PROPOSED PLAN

Swampy Acres Lead Battery Site
Kodiak Buskin Beach, Alaska

Virtual Public Meeting
Wednesday, January 20th @ 5 pm
Details available at:
http://visualmedia.jacobs.com/KodiakLBS

Comment Period
30 December 2020 — 30 January 2021

You are encouraged to comment on this Proposed Plan. The USACE will accept written, email, and voicemail comments during the public comment period, as well as verbal comments provided at the public meeting. A pre-addressed form is included with this document. **All comment letters must be postmarked by 30 January 2021.**

Submit comments to:

CEPOA-PM-ESP-FUDS
Swampy Acres Lead Battery Site
Proposed Plan
PO Box 6898
JBER, Alaska 99506-0898

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The information summarized in this Proposed Plan can be found in greater detail in the Feasibility Study and other documents contained in the Administrative Record file for this site, which is housed at the Kodiak Public Library on 612 Egan Way. The USACE encourages the public to review these documents to gain a more comprehensive understanding of the Lead Battery Site and the response activities that have been conducted at the Lead Battery Site.

Your participation and comments are encouraged.

USACE ANNOUNCES PROPOSED PLAN

The United States Army Corps of Engineers (USACE) requests your comments on this Proposed Plan for remedial action at the Swampy Acres Lead Battery Formerly Used Defense Site (FUDS) located on Kodiak Island, Alaska (Figure 1).

The Proposed Plan is a component of the requirements of Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund [42 U.S.C. § 9601 et al.]. The Lead Battery Site is a CERCLA site that is not listed on the National Priority List. USACE is issuing this Proposed Plan as part of its public participation responsibilities under CERCLA. The purpose of this Proposed Plan is to describe the:

- Environmental conditions and risks posed by the site;
- Cleanup criteria;
- Investigations, remedial actions, and removal actions conducted;
- Potential remedial alternatives that were considered with a comparative evaluation;
- The preferred remedial alternative for the site; and to
- Request public comment on the preferred alternative as well as all other remedial alternatives considered and provide information on how the public can provide input to the remedy selection process.

Contents

This Proposed Plan was prepared in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and follows the requirements from the Engineering Regulations 200-3-1 of the FUDS Program Policy and the U.S. Environmental Protection Agency (EPA) guidance provided in *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*.

The Department of Defense (DoD) is authorized to carry out a program of environmental restoration at former military sites under the Defense Environmental Restoration Program, which includes clean-up efforts at FUDS.

FORMERLY USED DEFENSE SITE

A FUDS property is a facility or site that was owned by, leased to, or otherwise possessed by the United States that was transferred from DoD control prior to 17 October 1986. The FUDS program includes former Army, Navy, Marine, Air Force, and other defense-used properties that now range from privately owned lands to state or Federal lands such as national parks as well as residential land, schools, and industrial parks. More than 500 FUDS have been identified in Alaska.

Although this Proposed Plan recommends a Preferred Alternative for the site, USACE may modify or select another remedial alternative based on new information or public comment. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan. After considering all public comments, USACE will prepare a Decision Document describing the selected remedy. The Decision Document will include responses to all significant public comments. Changes to the proposed approach may be made through this comment review process, which highlights the importance of community involvement. A more in-depth look at the remedies considered for the Lead Battery Site is provided in the 2019 Feasibility Study, which is available as part of the Administrative Record for the site at the Kodiak Public Library.

SITE BACKGROUND

The Lead Battery Site is one of 66 sites (Figure 2) that are being addressed at the Buskin Beach-Swampy Acres FUDS. Because lead from battery disposal is quite different from the predominantly fuel-based contaminated sites in the area, it was separated from the other Swampy Acres sites at the Feasibility Study stage of the CERCLA process in June 2018 and renamed the Swampy Acres Lead Battery Site. It kept the original FUDS identifier: F10AK0902-08.

Lead Battery Removal (1997)

Unnamed Creek at Lead Battery Site (2001)

The Lead Battery Site is located approximately 4 miles southwest of the city of Kodiak in the central portion of the former Fort Greely Army Garrison (Figure 1). Fort Greely was located on 4,583 acres within the Naval Station Reservation boundary, which was operational from 1939 through 1975. The Lead Battery Site is situated along an unnamed creek (Kodiak Island Borough stream ID 25826) flanked by a steep hill rising approximately 75 feet to a former warehouse slab foundation (Figure 2). Prior reports indicate that batteries were disposed of by dumping them from the warehouse downslope across the site. The former motor shed warehouse slab foundation, A1301, is considered a separate site and was not sampled as part of the Lead Battery Site. This area will be evaluated further in future efforts with the remaining Swampy Acres sites.

