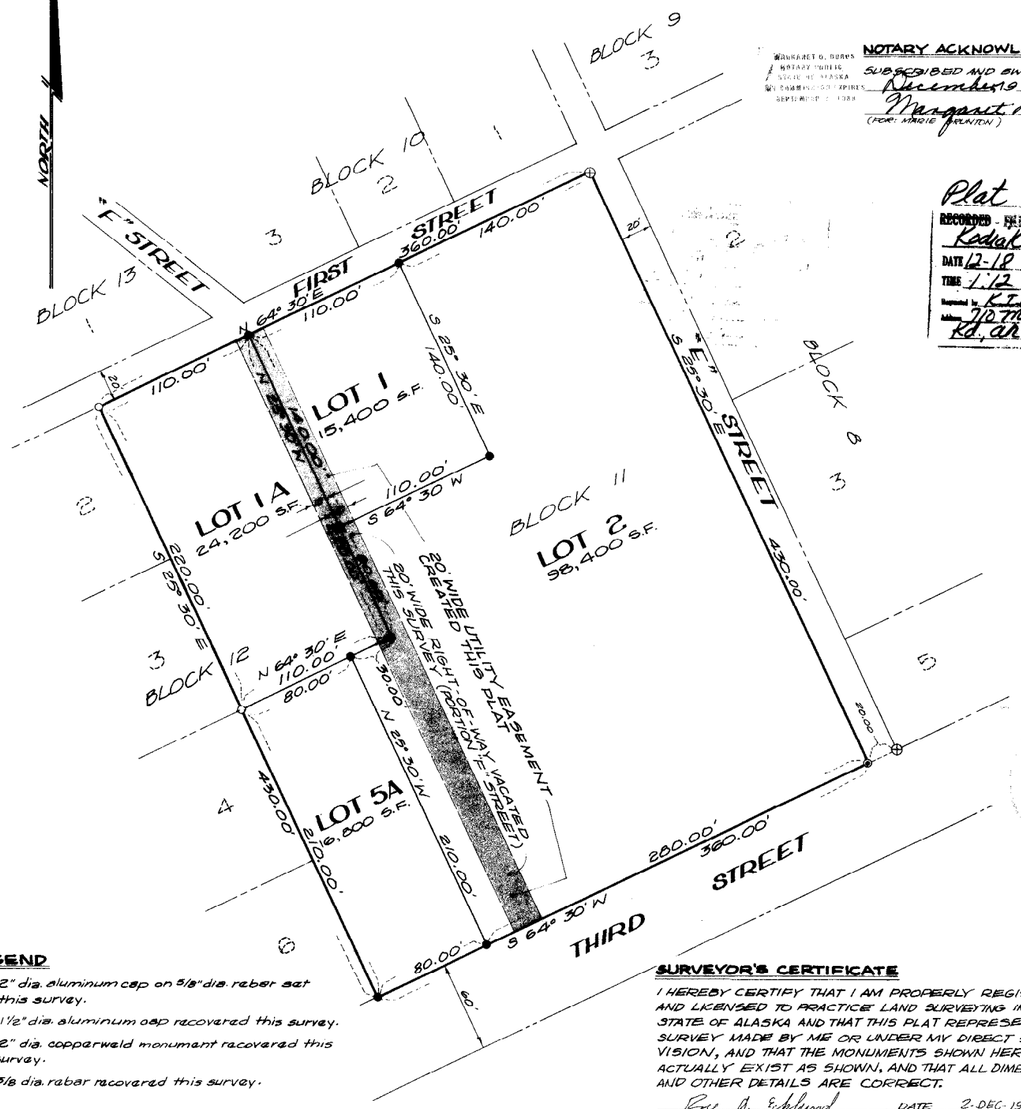
87-37

LEGAL DESCRIPTION

BLOCK 11 AND LOTS 1 and 5, BLOCK 12, LARSEN BAY TOWNSITE, U.S. SURVEY 4872, KODIAK ISLAND BOROUGH, STATE OF ALASKA.

PLAT NUMBER 69-3, KODIAK RECORDING DISTRICT.

CONTAINS: 134,800 SQUARE FEET, MORE OR LESS.



TAX CERTIFICATE

I HEREBY CERTIFY THAT, ACCORDING TO THE RECORDS OF THE KODIAK ISLAND BOROUGH, ALL TAXES ACCESSED AND DUE AGAINST SAID LAND AND IN FAVOR OF THE KODIAK ISLAND BOROUGH ARE PAID IN FULL.

DATED AT KODIAK, ALASKA, THIS 16 DAY OF Dec, 1987.

KODIAK ISLAND BOROUGH CLERK

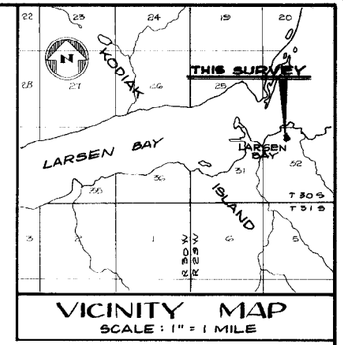
NOTARY ACKNOWLEDGMENT

SUBSCRIBED AND SWORN TO BEFORE ME THIS 17th DAY OF December 19 87.

Margaret D. Burns 9-4-88
(FOR: MARIE BRUNTON) MY COMMISSION EXPIRES

MARGARET D. BURNS NOTARY PUBLIC STATE OF ALASKA MY COMMISSION EXPIRES SEPTEMBER 4, 1988

Plat 87-37
RECORDED - FILED
Kodiak REC. DIST.
DATE 12-18, 1987
TIME 1:12 P.M.
Recorded by KIB
Address 710 Mill Bay Rd, AK 99615
pd 20-



VICINITY MAP
SCALE: 1" = 1 MILE

OWNERSHIP AFFIDAVIT

WE HEREBY CERTIFY THAT WE ARE THE OWNERS OF THE PROPERTY SHOWN AND DESCRIBED HEREON. WE HEREBY REQUEST APPROVAL OF THIS PLAT SHOWING SUCH EASEMENTS FOR PUBLIC ROADWAYS AND UTILITIES DEDICATED BY US FOR PUBLIC USE.

[signature] DATE 12/10/87
CITY OF LARSEN BAY - LOT 5, BLOCK 12

[signature] DATE 12-11-87

James M. Selby POA for Marie Brunton DATE 12/17/87
MARIE BRUNTON - LOT 1, BLOCK 12

NOTARY ACKNOWLEDGMENTS

MARGARET D. BURNS NOTARY PUBLIC STATE OF ALASKA MY COMMISSION EXPIRES SEPTEMBER 4, 1988

SUBSCRIBED AND SWORN TO BEFORE ME THIS 10th DAY OF December, 1987.

Margaret D. Burns 9-4-88
(FOR: KODIAK ISLAND BOROUGH) MY COMMISSION EXPIRES

MARGARET D. BURNS NOTARY PUBLIC STATE OF ALASKA MY COMMISSION EXPIRES SEPTEMBER 4, 1988

SUBSCRIBED AND SWORN TO BEFORE ME THIS 11th DAY OF December, 1987.

Margaret D. Burns 9-4-88
(FOR: CITY OF LARSEN BAY) MY COMMISSION EXPIRES

PLAT APPROVAL

KODIAK ISLAND BOROUGH PLANNING AND ZONING COMMISSION:
RECEIVED 4/17/87 APPROVED 5/20/87
CHAIRMAN [signature] DATE 12/4/87

THIS IS TO CERTIFY THE WITHIN PLAT IS DULY APPROVED IN ACCORDANCE WITH KODIAK ISLAND BOROUGH MUNICIPAL CODE THIS 17th DAY OF December, 19 87.

BOROUGH MAYOR James M. Selby
BOROUGH CLERK DATE
BOROUGH ENGINEER David L. Crowe DATE 12/3/87

LEGEND

- ● = 2" dia. aluminum cap on 5/8" dia. rebar set this survey.
- ○ = 1½" dia. aluminum cap recovered this survey.
- ⊕ = 2" dia. copperweld monument recovered this survey.
- ◉ = 5/8 dia. rebar recovered this survey.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THE MONUMENTS SHOWN HEREON ACTUALLY EXIST AS SHOWN, AND THAT ALL DIMENSIONAL AND OTHER DETAILS ARE CORRECT.

Roy A. Ecklund DATE 2 DEC 1987
REGISTERED LAND SURVEYOR
REGISTRATION NUMBER 1638-S

PREPARED FOR: KODIAK ISLAND BOROUGH
710 MILL BAY ROAD, KODIAK, ALASKA 99615

ROY A. ECKLUND 1638-S REGISTERED LAND SURVEYOR STATE OF ALASKA

VACATION OF BLOCK 11, LOTS 1 & 5, BLOCK 12, AND THAT PORTION OF "F" STREET BETWEEN BLOCK 11 AND BLOCK 12, TRACT A, LARSEN BAY TOWNSITE, U.S. SURVEY 4872

REPLAT TO LOTS 1 AND 2, BLOCK 11 AND LOTS 1A AND 5A, BLOCK 12, TRACT A, LARSEN BAY TOWNSITE, U.S. SURVEY 4872
WITHIN KODIAK RECORDING DISTRICT
KODIAK ISLAND ALASKA

ECKLUND SURVEYING P.O. Box 146 Kodiak, Alaska 99615	DRAWN BY: S. Austerman	DATE: 8 April 1987
	SCALE: 1" = 50 feet	REF: S. 4872 - LB

S-87-014

APPENDIX E

ENVIRONMENTAL RECORDS SOURCE INFORMATION

URL: http://yosemite.epa.gov/r10/cleanup.nsf//

Region 10: the Pacific Northwest

Alaska Cleanup Sites

These lists attempt to help you find information about any cleanup work ongoing in Alaska. In some cases states are responsible for the information. Please check all lists. Envirofacts Multisystem search for AK may be a starting place.

Leaking Underground Storage Tank (LUST) Sites
Indian Land Leaking Underground Storage Tank (LUST) Sites
Alaska Department of Environmental Conservation LUST sites

Brownfields, Oil, RCRA Corrective Action Superfund Sites
Click on the triangle ▲ near the row heading to re-sort the table. "Type of site" include National Priority List (NPL) and RCRA Corrective Action (RCRA CA) sites. Sites not associated with any particular city will show near the bottom of the list.

State ▲	City ▲	Title ▲	Typ
Alaska	Adak	Adak Naval Air Station	NPL
Alaska	Fairbanks	Alaska Battery Enterprises	Dele
Alaska	Anchorage	Anchorage Terminal Reserve	NPL
Alaska	Fairbanks	Arctic Surplus	NPL
Alaska	Deadhorse	BP Alaska GC1-GC2 Gathering Line Discharge	Oil
Alaska	Deadhorse	BP Alaska GC1-GC2 Transmission Pipeline Discharge	Oil
Alaska	Deadhorse	BP Alaska ZPad Produce Water Spill	
Alaska	Deadhorse	BP Prudoe Bay Drill Site 14	Oil
Alaska		Brownfields and Alaska	Brow
Alaska	Kenai	Cook Inlet Pipe Line Company's Drift River Terminal Facility	RCR
Alaska	Fairbanks	Eielson Air Force Base	NPL
Alaska	Anchorage	Elmendorf Air Force Base	NPL
Alaska	Anchorage	Fort Richardson (USArmy)	NPL
Alaska	Fort Wainwright	Fort Wainwright	NPL
Alaska	Ketchikan	Ketchikan Pulp Company	NPL
Alaska	Anchorage	Kuparuk Flowline Spill DS2M	Oil
Alaska		RCRA Corrective Action Sites in Alaska	RCR
Alaska	Prince of Wales Island	Salt Chuck Mine	NPL
Alaska	Anchorage	Standard Steel & Metals Salvage Yard (USDOT)	Dele

http://cfpub.epa.gov/supercpad/cursites/srchrslt.cfm?start=1&CFID=24652239&CFTOKEN=36029956&jsessionid=2030ce5d10cb74839a5a417f642e253f6a7b

Last Updated on Monday, September 13, 2010

Superfund

Search Superfund Site Information

Disclaimer:

The CERCLIS Public Access Database contains a selected set of "non-enforcement confidential" information and is updated by the regions every 90 days. The data describes what has happened at Superfund sites prior to this quarter (updated quarterly). This database includes lists of involved parties (other Federal Agencies, states, and tribes), Human Exposure and Ground Water Migration, and Site Wide Ready for Reuse, Construction Completion, and Final Assessment Decision (GPRA-like measures) for fund lead sites. Other information that is included has been included only as a service to allow public evaluations utilizing this data. Independent Quality Assessments may be made of this data by reviewing the QAPP provided by this link.(PDF 29pp, 124K)

Search Results

Search Criteria:

Active vs. Archived:	***Active*** *What are active and archived sites?*
City:	*LARSEN BAY*
State(s):	*Alaska*

Found **0** site(s) that match your search criteria listed above.
To conduct another search, return to the **Search Superfund Site Information** page or request a **Customized SIS Report**.

