Proposed Plan - Burn Pit, Dry Well, and Site-Wide Groundwater Areas of Concern

Sears Creek Station, Alaska

July 2023

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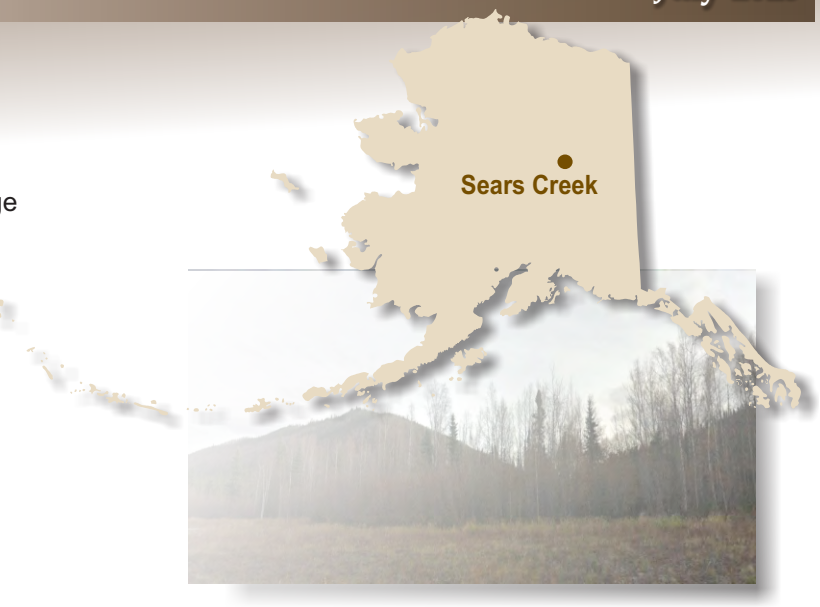


INTRODUCTION

This **Proposed Plan** follows the process and standards of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** of 1980 and **National Contingency Plan (NCP)** requirements, and presents the alternatives proposed by the U.S. Army as the lead agency and the Alaska Department of Environmental Conservation (ADEC) as regulatory lead agency to describe remedial alternatives for contaminated soil and groundwater at the Sears Creek Station (SCS), which is located between Delta Junction and Tok, Alaska (Figure 1).

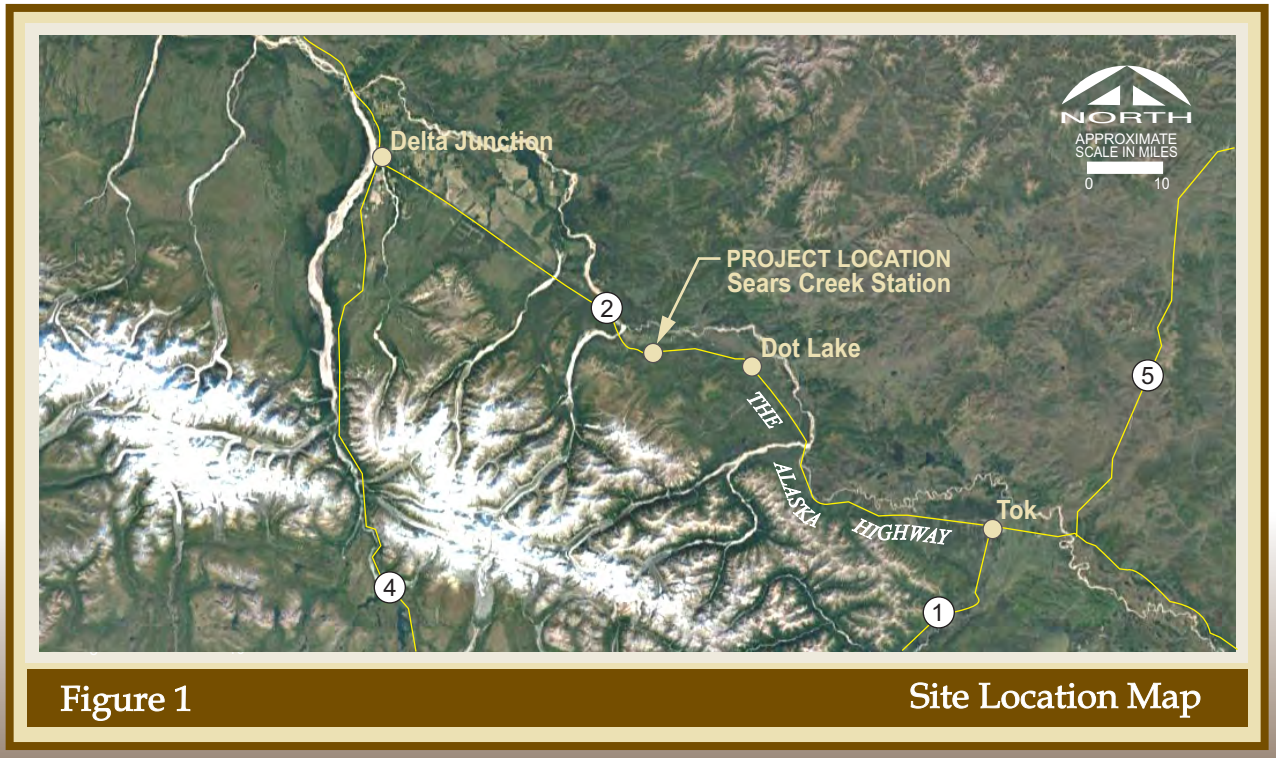
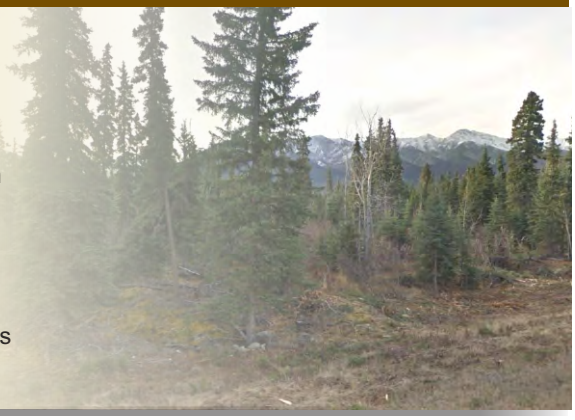


Figure 1 Site Location Map

Summary of the Preferred Remedial Alternative



The alternatives in this Proposed Plan address contaminated soil at the Burn Pit and Dry Well, as well as contaminated site groundwater.