Figure 1 — Site Location

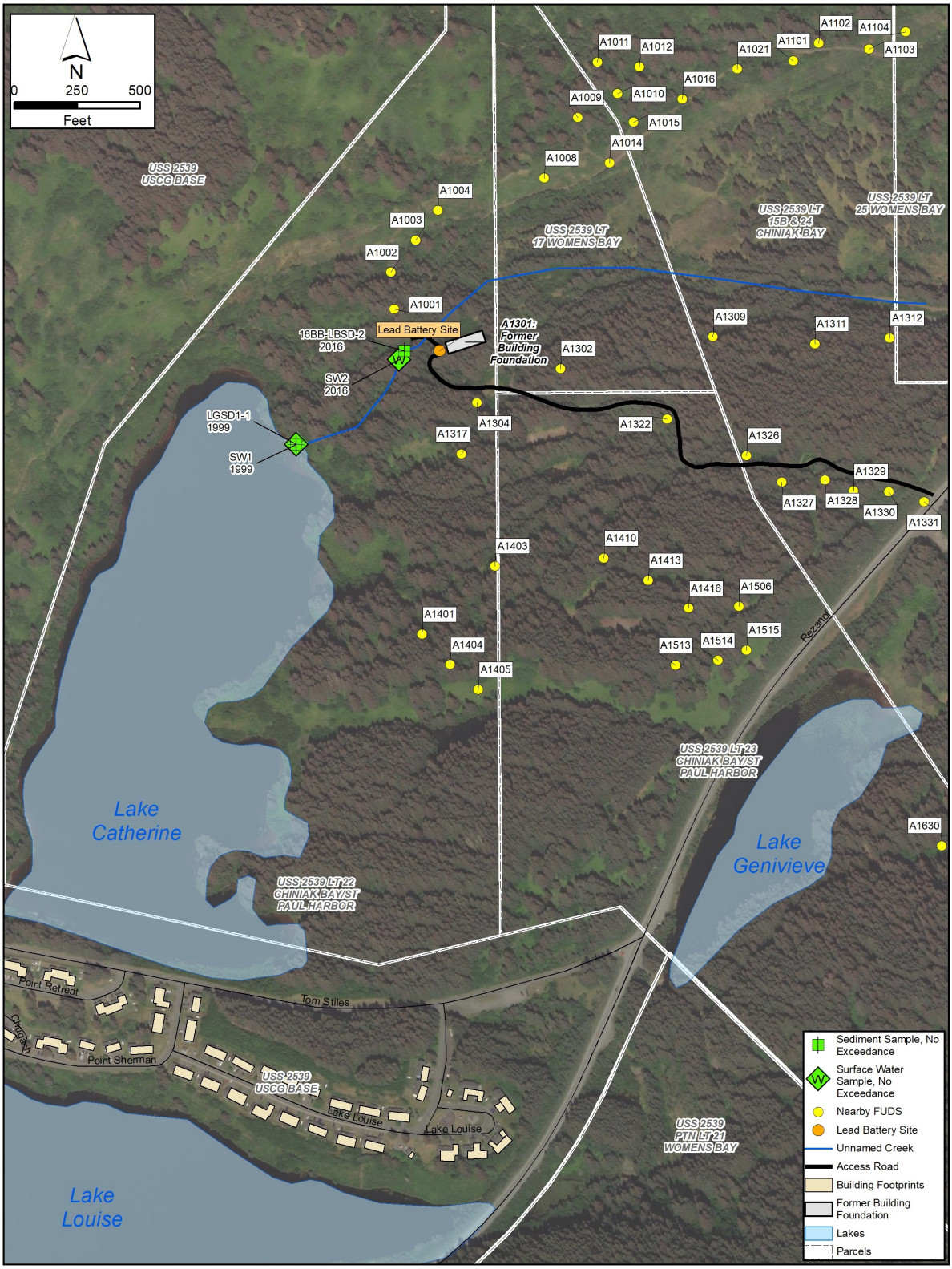


Figure 2 — Site Vicinity and Stream Sample Locations

Lead battery casings and debris were previously removed from the site, but soil and sediment with lead above the Alaska Department of Environmental Conservation (ADEC) cleanup level of 400 milligrams per kilogram (mg/kg) remains. The ADEC cleanup level is considered protective of human health and, based on an evaluation of site-specific ecological risk, also appears to be protective of the environment at the Lead Battery Site. The ADEC cleanup levels for lead in soil and groundwater are equivalent to the EPA regional screening levels for residential soil and tapwater, respectively.


Soil Removal in Progress (2001)

Groundwater contamination has fluctuated above and below the cleanup level, but were below the ADEC Table C groundwater cleanup level for lead at both monitoring locations based on the most recent samples collected in 2016.

HISTORICAL INVESTIGATIONS

Since 1996, USACE has conducted several site investigations and response actions at the Lead Battery Site. Investigations pertaining to this site are briefly summarized below. These documents are available in the Administrative Record file for the site, which is housed at the Kodiak Public Library. Data representative of current site conditions are presented on Figure 3.

1996 Phase I Remedial Investigation

Two large steel battery boxes were found in an unnamed creek northeast of Lake Catherine (one in the creek, another on the adjacent embankment) near Building A1301. The boxes were constructed of steel and measured 1.5 by 1.5 by 3 feet and constructed with 18 lead-lined cells. Since no debris or broken parts were lying nearby, the casings were likely dumped at those locations after they were opened.

1997 Interim Removal Action

In 1997, two 300-pound lead battery casings from sample locations GGBC01 and GGBC03 and one 1,600-pound lead battery from sample location GGBC02 were removed from the unnamed creek and embankment southwest of Subarea A1301 (Figure 2). Analytical results from beneath removal locations and both up- and downstream indicated elevated lead concentrations up to 11,600 mg/kg in soil. The extent of contamination was not fully delineated, and the original removal locations were described but exact locations vary in subsequent reporting and should be considered estimated.

1998-1999 Remedial Investigation

A grid sampling approach was used to investigate the extent of lead contamination in the surface soil (0 to 6 inches below ground surface) and subsurface soil (3 feet below ground surface); previously sampled areas were not re-sampled. Four of the 50 soil sample locations had lead results above the cleanup level, the highest of which was 3,700 mg/kg. All areas containing lead above the cleanup level were found within the upper 12 inches of soil and covered approximately 650 square feet.

This area extended from the base of the creek drainage approximately 40 feet upgradient of the creek. One southern edge perimeter sample location from 0.5 feet below ground surface also exceeded the criterion for lead at 655 mg/kg, but no further battery fragments or cells were identified nearby. Ten sediment and two surface water locations were sampled along the creek. In the three locations most immediately downgradient of the former battery/battery casing removal sites, sediment concentrations above the ADEC cleanup level ranged from 672 mg/kg to 4,840 mg/kg. Lead was not detected in the surface water in this location. Downstream sediment and surface water results indicated that lead was not migrating from the site to Lake Catherine, and no fuels, polycyclic aromatic hydrocarbons, other metals, or benzene, toluene, ethylbenzene, or xylenes were present above cleanup levels.

2001 Interim Removal Action

Lead-contaminated soil to 1.5 feet below ground surface and visible metal fragments, lead battery parts, and battery cells were removed using hand tools. Initial post-removal sampling indicated that contamination was still present, so an additional 1 foot of soil across the area was removed. Re-sampling showed clean boundaries. Sediment removal from this area was deemed impractical due to the likelihood that contaminated sediment would wash further downstream if an attempt were made to remove the bottom surface of the streambed. Divergence of the stream was also considered an impractical option due to the steep side slopes that parallel the creek. Site closure was recommended.