OSWER Home | Superfund Home

URL: http://cfpub.epa.gov/supercpad/cursites/srchrslt.cfm
This page design was last updated on Friday, July 16, 2010
Content is dynamically generated by ColdFusion

EPA Region 10 Report: List of TSD Facilities Sorted by Handler Name

State of Alaska

Number of handlers: 21

Handler Name	Handler ID	Location Address	City	Zip Code	TSD Type	Gen Type	Transport	Used Oil
AGRIUM KENAI NITROGEN OPERATIONS	AKD092876390	MILE 21 KENAI SPUR HIGHWAY	KENAI	99611	SC	SQG	no	no
ALASKA RAILROAD CORP	AKD981767403	327 W SHIP CREEK AVE	ANCHORAGE	99501	SC	SQG	yes	yes
ALASKA SHIP & DRYDOCK	AKD981769821	3801 TONGASS AVE	KETCHIKAN	99901	SC	SQG	no	yes
ALYESKA TAPS VALDEZ MARINE TERMINAL	AKD052581758	300 DAYVILLE RD, PIPELINE MILEPOST	VALDEZ	99686	L	LQG	no	yes
BP EXPLORATION ALASKA PRUDHOE BAY	AKD000643239	PRUDHOE BAY UNIT	PRUDHOE BAY	99734	SC	LQG	no	yes
CHEMRON ALASKA	AKD980984405	13460 HERMANN AVE	PALMER	99645	BST	none	yes	yes
CROWLEY ENVIRONMENTAL SVCS	AKD084611219	101 E 100TH	ANCHORAGE	99515	SC	none	no	no
DRIFT RIVER TERMINAL COOK INLET PIPELINE	AKD000641811	ANCHORAGE APPROX 90 MI SW OF	DRIFT RIVER	99600	LC	CEG	no	no
ENVIRONMENTAL SYSTEMS INC	AKD983069162	1438 OLD RICHARDSON HWY	NORTH POLE	99705	ISC	none	no	no
FLINT HILLS RESOURCES ALASKA, LLC NORTH	AKD000850701	1100 H&H LANE	NORTH POLE	99705	LSC	LQG	no	no
FORMER U. S. NAVAL AIR STATION ADAK	AK4170024323	ADAK ISLAND (PARCEL 4)	ADAK	99546	LSTC	CEG	no	no
TESORO ALASKA COMPANY-KENAI REFINERY	AKD048679682	54741 TESORO ALASKA COMPANY	KENAI	99611	LSC	LQG	no	no
UNIVERSITY OF ALASKA FAIRBANKS	AKD048679567	TANANA DRIVE	FAIRBANKS	99775	SC	LQG	no	yes
US ARMY FT WAINWRIGHT	AK6210022426	ENTIRE MILITARY RESERVATION	FT WAINWRIGHT	99703	STC	LQG	no	no
USAF EIELSON AFB	AK1570028646	2310 CENTRAL AVE. SUITE 100	EIELSON AFB	99702	STC	LQG	no	no
USAF ELMENDORF AFB	AK8570028649	11735 VANDENBERG AVE.	ANCHORAGE	99506	LSC	LQG	no	no
USARMY FT GREELY	AK3210022155	RICHARDSON HWY	DELTA JUNCTION	99737	STC	SQG	no	no
USARMY FT RICHARDSON	AK1210022157	730 QUARTERMASTER ROAD	ANCHORAGE	99505	LSTC	LQG	no	no
USDHS CG INTEGRATED SUPPORT COMMAND KODI	AK9690330742	ANTON LARSON BAY ROAD AND REZA	KODIAK	99619	LSC	LQG	yes	yes
USDHS CG ISC KETCHIKAN	AK8690360492	1300 STEDMAN STREET	KETCHIKAN	99901	SC	LQG	no	yes
USDOT FAA LAKE MINCHUMINA BLDG 200&300	AK7690590032	701 C ST	ANCHORAGE	99513	C	CEG	no	no

***** End of Report *****

activity type designators
TSD: L - land disposal ; S - storage ; T - treatment ; I - incinerator ; B - burner/blender ; C - corrective action
Generator: LQG - large quantity generator ; SQG small quantity generator ; CEG - conditionally exempt small quantity generator

ERNS Incidents in Alaska (1982-2010)

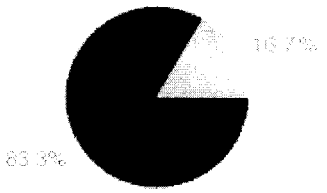
Search Criteria Used (More)

Reporting Year	ALL	GO
Level of Detail	Summary	GO
Type of Report Output	Text (HTML)	GO

Summary

Total number of incidents: **6**
Total number of reported fatalities: **0**
Total number of reported hospitalizations: **0**
Total number of reported injuries: **0**
Total number of people evacuated: **0**
Total reported property damage: **$0**
Get list of incidents

Incident Type



Type of incident	Number of incidents
Fixed site (e.g. incident at a building)	0
Continuous release	0
Storage tank, drilling platform, or pipeline	1
Unknown sheen on water	0
Mobile vehicle (plane, truck, train, ship, etc.)	5
Other or unknown	0

Expand pie chart and table to all categories

Top 5 cities for numbers of incidents

LARSEN BAY, AK 6

Top 5 dischargers for numbers of incidents

Discharger Left Blank	2
VESSEL SABRINA C	1
F/V MILLENIUM	1
COMM. F/V LADY TAELYR	1
LARSEN BAY CITY FUEL FARM	1

Expand summary to all dischargers

Top 5 CHRIS substances for numbers of incidents

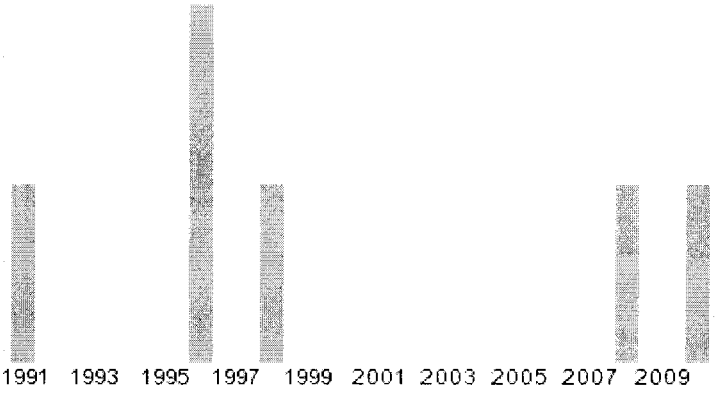
Top 5 discharger types for numbers of incidents

PRIVATE ENTERPRISE	3
OTHER	1
PRIVATE CITIZEN	1
UNKNOWN	1

Top 5 incident causes for numbers of incidents

EQUIPMENT FAILURE	2
OTHER	2
UNKNOWN	1
OPERATOR ERROR	1

Number of incidents trend



Year	Number of incidents
1991	1
1992	0
1993	0
1994	0
1995	0
1996	2
1997	0
1998	1
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	1
2009	0

OUN: Unknown oil	2	2010	1
OTH: Other oil	1		
OTD: Oils, fuel: 2-D	1		
GAS: Gasoline: automotive (unleaded)	1		
ODS: Oils: diesel	1		

Expand summary to all CHRIS substances

Expand all summaries to all values, not just top 5

END OF REPORT

This search was done on March 3, 2011. It was compiled from government data last released on January 04, 2011. The data were obtained from the U.S. Coast Guard's Emergency Response Notification System database (ERNS).

Search Criteria Used

Incident Location City	Larsen Bay	
Incident Location State	Alaska	
Reporting Year	ALL	GO
Level of Detail	Summary	GO
Type of Report Output	Text (HTML)	GO

Alaska Department of Fish & Game

www.adfg.state.ak.us

Endangered Species in Alaska

The Alaska Department of Fish and Game received funds in 2007 to establish a unit to oversee state involvement in endangered and threatened species. This unit coordinates state participation under federal and state endangered species legislation. This includes coordinating state comments on proposed listings and on recovery of listed species. Two federal agencies are responsible for implementing the federal Endangered Species Act (ESA) legislation.

Federal Lists • State of Alaska Endangered Species List

- The National Marine Fisheries Service is responsible for oversight of marine species
- The U.S. Fish and Wildlife Service is responsible for freshwater and land based species.

Federal Lists

Endangered | Threatened | Under Consideration for Protection

Listed as Endangered under the ESA

Fourteen species that occur in Alaska are currently list as endangered under the ESA.

- Short-tailed Albatross - PDF file* (791KB) USFWS
- Eskimo Curlew
- Aleutian Shield Fern - USGS
- Steller Sea Lion (western stock) - NOAA Fisheries & ADF&G
- Leatherback Turtle - NOAA
- Whales - NOAA Fisheries
  - Blue Whale
  - Bowhead Whale
  - Cook Inlet Beluga Whales
    - Conservation Plan - PDF file (1.56 MB)
      - State comments (8/24/07) - PDF file (45 KB)
    - Proposed Rule to List Federal Register Notice
      - State Comments to National Marine Fisheries Service Assistant Director
      - State comments Overview
      - State comments Chapter 1 Population (PDF dated 7/31/2007)
      - State comments Chapter 2 Threats (PDF dated 7/31/2007)
      - State comments Chapter 3 Conservation Plan (PDF dated 7/31/2007)
      - State comments Chapter 4 Critical Habitat (PDF dated 7/31/2007)
      - State comments Chapter 5 Economic Impact (PDF dated 7/31/2007)
    - State letter requesting 6 month extension (12/24/07) - PDF file* (48 KB)
    - NOAA Decision to extend status review 6 months (3/21/08) - PDF file* (63 KB)
    - Decision to list as Endangered (10/22/08) - PDF file (96 KB)
      - Governor's News Release (response to listing)
      - Decision to sue (1/12/09) - PDF file (767 KB)
      - Governor's News Release (announcement of decision)
    - NMFS critical habitat request for information (4/14/09) - PDF file (60 KB)
      - State of Alaska comments/information (5/14/09) - PDF file (800 KB)
        - Map of Cook Inlet Land Ownership - PDF file (400 KB)
        - Map of Permitted Wastewater Discharge in Cook Inlet - LARGE PDF file (1.0 MB)
    - NMFS Proposed Critical Habitat (12/2/09) - PDF file (843 KB)
      - State of Alaska comments (3/3/10) - LARGE PDF file (1.43 MB)
      - State of Alaska press release (3/3/10) - PDF file (76 KB)
  - Fin Whale - NOAA
  - Humpback Whale
    - 90 day Finding, Initiate Status Review - NMFS - PDF file (57 KB)
      - State information - LARGE PDF file (1.14 MB)
  - Northern Right Whale, North Pacific DPS - NOAA Fisheries & ADF&G
    - Designation of Critical Habitat Federal Register Notice (10/29/07)
      - State comments (1/3/06) - PDF file (279 KB)
      - State comments (12/27/07) - PDF file (217 KB)
  - Sei Whale - NOAA
  - Sperm Whale - NOAA
- Wood Bison

State of Alaska Endangered Species List

- Short-tailed Albatross - PDF file* (791KB) USFWS
- Eskimo Curlew
- Blue Whale
- Humpback Whale
- Right Whale - NOAA Fisheries & ADF&G

For Additional Information

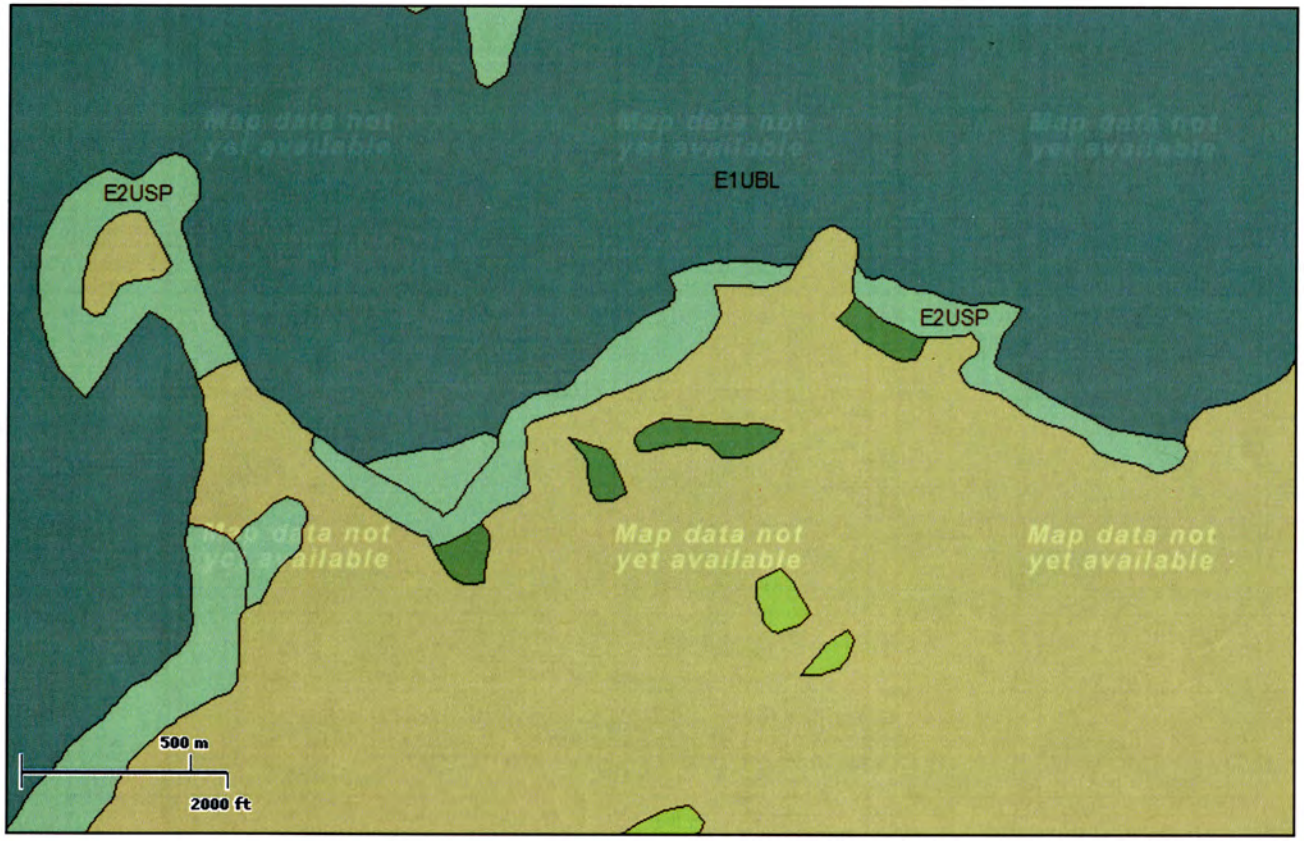
Please contact:
Doug Vincent-Lang
(907) 267-2339

U.S. Fish and Wildlife Service

National Wetlands Inventory

Larsen Bay NWI

Sep 13, 2010



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deetwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Status

- Digital
- Scan
- Non-Digital
- No Data

User Remarks:

Alaska Underground Storage Tank Facility Summary Report

Facility: 3351 Larsen Bay School

Facility Information		**Owner Information**	
Facility ID	3351	**Owner ID**	693
Facility Name	Larsen Bay School	**Owner Name**	Kodiak Island Borough For more information
Location Address	Third ST, Larsen Bay, AK 99624	**Mailing Address**	710 Mill Bay Road Kodiak, AK 99615

Number of Tanks for this Facility: 1

Tank Information - Tank # 1		**Next Inspection Due:**	
DEC Tank ID	1	**Regulated Tank?**	No
Owner Tank ID		**Compliance Tag #**	
Status	Permanently Out of Use	**Installed**	1/1/1988
Closure Status	Tank closed in place	**Age**	23.1
Product	Heating Oil	**Capacity**	2000 gallons
Tank Material Construction	Not Listed	**Secondary Containment Option (Tank)**	None
Pipe Material Construction	Not Listed	**Secondary Containment Option (Piping)**	None
Piping Type	Not Listed	**Piping Release Detection**	Not Listed
Overfill Prevention Met	No	**LD Other Methods**	
Spill Prevention Met	No		
Cathodic Protection Met	No		

End of Report on 2/7/2011

Alaska Department of Environmental Conservation

Contaminated Sites Database

Cleanup Chronology Report for Larsen Bay Old School

File Number	2606.57.001	**Hazard ID**	25511
SiteName	Larsen Bay Old School	**Staff**	Deborah Williams - 9074515174
Address 1	Old School	**Status**	Informational
Address 2		**Landowner**	Larsen Bay Tribal Council
City/State/Zip	Larsen Bay, AK 99624		
Latitude	57.538059	**Meridian**	Seward
Longitude	-153.981476	**Range**	29
Section	32	**Township**	30

Problem/Comments The Larsen Bay Tribal Council submitted a DEC Brownfield Assessment request for 2010 (FY2011) for the old school in Larsen Bay. The BIA built the school in 1968 and the Kodiak Island Borough owned the building and parcel until 1987. A new school was built directly adjacent to the property in 1980. Property ownership transferred the school to the City of Larsen Bay in 1988 then in 2007 the property was transferred to the Native Village of Larsen Bay. The building now stands vacant and is boarded up. There is a potential for asbestos and lead based paint. The site is directly adjacent to areas of high public use. The Tribal Council would like to remove the building and host a community garden space on the property.