The **preferred remedial alternative** is Alternative 3: which consists of excavation and offsite disposal/treatment of contaminated soil at the Burn Pit and Dry Well Areas of Concern (AOCs), Land Use Controls (LUCs) and monitored natural attenuation (MNA) of the Site-Wide Groundwater AOC until cleanup levels are achieved.

This alternative was selected over the other alternatives as it meets the threshold criteria and provides the best value among the other alternatives with respect to the balancing criteria.

The purpose of this Proposed Plan is to:

- Provide background information and describe current environmental conditions at the site.
- Describe the alternatives considered.
- Present the preferred alternative and the rationale for its selection.
- Solicit public comment on the preferred alternative.
- Provide information on how the public can participate in the remedy selection process.

As part of the regulatory process, this Proposed Plan documents the lead agency's proposed selection of an alternative for cleanup of contaminated soil and groundwater at three of the site AOCs: The Burn Pit, the Dry Well, and Site-Wide Groundwater. It fulfills the requirements of CERCLA section 117(a) and the NCP at 40 Code of Federal Regulations (CFR) 300.430(f)(2).

The U.S. Army is soliciting review and comment by the public on this Proposed Plan and the preferred alternative. A final decision on the preferred alternative for remedial actions will be made after comments are reviewed and considered during the 30-day public comment period. The current preferred alternative may be modified if public comments or additional data indicate that such changes will result in a more appropriate solution.

The U.S. Army will prepare a Record of Decision (ROD) to document the alternative selected and summarize responses to public comments (Responsiveness Summary).

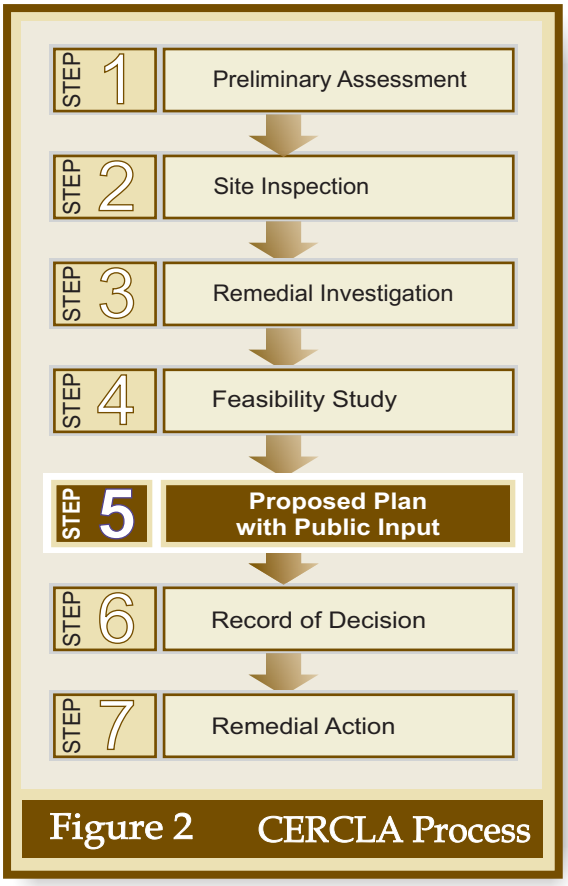


Figure 2 CERCLA Process

REGULATORY PROCESS

The U.S. Army is managing the SCS by following the *Defense Environmental Restoration Program (DERP) Management Manual* (DoD, 2012) and the CERCLA process to remove exposure and prevent future health risks at the Burn Pit, Dry Well, and Site-Wide Groundwater AOCs.

The CERCLA process involves a series of actions, as shown on Figure 2. The U.S. Army has developed a Feasibility Study (FS) (Step 4) as part of the process, and this Proposed Plan summarizes the results of that study and proposes a preferred alternative for public comment. Detailed information regarding remedial alternative consideration is presented in the FS (U.S. Army, 2020) and is available along with site investigative reports at the administrative record located at Fort Wainwright, Alaska. See Additional Information text box on page 12.

The alternatives listed in this Proposed Plan only address the remedial alternative for the Burn Pit, Dry Well, and Site-Wide Groundwater AOCs.

SITE BACKGROUND

The SCS was one of six booster stations constructed in 1961 along the Haines-Fairbanks Pipeline (HFP) to increase pressure and flow through the pipeline. The 8-inch HFP, located south of the SCS, carried refined petroleum products that were introduced into the pipeline from fuel tankers at the Haines Terminal in Haines, Alaska. The pipeline and pumping station were deactivated in 1973.

The SCS encompasses approximately 11.24 acres and is owned by the U.S. Army. The facility is fenced and secured with a locked gate (a new perimeter chain link fence and gate were installed in 2007). The land surrounding the SCS is owned by the State of Alaska Department of Natural Resources. A gravel pit used by the State of Alaska Department of Transportation and Public Facilities is located to the northwest of the SCS.

Basis for Taking Action

In the U.S. Army's judgement the Preferred Alternative identified in this Proposed Plan is necessary to protect public health or welfare from actual or threatened releases of pollutants or contaminants from this site which may present an imminent and substantial endangerment to public health or welfare.

The SCS site included: a composite building (including engine, pump, generator, and mechanical rooms; an office; a storage and refrigeration area; and a garage), a warehouse, trailer houses, greenhouses, a septic tank and leach wells, two aboveground storage tanks, two underground storage tanks, fuel piping, a fuel dispenser, a diesel fuel transfer pump, a dry well, a valve manifold building, a day tank/dewatering tower, a scraper trap, and a burn pit (Figure 3). The only remaining structure onsite is the composite building. All other tanks and structures have been removed from the site.