2008 Focused Feasibility Study

The Lead Battery Site and several nearby sites were grouped together to evaluate remedial alternatives. Geochemical treatment was evaluated to address lead in groundwater at the Lead Battery Site. However, the 2008 proposed plan was never published for public comment since 2008 groundwater sampling unexpectedly showed that contamination still remained, and data gaps were identified. Additional sampling appeared warranted.

2014 Limited Site Investigation

Three soil samples were collected: one from within the 2001 excavation limits, and two from or near areas where lead contamination was suspected. Lead concentrations were below the ADEC cleanup level of 400 mg/kg in all samples; however, while planned for collection at 1 foot below ground surface, these samples were collected at 6 inches instead due to frozen ground. A sediment sample near the southeast stream bank had a lead concentration of 764 mg/kg.

Groundwater Sampling (2003—2016)

Two microwells were installed in 2003, one in the area of the former battery casing locations (PB-MW1-03) and another downgradient (PB-MW2-03). The ADEC Table C cleanup level for lead is 15 micrograms per liter (µg/L) – results above this concentration may be harmful to human health and the environment. In 2008, chemical analyses were conducted for fuels, volatile organic compounds, polycyclic aromatic hydrocarbons, and metals including lead in order to rule out contaminants other than lead. With the exception of arsenic, which exceeded the current Table C groundwater cleanup level of 0.52 µg/L at 1.43 µg/L, all results were below applicable criteria, so sampling continued for lead only. Due to the prevalence of naturally occurring arsenic throughout the state, ADEC regulation allows for arsenic to be considered “unless anthropogenic contribution from a source, activity, or mobilization by means of another introduced contaminant is known or suspected.” No anthropogenic source for arsenic has been identified at the Lead Battery Site. Concentrations of lead in groundwater over time are provided in Table 1.

2016 Data Gaps Analysis

During the 2016 groundwater sampling and well inventory, 19 soil samples and 2 sediment samples were collected from the unnamed creek for lead analysis. Two soil samples from the south side approximately 2 feet from the creek exceeded the ADEC cleanup level.

Table 1: Lead Concentrations in Groundwater

Year	Month	PB-MW1-03 (µg/L)	PB-MW2-03 (µg/L)
2003	November	15.9	0.98 J
2005	February	2.15 B	9.29 B
2005	May	218	3.2
2005	September	867 B, CQ	32.7 B, CQ
2008	June	15.1	0.049
2014	February	33.4 QN	ND [5] QN
2016	May	7.8	0.183

Notes:
RED = exceeds ADEC Table C cleanup level of 15 µg/L
ND = Lead was not detected. The laboratory method in this case was only capable of reporting lead concentrations above the number in brackets. Thus, this location did not exceed the ADEC cleanup level (15 µg/L) because the laboratory would have reported anything greater than 5 µg/L.
In general, a letter designation following the numerical result (i.e. B, CQ, QN) indicates that there was a data quality issue, and the associated concentrations should be considered estimates.

Three samples collected near 1997 historical sample point KOA004801 with a reported lead concentration of 11,600 mg/kg lead contained comparably very low lead concentrations that ranged from 12.8 to 20.5 mg/kg. Sources conflict as to whether that location was included in the 2001 removal boundary, but in any case several clean samples in the vicinity show that contaminated soil, if present, is very limited in extent. Both sediment samples, collected from the stream bed adjacent to the removal locations and downstream from the 2014 sample point LBAT-STRM, were well below the ADEC cleanup level.

2019 Feasibility Study

A Feasibility Study prepared in 2019 evaluated potential response technologies to address lead contamination in soil at the Lead Battery Site, which was split out from the petroleum, oil, and lubricant sites in a June 2018 Memorandum of Record. Technologies were first screened based on site-specific effectiveness, implementability, and cost. Technologies were then developed into remedial alternatives, which were then evaluated against seven of the nine NCP criteria, which are described and explained on Pages 14-17. The remaining two criteria, called the modifying criteria, are state and community acceptance. Those criteria are addressed by presenting the alternatives in this Proposed Plan. Retained alternatives include:

Alternative 1: No Action
Alternative 2: Open Excavation and Offsite Disposal
Alternative 3: Institutional Controls

SITE CHARACTERISTICS

The Kodiak Naval Operating Base and Forts Greely and Abercrombie constitute one of eight national historic landmarks that commemorate World War II in Alaska. In 1989, 688 acres – including the Lead Battery Site – were withdrawn from the Naval Reservation for Native selection pursuant to the Alaska Native Claims Settlement Act.