Action Date	Action	Description	DEC Staff
04/28/2010	Site Added to Database	A new site has been added to the database	Williams, Deborah
04/28/2010	Brownfield Inventory	The Larsen Bay Tribal Council submitted a DBA Request for 2011.	Williams, Deborah
07/09/2010	Update or Other Action	DEC received a response from the Alaska State Historic Perservation Office (SHPO) for the assessment work planned for FY2011 that there is "No Historic Properties Affected."	Williams, Deborah
07/30/2010	Brownfield Confirmed	Notice to proceed was awarded to Shannon & Wilson through SPAR term contract. Project managed under Reuse and Redevelopment Program.	Williams, Deborah

APPENDIX F

FIELD NOTES AND GPS COORDINATES

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

Name Randy Hessong XXX
Shannon & Wilson, Inc.
Address 5430 Fairbanks St, Ste 3
Anchorage, AK 99518
Phone (907) 561-2120

Project Larsen Bay PACP
32-1-17376

Yellow Polyethylene Protective Slipcovers (Item #31) are available for this style of notebook. Helps protect your notebook from wear & tear. Contact your dealer or the J. L. Darling Corporation.

RKH 10/25/10 = (1)

0645 AK Air Flight to Kodiak
Island air
0940 - Larsen Bay - To Tribal Council office - meet Alex Panamaroff Jr.
Wx: Rain,
Go through Questionnaire w/ Alex

Mary Nelson - LBTC President
recommends talking with her mother Virginia & w/ Clyda Epe for history at school.

Richard Hansen - LBTC Environmental Employee working on solid waste issues

Infiltration galley in Humpy Creek
Water in creek inadequate for demands of power & water
Much of power is diesel generator.

Set up 9:00 meeting w/ Virginia Stanton 847-2330 & Auntie Clyda for tomorrow

11:40 - To Clinic appointment, w/ Mary & Richard. Meet Sam Kenoyer
New major, 8 yr. res., health aide.

17376 10/25/10 RCH

Get setup & make walk-around of site.
- windows boarded - screws.
- Generator shed, pilings in place
- Water well present @ NE corner
- Fence + electrical transformer about where 1981 UST shown.
- More topographical relief than expected
- 55 gallon drums at SE corner
- Various construction debris, mostly around SE corner
- More recent sewer appears to connect toward new school

12:30 → 12.48 Lunch, study figures.

13:05 on site - walk around video tour. (Photos - City heavy equipment, 1 exterior)
Walk area with witching rods. Crossing where potential old 2000 gal UST was on 1981 survey sketch.

14:00 Richard Hansen on site - open main door.
Video tour of interior - may not be good in darker areas.
- On 5th photo digital camera says memory full.
- Neighbor to East - was on council, SMI + DO - Aware of potential ACM

17376 10/25/10 RCH 2 of 2 = (8)

N

foundation - wood piles.

Gable siding

Chimney

11" ceiling tiles composite

wood-framed windows

plywood interior walls

square VAT floor tile

Flourescent lighting throughout 3 main rooms

Forced air furnace

Slop sink

sheetrocked

cylinder

Restroom

Restroom

Kitchen

internal walls are drywall wainscoat in bathrooms - hard board (acm?)

steel sheet roof

internal wall drywall external (3 inside) plywood

T-111 plywood siding

Asphalt shingle Library roof

drywall interior walls & ceiling wood-framed windows

vinyl flooring

chimney

3/8" Fuel copper line

Electrical from underground 4" plastic conduit

17376 10/25/10 KSW

10:30 Off site w/ Richard.
Look at scrap heaps / gravel pits / landfill for places to load farm soil. Take video, since digital camera has memory issues.

15:35 – Download images from camera, clear memory, reset size, storage. Don't have flash photos of interior. Door Re-boarded

15:50 – Return to site – long series of small photos. Fuel piping visible under building, running to SW corner of old building. Witching rod anomaly leads to area NW of electrical transformer –

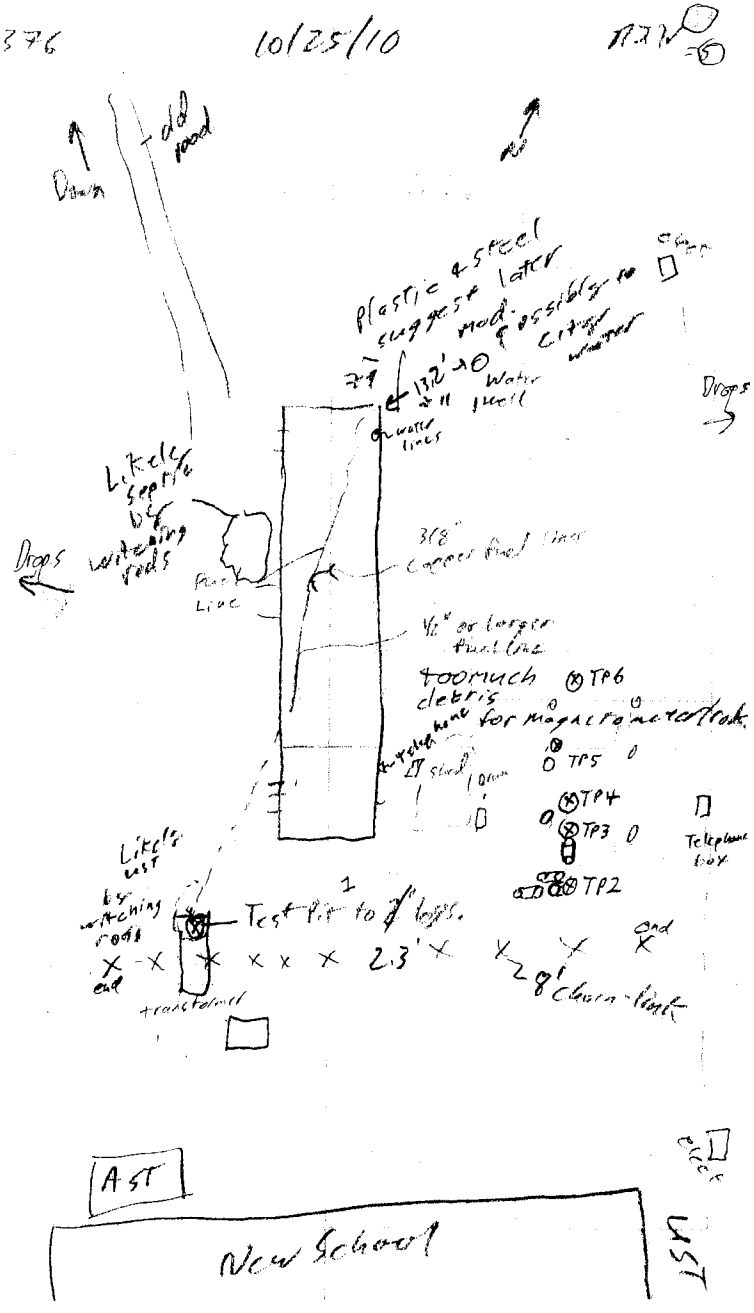
Dig to 2' bgs – silty, sandy gravel. Difficult digging. 0.4' veg. mat, then no apparent soil horizon. Likely fill. Find a piece of plastic pipe 1" x 1½" at 1.5', stick @ 6.7'.

17:00 give up on test pit.

Dig a transect of shallow pits across generator shed area.

Organic soil layers.

17376 10/25/10 KSW



17376 10/25/10 RIH

Headspace screening samples

TP151; 2-2.1' bgs, 17:36; Brown, silty, sandy GRAVEL; moist No odor
Headspace: 1.8ppm

TP251; 0.6-0.8' bgs, 17:42; Brown, silty SAND; w/roots; moist - beneath E edge - group of 3 drums. Odor of fuel in area, not necessarily in soil.
Headspace: 2.7ppm

TP351; 0.7-0.8' bgs; 17:50; Dark brown, gravelly organic silt w/roots; moist; "Trace product weathered" diesel odor. Below 4th layer of gravel down.
Headspace: 47ppm

TP451; 0.7-0.9' bgs; 18:00; reddish brown SILT; moist; diesel odor. Just inside S. edge generator footprint
Headspace: 160ppm

TP551; 0.2-0.5' bgs; 18:06; Gray, gravelly SAND; wet beneath veg mat, over (organic silt & silt. water enters hole.
Headspace: 15ppm
→ mild petroleum odor.

17376 10/25/10 RIH

TP651, 0.5-0.7' bgs; 18:12 Mixed silty, gravelly SAND and organic silt; moist. Could smell creosote from nearby piles. Just N. of generator shed
Headspace: 3.9ppm

TP751, 0.3-0.5' bgs; 18:30; Reddish brown, silty sandy SILT; moist
Beneath building under fuel line junction
Headspace: 2.0ppm

18:42 Off site after backfilling T.P.s.
18:48 → Samples set up to warm. OVM.
19:30 check calibration - OVM #6 - ✓
Read headspace. Stow to get to = Temps.
19:48 off.

RIH

17376 10/26/10 RZH

8:48 Prepped, setup for adult work department

9:00 Caretaker - Water well - early 60s, before earth quake. Pressure tank in furnace room

- Oil - from cannery - skiffs, rolled barrels up road from beach
- Generator. then - barrels rolled too.
- once talked about making a museum. Costs for heating / lighting high.
- Possible preschool.
- Possible garden. (May not get a lot of use) - Possible playground

School - maybe 20 kids - 1 aide this year have had trouble keeping 10 kids.
- Teacher housing?

Virginia Stanton - what to school
Marlene Kenoyer - there - in 1960s 57 years.

Scotty Keaton - house to N. - janitor, school named after. Gone now

9:25 - End of interview with.

Virginia + Marlene step by @ 9:00
- Clinic apparatus. "Aunty Clyde moved here after earthquake, didn't have use as classrooms no school" We never there.

17376 10/26/10 RZH 9

- Catering notes:
  - Remember towels for teachers, bar of soap outside on stand for them
  - Don't remember a LST where shown in 1981. Not sure how fuel would be transported to fill.
  - Remember lots of drums at S.E. corner in 60s.
  - Old school out of use once new school done.
  - Talked about bus problems, bears.

9:36 Email from Hayden Tweten - AOEC approves collecting some samples from generator area, dig at potential use if can be done today.

Talk w/ Sam Kenoyer - Mayor - No backhoe operator available w/ city right now. May be able to supply a root beer.

Walk to LBTC building.

17376 10/26/10 JAH

Travis from White E.C. is on phone w/ Alex - talk w/ Travis - he can probably come out tomorrow to sample building. Will need ladder.

Discuss collecting a couple of soil samples, digging for tanks.
- Mary + Alex good w/ sampling.
- Richard to help get digging bar.

10:40 - Borrow rock bar from City Maint.
Set up to collect analytical samples.

Wx: Right at freezing, Rain squalls + sunny breaks, very light breeze.

Open up TP3, expose fresh face.
TP3SL; 11:00; Win a few inches of headspace sample. 1x4oz glass DRO, +?

Open up TP4, expose fresh face.
TP4SL; 11:15; w/in a few inches of headspace.
1x4oz glass - DRO +?

Dig Test Pit 4 deeper to see if

17376 10/26/10 JAH 17376=11

contaminant may have moved past silt soil horizon. Gets gravelly/rocky @ 1.2' bgs, water starts entering hole @ 1.4'

Headspace only: TP4SZ; 11:25; 1.35-1.45' bgs. Gray, silty, gravelly SAND; wet diesel odor + sheen.
Headspace: 211ppm not warm

Use GPS to mark waypoints.
TP1 = WP28 + 29
TP2 - TP6 = WP30 - 34 respectively
Well = WP35
Front Door - main = WP36 (near TP7)
Accuracy = 11 to 24'
Rain squall w/ wet snow
Dig at suspected UST location (TP1)
Steel UST encountered @ 12:05
2.3' bgs. No fittings encountered.
Photos: Very rusty, no perforations noted in small area. No odor noted.
TP1SZ; 12:20; 2.3' bgs - soil touching top of UST. Brown, silty, gravelly SAND; moist No odor noted
Headspace: 2.4ppm

◯=12
17376 10/26/10 RAH

12:40 off Site. Leave rack bar @ Connex

To Apt. - Packup & read headspace quickly.

13:00 Richard to take me to airport

Flight delayed to 1313Ø.

Travis called Alex back - can't come out until next week, according to Mary.

14:30 - Depart Island Air. Get on 15:05 ERA flight.