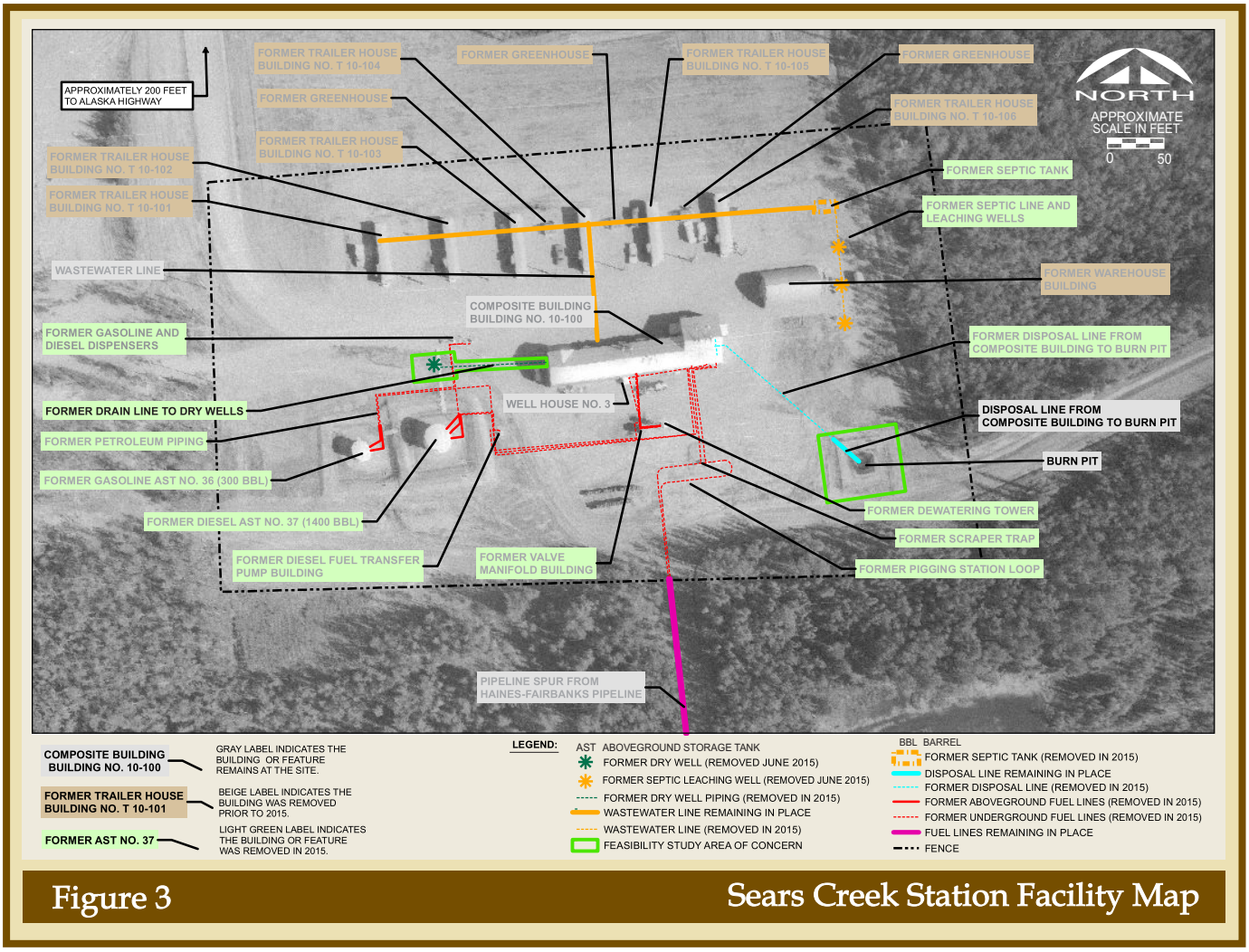


Figure 3 Sears Creek Station Facility Map

Several investigations of the SCS have been completed: surface soil sampling in 1994 (USAPEHEA, 1994), a remedial investigation in 2007/2008 (North Wind, 2010), data gap evaluation in 2014 (North Wind, 2014), infrastructure removal and sampling in 2015 (Bristol, 2016a, 2016b; North Wind, 2016), and a supplemental remedial investigation (SRI) in 2015 (U.S. Army, 2018). These investigations evaluated the 17 AOCs at the SCS, determined which AOCs contained environmental contamination exceeding soil and groundwater cleanup levels, and defined the vertical and horizontal extent of contamination. These investigations and actions form the basis for the following grouping of the 17 AOCs:

AOCs with hazardous substances regulated under CERCLA:
- Burn Pit
- Dry Well
- Site-Wide Groundwater

AOCs with only petroleum hydrocarbons:
- Valve Manifold Building
- Fuel Lines (associated with the Valve Manifold Building and Dewatering Tower)
- Former Drum Storage Area

AOCs with no elevated contaminant concentrations and requiring closure:
- Dewatering Tower
- Disposal Line
- Diesel Transfer Pump
- Aboveground Fuel Tanks
- Fuel Lines (associated with the ASTs and diesel transfer pump)
- Underground Storage Tanks
- Composite Building
- Composite Building Sump
- Scraper Trap
- Warehouse Building

AOC closed under another regulatory program:
- Septic Tank/Leach Wells (closure documented in the Draft Class V UIC Well Closure Report, Rev1 (Bristol, 2016a)

The three AOCs recommended for further evaluation under the CERCLA process (the Dry Well, the Burn Pit, and Site-Wide Groundwater) are the addressed in this Proposed Plan. The remaining 13 AOCs will be addressed under separate documentation.

SITE CHARACTERISTICS

LOCATION

The SCS is located at Milepost 1374 on the Alaska Highway, approximately 50 miles southeast of Delta Junction, Alaska, and 60 miles northwest of Tok, Alaska. The nearest community is Dot Lake, approximately 12 miles to the southeast (Figure 1).

ENVIRONMENTAL SETTING

The SCS is located in the Tanana Lowland, with geology generally consisting of gravel, sand, and silt deposits along alluvial streams, outwash fans, and wind-deposited loess. The climate is typical of the subarctic region of interior Alaska and is characterized by large diurnal and seasonal temperature variation, low precipitation, and low humidity. Average temperatures at Dot Lake range from a low of -22 degrees Fahrenheit (°F) in the winter (December-February) to a high of 65°F in the summer (June-August). The average annual precipitation is approximately 11.1 inches, and the average snowfall is 27 inches (U.S. Army, 2018).

HISTORICAL, CURRENT, AND FUTURE LAND USE

The SCS has historically been used by the U.S. Army for industrial purposes. The SCS is currently out of operation and the site is completely vacant. Groundwater underlying the SCS is not currently used for drinking or agricultural purposes. Other than the existing SCS Water Supply Well, there are no other drinking water wells currently located in the immediate vicinity of the SCS. The U.S. Army has no plans to sell or transfer the property, so the current land use is expected to be monitored and maintained for the foreseeable future.