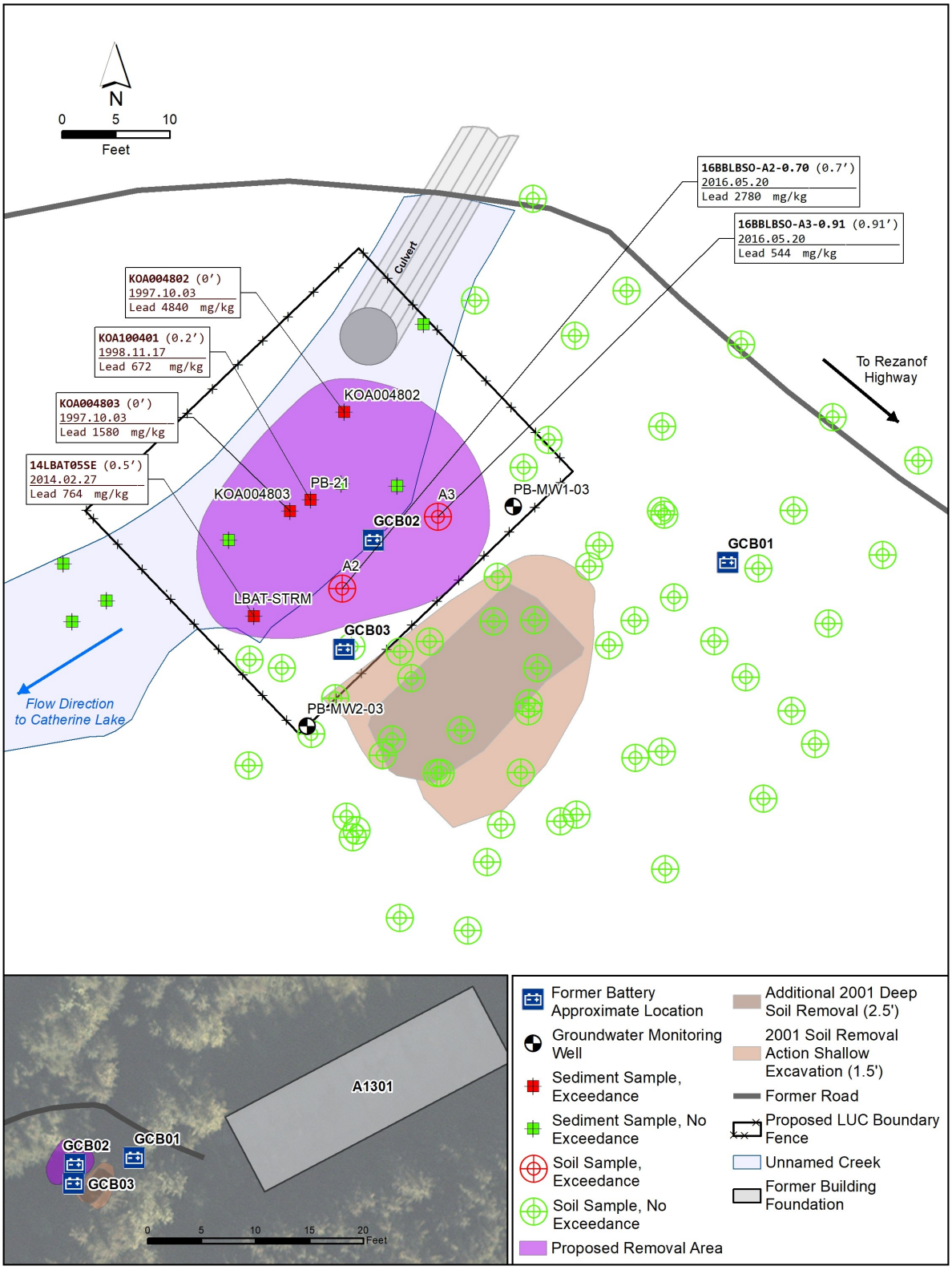


Figure 3 — Results

As a result, the Buskin Beach-Swampy Acres Lead Battery Site is outside the officially designated boundary of the Kodiak Naval Operating Base and Forts Greely and Abercrombie National Historic Landmark. The current landowner is Natives of Kodiak, Inc. (NOK); with Koniag, Inc. as the subsurface estate holder. The Lead Battery Site, Lot 22, is undeveloped and includes conservation and split zoning lots, which may include residential, commercial, and/or industrial development in the future. NOK plans to develop the site for residential use. There are no water supply wells on site. At present, an unimproved dirt and gravel road from the Rezanof Highway that is used for subsistence and recreation traverses the Lead Battery Site. Locked access gates are managed by U.S. Coast Guard (USCG) and NOK.

The area surrounding the Lead Battery Site and the unnamed creek is steep and heavily wooded with large spruce trees, and partially covered by moss and grasses with some exposed soil that consists of a gravelly silty sand and man-made fill partially covered by organic litter such as branches, twigs, and spruce cones. Groundwater tends to be very shallow. Bedrock was noted at 3 feet below ground surface; this depth represents the maximum vertical extent of soil contamination. The unnamed creek empties into Lake Catherine approximately 700 feet to the southwest. The creek is not listed as anadromous fish-bearing waters; however, Lake Catherine is listed as anadromous fish-bearing waters. No Endangered Species Act-listed species have been identified in terrestrial or freshwater habitats in the Lead Battery Site.

NATURE AND EXTENT OF CONTAMINATION

Lead resulting from improper battery disposal is the only contaminant of concern at the Lead Battery Site. Lead does not biodegrade or decay, and is not rapidly absorbed by plants; therefore, it can remain in soil at elevated levels for long periods of time. Because lead binds to soil, it does not migrate readily through the soil column from surface to subsurface or from soil into water.

Soil

Since lead concentrations remain above the ADEC cleanup level along one bank of the unnamed creek, soil is considered for remediation at the Lead Battery Site. Soil samples were collected in 1997 from battery case removal locations, in 1998 at the location of 1997 exceedances using a grid approach, at the extents of the two 2001 interim removal actions, in 2014 to verify 2001 removal, and in 2016 to determine potential data gaps on either side of an approximated 1997 exceedance location. Exceedances were reported in 1997, 1998, after the first 2001 removal action, and in 2016 between the 2001 excavation and the unnamed creek.

In general, soil at the Lead Battery Site has been well characterized. Locations where elevated lead remains are laterally bounded by clean results. Remaining exceedances are located between the 2001 excavation and the east bank of the unnamed creek, and may extend to the northeast along the stream where samples have not been collected. Including some of this area, the volume of remaining soil contamination is estimated at 18 cubic yards (in an area covering 160 square feet).

Groundwater

Two groundwater monitoring wells, PB-MW1-03 and PB-MW2-03, were installed in 2003 and sampled numerous times between 2003 and the most recent event in 2016. PB-MW1-03 is located upgradient to the northeast and close to the former battery case GCB01 location, and PB-MW2-03 is located downgradient to the southwest and close to the former battery case GCB03 location. Both wells are shown relative to the former battery locations on Figure 3.

At source area well PB-MW1-03, lead concentrations fluctuated over the years and failed to show a clear trend, but concentrations had decreased to below the ADEC Table C cleanup level in 2016, and no samples have been collected since.

Groundwater only ever exceeded the ADEC cleanup level for lead once in downgradient well PB-MW2-03 in 2005. A corresponding field duplicate sample, which is a second sample collected at the same time to serve as a check on laboratory procedures, had a result that was below the cleanup level. This means that the primary/duplicate pair failed quality control criteria – the two results should have been nearly the same and therefore might not be indicative of actual site conditions. Results from 2008, 2014, and 2016 were below the Table C cleanup level at PB-MW2-03.