RAH

Larsen Bay Old School PACP

32-1-17376

1 March 2011

INPUT	OUTPUT
Geographic, NAD83 Vertical - NAVD88, U.S. Feet	State Plane, NAD83 5005 - Alaska 5, U.S. Feet Vertical - NAVD88, U.S. Feet

Test Pit TP1 (UST)

1/8

Latitude: 57.53782201
Longitude: 153.9813812
Elevation/Z: 51.7

Northing/Y: 1292166.041
Easting/X: 1644074.864
Elevation/Z: 51.700
Convergence: 0 00 56.55433
Scale Factor: 0.999900015
Combined Factor: 0.999895436

Test Pit TP2

2/8

Latitude: 57.53789627
Longitude: 153.9810472
Elevation/Z: 50.1

Northing/Y: 1292193.190
Easting/X: 1644140.481
Elevation/Z: 50.100
Convergence: 0 00 57.56890
Scale Factor: 0.999900016
Combined Factor: 0.999895513

Test Pit TP3

3/8

Latitude: 57.53791245
Longitude: 153.9810707
Elevation/Z: 50.9

Northing/Y: 1292199.100
Easting/X: 1644135.862
Elevation/Z: 50.900
Convergence: 0 00 57.49753
Scale Factor: 0.999900016
Combined Factor: 0.999895475

Test Pit TP4

4/8

Latitude: 57.53792862
Longitude: 153.9811051
Elevation/Z: 51.7

Northing/Y: 1292205.006
Easting/X: 1644129.101
Elevation/Z: 51.700
Convergence: 0 00 57.39305
Scale Factor: 0.999900016
Combined Factor: 0.999895437

Remark: Hand-held GPS, +/- 16 to 24 feet.

Larsen Bay Old School PACP

32-1-17376

1 March 2011

INPUT	OUTPUT
Geographic, NAD83	State Plane, NAD83
Vertical - NAVD88, U.S. Feet	5005 - Alaska 5, U.S. Feet
	Vertical - NAVD88, U.S. Feet

Test Pit TP5

5/8

Latitude: 57.5379536
Longitude: 153.9811417
Elevation/Z: 50.9

Northing/Y: 1292214.131
Easting/X: 1644121.908
Elevation/Z: 50.900
Convergence: 0 00 57.28190
Scale Factor: 0.999900016
Combined Factor: 0.999895475

Test Pit TP6

6/8

Latitude: 57.53797783
Longitude: 153.9811669
Elevation/Z: 50.9

Northing/Y: 1292222.982
Easting/X: 1644116.954
Elevation/Z: 50.900
Convergence: 0 00 57.20537
Scale Factor: 0.999900016
Combined Factor: 0.999895475

Water Well

7/8

Latitude: 57.53812065
Longitude: 153.9814869
Elevation/Z: 54.8

Northing/Y: 1292275.143
Easting/X: 1644054.067
Elevation/Z: 54.800
Convergence: 0 00 56.23346
Scale Factor: 0.999900015
Combined Factor: 0.999895288

Main Entrance

8/8

Latitude: 57.53800054
Longitude: 153.9815278
Elevation/Z: 64.3

Northing/Y: 1292231.259
Easting/X: 1644046.043
Elevation/Z: 64.300
Convergence: 0 00 56.10915
Scale Factor: 0.999900015
Combined Factor: 0.999894834

Remark: Hand-held GPS, +/- 16 to 24 feet.

APPENDIX G

SITE PHOTOGRAPHS

Photo 1: Water well head and northeast corner of Old School building, looking southwest 10/25/2010.

Photo 2: Former sheet-metal shed floor, debris, and drums near southeast corner of Old School, looking west 10/25/2010.

Photo 3: Four 55-gallon steel drums southeast of building and south of former generator, looking north-northwest 10/25/2010.

Photo 4: Depression, stressed vegetation, and creosote-treated timber supports thought to be the location of a former electric generator, looking north-northwest 10/25/2010.

Photo 5: Electrical transformer and southwest corner of Old School, looking north 10/25/2010.

Larsen Bay Old School PACP
Larsen Bay, Alaska

PHOTOGRAPHS 1 TO 5

April 2011 32-1-17376

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Photo 6: Collapsing stairs at northern Old School entrance, flaking paint, and cement board skirting, looking north-northwest 10/25/2010.

Photo 7: Damaged chain-link fence and exposed, broken sewer line at south end of Old School, looking northwest 10/25/2010.

Photo 8: Plywood replacement for cement board skirting at northeast corner of Old School, plastic and galvanized water piping visible under building, looking south 10/25/2010.

Photo 9: Galvanized duct work for forced-air furnace, copper fuel lines, wood support blocks, and Test Pit TP7 location beneath building, looking southeast 10/25/2010.

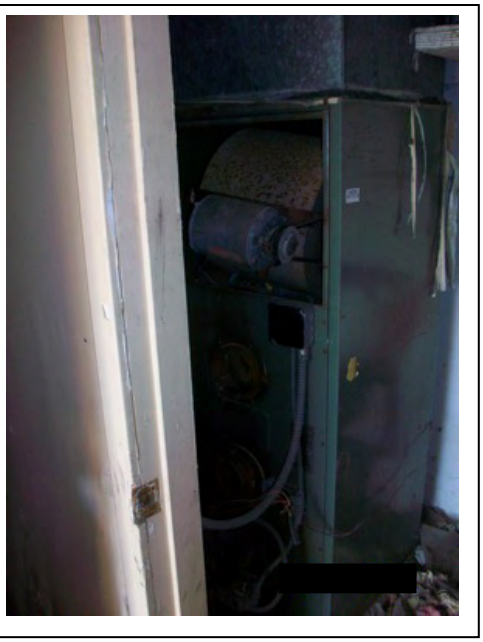


Photo 10: Oil-fired forced-air furnace in mechanical room of Old School, looking north, 10/25/2010.

Larsen Bay Old School PACP
Larsen Bay, Alaska

PHOTOGRAPHS 6 TO 10

April 2011 32-1-17376

Photo 11: Four-inch plactic pipe placed in Test Pit TP1 location to mark location of UST, active Larsen Bay School, 1,000 gallon AST, and electrical transformer visible behind fence, looking south 10/26/2010.

Photo 12: City of Larsen Bay heavy equipment and northwestern corner of City building, Old School is behind trees between the satellite dish and the City building, looking north-northeast 10/25/2010.

Photo 13: One of several disturbed open areas west of the village and east of the landfill that have potential for setting up soil treatment cells, looking east-northeast 10/25/2010.

APPENDIX H

RESULTS OF ANALYTICAL TESTING BY SGS NORTH AMERICA, INC. OF ANCHORAGE, ALASKA AND LABORATORY DATA REVIEW CHECKLIST

SGS North America Inc.
Alaska Division
Level II Laboratory Data Report

Project:	32-1-17376 Larsen Bay
Client:	Shannon & Wilson, Inc.
SGS Work Order:	1105811

Released by:

SGS North America
Environmental Services – Alaska Division
Project Manager

Steven Crupi
2011.01.13
18:19:21 -09'00'

Contents:

Note:
Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the standards set forth by the proper regulatory authority, the SGS Quality Assurance Program Plan, and the National Environmental Accreditation Conference.

Client Name: Shannon & Wilson, Inc.
Project Name: 32-1-17376 Larsen Bay
Workorder No.: 1105811

Sample Comments

Refer to the sample receipt form for information on sample condition.

Lab Sample ID	Sample Type	Client Sample ID
1105811001	PS	17376-TP3S1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample dilution.
REPORT UPDATE: - Project title and sample IDs corrected.

1105811002	PS	17376-TP4S1

AK102 - The pattern is consistent with a weathered middle distillate.
AK102 - 5a-Androstane (surrogate) recovery is outside QC criteria due to sample dilution.
AK103 - Unknown hydrocarbon with several peaks is present.
REPORT UPDATE: - Project title and sample IDs corrected.

* QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Laboratory Analytical Report

Client: **Shannon & Wilson, Inc.**
5430 Fairbanks Street, Suite 3
Anchorage, AK 99518

Attn: **Randy Hessong**
T: (907) 561-2120 F:

Project: **32-1-17376 Larsen Bay**

Workorder No.: **1105811**

Certification:

This data package is in compliance with the terms and conditions of the contract, both technically and for completeness, unless otherwise noted on the sample data sheet(s) and/or case narrative. This certification applies only to the tested parameters and the specific sample(s) received at the laboratory. If you have any questions regarding this report, or if we can be of further assistance, please contact your SGS Project Manager.

Jennifer Serna

jennifer.serna@sgs.com
Project Manager

Contents (Bookmarked in PDF):

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and AK100001 for NELAP (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6010B, 6020, 7470A, 7471B, 8021B, 8081B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, the National Environmental Laboratory Accreditation Program and other regulatory authorities. The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RL	Reporting Limit
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
All DRO/RRO analyses are integrated per SOP.

Client Name: Shannon & Wilson, Inc.
Project Name: 32-1-17376 Larsen Bay
Workorder No.: 1105811

Analytical Methods

Method Description	Analytical Method
Diesel/Residual Range Organics	AK102
Diesel/Residual Range Organics	AK103
Percent Solids SM2540G	SM20 2540G
SW8082 PCB's	SW8082A

Sample ID Cross Reference

Lab Sample ID	Client Sample ID
1105811001	17376-TP3S1
1105811002	17376-TP4S1
1105835002	10GBPSTCG3 MS
1105835003	10GBPSTCG3 MSD

Detectable Results Summary

Print Date: 1/13/2011 6:18 pm

Client Sample ID: **17376-TP3S1**
SGS Ref. #: 1105811001

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	47200	mg/Kg
Residual Range Organics	4150	mg/Kg

Client Sample ID: **17376-TP4S1**
SGS Ref. #: 1105811002

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	73000	mg/Kg
Residual Range Organics	1800	mg/Kg

Client Sample ID: **17376-TP3S1**
SGS Ref. #: 1105811001
Project ID: 32-1-17376 Larsen Bay
Matrix: Soil/Solid (dry weight)
Percent Solids: 71.5

Collection Date/Time: 10/26/10 11:00
Receipt Date/Time: 10/28/10 12:15

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	47200		3100	mg/Kg	50	XFC9623	XXX24022	
Residual Range Organics	4150		3100	mg/Kg	50	XFC9623	XXX24022	
5a Androstane <surr>	0	*	50-150	%	50	XFC9623	XXX24022	
n-Triacontane-d62 <surr>	0	*	50-150	%	50	XFC9623	XXX24022	

Batch Information

Analytical Batch: XFC9623
Analytical Method: AK102
Analysis Date/Time: 11/02/10 14:14
Dilution Factor: 50
Prep Batch: XXX24022
Prep Method: SW3550C
Prep Date/Time: 11/01/10 10:15
Initial Prep Wt./Vol.: 30.338 g
Prep Extract Vol.: 2.24 mL
Container ID:1105811001-A
Analyst: HM

Analytical Batch: XFC9623
Analytical Method: AK103
Analysis Date/Time: 11/02/10 14:14
Dilution Factor: 50
Prep Batch: XXX24022
Prep Method: SW3550C
Prep Date/Time: 11/01/10 10:15
Initial Prep Wt./Vol.: 30.338 g
Prep Extract Vol.: 2.24 mL
Container ID:1105811001-A
Analyst: HM

Client Sample ID: **17376-TP3S1**
SGS Ref. #: 1105811001
Project ID: 32-1-17376 Larsen Bay
Matrix: Soil/Solid (dry weight)
Percent Solids: 71.5

Collection Date/Time: 10/26/10 11:00
Receipt Date/Time: 10/28/10 12:15

Polychlorinated Biphenyls

Parameter	Result	LOQ/CL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Aroclor-1016	ND	69.0	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1221	ND	69.0	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1232	ND	69.0	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1242	ND	69.0	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1248	ND	69.0	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1254	ND	69.0	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1260	ND	69.0	ug/Kg	1	XGC7256	XXX24016	
Decachlorobiphenyl <surr>	84.1	60-125	%	1	XGC7256	XXX24016	

Batch Information

Analytical Batch: XGC7256
Analytical Method: SW8082A
Analysis Date/Time: 10/31/10 18:36
Dilution Factor: 1

Prep Batch: XXX24016
Prep Method: SW3550C
Prep Date/Time: 10/29/10 14:45

Initial Prep Wt./Vol.: 22.826 g
Prep Extract Vol.: 5 mL
Container ID:1105811001-A
Analyst: RTS

Client Sample ID: **17376-TP3S1**
SGS Ref. #: 1105811001
Project ID: 32-1-17376 Larsen Bay
Matrix: Soil/Solid (dry weight)
Percent Solids: 71.5

Collection Date/Time: 10/26/10 11:00
Receipt Date/Time: 10/28/10 12:15

Solids

Parameter	Result	LOQ/CL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	71.5		%	1	SPT8279		

Batch Information

Analytical Batch: SPT8279
Analytical Method: SM20 2540G
Analysis Date/Time: 10/29/10 18:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1105811001-A
Analyst: SHA

Client Sample ID: **17376-TP4S1**
SGS Ref. #: 1105811002
Project ID: 32-1-17376 Larsen Bay
Matrix: Soil/Solid (dry weight)
Percent Solids: 53.8

Collection Date/Time: 10/26/10 11:15
Receipt Date/Time: 10/28/10 12:15

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	73000		4370	mg/Kg	50	XFC9623	XXX24022	
Residual Range Organics	1800		87.3	mg/Kg	1	XFC9621	XXX24022	
5a Androstane <surr>	0	*	50-150	%	50	XFC9623	XXX24022	
n-Triacontane-d62 <surr>	69.9		50-150	%	1	XFC9621	XXX24022	

Batch Information

Analytical Batch: XFC9621
Analytical Method: AK103
Analysis Date/Time: 11/01/10 21:40
Dilution Factor: 1
Prep Batch: XXX24022
Prep Method: SW3550C
Prep Date/Time: 11/01/10 10:15
Initial Prep Wt./Vol.: 30.021 g
Prep Extract Vol.: 2.35 mL
Container ID:1105811002-A
Analyst: LCE

Analytical Batch: XFC9623
Analytical Method: AK102
Analysis Date/Time: 11/02/10 14:35
Dilution Factor: 50
Prep Batch: XXX24022
Prep Method: SW3550C
Prep Date/Time: 11/01/10 10:15
Initial Prep Wt./Vol.: 30.021 g
Prep Extract Vol.: 2.35 mL
Container ID:1105811002-A
Analyst: HM

Client Sample ID: **17376-TP4S1**
SGS Ref. #: 1105811002
Project ID: 32-1-17376 Larsen Bay
Matrix: Soil/Solid (dry weight)
Percent Solids: 53.8

Collection Date/Time: 10/26/10 11:15
Receipt Date/Time: 10/28/10 12:15

Polychlorinated Biphenyls

Parameter	Result	LOQ/CL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Aroclor-1016	ND	91.3	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1221	ND	91.3	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1232	ND	91.3	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1242	ND	91.3	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1248	ND	91.3	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1254	ND	91.3	ug/Kg	1	XGC7256	XXX24016	
Aroclor-1260	ND	91.3	ug/Kg	1	XGC7256	XXX24016	
Decachlorobiphenyl <surr>	73.2	60-125	%	1	XGC7256	XXX24016	