NATURE AND EXTENT OF CONTAMINATION

The results of the soil and groundwater investigation activities at the SCS and the human health and ecological risk assessment (U.S. Army, 2018) established the nature and extent of contamination at the Burn Pit, Dry Well, and Site-Wide Groundwater AOCs. A summary of the soil contaminants of concern (COCs) for the Burn Pit and Dry Well AOCs are presented in Table 1, and a summary of the Site-Wide Groundwater COCs is provided in Table 2.

Burn Pit AOC investigations completed between 2007 and 2015 included 42 soil borings (4 completed as groundwater monitoring wells) with soil samples collected at depths ranging from 0 to 40 feet below ground surface (ft-bgs) from 42 soil borings and five surface sample locations. Diesel Range Organics (DRO) was the only COC that exceeded the screening criteria, and that only occurred in one sample at a depth of 4-5 ft-bgs near what appears to be the middle of the former Burn Pit area, with a concentration of 3,580 milligrams per kilogram (mg/kg). Although arsenic was also detected at a concentration that exceeded the site-specific cleanup level, it was determined to be associated with naturally occurring sources.

Table 1 Soil Contaminants of Concern

COC	Site-Specific Alternative Cleanup Levels (mg/kg)	Basis	AOC	Maximum Site Concentration (mg/kg)
DRO	3,300[1]	Migration-to-Groundwater	Burn Pit	3,580
Arsenic	8.8[2]	Human Health	Dry Well	16
Lead	400[2]	Human Health	Dry Well	1,200

Key:
1 – 18 AAC 75.341(e)(2) Method 3, Migration to Groundwater Pathway
2 – 18 AAC 75.341, Table B1, Method Two - Soil Cleanup Levels
AOC – area of concern
COC – contaminant of concern
DRO – diesel range organics
mg/kg – milligram per kilogram

Arsenic – a toxic element that occurs naturally as a mineral within the earths crust and exists in high concentrations within Alaska.

DRO – A measurement of organics within the diesel fuel range.

Lead – a toxic element that occurs naturally in small amounts in the earths crust and used historically in paints, ceramics, pipes, and plumbing materials, solders, gasoline, ammunition, and cosmetics.

Dry Well AOC investigations were completed in 2015 and included soil samples collected at depths ranging from 6 to 55 ft-bgs from 6 soil borings (1 completed as a groundwater monitoring well) and two excavation samples collected after removal of the dry well of conveyance line. Arsenic and lead were the only COCs exceededing the screening criteria, and that only occurred in one sample at a depth of 12.5 ft-bgs, adjacent to the location of the former Dry Well, with an arsenic concentration of 16 mg/kg and a lead concentration of 1,200 mg/kg. The single detection of arsenic adjacent to the location of the former Dry Well was the only detection determined to be potentially associated with site operations. All other arsenic detections were determined to be associated with naturally occurring sources.

Table 2 Groundwater Contaminants of Concern

COC	Cleanup Criteria [1] (mg/L)	Maximum Site Concentration (mg/L)
Diesel range organics	1.5	2.27
Gasoline range organics	2.2	4.76
Ethylbenzene	0.015	0.215
Xylenes (total)	0.19	0.69
1,2,4-trimethylbenzene	0.056	0.693
1,3,5-trimethylbenzene	0.06	0.204
Naphthalene	0.0017	0.18
1-methylnaphthalene	0.011	0.039
2-methylnaphthalene	0.036	0.0607
Lead	0.015	0.0982

Key:
1 – 18 Alaska Administrative Code 75.345, Table C groundwater cleanup levels
COC – Contaminant of concern
mg/L – milligram per litter

Site-Wide Groundwater AOC investigations were completed between 2007 and 2015 with the installation of 18 groundwater monitoring wells completed around the SCS. Analysis of groundwater samples from all but two of these wells did not find any contaminants above the cleanup levels. Groundwater samples from the two wells closest to the Burn Pit AOC had numerous exceedances of the screening criteria resulting in the following COCs: DRO, gasoline range organics [GRO], ethylbenzene, xylenes, 1,2,4-trimethylbenzene [1,2,4-TMB], 1,3,5-trimethylbenzene [1,3,5-TMB], 1- methylnaphthalene [1-MNPT], 2-methylnaphthalene [2-MNPT], and naphthalene. Although arsenic was also

detected at a concentration that exceeded the cleanup level, it was determined to be associated with naturally occurring sources.

Lead was detected above screening criteria in a single sample collected from the Water Supply Well, which is believed to be associated with the components of the water distribution system.

SCOPE AND ROLE OF REMEDIAL ACTION

The Remedial Alternative proposed in this Proposed Plan is part of the U.S. Army response to the presence of DRO in soil at the Burn Pit, arsenic and lead in soil at the Dry Well, and DRO, GRO, ethylbenzene, xylene, 1,2,4-TMB, 1,3,5-TMB, 1-MNPT, 2-MNPT, and lead in Site-Wide Groundwater.

SUMMARY OF SITE RISKS

A human health screening level risk assessment (HHSLRA) and the first two steps of the ADEC ecological risk assessment (ERA) process (Step 1 Ecological Scoping Evaluation and Step 2 Ecological Screening Evaluation) were conducted for the SCS as part of the SRI (U.S. Army, 2018). The Scope of the screening risk assessment was to identify the potential for adverse effects to human health and the environment based on comparison of site concentrations to generic and/or site-specific screening concentrations.

The HHSLRA assessed human health risk in comparison to the ADEC excess cancer risk threshold of 1×10^{-5}, the U.S. Environmental Protection Agency's (EPA) acceptable risk range of 1×10^{-4} to 1×10^{-6}, and the hazard index (HI) of 1. The ADEC and EPA cancer risk values represent acceptable exposure levels to carcinogenic constituents and a HI up to 1 represents an acceptable exposure to noncarcinogenic constituents. The human health risks for the Burn Pit, Dry Well, and Site Groundwater AOCs are as follows:

Regulatory Basis

This Proposed Plan follows the format and process of the CERCLA, at 42 United States Code § 9601 et. Seq., and the NCP, at 40 CFR Part 300. The Defense Environmental Restoration Program is the program the Army uses to take CERCLA response actions and satisfy its CERCLA lead agency functions as delegated by Executive Order 12580. This Proposed Plan also meets requirements of Alaska State law and regulations including, but not limited to, Title 46 of the Alaska Statutes and the regulations promulgated thereunder. This Proposed Plan is a document that the U.S. Army is required to issue to fulfill the requirements of CERCLA § 117(a) and NCP § 300.430 (f)(2).