Soil excavation in 2001 could have mobilized lead from the disturbed soils into groundwater, accounting for the fluctuations in PB-MW1-03 and the lone exceedance at PB-MW2-03. Groundwater is considered as part of an active remedy for the Lead Battery Site based on migration potential from contaminated soils as part of an active remedy.

Surface Water

Surface water remediation is not recommended for the Lead Battery Site, as surface water sample results from Lake Catherine near the unnamed creek inlet, as well as upstream of the inlet, did not contain lead above the cleanup level. Re-suspension of contaminated sediment to surface water is possible, especially if excavation or other activities disturb the stream bed. Under such a scenario, surface water would become a secondary transport mechanism for migration of lead-contaminated sediment.

Sediment

Sediment samples were collected in 1997 from underneath as well as up- and downstream from the locations where battery cases were encountered. A second sampling effort in 1998 was initiated to investigate 1997 exceedances, but clean boundaries were not achieved in all locations. In June 1999, sediment sample SD1 was collocated with surface water sample SW1 where the unnamed stream empties into Lake Catherine – no exceedances were reported. Subsequent efforts to fill data gaps were undertaken in 2001, 2014, and 2016. As shown on Figure 3, sediment exceedances are present along the stream bank where nearby soil concentrations also exceed 400 mg/kg, and contamination in sediment also extends farther into the creek and upstream to the culvert location. No sediment removal has been conducted to date. The volume of remaining sediment contamination is estimated at 34 cubic yards in an area covering 323 square feet. No sediment removal has been conducted to date. Sediment exceedances are present along the stream bank where nearby soil concentrations also exceed 400 mg/kg, and contamination in sediment also extends farther into the creek and upstream to the culvert location. The volume of remaining sediment contamination is estimated at 34 cubic yards in an area covering 323 square feet.

In general, sediment in the vicinity of the Lead Battery Site has been well characterized with locations where lead exceeds 400 mg/kg laterally bounded by results below 400 mg/kg. Since elevated lead concentrations remain above the cleanup level, exposure risks are present. Sediment is therefore considered for remediation at the Lead Battery Site. Concentrations of lead in sediment have remained consistent near the former location of battery case #2. Although it is possible that lead in sediment would be transported downstream by the creek, it does not appear to be appreciably occurring. Additionally, two samples collected downstream of the site – one from about 40 feet downstream (16BB-LBSD-2 in 2016) and the other at the inlet to Lake Catherine (SD1 in 1999) – did not contain elevated lead concentrations.

SCOPE AND ROLE OF THE RESPONSE ACTION

The goals of this project are to reduce risk to human health and the environment and to obtain site closure in compliance with applicable regulations. The response actions proposed for the Lead Battery Site are intended to address lead contamination in soil adjacent to the unnamed creek and in sediment within and along it. Remedial action is considered for the Lead Battery Site because lead is present in soil and sediment above the ADEC human health cleanup level. Approximately 18 cubic yards of soil and 34 cubic yards of sediment contain lead at concentrations above 400 mg/kg.

CERCLA requires that a Proposed Plan discuss how response actions address source materials constituting principal threats. A principal threat waste refers to contamination that is highly toxic, highly mobile, and cannot be reliably contained. Lead is neither highly mobile nor difficult to contain, and the definition of highly toxic is qualitative and therefore difficult to apply to an area where no known exposures have occurred. Lead is a hazardous substance regulated under CERCLA. Sample results from the Lead Battery Site exceed the most conservative residential standards used in this Proposed Plan. Results also exceed the EPA regional screening levels for industrial soil (800 mg/kg) and the EPA standard for non-play areas of 1,200 mg/kg. It is therefore believed that lead does constitutes a principal threat waste at the Lead Battery Site, albeit in small amounts.

The preferred alternative identified in this Proposed Plan is Open Excavation and Offsite Disposal. It is USACE's current judgment that the preferred alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, will protect human health and the environment from actual or threatened releases of a hazardous substance into the environment. The scope of the preferred alternative addresses contaminated soil and sediment at the Lead Battery Site.

SUMMARY OF SITE RISKS

Past investigations and remedial efforts have documented the former presence of lead batteries and battery casings at the Lead Battery Site; lead is the only contaminant of concern retained for its contribution to overall risk. Lead is highly toxic and is a probable human carcinogen although it is not typically evaluated for cancer risk. Exposure to lead has been linked to several adverse effects, primarily related to the central nervous system. In children, lead can cause cognitive developmental effects. In adults, lead may also cause weakness in fingers, wrists, or ankles; small increases in blood pressure; and anemia. A screening level human health risk assessment was performed in the Feasibility Study for all available analytical data that are considered representative of site conditions (i.e. samples collected from soil or sediment remaining onsite).

The ADEC Method Two cleanup level, 400 mg/kg, was used as the screening level. When sample results from the Lead Battery Site were compared to this screening level, most were acceptable. However, soil sample results from two locations and sediment sample results from four locations indicated potential for unacceptable risk; these sample locations provided the basis for estimated volumes of lead-contaminated soil and sediment.

Lead is unique among metal contaminants. Although it is suspected to cause cancer in humans, other potentially adverse effects are likely to occur at concentrations lower than those suspected of causing cancer. EPA regulates lead using exposure models to predict blood-lead levels. For the Lead Battery Site, USACE used the Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) to evaluate exposure to water, soil, and dust to assess future residential site use. The EPA threshold of 10 micrograms per deciliter (µg/dl) roughly corresponds to the remedial action objective (RAO) of 400 mg/kg of lead in soil. Based on model results, contamination remaining at the Lead Battery Site has the potential to produce blood-lead concentrations ranging from 9.2 to 13.6 µg/dl. This range indicates that probable risk to human health and the environment is present at the Lead Battery Site, and that risk would be reduced to acceptable levels if contamination above 400 mg/kg were removed.