Batch Information

Analytical Batch: XGC7256
Analytical Method: SW8082A
Analysis Date/Time: 10/31/10 18:48
Dilution Factor: 1

Prep Batch: XXX24016
Prep Method: SW3550C
Prep Date/Time: 10/29/10 14:45

Initial Prep Wt./Vol.: 22.916 g
Prep Extract Vol.: 5 mL
Container ID:1105811002-A
Analyst: RTS

Client Sample ID: **17376-TP4S1**
SGS Ref. #: 1105811002
Project ID: 32-1-17376 Larsen Bay
Matrix: Soil/Solid (dry weight)
Percent Solids: 53.8

Collection Date/Time: 10/26/10 11:15
Receipt Date/Time: 10/28/10 12:15

Solids

Parameter	Result	LOQ/CL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	53.8		%	1	SPT8279		

Batch Information

Analytical Batch: SPT8279
Analytical Method: SM20 2540G
Analysis Date/Time: 10/29/10 18:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1105811002-A
Analyst: SHA

SGS Ref.#	1000912	Method Blank	**Printed Date/Time**		01/13/2011 18:18
Client Name	Shannon & Wilson, Inc.		**Prep**	**Batch**	XXX24016
Project Name/#	32-1-17376 Larsen Bay			**Method**	SW3550C
Matrix	Soil/Solid (dry weight)			**Date**	10/29/2010

QC results affect the following production samples:

1105811001, 1105811002

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Polychlorinated Biphenyls					
Aroclor-1016	ND	50.0	15.0	ug/Kg	10/31/10
Aroclor-1221	ND	50.0	15.0	ug/Kg	10/31/10
Aroclor-1232	ND	50.0	15.0	ug/Kg	10/31/10
Aroclor-1242	ND	50.0	15.0	ug/Kg	10/31/10
Aroclor-1248	ND	50.0	15.0	ug/Kg	10/31/10
Aroclor-1254	ND	50.0	15.0	ug/Kg	10/31/10
Aroclor-1260	ND	50.0	15.0	ug/Kg	10/31/10
Surrogates					
Decachlorobiphenyl <surr>	125	60-125		%	10/31/10
Batch	XGC7256				
Method	SW8082A				
Instrument	HP 6890 Series II ECD SV H F				

SGS Ref.#	1001083	Method Blank	**Printed Date/Time**	01/13/2011 18:18
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	XXX24022
Project Name/#	32-1-17376 Larsen Bay		**Method**	SW3550C
Matrix	Soil/Solid (dry weight)		**Date**	11/01/2010

QC results affect the following production samples:

1105811001, 1105811002

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	ND	20.0	6.20	mg/Kg	11/01/10
Surrogates					
5a Androstane <surr>	72.1	60-120		%	11/01/10
Batch XFC9620					
Method AK102					
Instrument HP 7890A FID SV E F					
Residual Range Organics	ND	20.0	6.20	mg/Kg	11/01/10
Surrogates					
n-Triacontane-d62 <surr>	93	60-120		%	11/01/10
Batch XFC9620					
Method AK103					
Instrument HP 7890A FID SV E F					

SGS Ref.#	1001086	Method Blank	**Printed Date/Time**	01/13/2011 18:18
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	
Project Name/#	32-1-17376 Larsen Bay		**Method**	
Matrix	Soil/Solid (dry weight)		**Date**	

QC results affect the following production samples:

1105811001, 1105811002

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Solids					
Total Solids	100			%	10/29/10
Batch SPT8279					
Method SM20 2540G					
Instrument					

SGS Ref.#	1001087 Duplicate	**Printed Date/Time**	01/13/2011 18:18
Client Name	Shannon & Wilson, Inc.	**Prep Batch**	
Project Name/#	32-1-17376 Larsen Bay	**Method**	
Original	1106878008	**Date**	
Matrix	Soil/Solid (dry weight)		

QC results affect the following production samples:

1105811001, 1105811002

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
Solids						
Total Solids	90.4	88.9	%	2	(< 15)	10/29/2010
Batch SPT8279						
Method SM20 2540G						
Instrument						

SGS Ref.#	1000913 Lab Control Sample	**Printed Date/Time**	01/13/2011 18:18
		Prep Batch	XXX24016
Client Name	Shannon & Wilson, Inc.	**Method**	SW3550C
Project Name/#	32-1-17376 Larsen Bay	**Date**	10/29/2010
Matrix	Soil/Solid (dry weight)		

QC results affect the following production samples:

1105811001, 1105811002

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polychlorinated Biphenyls								
Aroclor-1016	LCS	230	103	(58-122)			222 ug/Kg	10/31/2010
Aroclor-1260	LCS	240	108	(61-130)			222 ug/Kg	10/31/2010
Surrogates								
Decachlorobiphenyl <surr>	LCS		107	(60-125)				10/31/2010

Batch	XGC7256
Method	SW8082A
Instrument	HP 6890 Series II ECD SV H F

SGS Ref.#	1001084	Lab Control Sample	**Printed Date/Time**	01/13/2011	18:18
	1001085	Lab Control Sample Duplicate	**Prep Batch**	XXX24022	
Client Name	Shannon & Wilson, Inc.		**Method**	SW3550C	
Project Name/#	32-1-17376 Larsen Bay		**Date**	11/01/2010	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1105811001, 1105811002

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	155	93	(75-125)			167 mg/Kg	11/01/2010
	LCSD	152	91		2	(< 20)	167 mg/Kg	11/01/2010
Surrogates								
5a Androstane <surr>	LCS		88	(60-120)				11/01/2010
	LCSD		91		3			11/01/2010
Batch XFC9620 **Method** AK102 **Instrument** HP 7890A FID SV E F								
Residual Range Organics	LCS	156	94	(60-120)			167 mg/Kg	11/01/2010
	LCSD	157	94		1	(< 20)	167 mg/Kg	11/01/2010
Surrogates								
n-Triacontane-d62 <surr>	LCS		95	(60-120)				11/01/2010
	LCSD		95		1			11/01/2010
Batch XFC9620 **Method** AK103 **Instrument** HP 7890A FID SV E F								

SGS Ref.#	1105835002	Billable Matrix Spike	**Printed Date/Time**		01/13/2011 18:18
	1105835003	Billable Matrix Spike Dup.	**Prep**	**Batch**	XXX24016
				Method	Sonication Extraction Soil SW8
				Date	10/29/2010
Original	1105835001				
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1105811001, 1105811002

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polychlorinated Biphenyls									
Aroclor-1016	BMS	ND	234	96	(58-122)			245 ug/Kg	10/31/2010
	BMSD		205	84		14	(< 30)	244 ug/Kg	10/31/2010
Aroclor-1260	BMS	23.2J	219	80	(61-130)			245 ug/Kg	10/31/2010
	BMSD		215	79		1	(< 30)	244 ug/Kg	10/31/2010
Surrogates									
Decachlorobiphenyl <surr>	BMS		234	96	(60-125)				10/31/2010
	BMSD		215	88		8			10/31/2010

Batch	XGC7256
Method	SW8082A
Instrument	HP 6890 Series II ECD SV H F

1105811

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Laboratory SGS

Attn: Jennifer

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Seattle, WA 98103
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2055 Hill Road
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1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	DRO/RRO AK102/103 1x4oz	PCBs - SW8082 1x4oz					Total Number of Containers	Remarks/Matrix
17376 - TP351	(1) A	11:00	10/26/10		X	X	X					1	Soil
17376 - TP451	(2) A	11:15	10/26/10		X	X	X					1	Soil

Project Information	Sample Receipt
Project Number: 32-1-17376	Total Number of Containers
Project Name: Lasen Bay PACP	COC Seals/Intact? Y/N/NA
Contact: Randy Hessong/Hayden	Received Good Cond./Cold
Ongoing Project? Yes ☐ No ☒	Delivery Method:
Sampler: Randy Hessong	(attach shipping bill, if any)

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	ADEC Level II Deliverables.

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 12:15	Signature: Time:	Signature: Time:
Printed Name: Randy Hessong Date: 10/28/10	Printed Name: Date:	Printed Name: Date:
Company: S&W	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 12:15
Printed Name: Date:	Printed Name: Date:	Printed Name: Joe Rud. Date: 10/28/10
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

203 TB = 1.4

No. 27750

SGS

1105811

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No (N/A) (Yes) No N/A	
Temperature blank compliant* (i.e., 0-6°C after correction factor)? * *Note: Exemption permitted for chilled samples collected less than 8 hours ago.* Cooler ID: 1 @ 1.4 w/ Therm.ID: 203 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ *Note: If non-compliant, use form FS-0029 to document affected samples/analyses.* If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled." **If temperature(s) <0°C, were all sample containers ice free?**	(Yes) No N/A Yes No (N/A)	
Delivery method (specify all that apply): (Client) USPS Alert Courier Road Runner AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other:	Note airbill/tracking # See Attached or (N/A)	
→ For samples received with payment, note amount ($) and cash / check / CC (circle one).		(N/A)
→ For samples received in FBKS, ANCH staff will verify all criteria are reviewed.	SRF Initiated by:	(N/A)
Do samples **match COC*** (i.e., sample IDs, dates/times collected)? * *Note: Exemption permitted if collection times differ by less than an hour; in which case, the times on the COC will be used.* Are analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A	
Were samples in **good condition** (no leaks/cracks/~~breakage~~)? Packing material used (specify all that apply): (Bubble Wrap) Separate plastic bags Vermiculite Other:	(Yes) No N/A	
Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB? Were the bottles provided by SGS? (Note apparent exceptions.)	Yes No (N/A) Yes No (N/A)	
Were **proper containers** (type/mass/volume/preservative*) used? * *Note: Exemption permitted for waters to be analyzed for metals.* Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(Yes) No N/A Yes No (N/A)	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)? *Refer to attached bottle sheet (form F066) for documentation.*	Yes No (N/A) Yes No (N/A)	
For **RUSH** or **SHORT HOLD TIME** samples, were the COC & this SRF flagged, bottles flagged (e.g., stickers) and lab notified?	Yes No (N/A)	
For client requested, **site-specific QC** (e.g., MS/MSD/DUP), were bottles flagged (e.g., stickers) and numbered accordingly?	Yes No (N/A)	
For **special handling** (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	(Yes) No N/A JJR	
Was the WO# recorded in Front Counter/Sample Receiving log? **For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?**	(Yes) No N/A Yes No N/A	SRF Completed by: JJR Bottle Sheet by: JJR PM = N/A
Was **PEER REVIEW** of sample numbering completed (i.e., compare WO# on containers to COC, container ID on containers to COC, unique lab ID on each container?)	(Yes) No N/A	Peer Reviewed by: KP Metrics: 13:19
Additional ~~n~~otes (if applicable):		

WO# (7 digits)	Sample # - Sample #	Container ID - Container ID	Matrix	QC	Preservative (CHECKED)	TEST GROUP	PRINT LABELS	Notes: ANOMALIES - *e.g., preservative added* or SPECIAL HANDLING - *e.g., Multi-Incremental (MI), Field Filter (FF), Lab Filter (LF), use "same jar as" (SJA) for QC, 2xMeOH, bubbles, etc.*
SAMPLE ID			TYPE		CONTAINERS	ANALYSIS		Type comments below:
1105811	001 - 002	A - A	2 Soil		N/A	S_Weigh_Out		

1105811

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Larsen Bay Old School Property Assessment and Cleanup Plan
Date: April 2011

Laboratory Report Date: January 13, 2011

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Randy Hessong
Title: Engineer IV

Laboratory Name: SGS Environmental Services, Inc.
Work Order Number: 1105811

ADEC File Number: 2606.57.001
ADEC Hazard ID: 25511
(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes / No / *NA* (Please explain.)**
Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS-approved?
Yes / No / *NA* (Please explain.)
Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?
Yes / No / *NA* (Please explain.)
Comments**:**

b. Correct analyses requested? **Yes / No / *NA* (Please explain.)**
Comments**:**

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
Yes / No / *NA* (Please explain.)
Comments: *Temperature blank temperature measured as 1.4°C.*

b. Sample preservation acceptable - acidified waters, Methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes / No / *NA* (Please explain.)**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No / *NA* (Please explain.)**
Comments: *Sample receipt form notes samples were received in good condition.*

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? **Yes / No / *NA* (Please explain.)**
Comments: *No discrepancies noted.*

e. Data quality or usability affected? **(Please Explain.)**
Comments: *A sample temperature of 1.4°C does not affect the results.*

4. Case Narrative

a. Present and understandable? **Yes / No / *NA* (Please explain.)**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? **Yes / No / *NA* (Please explain.)**
Comments: *See Section 6.c. for surrogate discrepancies.*

c. Were corrective actions documented? **Yes / No / *NA* (Please explain.)**
Comments: *Corrections to the project title and sample IDs are noted.*

d. What is the effect on data quality/usability, according to the case narrative?
Comments: *None noted.*

5. Sample Results

a. Correct analyses performed/reported as requested on COC? **Yes / No / *NA* (Please explain.)**
Comments:

b. All applicable holding times met? **Yes / No / *NA* (Please explain.)**
Comments:

c. All soils reported on a dry-weight basis? **Yes / No / *NA* (Please explain.)**
Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project? **Yes / No / *NA* (Please explain.)**
Comments: *The LOQs for undetected analytes are less than the cleanup levels.*

e. Data quality or usability affected? **Yes / No / *NA* (Please explain.)**
Comments: *No discrepancies.*

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis, and 20 samples?
Yes / No / *NA* (Please explain.)
Comments:

ii. All method blank results less than PQL? **Yes / No / *NA* (Please explain.)**
Comments:

iii. If above PQL, what samples are affected? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? **Yes / No / *NA* (Please explain.)**
Comments:

If so, are the data flags clearly defined? **Yes / No / *NA* (Please explain.)**
Comments:

v. Data quality or usability affected? **Yes / No / *NA* (Please explain.)**
Comments: *No discrepancies.*

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846) **Yes / No / *NA* (Please explain.)**
Comments: *No LCSD for SW846 8082;, an MS/MSD was included instead.*

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes / No / *NA* (Please explain.)**
Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) **Yes / No / *NA* (Please explain.)**
Comments:

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from

LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No / *NA* (Please explain.)**
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected? **NA**
Comments:

vi. Do the affected samples(s) have data flags? **Yes / No / *NA* (Please explain.)**
Comments:

If so, are the data flags clearly defined? **Yes / No / *NA* (Please explain.)**
Comments:

vii. Data quality or usability affected? **Yes / No / *NA* (Please explain.)**
Comments: *No discrepancies.*

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? **Yes / No / *NA* (Please explain.)**
Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes / No / *NA* (Please explain.)**
Comments: *The DRO and RRO surrogates for Sample TP3S1 and the DRO surrogate for TP4S1 are less than the DQOs.*

iii. Do the sample results with failed surrogate recoveries have data flags? **Yes / No / *NA* (Please explain.)**
Comments:

If so, are the data flags clearly defined? **Yes / No / *NA* (Please explain.)**
Comments:

iv. Data quality or usability affected? Explain.
Comments: *The case narrative notes that the surrogates were diluted out. Accuracy is considered acceptable because the LCS and LCSD results and surrogates meet QC criteria.*

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.) Water and Soil

i. One trip blank reported per matrix, analysis and cooler? **Yes / No / *NA* (Please explain.)**

Comments: *Volatile analyses were not requested.*

ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes / No / *NA* (Please explain if NA or no.)**

iii. All results less than PQL? **Yes / No / *NA* (Please explain.)**
Comments:

iv. If above PQL, what samples are affected? ***NA***
Comments**:**

v. Data quality or usability affected? **Yes / No / *NA* (Please explain.)**
Comments: *Trip blanks are not applicable.*

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No / *NA* (Please explain.)
Comments: *Laboratory analyses were not scoped for this project. Two laboratory-provided containers were available in the field. Field duplicates not collected*

ii. Were the field duplicates submitted blind to the lab? **Yes / No / *NA* (Please explain.)**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: 30% for water, 50% for soil) **Yes / No / *NA* (Please explain.)**
Comments:

iv. Data quality or usability affected? **Yes / No / *NA* (Please explain.)**
Comments: *The results are considered informational for this project, and the internal laboratory duplicates meet criteria, so the usability of the data is unlikely to be affected.*

f. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below)
NA **/ Yes / No**
Comments: *Clean stainless steel spoons were used to collect each sample, decontamination was not performed in the field, and equipment blanks were not scoped for the project.*

i. All results less than PQL? **Yes / No / *NA* (Please explain.)**
Comments:

ii. If results are above PQL, what samples are affected? ***NA***
Comments:

iii. Data quality or usability affected? **Yes / No / *NA* (Please explain.)**
Comments: *PCBs were not detected, and the magnitude of the DRO results are unlikely to be affected by potential residual contamination.*

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? **Yes / No / *NA* (Please explain.)**
Comments: *Data flags/qualifiers not applied to results.*

APPENDIX I

WHITE ENVIRONMENTAL CONSULTANTS
HAZARDOUS MATERIAL INSPECTION REPORT

WHITE ENVIRONMENTAL CONSULTANTS INC.

Hazardous Material Inspection Report

Larsen Bay Old School
HAZID 25511
Larsen Bay, Alaska

Prepared for
Shannon & Wilson, Inc.
5430 Fairbanks Street, Suite 3
Anchorage, AK 99518

Prepared by
White Environmental Consultants Inc.
731 I Street, Suite 203
Anchorage, Alaska 99501

November 15, 2010

TABLE OF CONTENTS Hazardous Material Inspection Report

1 Scope of Work

On November 2, 2010 White Environmental Consultants Inc. (WEC) performed a hazardous material inspection of the Larsen Bay Old School located in Larsen Bay, AK.

The purpose of this survey is to provide Shannon & Wilson, our Client, with professional guidance from which they may fulfill all relevant environmental and worker health and safety obligations through compliance with applicable Environmental Protection Agency (EPA), Alaska Department of Environmental Conservation (ADEC), and the Federal Occupational Safety and Health Administration (OSHA) and the Alaska's Department of Occupational Safety and Health (AKOSH) during demolition activities conducted at the aforementioned property.

The interior and exterior of the school was inspected and/or sampled for asbestos containing materials (ACM) and suspected lead-containing paint (LCP) to determine specific renovation and disposal activities required if these materials are present. Fluorescent light ballasts were visually inspected for PCB containing ballast and a lead TCLP sample was collected to determine disposal requirements with regard to lead containing painted materials.

WEC collected 20 samples consisting of 27 layers of suspected asbestos containing materials (ACM). Suspect materials identified and sampled include:

- Cove Base Mastic
- Joint Compound
- Drywall
- HVAC Tape
- Gasket
- Wanes Coat Mastic
- Ceiling Tile
- Floor Tile
- Floor Mastics
- Window Glazing
- Cement Board

WEC collected 7 samples of suspect lead containing paints from the school. The purpose of the paint sampling was to characterize suspect paints to determine the need, if any, of lead compliance measures during the demolition process.

2 Inspection Findings and Compliance Recommendations

2.1 Asbestos-Containing Materials (ACM)

WEC personnel collected 20 samples for a total of 27 discrete layers of suspected asbestos containing building materials from the Larsen Bay Old School. Of the 27 sample layers collected, 14 were found to contain asbestos. A summary of the materials containing asbestos is shown below and is described as positive along with the percentage of asbestos contained in the product.

TABLE 1: ASBESTOS-CONTAINING MATERIALS

SAMPLE ID#	MATERIAL	LOCATION	ASBESTOS CONTENT
175-01b	Floor Tile Mastic	West Classroom	7%
175-03	Cement Board	Exterior, South Side of Building, at Ground Level	35%
175-05	Joint Compound	West Bathroom	3%
175-07	Joint Compound	East Bathroom	3%
175-09a	Floor Tile	East Bathroom	3%
175-09b	Floor Tile Mastic	East Bathroom	6%
175-10	Window Glazing	North Side of West Classroom	5%
175-11	Joint Compound	Mechanical Room	3%
175-13	Gasket	Mechanical Room at Furnace	60%
175-14	Window Glazing	East Classroom	5%
175-15a	Floor Tile	East Classroom	3%
175-15b	Floor Tile Mastic	East Classroom	8%
175-17a	Floor Tile	Library	4%
175-19	Cement Board	Exterior, North Side of Building, at Ground Level	35%

Asbestos Summary and Compliance Recommendations

Joint Compound:

Four samples of joint compound were taken from the old school. Of these samples, three were found to contain asbestos. Asbestos containing joint compound was found to be present in both the east and west bathrooms and the mechanical room. Joint compound in wall systems is considered to be a non-friable Category II asbestos containing material by the Environmental Protection Agency, and subject to Class II removal procedures as described by the Occupational Safety and Health Administration (OSHA) in 29 CFR.1910.1011. Any disturbance of gypsum wallboard in the building should only be performed by state of Alaska certified asbestos abatement personnel. EPA regulations allow the asbestos containing joint compound to remain in place during demolition of the building however, state certified asbestos workers will still be required to perform all demolition activities and the entire waste stream must be disposed of as asbestos containing waste.

Floor Tile / Floor Tile Mastic:

Asbestos containing floor tile and mastic was found to be present throughout the old school. Floor tile and floor tile mastic are considered to be a non-friable Category II asbestos containing material by the Environmental Protection Agency. Any disturbance of floor tile and floor tile mastic in the school should only be performed by state of Alaska certified asbestos abatement personnel. EPA regulations allow the asbestos containing floor tile and mastic to remain in place during demolition of the building however, state certified asbestos workers will still be required to perform all demolition activities and the entire waste stream must be disposed of as asbestos containing waste.

Cement Board:

Two samples of cement board were collected from the old school; both samples were found to contain asbestos in quantities greater than one percent. The cement board panels are present on the exterior of the building at the base; the panels were used as skirting. Cement board is considered to be a non-friable Category II asbestos containing material by the Environmental Protection Agency (EPA) Any disturbance of the cement board including chipping, drilling, or removal, should only be performed by state of Alaska certified asbestos abatement personnel. Given the probability of the cement board being rendered friable during mechanical demolition activities, WEC recommends that the cement board be removed by state of Alaska certified asbestos abatement personnel prior to demolition of the building.

Window Glaze:

Two samples of window glazing were collected from the old school and found to contain asbestos in quantities greater than one percent. The window glazing is present on all exterior windows of the building. Window glazing is considered to be a non-friable Category II asbestos containing material by the Environmental Protection Agency. EPA regulations allow the asbestos containing window glazing to remain in place during demolition of the building, however, state certified asbestos workers will still be required to perform all demolition activities and the entire waste stream must be disposed of as asbestos containing waste.

Gasket:

One sample of gasket material was collected from the furnace in the old school and found to contain asbestos in quantities greater than one percent. Gaskets are considered a non-friable Category II asbestos containing material by the Environmental Protection Agency. EPA regulations allow the asbestos containing gaskets to remain in place during demolition of the building, however, state certified asbestos workers will still be required to perform all demolition activities and the entire waste stream must be disposed of as asbestos containing waste. Given the age of the building any gasket found on site should be considered asbestos containing material.

Regulatory Authority

EPA 40 CFR 61 Subpart M National Emission Standard for Asbestos requires the removal of regulated asbestos containing materials prior to the renovation or demolition of a building.

OSHA 29 CFR 1926.1101 requires specific worker training and removal methods for all asbestos disturbances in renovation and demolition procedures.

2.2 Paint

WEC personnel collected 7 samples of suspected lead containing painted surfaces from the interior and exterior of the Larsen Bay Old School. Samples were analyzed by EPA Method SW846 – 7420. A summary of the materials paint analyses is shown below.

Client Sample ID #	Sampling Location Substrate	Results, parts per million (ppm) Total Lead	Limit of Detection, parts per million (ppm) Total Lead
175P-01	Exterior - Siding	1,600	44
175P-02	Exterior - Trim	17,000	44
175P-03	West Classroom - Wall	17,000	42
175P-04	West Bathroom - Wall	490	35
175P-05	Mechanical Room - Wall	490	52
175P-06	Library - Wall	<49	49
175P-07	West Classroom – Window Sill	390	40

The HUD/EPA term "lead-based paint" addresses the layers of paint on an applicable surface having lead equal to or greater than 1.0 mg/cm^2 or 5,000 parts per million. The EPA does not indicate any safe levels of lead on painted components of a waste stream and requires a Toxicicity Characteristic Leachate Procedure (TCLP) test to be performed on the waste stream to determine disposal requirements.

The OSHA Lead-in-Construction standard (29 CFR 1926.62) applies to all construction work where an employee may be occupationally exposed to *any detectable level* of lead, including demolition or salvage of structures where lead or materials containing lead are present. Based on these results OSHA lead compliance measures need to be implemented for the disturbance of lead containing paints related to the demolition of the residence. WEC also collected a lead Toxicicity Characteristic Leachate Procedure (TCLP) sample from the building which was found to be below the regulatory limit for disposal purposes only. Lead compliance measures will need to be implemented during demolition and asbestos containing materials are present.

Compliance Recommendations: Lead-based/containing paint disturbance

OSHA 29 CFR 1926.62 "Lead in Construction" has specific requirements when working in the presence of lead and where there is a potential for employee exposure to airborne lead.

1. Employee training
2. Employee exposure assessments
3. Lead compliance plan

2.3 PCB Ballasts and Mercury Thermostats

During the course of the visual inspection no mercury thermostat switches were found in the Larsen Bay Old School. Suspect PCB ballasts were found to be present in the Larsen Bay Old School. The fluorescent light fixtures are located throughout the old school, there are 21 fixtures present. Given the age of the lighting system present in the building all fluorescent light fixtures should be visually inspected for the presence of PCB ballasts prior to disposal. Any PCB ballast discovered will need to be removed from the building prior to demolition and be properly disposed of in accordance to local, state, and federal regulations. Prior to removal and disposal of any fluorescent light bulbs from the building a Mercury Toxicicity Characteristic Leachate Procedure (TCLP) test should be performed on the waste stream to determine disposal requirements.

Limitations:

This report is only representative of the sampling performed at the Larsen Bay Old School located in Larsen Bay, AK.

Other suspect materials discovered during renovation or demolition not covered in this survey should be assumed to contain asbestos and treated as such until further sampling shows materials do not contain asbestos.

Asbestos-containing materials may exist in areas not accessible at the time of inspection.

3 Laboratory Results / Field Collection Notes

WHITE ENVIRONMENTAL CONSULTANTS INC.
731 I St., Suite 203, Anchorage, AK 99501- (907) 258-8661
FAX: (907) 258-8662

NVLAP® Lab Code: 200124-0

Bulk Sample Analysis for Asbestos

WEC Project #: 10CSLT-175
Client Project#:

Report #: 77294
Report By: L.White
Report Date: 11/9/2010

Client: **Shannon & Wilson**
5430 Fairbanks St Suite 3
Anchorage, AK 99518

 # Samples: 20 **# Layers:** 27

Project Name/Location: Larsen Bay Old School

Collection Date: 11/2/2010
Collection By: T.Hubbard
TAT: 48 Hour
Analysis By: D.Milton
Analysis Date: 11/5/2010
Received By: D.Milton
Received Date: 11/5/2010

Client ID#	WEC ID#	Location	Material	Layer
175-01	AB10-9808A	West Classroom	Floor Tile	1 of 2

ASBESTOS

None Detected

Other Fibrous Materials

% Non-Fibrous Materials: 100%

Homogenous	Color
No	Off-White

None Detected

Client ID#	WEC ID#	Location	Material	Layer
175-01	AB10-9808B	West Classroom	Floor Tile Mastic	2 of 2

ASBESTOS

Chrysotile 7%

% Asbestos: 7%

% Non-Fibrous Materials: 93%

Other Fibrous Materials

Homogenous	Color
No	Black

None Detected

Client ID#	WEC ID#	Location	Material	Layer
175-02	AB10-9809	West Classroom	Ceiling Tile	1 of 1

ASBESTOS

None Detected

% Other Fibrous Materials: 75%

% Non-Fibrous Materials: 25%

Other Fibrous Materials

Cellulose 75%

Homogenous	Color
No	Off-White

Client ID#	WEC ID#	Location	Material	Layer
175-03	AB10-9810	Exterior South Side At Foundation	CAB	1 of 1

ASBESTOS

Chrysotile 35%

% Asbestos: 35%

% Non-Fibrous Materials: 65%

Other Fibrous Materials

None Detected

Homogenous	Color
No	Gray

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NVLAP®
Lab Code: 200124-0

Bulk Sample Analysis for Asbestos

WEC Project #: 10CSLT-175
Client Project#:

Report #: 77294
Report By: L.White
Report Date: 11/9/2010

Client ID#	WEC ID#	Location	Material	Layer
175-04	AB10-9811	West Classroom	Covebase Mastic	1 of 1

ASBESTOS

None Detected

Other Fibrous Materials

Cellulose	<1%

% Other Fibrous Materials: <1%
% Non-Fibrous Materials: 100%

Homogenous No
Color Brown

Client ID#	WEC ID#	Location	Material	Layer
175-05	AB10-9812A	West Bathroom	Wall Board	1 of 2

ASBESTOS

None Detected

Other Fibrous Materials

Cellulose	5%
Fiberous Glass	4%

% Other Fibrous Materials: 9%
% Non-Fibrous Materials: 91%

Homogenous No
Color Off-White

Client ID#	WEC ID#	Location	Material	Layer
175-05	AB10-9812B	West Bathroom	Joint Comp	2 of 2

ASBESTOS

Chrysotile	3%

Other Fibrous Materials

None Detected

% Asbestos: 3%
% Non-Fibrous Materials: 97%

Homogenous No
Color Off-White

Client ID#	WEC ID#	Location	Material	Layer
175-06	AB10-9813	West Bathroom	Wanescot Mastic	1 of 1

ASBESTOS

None Detected

Other Fibrous Materials

None Detected

% Non-Fibrous Materials: 100%

Homogenous No
Color Black

Client ID#	WEC ID#	Location	Material	Layer
175-07	AB10-9814A	East Bathroom	Joint Comp	1 of 2

ASBESTOS

Chrysotile	3%

Other Fibrous Materials

None Detected

% Asbestos: 3%
% Non-Fibrous Materials: 97%

Homogenous No
Color Off-White

WHITE ENVIRONMENTAL CONSULTANTS INC.
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(907) 258-8661
FAX: (907) 258-8662

NVLAP®
Lab Code: 200124-0

Bulk Sample Analysis for Asbestos

WEC Project #: 10CSLT-175
Client Project#:

Report #: 77294
Report By: L.White
Report Date: 11/9/2010

Client ID#	WEC ID#	Location	Material	Layer
175-07	AB10-9814B	East Bathroom	Joint Comp	2 of 2

ASBESTOS
Chrysotile 3%

% Asbestos: 3%

% Non-Fibrous Materials: 97%

Other Fibrous Materials
None Detected

Homogenous No
Color Off-White

Client ID#	WEC ID#	Location	Material	Layer
175-08	AB10-9815	East Bathroom	Wainescot Mastic	1 of 1

ASBESTOS
None Detected

% Non-Fibrous Materials: 100%

Other Fibrous Materials
None Detected

Homogenous No
Color Black

Client ID#	WEC ID#	Location	Material	Layer
175-09	AB10-9816A	East Bathroom	Floor Tile	1 of 2

ASBESTOS
Chrysotile 3%

% Asbestos: 3%

% Non-Fibrous Materials: 97%

Other Fibrous Materials
None Detected

Homogenous No
Color Tan

Client ID#	WEC ID#	Location	Material	Layer
175-09	AB10-9816B	East Bathroom	Floor Tile Mastic	2 of 2

ASBESTOS
Chrysotile 6%

% Asbestos: 6%

% Non-Fibrous Materials: 94%

Other Fibrous Materials
None Detected

Homogenous No
Color Black

Client ID#	WEC ID#	Location	Material	Layer
175-10	AB10-9817	North Side Of West Classroom	Window Glaze	1 of 1

ASBESTOS
Chrysotile 5%

% Asbestos: 5%

% Non-Fibrous Materials: 95%

Other Fibrous Materials
None Detected

Homogenous No
Color Gray

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Lab Code: 200124-0

Bulk Sample Analysis for Asbestos

WEC Project #: 10CSLT-175
Client Project#:

Report #: 77294
Report By: L.White
Report Date: 11/9/2010

Client ID#	WEC ID#	Location	Material	Layer
175-11	AB10-9818A	Mech Room	Joint Comp	1 of 2

ASBESTOS
Chrysotile 3%

Other Fibrous Materials
None Detected

% Asbestos: 3%
% Non-Fibrous Materials: 97%

Homogenous No
Color Off-White

Client ID#	WEC ID#	Location	Material	Layer
175-11	AB10-9818B	Mech Room	Joint Comp	2 of 2

ASBESTOS
Chrysotile 3%

Other Fibrous Materials
None Detected

% Asbestos: 3%
% Non-Fibrous Materials: 97%

Homogenous No
Color Off-White

Client ID#	WEC ID#	Location	Material	Layer
175-12	AB10-9819	Mech Room At Furnace	HVAC Tape	1 of 1

ASBESTOS
None Detected

Other Fibrous Materials
Cellulose 40%

% Other Fibrous Materials: 40%
% Non-Fibrous Materials: 60%

Homogenous No
Color Off-White

Client ID#	WEC ID#	Location	Material	Layer
175-13	AB10-9820	Mech Room At Furnace	Gasket	1 of 1

ASBESTOS
Chrysotile 60%

Other Fibrous Materials
None Detected

% Asbestos: 60%
% Non-Fibrous Materials: 40%

Homogenous No
Color Brown

Client ID#	WEC ID#	Location	Material	Layer
175-14	AB10-9821	East Classroom	Window Glaze	1 of 1

ASBESTOS
Chrysotile 5%

Other Fibrous Materials
None Detected

% Asbestos: 5%
% Non-Fibrous Materials: 95%

Homogenous No
Color Gray

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Bulk Sample Analysis for Asbestos

WEC Project #: 10CSLT-175
Client Project#:

Report #: 77294
Report By: L.White
Report Date: 11/9/2010

Client ID#	WEC ID#	Location	Material	Layer
175-15	AB10-9822A	East Classroom	Floor Tile	1 of 2

ASBESTOS
Chrysotile 3%

% Asbestos: 3%

% Non-Fibrous Materials: 97%

Other Fibrous Materials
None Detected

Homogenous	Color
No	Tan

Client ID#	WEC ID#	Location	Material	Layer
175-15	AB10-9822B	East Classroom	Floor Tile Mastic	1 of 2

ASBESTOS
Chrysotile 8%

% Asbestos: 8%

% Non-Fibrous Materials: 92%

Other Fibrous Materials
None Detected

Homogenous	Color
No	Black

Client ID#	WEC ID#	Location	Material	Layer
175-16	AB10-9823	East Classroom	Cove Base Mastic	1 of 1

ASBESTOS
None Detected

% Non-Fibrous Materials: 100%

Other Fibrous Materials
None Detected

Homogenous	Color
No	Brown

Client ID#	WEC ID#	Location	Material	Layer
175-17	AB10-9824A	Library	Floor Tile	1 of 2

ASBESTOS
Chrysotile 4%

% Asbestos: 4%

% Non-Fibrous Materials: 96%

Other Fibrous Materials
None Detected

Homogenous	Color
No	Off-white/Brown

Client ID#	WEC ID#	Location	Material	Layer
175-17	AB10-9824B	Library	Floor Tile Mastic	2 of 2

ASBESTOS
None Detected

% Non-Fibrous Materials: 100%

Other Fibrous Materials
None Detected

Homogenous	Color
No	Yellow

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Lab Code: 200124-0

Bulk Sample Analysis for Asbestos

WEC Project #: 10CSLT-175
Client Project#:

Report #: 77294
Report By: L.White
Report Date: 11/9/2010

Client ID#	WEC ID#	Location	Material	Layer
175-18	AB10-9825A	Library	Joint Comp	1 of 2

ASBESTOS

None Detected

Other Fibrous Materials

% Non-Fibrous Materials: 100%

Homogenous: No
Color: Off-White

None Detected

Client ID#	WEC ID#	Location	Material	Layer
175-18	AB10-9825B	Library	Joint Comp	2 of 2

ASBESTOS

None Detected

Other Fibrous Materials

% Non-Fibrous Materials: 100%

Homogenous: No
Color: Off-White

None Detected

Client ID#	WEC ID#	Location	Material	Layer
175-19	AB10-9826	North Side Of Building At Foundation	CAB	1 of 1

ASBESTOS

Chrysotile	35%

% Asbestos: 35%

Other Fibrous Materials

% Non-Fibrous Materials: 65%

Homogenous: No
Color: Gray

None Detected

Milton Dave, Lab Analyst

Date 11/9/2010

Date 11/9/2010

Analysis performed by EPA Method 600/R-93/116. All quantities reported are based on visual estimation by PLM, unless point-counting method is requested and noted for the sample. Test report relates only to items tested and must not be used by client to claim product endorsement by NVLAP or any agency of the U.S. Government. Test reports must not be reproduced without the approval of WEC Inc., and are subject to WEC Inc. General Terms and Conditions (see reverse).

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PROJECT NAME Larsen Bay Old School
LOCATION Larsen Bay, AK PROJECT NO. 10CSLJ-175
CLIENT Shannon & Wilson Inc. DATE 11/02/2010
CLIENT PROJECT# SHEET NO. 1 OF 2

CHAIN OF CUSTODY RECORD – ANALYTICAL REQUEST

ANALYSIS REQUESTED (circle) PCM (PLM) TEM LEAD	TURNAROUND REQUESTED 48 Hour	NO. OF SAMPLES 19	COLLECTION DATE: 11/02/2010
RELINQUISHED BY:	DATE / TIME	SAMPLES RECEIVED BY	DATE / TIME
SHIPPING METHOD	COURIER (signature)	SAMPLES RECEIVED BY	DATE / TIME

COMMENTS
*PCB Ballasts present - 21 Fixtures

SAMPLE ID#	MATERIAL	LOCATION	COMMENTS
175-01	Floor Tile/Mastic	West Classroom	
175-02	Ceiling Tile	"	
175-03	Cement Board	Exterior, South side, At Foundation	
175-04	Cove base Mastic	West Classroom	
175-05	Joint Comp/ Drywall	West Bathroom	
175-06	Wainscot Mastic	"	
175-07	Joint Comp	East Bathroom	
175-08	Wainscot Mastic	"	
175-09	Floor Tile/Mastic	"	
175-10	Window Glazing	North Side of West Classroom	
175-11	Joint comp	Mech Room	
175-12	HVAC Tape	Mech Room at Furnace	
175-13	Gasket	"	
175-14	Window Glazing	East Classroom	
175-15	Floor Tile/Mastic	"	

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PROJECT NAME Larsen Bay Old School
LOCATION PROJECT NO. LBSCH-175
CLIENT DATE 11/02/2009
CLIENT PROJECT# SHEET NO. 2 OF 2

CHAIN OF CUSTODY RECORD – ANALYTICAL REQUEST

ANALYSIS REQUESTED (circle) PCM PLM TEM LEAD	TURNAROUND REQUESTED	NO. OF SAMPLES	COLLECTION DATE:
RELINQUISHED BY:	DATE / TIME	SAMPLES RECEIVED BY	DATE / TIME
SHIPPING METHOD	COURIER (signature)	SAMPLES RECEIVED BY	DATE / TIME

COMMENTS

SAMPLE ID#	MATERIAL	LOCATION	COMMENTS
175-16	Cove base Mastic	East Classroom	
175-17	Floor Tile/ Mastic	Library	
175-18	Joint Comp	"	
175-19	Cement Board	North side of Bldg at Foundation	

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Lead Analysis in Paint

WEC Project #: 10CSLT-175
Client Project#:

Report #: 77321
Report By: B.Waltuch
Report Date: 11/9/2010

Client: **Shannon & Wilson**
5430 Fairbanks St Suite 3
Anchorage, AK 99518

TAT: 48 Hour **# Samples:** 7

Collection By: T.Hubbard
Collection Date: 11/2/2010
Analysis By: J.Hicklin
Analysis Date: 11/9/2010
Received By: Hicklin
Received Date: 11/5/2010

Project /NameLocation: Larsen Bay Old School

Client ID #	WEC ID#	Result	Result Units	Reporting Limit
175P-01	AP10-2601	1,600	ppm	44
175P-02	AP10-2602	17,000	ppm	44
175P-03	AP10-2603	17,000	ppm	42
175P-04	AP10-2604	490	ppm	35
175P-05	AP10-2605	490	ppm	52
175P-06	AP10-2606	<49	ppm	49
175P-07	AP10-2607	390	ppm	40

Joel Hicklin, Lab Analyst — **Date** 11/9/2010

Date 11/9/2010

Analysis performed by flame atomic absorption spectroscopy, EPA Method SW846-7420. The Reporting Limit is twice that of the Method Detection Limit (MDL) which is the minimum concentration of analyte that can be reported with 99% confidence that the analyte's concentration is greater than zero, and is determined from statistical analysis of replicate samples in a given matrix containing the analyte as defined in 40CFR Part 136, Appendix B. Any modifications that have been made to the previously referenced test methods are documented in WEC Inc.'s Standard Operating Procedures Manual. Supporting Laboratory Documentation is available upon request. WEC is a current proficient participant in the AIHA ELPAT program (Lab ID# 102739). Test reports must not be reproduced without the approval of WEC Inc., and are subject to WEC Inc. General Terms and Conditions (see reverse).