- Burn Pit AOC – There is not a risk to human health based on existing surface and subsurface soil concentrations.

- Dry Well AOC - There is a cancer risk, primarily due to the presence of arsenic, with a calculated risk of 3.6×10^{-5} which slightly exceeds the ADEC excess cancer risk threshold of 1.0×10^{-5} but is within the EPA acceptable risk range.

- Site-Wide Groundwater AOC – There is a cancer risk, primarily due to the presence of naphthalene , ethylbenzene, and 1-MNPT, with a calculated risk of 1×10^{-3} which exceeds the acceptable ADEC and EPA values. Additionally, there is also a noncarcinogenic risk, primarily driven by 1,2,4-TMB, 1,3,5-TMB, xylenes, 2-MNPT, and cobalt, with a calculated HI of 58 which exceeds the acceptable ADEC and EPA value. Additionally, GRO, DRO, and lead concentrations in groundwater were above ADEC cleanup levels and may also present potential human health concerns.

  Management of the fuel related contaminants will reduce the noncancer risk to acceptable levels. While cobalt was a contributor to the total noncancer risk calculation, it is not necessary for the groundwater remedy to address cobalt as it is a naturally occurring element, soil concentrations at SCS were predominantly found below the established site-specific background value, detected groundwater concentrations were generally consistent with naturally occurring cobalt concentrations, and anthropogenic uses of cobalt were not part of the operations at SCS.

The ERA concluded that ecological receptors (such as upland birds, mammals, invertebrates, and plant communities) could be exposed to contamination in the shallow soils. However, because of the small size of the AOCs, any such exposure would be limited. Also, the screening levels are generally very conservative and the detected concentrations of COCs were generally low. Based on this information and the ADEC decision criteria, the potential risk to ecological receptors is considered to be insignificant and therefore any remedial action does not need to consider ecological risk.

REMEDIAL ACTION OBJECTIVE

The Remedial Action Objectives (RAOs) are specific goals for protecting human health and the environment. The RAOs for the SCS include three specific goals to protect human health and the environment.

- RAO 1 is to prevent the exposure of human receptors with contaminated media that pose a cumulative carcinogenic risk greater than 1 in 100,000 or a cumulative noncarcinogenic HI greater than 1 across all exposure pathways. Specifically, reduce concentrations of arsenic and lead in soil less than 15 ft bgs to below ADEC cleanup levels protective of human health.

- RAO 2 is to restore groundwater water quality standards to protective of human receptors considering cumulative exposure through dermal contact, ingestion, and inhalation of volatile compounds in groundwater. Specifically, to reduce concentrations of: naphthalene, DRO, GRO, ethylbenzene, xylenes, lead, 1,2,4-TMB, 1,3,5-TMB, 1-MNPT, and 2-MNPT in groundwater to below ADEC cleanup levels.

- RAO 3 is to prevent further degradation of groundwater by reducing the concentrations of COCs in soil to levels protective of groundwater quality. Specifically, to reduce concentrations of DRO in soil to below alternative cleanup levels (ACLs) for protection of migration to groundwater.

CLEANUP GOALS

Soil cleanup goals were selected based on the most conservative of the human health cleanup level (18 AAC 75.341 Tables B1 and B2, under 40-inch zone), the maximum allowable concentration (for petroleum hydrocarbons only, 18 AAC 75.341 Table B2), and the ADEC Method Three migration-to-groundwater value (U.S. Army, 2018). Groundwater cleanup goals are based on groundwater human health cleanup levels (18 AAC 75.345 Table C). Table 3 presents the soil and groundwater cleanup levels.

Table 3 Cleanup Goals

COC	Soil Cleanup Level (mg/kg)	Groundwater Cleanup [3] Level (mg/L)
Diesel range organics	3,300 [1]	1.5
Gasoline range organics	NA	2.2
Ethylbenzene	NA	0.015
Xylenes (total)	NA	0.19
1,2,4-trimethylbenzene	NA	0.056
1,3,5-trimethylbenzene	NA	0.06
Naphthalene	NA	0.0017
1-methylnaphthalene	NA	0.011
2-methylnaphthalene	NA	0.036
Arsenic	8.8 [2]	NA
Lead	400 [2]	0.015

Key:
1 – 18 AAC 75.341(e)(2) Method 3, Migration to Groundwater Pathway
2 – 18 AAC 75.341, Table B1, Method Two - Soil Cleanup Levels
3 – 18 AAC 75.345, Table C Groundwater Cleanup Levels
AAC - Alaska Administrative Code
COC – Contaminant of concern
mg/kg – milligram per kilogram
mg/L – milligram per liter
NA – not applicable

REMEDIAL ALTERNATIVES

The remedial alternatives listed in Table 4 were developed for the Dry Well, Burn Pit, and Site-Wide Groundwater AOCs by assembling specific response actions to create site remedies that are effective, implementable, and have reasonable costs to address site contamination and mitigate potential risks.

ALTERNATIVE 1 – NO ACTION

The no action alternative is required by the CERCLA process. It assumes no further work will be conducted to provide a baseline comparison with other actions (40 CFR 430(e)(6)).

ALTERNATIVE 2 – LAND USE CONTROLS AND MONITORED NATURAL ATTENUATION

Land Use Controls (LUCs) would be used to prevent uncontrolled exposure of potential receptors to contaminated media. Controls and monitoring would be required if any excavation activities were performed and land use would be controlled to preclude residential development or withdrawal of groundwater for any beneficial use over the

Table 4 Summary of Remedial Alternatives

Alternative	Name	Description
1	No Action	No further action will be taken.
2	LUCs and MNA	LUCs would control exposure to soil and groundwater. MNA would monitor natural attenuation of contaminants in groundwater.
3	Excavation of Contaminated Soil, MNA, and LUCs	Excavation and offsite disposal of arsenic and lead at the Dry Well AOC, excavation and offsite treatment of petroleum contaminated soil at the Burn Pit AOC, MNA would monitor natural attenuation of contaminants in groundwater, and LUCs would control exposure to groundwater.
4	Excavation of Contaminated Soil, Biosparging, and LUCs	Excavation and offsite disposal of arsenic and lead at the Dry Well AOC, excavation and offsite treatment of petroleum contaminated soil at the Burn Pit AOC, biosparging would treat contaminants in groundwater, and LUCs would control exposure to groundwater.
5	Excavation of Contaminated Soil, ISCO, and LUCs	Excavation and offsite disposal of arsenic and lead at the Dry Well AOC, excavation and offsite treatment of petroleum-contaminated soil at the Burn Pit AOC, in-situ chemical oxidation (ISCO) would treat contaminants in groundwater, and LUCs would control exposure to groundwater.

groundwater plume. Any structures built at the site near source areas containing contaminants would have to be designed and constructed to mitigate vapor intrusion concerns. Under this alternative, the Water Supply Well would be decommissioned to prevent future use and potential exposure to lead.

Implementation of this alternative would require documentation of the LUCs, maintenance of administrative controls through review of work clearance permits, periodic inspections of the site, and corrective action for LUC violations. The U.S. Army would be responsible for documenting, monitoring, maintaining, and enforcing the LUCs.

Monitored Natural Attention (MNA) would be used to verify that COC concentrations in groundwater at the Burn Pit AOC are stable or decreasing and that COCs in groundwater are not threatening potential receptors. The protectiveness of the remedy would be evaluated during CERCLA Five-Year Reviews. MNA is assumed to take 40 years to reduce concentrations of COCs in groundwater to below cleanup levels. However, LUCs and CERCLA Five-Year Reviews would continue in perpetuity.

LUCs: Physical, legal, and administrative methods of controlling site risks to human health and the environment.

MNA: a treatment process where the natural attenuation process of contaminants is allowed to occur without enhancement but is monitored to ensure progress.

Capital costs: $97,000
Duration: 100 years (used for costing purposes)
Total present value: $1,590,000

ALTERNATIVE 3 – EXCAVATION OF CONTAMINATED SOIL, MONITORED NATURAL ATTENUATION, AND LAND USE CONTROLS

This is the preferred alternative which combines several specific response actions to achieve the stated RAOs. This alternative includes:

1. Dry Well AOC: Excavation and offsite disposal of the arsenic-and lead-contaminated soil exceeding the cleanup levels.

2. Burn Pit AOC: Excavation and offsite treatment of DRO-contaminated soil exceeding the cleanup level.

3. Site-Wide Groundwater AOC: Implementation of MNA and LUCs. Groundwater would be monitored to document reductions in COC concentrations/mass and plume stability or contraction via natural attenuation processes. The Water Supply Well would be decommissioned and a monitoring well installed and sampled to determine if lead concentrations at this location are above or below cleanup levels. LUCs would be implemented and maintained to prevent exposure with contaminated media until the concentrations of all COCs in soil and groundwater reach levels that allow for unlimited use and unrestricted exposure.

Implementation of this alternative would require documentation of the LUCs, maintenance of administrative controls through review of work clearance permits, periodic inspections of the site, and corrective action for LUC violations. The U.S. Army would be responsible for documenting, monitoring, maintaining, and enforcing the LUCs.

After active remediation is complete, it is expected that only MNA and LUCs would be required for site groundwater beneath the Burn Pit AOC. The protectiveness of the remedy would be evaluated during CERCLA Five-Year Reviews. MNA is assumed to take 20 years to reduce concentrations of COCs in groundwater to below cleanup levels after excavation and removal of DRO-contaminated soil at the Burn Pit AOC.

Capital costs:	$641,000
Duration:	20 years
Total present value:	$1,185,000

ALTERNATIVE 4 – EXCAVATION OF CONTAMINATED SOIL, BIOSPARGING, AND LAND USE CONTROLS

Alternative 4 includes:

1. Dry Well AOC: Excavation and offsite disposal of the arsenic- and lead-contaminated soil exceeding the cleanup levels.
2. Burn Pit AOC: Excavation and offsite treatment of DRO-contaminated soil exceeding the cleanup level.
3. Site-Wide Groundwater AOC: Biosparging and LUCs. Biosparging would include several air injection wells, vapor monitoring wells, a blower system to inject air into the groundwater, and a generator to operate the blower system. The injection of air would increase the dissolved oxygen in the groundwater in order to stimulate aerobic degradation and also remove some volatiles through volatilization. Groundwater would be monitored to document reductions in COC concentrations/mass. The Water Supply Well would be decommissioned and a monitoring well installed and sampled to determine if lead concentrations at this location are above or below cleanup levels.

LUCs would be implemented and maintained to prevent exposure to contaminated media until the concentrations of all COCs in soil and groundwater reach levels that allow unlimited use and unrestricted exposure. After completion of the removal actions, it is expected that only biosparging and LUCs would be required for site groundwater beneath the Burn Pit AOC. A total of 3 years of biosparging and 3 additional years of groundwater monitoring are assumed to reduce concentrations of COCs in groundwater to below cleanup levels. The protectiveness of the remedy would be evaluated during CERCLA Five-Year Reviews.

Capital costs:	$1,100,000
Duration:	6 years
Total present value:	$1,516,000

ALTERNATIVE 5 – EXCAVATION OF CONTAMINATED SOIL, IN-SITU CHEMICAL OXIDATION, AND LAND USE CONTROLS

Alternative 5 includes:

1. Dry Well AOC: Excavation and offsite disposal of the arsenic- and lead-contaminated soil exceeding the cleanup levels.
2. Burn Pit AOC: Excavation and offsite treatment of DRO-contaminated soil exceeding the cleanup level.
3. Site-Wide Groundwater AOC: In-situ chemical oxidation (ISCO) and LUCs. ISCO is a process by which chemical oxidants are introduced and the contaminants react with the oxidant and are degraded to innocuous substances such as carbon dioxide, water, and inorganic constituents. Groundwater would be monitored to document reductions in COC concentrations/mass. The Water Supply Well would be decommissioned and a monitoring well installed and sampled to determine if lead concentrations at this location are above or below cleanup levels.

ISCO would include two injection events in a grid pattern covering the footprint of the groundwater plume beneath the Burn Pit AOC and targeting the upper 10 feet of the saturated zone. The chemical oxidant would include approximately 51,000 pounds of sodium persulfate and 74,000 pounds of alkaline activation reagent.

LUCs would be implemented and maintained to prevent exposure with contaminated media until the concentrations of all COCs in soil and groundwater reach levels that allow unlimited use and unrestricted exposure. After completion of the removal actions and ISCO treatment, it is expected that 3 years of groundwater monitoring would be required to document that COCs in site groundwater beneath the Burn Pit AOC are below ADEC cleanup levels. The protectiveness of the remedy would be evaluated during CERCLA Five-Year Reviews.

Capital costs: $1,086,000
Duration: 4 years
Total present value: $1,353,000

Table 5 **Alternatives Comparative Evaluation**

Item	Alternatives				
	1	2	3	4	5
	No Action	LUCs and MNA	Excavation of Contaminated Soil, MNA, and LUCs	Excavation of Contaminated Soil, Biosparging, and LUCs	Excavation of Contaminated Soil, ISCO, and LUCs
THRESHOLD CRITERIA					
Protection of Human Health and Environment	Fail	Fail	Pass	Pass	Pass
Compliance with ARARs/TBCs	Fail	Fail	Pass	Pass	Pass
PRIMARY BALANCING CRITERIA					
Long-Term Effectiveness and Permanence	N/A	N/A	Moderate	High	High
Reduction in Toxicity, Mobility, or Volume through Treatment	N/A	N/A	Low-Moderate	High	High
Short-Term Effectiveness	N/A	N/A	Moderate	Moderate-High	Low-Moderate
Implementability	N/A	N/A	High	Low	Moderate
Cost	$0	N/A	$1,185,000	$1,516,000	$1,353,000
MODIFYING CRITERIA					
State/Support Agency Acceptance	N/A	N/A	TBD	TBD	TBD
Community Acceptance	N/A	N/A	TBD	TBD	TBD

Key:
ARARs – applicable or relevant and appropriate requirements
LUC – Land Use Control
MNA – Monitored Natural Attenuation
N/A – Not applicable
NPV – Net Present Value
TBC – To Be Considered
TBD – To Be Determined
ISCO – In-Situ Chemical Oxidation
% – percent

EVALUATION OF ALTERNATIVES

The five alternatives were evaluated individually and against each other based on the nine criteria identified in CERCLA Section 121(b) and the NCP Section 300.430(f)(5)(I), (the nine criteria are presented in Table 5 above). These criteria provide a basis for comparison of the relative performance of the alternatives and identifies their advantages and disadvantages. Evaluating against the nine criteria provides sufficient information to adequately compare the alternatives and select the most appropriate approach for a site.

The nine criteria are divided into three groups: threshold, balancing, and modifying criteria. Threshold criteria must be met by a particular alternative for it to be eligible for selection. Balancing and modifying criteria are then used to establish the rationale for choosing the most appropriate alternative.

The results of this evaluation are used to identify a **Preferred Alternative**. The relative performance of each alternative when compared to the nine criteria, and how it compares to the other alternatives under consideration are discussed below.

A detailed analysis of the alternatives can be found in the FS (U.S. Army, 2020), which serves as a basis for this Proposed Plan. **Table 4** of this Proposed Plan present the alternatives for the SCS Burn Pit, Dry Well, and site groundwater using the evaluation criteria.

THRESHOLD CRITERIA

Overall Protection of Human Health and the Environment – determines whether an alternative eliminates, reduces, or controls threats to public health and the environment.

Alternatives 3, 4, and 5 would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through treatment and/or land use controls.

Alternatives 1 and 2 do not provide overall protection of human health and the environment.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) – evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

ARARs: State and federal laws and regulations that must be met or considered in development and implementation of site cleanup

Alternatives 3, 4, and 5 would meet their respective state and federal ARARs. Alternatives 1 and 2 do not comply with applicable ARARs.

BALANCING CRITERIA

As Alternatives 1 and 2 are not protective of human health and the environment and do not meet respective ARARs, they were eliminated from consideration and not evaluated with respect to the balancing criteria.

Long-Term Effectiveness and Permanence – considers the ability of an alternative to maintain protection of human health and the environment over time.

Alternative 3 removes contamination in soil exceeding cleanup levels at the Burn Pit and Dry Well AOCs but relies on MNA for treatment of groundwater. As a result, this alternative was rated Moderate.

Alternatives 4 and 5 treat or remove contamination in soil and groundwater to ultimately achieve cleanup levels and Cleanup Complete in a shorter time period. As a result, both were scored High.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment – evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Alternative 3 removes contamination in soil exceeding cleanup levels at the Burn Pit and Dry Well AOCs but relies on MNA for treatment of groundwater. As a result, this alternative was rated Low-Moderate.

Alternatives 4 and 5 treat or remove contamination in soil and groundwater. As a result, both were scored High.

Short Term Effectiveness – considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

Alternatives 3, 4, and 5 all include excavation and transportation of contaminated soil for offsite treatment or disposal.

Alternative 3 would take an estimated 20 years to achieve groundwater quality standards verses the 4 to 6 years that Alternatives 4 and 5 are estimated to take and was, therefore, rated Moderate.

Alternative 4 has relatively low risk during implementation and a short duration to achieve cleanup and was, therefore, rated Moderate-High.

Alternative 5 includes the transportation, handling, and injection of chemicals, which poses additional risks to workers and the environment if mishandled and was, therefore, rated Low-Moderate.

Additional Information

The SCS administrative record is located at:

Fort Wainwright CERCLA
Library
Building 4320
Fort Wainwright, AK, 99703

Implementability – considers the technical and administrative feasibility of implementing an alternative, including factors such as the relative availability of goods and services.

Alternatives 3, 4, and 5 all include excavation and transportation of contaminated soil for offsite treatment or disposal.

Alternative 3 only includes MNA beyond the excavations and was therefore rated High.

Alternative 4 involves the installation, operation, and maintenance of an active remedial system and establishment of a power source and was therefore rated Low.

Alternative 5 involves the injection of a chemical oxidant which could require multiple injection rounds to achieve objectives and was therefore rated Moderate.

Cost – includes estimated capital and annual operations and maintenance costs, as well as net present value. Net present value is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

Alternative 3 has the lowest total present value cost. Alternative 4 is 28% more expensive and Alternative 5 is 14% more expensive.

MODIFYING CRITERIA

State Acceptance – considers whether the State agrees with the preferred alternative identified in the Proposed Plan.

The State agency is Alaska Department of Environmental Conservation (ADEC). ADEC has participated in the development of this Proposed Plan and supports it. Final ADEC support of the decision will be evaluated following the public comment period.

Community Acceptance – considers whether the local community agrees with the preferred alternative identified in the Proposed Plan. Comments received on the Proposed Plan are an important indicator of community acceptance. Community acceptance of the preferred alternatives will be evaluated after the public comment period ends. Community comments and responses will be included in the ROD.

PREFERRED ALTERNATIVE

Based on a thorough examination of the five Alternatives and evaluations against the nine criteria, as described above, the Preferred Alternative for the Burn Pit AOC, Dry Well AOC, and Site-Wide Groundwater AOC is:

ALTERNATIVE 3 – EXCAVATION OF CONTAMINATED SOILS, MNA, AND LUCs

This alternative would remove contaminated soil containing COCs at concentrations greater than the cleanup levels by excavating and treating or disposing of the contaminated soil offsite. Groundwater exceeding cleanup levels below the Burn Pit would be treated in-situ using MNA. The Water Supply Well would be decommissioned to eliminate the potential for exposure to lead associated with well components and a monitoring well installed and sampled to determine if lead concentrations at this location are above or below cleanup levels. LUCs would be implemented to prohibit the use of groundwater near the Burn Pit plume until cleanup levels are achieved through MNA.

Based on information currently available, the U.S. Army believes the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The U.S. Army expects the Preferred Alternative to satisfy the statutory requirements of CERCLA Section 121(b) by:

1) Protecting human health and the environment.
2) Complying with ARARs.
3) Being cost-effective.
4) Utilizing permanent solutions and treatment technologies.
5) Satisfying the preference for treatment.

The Preferred Alternative is based on current information, which could change in response to public comment or new information.

PUBLIC PARTICIPATION REQUEST

The U.S. Army invites the public to review and comment on the recommendations in this Proposed Plan. The final decision for the sites will be made after the end of the comment period. The alternative selected for the AOCs can change in response to public comments or new information presented during the public participation period.

After consideration of comments, the U.S. Army will document the decision for the site in a ROD. All comments received by the U.S. Army will be summarized in the Responsiveness Summary section of the ROD. You can send comments in writing or by email. Comments may also be presented at the public meeting.

PUBLIC MEETING

A public meeting is scheduled from 5:00 p.m. to 7:00 p.m. on Tuesday, July 25th 2023 at the Delta Junction Community Center. The Proposed Plan will be discussed and questions taken.

PUBLIC COMMENT PERIOD

You are encouraged to comment on this Proposed Plan.

Please send comments via email to the Fort Wainwright Public Affairs Officer, Grant Sattler at

alan.g.sattler.civ@mail.mil
or
usarmy.wainwright.id-pacific.list.pao@mail.mil

The public comment period begins on July 16th 2023 and ends on August 15th 2023. Comments postmarked by August 15th 2023 will be addressed.

Contact for Questions

If you have any questions about the information provided in this Proposed Plan,

or if you would like to be added to or deleted from the mailing list, please contact:

Grant Sattler, USAG, Alaska

Fort Wainwright Public Affairs Officer
Telephone: (907) 353-6701
alan.g.sattler.civ@mail.mil
or
usarmy.wainwright.id-pacific.list.pao@mail.mil

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Glossary of Terms

Administrative Record: Documents used to form the basis of environmental response actions.

Applicable, Relevant, or Appropriate Requirements (ARARs): State and federal laws and regulations that must be met or considered in development and implementation of cleanup alternatives at a site. These include cleanup standards, standards of control, and other substantive environmental protection requirements, factors, or limitations under federal or state environmental or facility-siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site.

Cleanup Level: The maximum concentration or amount of a chemical permitted to remain in the environment. Levels have been determined to be protective of human health and the environment.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Federal statute established in 1980, modified in 1986, also known as “Superfund”, that establishes a comprehensive framework to identify, investigate, and cleanup releases or threatened releases of hazardous substances, pollutants, or contaminants into the environment. CERCLA provides the statutory authority for cleanup of hazardous substances, pollutants, or contaminants that could endanger public health, welfare, or the environment (42 USC § 9601 et. seq.).

Groundwater: Water that is below ground surface and contained within the pore spaces of sand, gravel, or organic material, or within cracks in fractured bedrock.

Land Use Controls (LUCs): Any type of physical, legal, proprietary or administrative mechanism that restricts the use of, or limits access to, real property to prevent or reduce risks to human health and the environment. Physical mechanisms (i.e., engineering controls) encompass a variety of engineered remedies to contain or reduce contamination and physical barriers to limit access to property, such as landfill caps, fences, or signs. The legal, proprietary, or administrative mechanisms used for LUCs are generally the same as those used for used for institutional controls (ICs), as discussed in the NCP. Examples of ICs include: deed notices; IC registries, property easements and covenants; installation administrative controls, such as construction and work request review and approval processes; and administrative orders and cleanup agreements.

Monitored Natural Attenuation (MNA): a treatment process where the natural attenuation process of contaminants is allowed to occur without enhancement but is monitored to ensure progress.

National Contingency Plan (NCP): The National Oil and Hazardous Substances Pollution Contingency Plan, commonly referred to as the NCP, 40 Code of Federal Regulations (CFR) Part 300, is a set of regulations setting forth procedures that lead agencies must follow when implementing CERCLA and similar response authorities under the Clean Water Act.

Preferred Remedial Alternatives: Appropriate cleanup or site management options that ensure protection of human health and the environment.

Proposed Plan: A document required by Section 117(a) of CERCLA that informs the public about contaminated sites, alternatives that are being considered for cleaning up the sites, and which identifies the preferred alternatives. This document encourages public comment on all alternatives.

Record of Decision (ROD): A document required by CERCLA containing the final decision and statutory determinations of the lead agency concerning selection of the remedial action at a site(s). This includes any preliminary phase of a remedial action, such as an interim remedial action, which would require an interim ROD.

Responsiveness Summary: A summary of oral and written public comments received during the comment period and the responses to those comments. The responsiveness summary is part of the ROD.