Estimated blood-Pb concentrations based on 95% Upper Confidence Limits of measured soil-Pb and groundwater-Pb concentrations at Swampy Acres.

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	0.021	0.922	0.000	13.876	2.582	17.402	9.2
1-2	0.034	0.711	0.000	30.823	3.644	35.213	13.6
2-3	0.062	0.796	0.000	33.039	3.756	37.653	13.6
3-4	0.067	0.787	0.000	34.744	3.875	39.472	13.4
4-5	0.067	0.774	0.000	37.089	2.953	40.882	13.1
5-6	0.093	0.825	0.000	39.682	2.696	43.296	12.9
6-7	0.093	0.905	0.000	40.888	2.580	44.466	12.3

The Lead Battery Site has controlled access and no activities currently take place in the area that would result in a release or exposure. However, NOK plans to develop the site for residential use. Therefore, to ensure protectiveness, harmful exposures via direct contact, ingestion, and inhalation are considered for residents, commercial/industrial workers, construction workers, subsistence harvesters and consumers, site visitors, trespassers, and recreational users. Under the preferred alternative, lead-contaminated soil and sediment above the Method Two cleanup level would be excavated, staged, manifested, and transported offsite for disposal. Human health risk would decrease to acceptable levels, and the site would be restored for unrestricted use and unlimited exposure (UU/UE). No ecological site risks were identified, as the Lead Battery Site does not represent critical habitat or support endangered or threatened species.

REMEDIAL ACTION OBJECTIVES

RAOs describe the remedial goals specific to each contaminated media. Achievement of these criteria will be necessary to be protective of human health and the environment considering both current and future site use. The following RAOs were developed for the Lead Battery Site:

- Prevent or reduce future exposure of contaminants in soil and sediment at concentrations exceeding the ADEC Method Two human health cleanup level of 400 mg/kg; and
- Prevent offsite migration and migration from one medium to another (e.g. soil to groundwater, which does not currently exceed the cleanup level for lead) of contaminants in soil and sediment at concentrations exceeding the ADEC Method Two human health cleanup level of 400 mg/kg.

Table 2: Remedial Action Objectives for All Affected Media

Matrix	Lead Cleanup Level[1]	Maximum Remaining Concentration of Lead	Units
Soil	400	2,780	mg/kg
Sediment	400	4,840	mg/kg
Groundwater[2]	15	7.8	µg/L

Notes:

[1] ADEC Method Two cleanup levels per 18 AAC 75 (over 40-inch zone, human health) for soil/sediment and Table C for groundwater (exceedances in RED)

[2] The groundwater result shown is the highest reported during the most recent groundwater sampling event in 2016. Additional details are provided on Pages 9 and 10.

SUMMARY OF ALTERNATIVES

Approximately 18 cubic yards of lead-contaminated soil and 34 cubic yards of contaminated sediment are estimated to remain at the Lead Battery Site, which encompasses an area of approximately 160 square feet and 323 square feet, respectively. The maximum depth of contamination for soil is 3 feet below ground surface; this is also where bedrock provides an impermeable barrier for vertical migration for soil. The anticipated maximum depth of contamination for soil is 3 feet below ground surface where bedrock provides an impermeable barrier for vertical migration. In sediment, 6 inches below the sediment-water interface within the stream bed was used to estimate the vertical extent of contamination and removal volume.

ALTERNATIVE 1: NO ACTION

The No Action alternative is required to be evaluated as a baseline for comparison. Under this alternative, no activities would be undertaken to treat or remove the contamination present or to otherwise prevent exposure to the contamination. No monitoring would be conducted. Potential for unacceptable human or environmental exposure to the Lead Battery Site contaminants would remain for as long as contaminant concentrations are above the cleanup levels. No costs are associated with implementing this alternative and no onsite time is required. However, the No Action Alternative will not be selected because it fails to comply with the threshold criteria: it is neither protective of human health and the environment, nor does it comply with ARARs.

Capital Costs: $0 | Annual Operations & Maintenance: $0 | Present Worth Costs: $0 | Estimated Days: 0

ALTERNATIVE 2: OPEN EXCAVATION AND OFFSITE DISPOSAL

Alternative 2 involves temporary stream diversion, pre-screening to verify extents of material requiring removal, then excavation of contaminated soils and sediments with concentrations above the ADEC Method Two cleanup level. Excavation depth is conservatively estimated at 3 feet where bedrock presents a barrier to vertical migration. Approximately 52 cubic yards (78 tons) of contaminated material are anticipated.

Soil and sediment would be excavated and staged onsite prior to transport to an offsite disposal facility. Following soil and sediment removal, confirmation samples from the base and sidewalls of the excavation would be submitted for laboratory analysis. Once results are confirmed to be below the ADEC cleanup level for lead, excavated areas would be backfilled with clean material, graded, and the banks of the stream would be hydroseeded with native plant seed mix. Temporary access controls would be employed to minimize entry to the site during excavation activities and reseeding of excavated areas. Associated sampling would include overburden from stream diversion, the extents of the excavation to confirm that all lead contamination above 400 mg/kg was removed, and waste characterization for proper handling and disposal.

Several quarterly followed by annual groundwater sampling events would be performed to monitor whether contaminant rebound occurs, as appears to have happened following 2001 excavation activities, although this is not anticipated based upon complete removal (no residual lead contamination left behind to mobilize to groundwater). Once complete, the Lead Battery Site would be restored for UU/UE. No CERCLA five-year reviews or other follow-on actions would be required.

Capital Costs: $644k | Annual Operations & Maintenance: $0 | Present Worth Costs: $644k | Estimated Days:14

ALTERNATIVE 3: LAND-USE CONTROLS

Under this alternative, risk to human health would be mitigated by restricting activities within the source area boundary such as who may enter and for what purpose, what kind of development is allowed, and what activities are permissible. Land-use controls would include institutional controls and engineering controls. Institutional controls are rules and processes; it is anticipated under Alternative 3 that a deed restriction would limit development activities and resource access and use.

Engineering controls are physical barriers; recommendations for the Lead Battery Site include signage and fencing to prevent site access. Based on the current area of contamination at the Lead Battery Site, 130 linear feet of fence with placarding and gates would be needed (Figure 3). These protective measures must be agreed upon, documented, and maintained by the landowner until such a time that they are no longer needed. Response actions that result in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for UU/UE are required under the NCP to be reviewed every five years to ensure protection of human health and the environment. Thus, five-year reviews would be required to evaluate the long-term protectiveness of the remedy, and would continue indefinitely.

Capital Costs: $71k | Annual Operations & Maintenance: $213k | Present Worth Costs: $284k | Estimated Days: 5

EVALUATION OF ALTERNATIVES

In accordance with the NCP, the response alternatives were evaluated against the criteria, except state and community acceptance, described in §121(b) of CERCLA and the NCP [40 CFR 300.430(f)(1)(f)]. These criteria are used to evaluate and compare the different remediation alternatives to select a remedy. Table 3 profiles the relative performance of each alternative against seven of the nine criteria, noting how it compares to the other options under consideration. Evaluation of the last two criteria—state and community acceptance—will be conducted after the public comment period.

Threshold Criteria

Remedy protectiveness is determined by the ability of a remedy-in-place to achieve the RAOs, which indicate **overall protection of human health and the environment.** Alternative 1 would not be protective, but both Alternative 2 and Alternative 3 would be protective.

Applicable or Relevant and Appropriate Requirements (ARARs) are federal, state, and local standards, requirements, criteria, or limitations that are legally applicable or relevant and appropriate to the site. ARARs consider chemicals, locations, and actions. For the lead battery site, only chemical- and location-specific ARARs were identified in the 2019 Feasibility Study (Table 3).

Table 3: ARARs

Regulation	Description	Applicability
Oil and Other Hazardous Substances Pollution Control (18 AAC 75.341 [cleanup levels for lead in Table	Identifies Alaska state cleanup level for lead in soil. In the absence of State of Alaska sediment-specific cleanup levels, the soil cleanup level of 400 mg/kg is applied to sediment. The human health cleanup level was deemed appropriate as no sensitive ecological receptors were identified for the	Applicable
Water Quality Standards [18 AAC 70.020(11)]	*Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* , adopted by reference, identifies Alaska state criteria for contaminants in surface water. Re-suspension of lead in sediment is possible.	Relevant and Appropriate
Bald and Golden Eagle Protection Act (16 USC 668[a])	Statutes protecting bald and golden eagles. Bald eagles have been identified in the nearby BB/SA project area; any invasive work would have to consider and appropriately mitigate the impact on these protected species.	Applicable

Note:

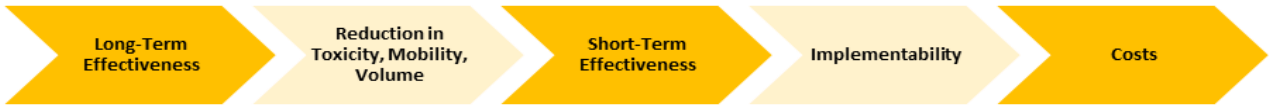
Alternative 2 is intended to remove all lead-contaminated soil and sediment above 400 mg/kg; no residual contamination above this cleanup level is anticipated.

Each alternative is considered specifically within the context of these ARARs:

- Alternative 1 would not comply with ARARs because no actions would be taken to address contamination at unacceptable levels. It will not be retained for comparative analysis.
- Alternative 2 would comply with all ARARs—confirmation soil sampling, measures to prevent re-suspension of sediment to surface water during removal, and continued groundwater monitoring would verify that chemical-specific ARARs had been achieved. Personnel would plan and conduct work with minimal disturbance to wildlife such as eagles.
- Alternative 3 does not achieve the chemical-specific ARARs for soil, but measures in place such as LUCs adequately prevent exposure to address the associated risks. Because this alternative is minimally invasive and site conditions already meet water quality and drinking water standards, Alternative 3 meets the other two chemical-specific ARARs. As with Alternative 2, the fence installation and subsequent inspections proposed under Alternative 3 can be conducted and scheduled in such a way that eagles and other wildlife are minimally or not at all affected.

Primary Balancing Criteria

In accordance with CERCLA guidance, alternatives were developed to include No Action as well as an alternative that focuses on reducing risk by preventing exposure to contaminated soil, and an alternative that focuses on removing the contaminated soil. Each alternative that passed the threshold criteria was subjected to detailed analysis based on the five primary balancing criteria established under CERCLA. The primary balancing criteria are:



Long-term effectiveness addresses the level of residual risk and the adequacy and reliability of site controls to mitigate residual risk. The remedies retained for analysis are effective, but since lead contamination would remain onsite under Alternative 3 requiring continued maintenance and monitoring, it is a less permanent solution than Alternative 2.

CERCLA has a statutory preference for any remedy that has the ability to **reduce the toxicity, mobility, and volume of contamination through treatment**. At the Lead Battery Site, none of the alternatives include treatment as a component of the remedy. Treatment options were considered for soil/sediment at the Lead Battery Site in the Feasibility Study, but due to the limited volume, challenges to effectiveness, and stakeholder preference for complete removal of contaminated material to support UU/UE, neither chemical extraction nor in situ solidification were carried forward through the preliminary screening evaluation.

Short-term effectiveness considers risk to site workers, the community, and the environment while remedy implementation is in progress, as well as the project duration until RAOs have been achieved. For this criterion, Alternative 3, which allows lead contamination to remain onsite, is preferred, as it requires no soil or sediment handling and takes only 5 days to complete. Alternative 2 has greater potential to expose workers to lead and takes twice as long to implement as Alternative 3.

Major **implementability** considerations relative to the Lead Battery Site include accessibility, as a steep embankment on either side of the unnamed creek make heavy equipment very difficult to mobilize and safely operate, and the fact that Kodiak Island does not have a treatment or disposal facility that is permitted to accept hazardous waste. Thus, offsite disposal is the only option for contaminant removal, and offsite disposal adds complexity including packaging and shipping requirements and the coordination of multiple modes of transportation to the final destination. Under this criterion, Alternative 3 is more implementable than Alternative 2.

Costs are only rough order-of-magnitude estimates at this stage in the CERCLA process. This criterion is considered not for the lowest price acceptable option, but as a consideration in evaluating the best balance of trade-offs between alternatives. The least expensive option is Alternative 3. Alternative 2 is the most expensive option.

Table 4: Alternative Comparison

Criterion	Alternative 1 No Action	Alternative 2 Open Excavation and Offsite Disposal	Alternative 3 Land-Use Controls
Overall Protection of Human Health and the Environment	○	●	●
Compliance with ARARs	○	●	●
Long-Term Effectiveness	NA	●	◐
Reduction in Toxicity, Mobility, or Volume	NA	○	○
Short-Term Effectiveness	NA	◐	●
Implementability	NA	◐	●
Cost	NA	$ 644 K	$ 284 K

○ = Does not satisfy criterion

● = Fully satisfies criterion

◐ = Partially satisfies criterion

K = thousands

NA = not applicable

Modifying Criteria

In addition to the threshold and balancing criteria, there are two **modifying criteria**: **state acceptance** and **community acceptance**. The evaluation of these modifying criteria will be presented in a Decision Document for the Lead Battery Site. An evaluation of the remedies considered for the Lead Battery Site with regard to the threshold and primary balancing criteria is provided in Table 4.

PREFERRED ALTERNATIVE

Based on information currently available, the USACE believes that Alternative 2, Open Excavation and Offsite Disposal, meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives. The LUCs proposed as Alternative 3 do provide better short-term effectiveness. Alternative 3 is also more implementable, and has a lower cost, than Alternative 2. However, the long-term effectiveness criterion, for which Alternative 2 ranks higher, is considered an important decision point because NOK plans to develop the Lead Battery Site for residential use. Only Alternative 2 will achieve substantial risk reduction and enable UU/UE by removing source materials constituting principal threats at the site.

The USACE expects the preferred alternative to satisfy the following statutory requirements of CERCLA §121 (b): (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent possible; and (5) satisfy the preference for treatment as a principal element, or explain why the preference for treatment will not be met. However, this preferred alternative can change based on public comments or the introduction of new information. Following the receipt of comments on this Proposed Plan, the alternatives will be further evaluated based on state agency acceptance and community acceptance. The final selected remedy will be presented in a Decision Document.

COMMUNITY PARTICIPATION

The final response action alternative will be selected for the site after community comments have been considered. In this final step of the remedy selection process, the lead agency reassesses its initial determination that the preferred alternative provides the best balance of trade-offs while factoring in any new information or points of view expressed by the state or the community during the public comment period. USACE encourages the public to gain a more comprehensive understanding of the Lead Battery Site and the response activities that have been conducted at the site. Information concerning the FUDS program on Kodiak Island can be found in the Administrative Record files located at the Kodiak Public Library, 612 Egan Way.

A 30-day public comment period follows submission of this Proposed Plan for public and regulatory review, and a public meeting in Kodiak will be held to discuss the Lead Battery Site and the remedy introduced in this Proposed Plan. A written response form is provided at the conclusion of this document. Questions as well as public comments can be directed to the USACE project manager Joshua Barsis at 907-753-5680 and Joshua.Barsis@usace.army.mil.

USACE will provide written responses to all significant comments. A summary of the responses will accompany the Decision Document and will be made available in the Administrative Record at the Kodiak Public Library.

GLOSSARY

Alaska Department of Environmental Conservation (ADEC) – the regulatory body that monitors the enforcement of Alaska's environmental standards.

Applicable or Relevant and Appropriate Requirements (ARAR) – federal, state, and local standards, requirements, criteria, or limitations that are legally applicable or relevant and appropriate to the site; they can be chemical-specific, action-specific, or location-specific.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) – a U.S. federal law designed to clean up sites contaminated with hazardous substances.

Contaminant of concern (COC) – chemicals, compounds, or materials that may cause adverse effects on human health or the environment.

Decision Document (DD) – a public document that explains which alternative or action will be used to clean up a contaminated FUDS site, why it was selected, and how it will be implemented. This document also summarizes all substantive public comments.

Defense Environmental Restoration Account (DERA) – legislation enacted to: (1) identify, investigate, research, and clean up contamination from hazardous substances, pollutants, and contaminants;

(2) correct environmental damage that creates an imminent and substantial endangerment to public health, welfare, or the environment; and

(3) demolish unsafe buildings and structures (10 USC 160 §2701)

Exceedance – a result that is above the cleanup level.

Feasibility Study – a public document required under CERCLA to investigate the potential options available to remediate contamination.

Integrated Exposure Uptake Biokinetic (IEUBK) Model – a process that uses site-specific lead concentrations to predict risk to the most susceptible receptors, children under the age of 7, under a potential future residential use scenario.

Land-use controls – include both structural or legal mechanisms that protect property users and the public from existing site contamination (e.g., site controls, notices of contamination, permitting requirements).

Remedial Action Objectives (RAO) – parameters developed after site characterization specifying remedial goals.

Site controls – a subset of land-use controls (see above); these are physical markers or barriers that protect property users and the public from existing contamination (e.g. signs, fences).

95% Upper Confidence Limit (UCL_{95}) - a conservative, statistically weighted average used as an exposure value for risk calculation

Thank You for Your Comments on the Proposed Plan for Swampy Acres Lead Battery Site

Your input on the response action alternatives discussed in this Proposed Plan is important to the USACE. Comments provided by the public are valuable in helping us select a remedy. Questions regarding the public comment period or this Proposed Plan can be directed to the USACE Project Manager, Joshua Barsis, at (907) 753-5680. Comments on this Proposed Plan can be emailed to Joshua.Barsis@usace.army.mil. Written comments can be submitted by using the space below. When you are finished, please fold, seal, and mail. A return address has been provided on the back of this page for your convenience. Comments must be postmarked by 30 January 2021.

Name:

Address:

City, State, Zip:

Email and/or Phone:

Comments on Proposed Plan for
Swampy Acres Lead Battery Site, Alaska

Return Address

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CEPOA-PM-ESP-FUDS
Swampy Acres Lead Battery Site
Proposed Plan
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