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PROJECT NAME Larsen Bay Old School
LOCATION Larsen Bay, AK PROJECT NO. 10CSW-175
CLIENT Shannon & Wilson, Inc. DATE 11/2/2010
CLIENT PROJECT# SHEET NO. 1 OF 1

CHAIN OF CUSTODY RECORD – ANALYTICAL REQUEST

ANALYSIS REQUESTED (circle) PCM (PLM) TEM LEAD	TURNAROUND REQUESTED 48 Hour	NO. OF SAMPLES 7	COLLECTION DATE: 11/02/2010
RELINQUISHED BY:	DATE / TIME 11/02/2010	SAMPLES RECEIVED BY	DATE / TIME
SHIPPING METHOD	COURIER (signature)	SAMPLES RECEIVED BY	DATE / TIME

COMMENTS

SAMPLE ID#	MATERIAL	LOCATION	COMMENTS
175P-01	Paint	Exterior- Siding	Multi Layers
175P-02	"	Exterior- Trim	1
175P-03	"	West Classroom - Wall	
175P-04	"	West Bathroom- Wall	
175P-05	"	Mech Room - Wall	
175P-06	"	Library - Wall	
175P-07	"	West Classroom- Window	

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TCLP (Lead)

WEC Project #: 10CSLT-175
Client Project#:

Report #: 77320
Report By: B.Waltuch
Report Date: 11/9/2010

Client: **Shannon & Wilson**
5430 Fairbanks St Suite 3
Anchorage, AK 99518

Collection By: T.Hubbard
Collection Date: 11/2/2010
 # Samples: 1
Analysis By: J.Hicklin
Analysis Date: 11/9/2010
Received By: Hicklin
Received Date: 11/8/2010
TAT: 72 Hour

Project Name/Location Larsen Bay Old School

Client ID #	Lab ID #	Ext Fld by Ph test	Weight (g)	Ext Fld Vol (l)	mg/l Lead
175T-01	AT10-2609	1	100.0	2.000	<RL

Joel Hicklin, Lab Analyst — **Date** 11/9/2010

Date 11/9/2010

Reporting Limit is 0.40 milligrams per liter (mg/L). Analysis is performed by flame atomic absorption spectroscopy NIOSH 7082, preparation method SW846-1311. The Reporting Limit is twice that of the Method Detection Limit (MDL) which is the minimum concentration of analyte that can be reported with 99% confidence that the analyte's concentration is greater than zero, and is determined from statistical analysis of replicate samples in a given matrix containing the analyte as defined in 40CFR Part 136, Appendix B. Any modifications that have been made to the previously referenced test methods are documented in WEC Inc.'s Standard Operating Procedures Manual. Supporting Laboratory Documentation is available upon request. WEC is a current proficient participant in the AIHA ELPAT program (Lab ID# 102739). Test reports must not be reproduced without the approval of WEC Inc., and are subject to WEC Inc. General Terms and Conditions (see reverse).

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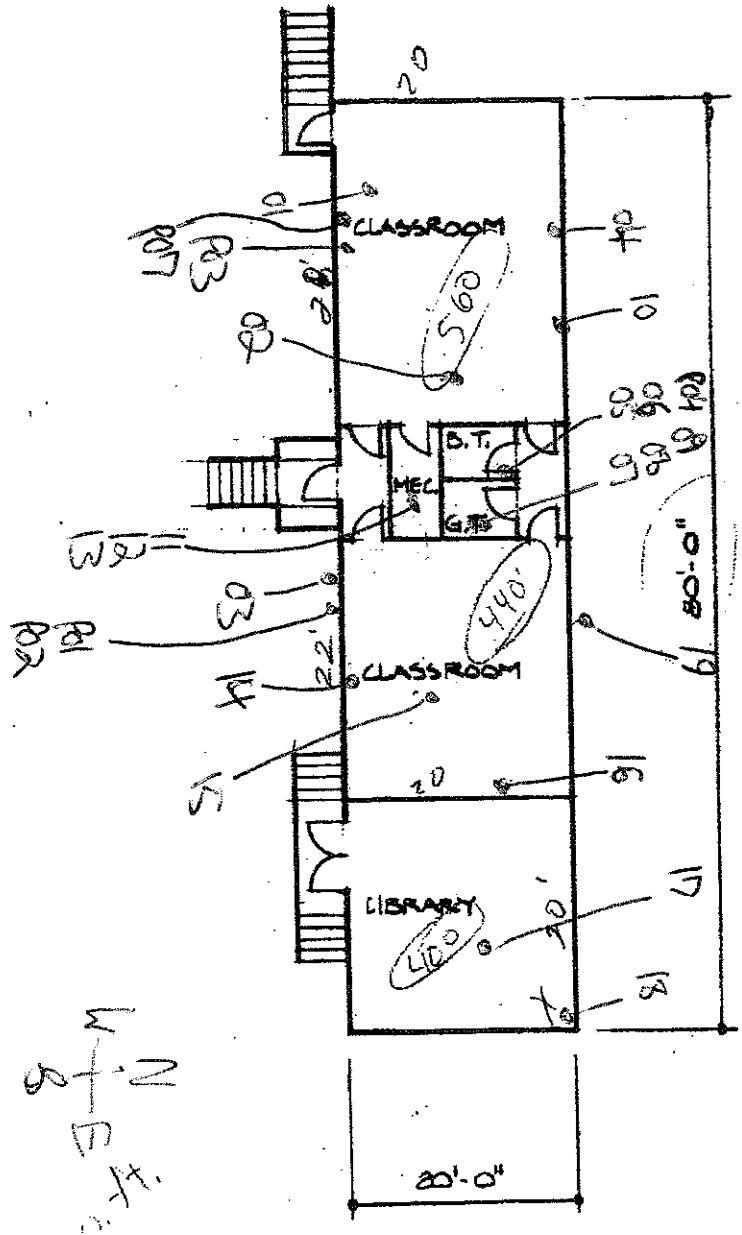
PROJECT NAME Larsen Bay Old School
LOCATION Larsen Bay, AK
PROJECT NO. 10GSLT-175 DATE 11/02/2010
CLIENT PROJECT # _____ SHEET NO. 1 OF 1

TCLP COLLECTION SHEET

ANALYSIS REQUESTED (circle)	TURNAROUND REQUESTED	SAMPLE ID #	COLLECTION DATE:
LEAD MERCURY OTHER	72 Hour	175T-01	11/02/2010
COLLECTED BY	DATE/TIME	SAMPLES RECIEVED BY	DATE/TIME
	11/02/2010		
SHIPPING METHOD	COURIER (signature)	SAMPLES RECIEVED BY	DATE/TIME

COMMENTS

COMPONENT #	MATERIAL	DESCRIPTION	LOCATION.	% OF WASTE STREAM
1	Wood	Framing & Most Interior Walls	Larsen Bay old School	50
2	Drywall	Some Interior Walls	Bathrooms, Library, Mech Room	15
3	Ceiling Tile	Interior	Classrooms	10
4	Floor Tile	Throughout	Throughout	10
5	Cement Board	Exterior Skirting	At exterior Skirting	15



ELEMENTARY SCHOOL
LARSEN BAY

NORTH

0 10 20 FT.

APPENDIX J

CONCEPTUAL SITE MODEL

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Larsen Bay Old School
File # 2606.57.001

Completed By: RandyHessong
Date Completed: 2/3/11

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

(3)
Check all exposure media identified in (2).

(4)
*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Current & Future Receptors

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion			C/F	F	C/F	I	
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil			C/F	F	C/F	I	
	☑ Migration to groundwater — check groundwater		☑ Inhalation of Fugitive Dust			C/F	F	C/F		
	☑ Volatilization — check air									
	☑ Runoff or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil	☑ groundwater	☑ Ingestion of Groundwater			F	F	F		C/F
	☑ Migration to groundwater — check groundwater		☑ Dermal Absorption of Contaminants in Groundwater			F	F	F		C/F
	☐ Volatilization — check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater — check groundwater	☑ air	☑ Inhalation of Outdoor Air			C/F	F	C/F		
	☐ Volatilization — check air		☐ Inhalation of Indoor Air							
	☑ Flow to surface water body — check surface water		☑ Inhalation of Fugitive Dust			C/F	F	C/F		
	☐ Flow to sediment — check sediment									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Surface Water	☐ Direct release to surface water — check surface water	☑ surface water	☑ Ingestion of Surface Water			C/F	F	C/F		
	☐ Volatilization — check air		☑ Dermal Absorption of Contaminants in Surface Water			C/F	F	C/F		
	☐ Sedimentation — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Sediment	☐ Direct release to sediment — check sediment	☐ sediment	☐ Direct Contact with Sediment							
	☐ Resuspension, runoff, or erosion — check surface water									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
		☑ biota	☑ Ingestion of Wild or Farmed Foods			C/F		C/F	C/F	

Revised, 10/01/2010

Print Form

Human Health Conceptual Site Model
Scoping Form

Site Name: Larsen Bay Old School

File Number: 2606.57.001

Completed by: Randy Hessong

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☒ USTs
- ☒ ASTs
- ☐ Dispensers/fuel loading racks
- ☒ Drums
- ☐ Vehicles
- ☐ Landfills
- ☒ Transformers
- ☐ Other:

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☒ Air
- ☐ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☐ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

Diesel range organics (DRO) measured within 0.5 feet of ground surface.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Limited sampling indicates DRO contamination. Soil was not tested for SVOCs, however the DRO concentrations suggest that elevated PAH concentrations are possible.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Groundwater contamination has not been investigated. A out-of-use groundwater well is on site, and DRO has the potential to migrate to groundwater.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Based on the vegetative cover on the site, lack of observed flow channels, and distance to the wetlands to the east and west of the site, contaminants are not expected to migrate to permanent surface water features. Water may pond ephemerally at the former generator location, however.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

The site has the potential to be used for harvesting wild foods, and is proposed for a community garden. DRO is not listed as bioaccumulative, but lead is. If lead based paint has entered the soil, there is potential for lead to be mobilized and enter to food chain.

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Considering the likely age of the fuel release, volatile compounds are not likely to remain at high concentrations. DRO is listed in Appendix D, however.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☐

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

The existing building is not occupied, demolition is proposed, and proposed reuses do not include occupied buildings. In addition, "DEC does not require evaluation of petroleum ranges GRO, DRO, or RRO for the indoor air inhalation (vapor intrusion) pathway."

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Evaluation of the potential groundwater pathway is needed. It is possible that groundwater from the site discharges to the salt water of Larsen Bay.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Because the contaminant is diesel, high concentrations of the contaminant would need to reach groundwater when the fuel was fresh for this pathway to be a concern.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.
- Chromium is present in soil that can be dispersed as dust particles of any size.

Generally, DEC direct contact soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because it is assumed most dust particles are incidentally ingested instead of inhaled to the lower lungs. The inhalation pathway only needs to be evaluated when very small dust particles are present (e.g., along a dirt roadway or where dusts are a nuisance). This is not true in the case of chromium. Site specific cleanup levels will need to be calculated in the event that inhalation of dust containing chromium is a complete pathway at a site.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Weathered lead-based paint has the potential to breakdown into respirable particles. There is also a possibility of asbestos released from exterior building materials. However, the potential to create dust from the moist, well vegetated soil is low.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Standing water and sediment were not observed on the site. Other exposure pathways would have to be completed for contaminants to reach sediments.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS OF POTENTIAL CONCERN

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table B-1 of 18 AAC 75.341 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greather than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000).

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS OF POTENTIAL CONCERN

A chemical is identified here as sufficiently volatile and toxic for further evaluation if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater, the molecular weight is less than 200 g/mole (EPA 2004a), and the vapor concentration of the pure component posed an incremental lifetime cancer risk greater than 10^{-6} or a non-cancer hazard quotient of 0.1, or other available scientific data indicates the chemical should be considered a volatile. Chemicals that are solid at typical soil temperatures and do not sublime are generally not considered volatile.

Acetone	Mercury (elemental)
Benzene	Methyl bromide (Bromomethane)
Bis(2-chloroethyl)ether	Methyl chloride (Chloromethane)
Bromodichloromethane	Methyl ethyl ketone (MEK)
Bromoform	Methyl isobutyl ketone (MIBK)
n-Butylbenzene	Methylene bromide
sec-Butylbenzene	Methylene chloride
tert-Buytlbenzene	**1-Methylnaphthalene**
Carbon disulfide	**2-Methylnaphthalene**
Carbon tetrachloride	Methyl *tert*-butyl ether (MTBE)
Chlorobenzene	**Naphthalene**
Chlorodibromomethane (Dibromochloromethane)	Nitrobenzene
Chloroethane	n-Nitrosodimethylamine
Chloroform	**n-Propylbenzene**
2-Chlorophenol	**Styrene**
1,2-Dichlorobenzene	1,1,2,2-Tetrachlorethane
1,3-Dichlorobenzene	Tetrachloroethylene (PCE)
1,4-Dichlorobenzene	**Toluene**

Dichlorodifluoromethane	1,2,4-Trichlorobenzene
1,1-Dichloroethane	1,1,1-Trichloroethane
1,2-Dichloroethane	1,1,2-Trichloroethane
1,1-Dichloroethylene	Trichloroethane
cis-1,2-Dichloroethylene	2,4,6-Trichlorophenol
trans-1,2-Dichloroethylene	1,2,3-Trichloropropane
1,2-Dichloropropane	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)
1,3-Dichloropropane	Trichlorofluoromethane (Freon-11)
Ethylbenzene	**1,2,4-Trimethylbenzene**
Ethylene dibromide (1,2-Dibromoethane)	**1,3,5-Trimethylbenzene**
Hexachlorobenzene	Vinyl acetate
Hexachloro-1,3-butadiene	Vinyl chloride (Chloroethene)
Hexachlorocyclopentadiene	**Xylenes (total)**
Hexachloroethane	GRO (see note 3 below)
Hydrazine	DRO (see note 3 below)
Isopropylbenzene (Cumene)	RRO (see note 3 below)

Notes:

1. Bolded chemicals should be investigated as volatile compounds when petroleum is present. If fuel containing additives (e.g., 1,2-dichloroethane, ethylene dibromide, methyl *tert*-butyl ether) were spilled, these chemicals should also be investigated.
2. If a chemical is not on this list, and not in Tables B of 18 AAC 75.345, the chemical has not been evaluated for volatility. Contact the ADEC risk assessor to determine if the chemical is volatile.
3. At this time, ADEC does not require evaluation of petroleum ranges GRO, DRO, or RRO for the indoor air inhalation (vapor intrusion) pathway.

APPENDIX K

ROUGH ORDER OF MAGNITUDE COST ESTIMATE

TABLE K-1 - ROUGH ORDER OF MAGNITUDE COST ESTIMATE

Plans Preparation (Corrective Action Plan, Work Plan)	
Environmental Consultant	$5,000
Remedial Action/Release Investigation/Additional Characterization	
Earthwork Contractor (HAZWOPER-Trained)	$51,000
Environmental Consultant	$10,000
Laboratory Testing	$8,000
Waste Handling Contractor	$1,500
Building Demolition and Disposal	
Abatement/Demolition Contractor	$41,000
Environmental Consultant	$3,200
Laboratory Testing	$600
Petroleum-Impacted Soil Treatment	
Local Contractor and Equipment	$21,000
Environmental Consultant	$4,100
Laboratory Testing	$1,600
Report	
Environmental Consultant	$5,000
Contingency (15%)	$22,800
TOTAL	$174,800
Rough Order of Magnitude Cost Estimate	$175,000

Cost estimate is for initial remedial action, release investigation, and additional characterization activities outlined in report text.

APPENDIX L

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 32-1-17376

Date: April, 2011
To: Alaska Department of Environmental Conservation
Re: Larsen Bay Old School PACP

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors, which were considered in the development of the report, have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland