



US Army Corps of Engineers

Proposed Plan for PMA-BG-003

Atka Air Force Auxiliary Field FUDS on Atka, Alaska

Virtual Public Meeting

Tuesday, August 20, 2024
@ 5 PM HDT Hawaii/Aleutians
6 PM AKDT Alaska

MS Teams meeting details:

<https://tinyurl.com/Atka-FUDS>
Meeting ID: 224 044 801 577
Passcode: AJAYvC
or call (907) 308-8052
Conference ID: 875 512 605#

Public Comment Period

August 9 to September 23, 2024

You are encouraged to comment on this Proposed Plan. The USACE will accept written, e-mail, and voicemail comments during the public comment period, as well as verbal comments provided during the public meeting. A pre-addressed form is included with this document. All comment letters must be postmarked by September 23, 2024.

Submit comments to:

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The information summarized in this CERCLA Proposed Plan can be found in greater detail in the Remedial Investigation Reports, Feasibility Study, and other documents contained in the Administrative Record file for this site, which is housed at the Tribal Council Office on 362 Chavichax Lane, Atka. USACE encourages the public to review these documents to gain a more comprehensive understanding of the AF AUX FLD and the response activities that have been conducted.

Your participation and comments are encouraged.

USACE ANNOUNCES PROPOSED PLAN

The U.S. Army Corps of Engineers (USACE) requests your comments on this Proposed Plan for contamination present at the PMA-BG-003 Former Material Handling Building located within the Air Force Auxiliary Field (AF AUX FLD) Formerly Used Defense Sites (FUDS) property on Atka Island, Alaska. PMA-BG-003 is within the FUDS Port and Materials Area (Figure 1). The FUDS ID number for this property is F10AK085102.

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 (U.S. Code [USC] Title 42, §9601 et seq. [42 USC 9601 et seq.]). The AF AUX FLD contains CERCLA-regulated features but is not listed on the National Priority List.

PURPOSE

USACE is issuing this Proposed Plan as part of its public participation responsibilities under CERCLA. The purposes of this Proposed Plan are as follows:

- Communicate the environmental conditions and risks posed by the site;
- Describe the prior investigations, remedial actions, and removal actions conducted;
- Specify cleanup criteria;
- Summarize the potential alternatives that were considered and the rationale for the preferred remedial alternative (**Creosote Timber and Soil Removal with Off-site Landfilling**) for PMA-BG-003;
- Request public comment on the preferred and all other remedial alternatives; and
- Provide information on how the public can provide input to the remedy selection process.

CONTENTS

Site Characteristics	2
Environmental Setting	4
Site History	4
Previous Investigation Results.....	5
Contaminants of Potential Concern	6
Nature and Extent of Contamination	6
Scope and Role of the Response Action...	7
Summary of Site Risks.....	7
Basis for Action.....	9
Remedial Action Objectives	9
Summary of Alternatives	10
Evaluation of Alternatives.....	11
Preferred Alternative	13
Community Participation	14
Glossary	15
References	17

This Proposed Plan was prepared in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and follows the requirements from the Engineer Regulation 200-3-1, FUDS Program Policy (USACE 2020) and U.S. Environmental Protection Agency (EPA) guidance (EPA 1994, 1999). The U.S. Department of Defense is authorized to carry out a program of environmental restoration at former military properties, including FUDS, under the Defense Environmental Restoration Program, 10 USC 2700 et seq.

This Proposed Plan addresses CERCLA-eligible contamination. USACE is the lead executing agency on behalf of the U.S. Department of Defense. Alaska Department of Environmental Conservation (ADEC) is the regulatory support agency. The preferred alternative for polycyclic aromatic hydrocarbons (PAHs) in soil at PMA-BG-003 is **Creosote Timber and Soil Removal with Off-site Landfilling**. A more in-depth look at the remedies considered for PMA-BG-003 is provided in the 2023 Feasibility Study, which is available as part of the Administrative Record at the Tribal Council Office described in the Public Meeting summary on Page 1. Although this Proposed Plan recommends a preferred remedial alternative for the property, 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 alternatives presented in this Proposed Plan. After considering all public comments, USACE will prepare a Record of Decision describing the selected remedy. The Record of Decision 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.

Terms Defined in the Glossary (Page 15) are Highlighted upon their first use in text.

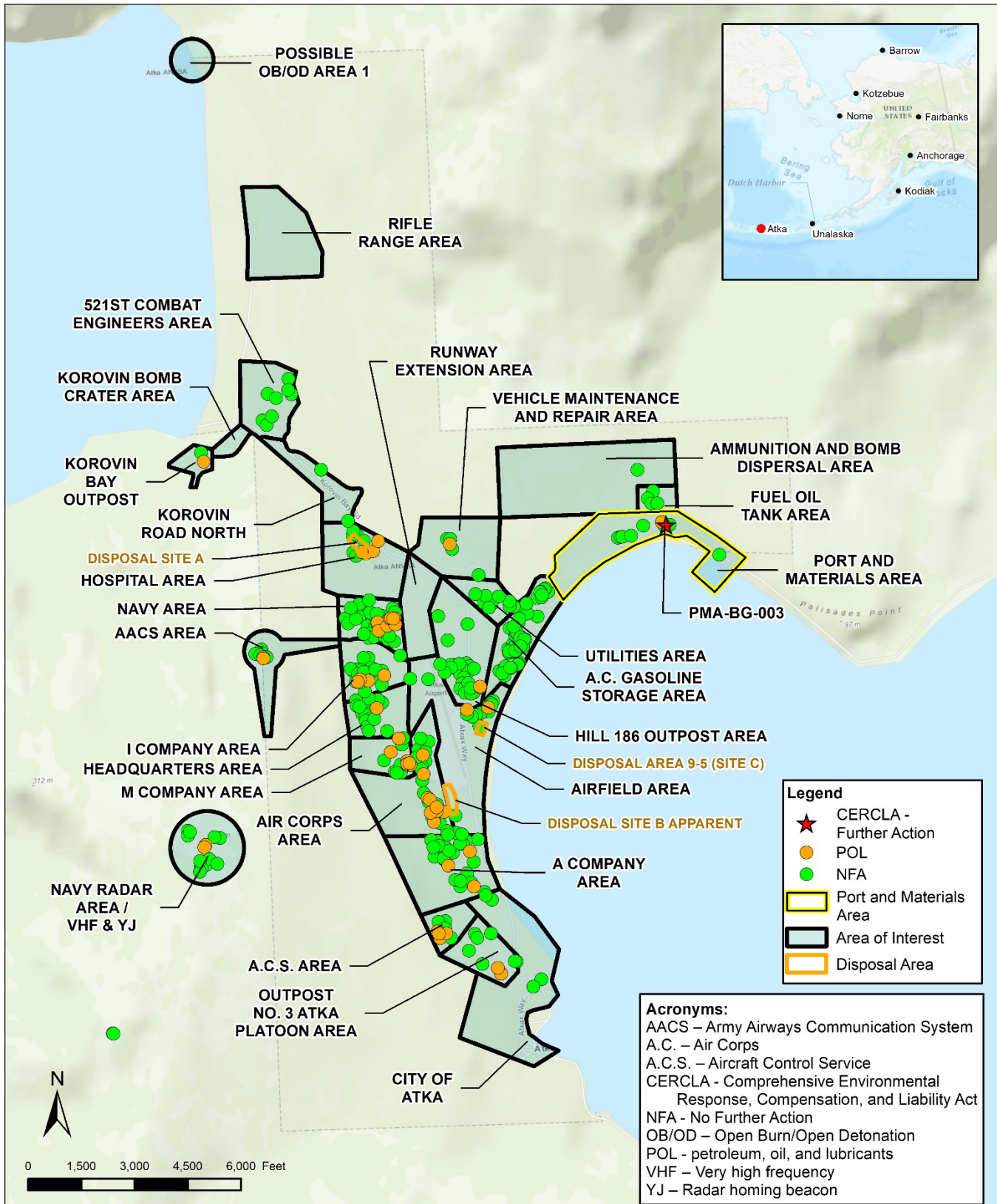
SITE CHARACTERISTICS

PMA-BG-003 is located on Atka Island in the Andreanof Islands of the Aleutian Archipelago (latitude 52°13'43" North and longitude 174°12'19" West) (Figure 1 [see inset]). The island is approximately 1,100 miles southwest of Anchorage, Alaska, and 110 miles northeast of Adak Island, Alaska. Access to Atka Island is by commercial or chartered airplane via Dutch Harbor, and access to the site from the City of Atka is by foot or utility vehicle. Freight services are available by barge from Seattle beginning in May and running through October.

The nearest inhabited area is the City of Atka, located more than a mile south-southwest from the Atka Airport runway and 5 miles from PMA-BG-003; the city has a population of 53 (State of Alaska, Department of Labor 2021). The majority of Atka Island is undeveloped, and the economy is primarily based on subsistence living and fishing (USACE 2009). Land uses in the area surrounding the site primarily include recreation and subsistence harvesting and hunting with some residential and commercial use. Seasonal camps and subsistence resources exist in the vicinity of PMA-BG-003, including a historical camp adjacent to Dock Creek (named *Yaxagim chugaa* in Aleut) (ADF&G 1983). Future land uses are likely to remain unchanged. City of Atka residents obtain their municipal water supply from a stream and dammed reservoir located south-southwest of the community.



PMA-BG-003 is the only CERCLA site remaining at the Atka AF AUX FLD FUDS (Figure 1). Groundwater is present at approximately 6.5 feet below ground surface (bgs). PMA-BG-003 is situated approximately 100 feet from the nearest surface water drainage and approximately 200 feet from the coastline.



Note: The Korovin Bomb Crater Area, Rifle Range Area, and Possible OB/OD Area 1 have been addressed under the Military Munitions Response Program.

Figure 1 – Areas of Interest

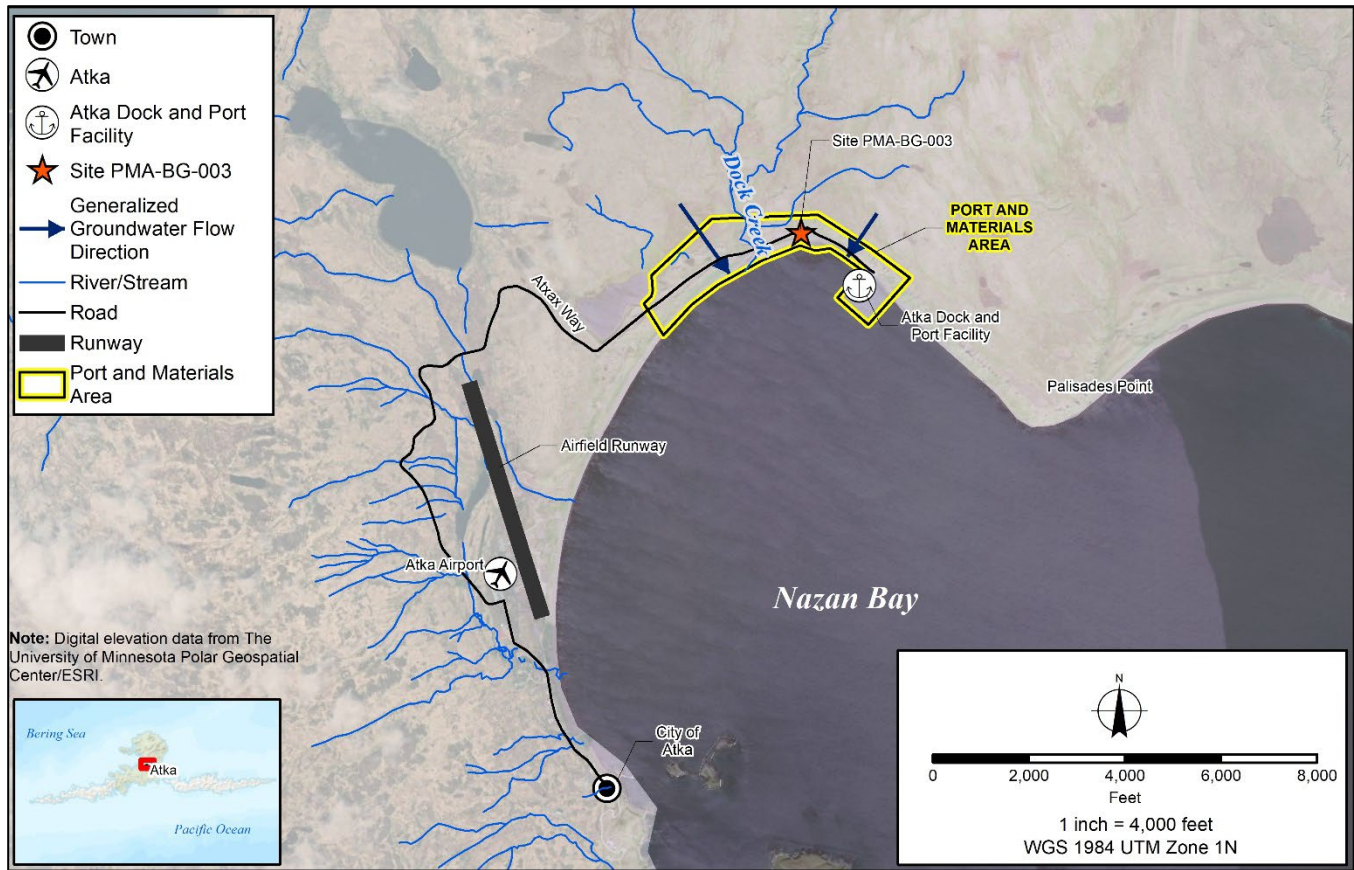


Figure 2 – PMA-BG-003

ENVIRONMENTAL SETTING

Atka Island has two distinct geographical regions. The southwestern portion is a geologically older eroded area while the northeastern portion where the site is located is younger and more rugged. Two volcanoes, Mount Kliuchef and Korovin Volcano, are located 5.8 miles northeast and 10 miles north of the site, respectively. Mount Kliuchef is dormant, and Korovin Volcano is active with frequent seismic activity and volcanic tremors. Bedrock on the island consists of basalts, andesites, and breccias. Soils on the island are derived from the weathered byproducts of volcanic rocks (USACE 1999). Where present, regional groundwater depth is variable depending on localized conditions and ranges from 1 to 35 feet bgs. Lakes and ponds occur in most topographic depressions, and small streams flow from the highlands down to the island shoreline.

Vegetation on the island includes various arctic and alpine species of mosses, bryophytes, grasses, and other low-growing plants. Trees are not native to Atka, and any that currently exist there have been introduced. At 1,000 feet above sea level, vegetation becomes sparse as a result of exposure to very high winds (USACE 1999). The surrounding marine environment supports commercial and subsistence fishing for a variety of fish and shellfish species. Bird species of Atka Island include bald eagles, ravens, rock ptarmigan, puffins, and other seabirds. Reindeer were introduced on Atka Island in 1914; several thousand now roam the island and are a source of food for residents. Introduced foxes are also common throughout the island. Marine mammals, including sea otters, sea lions, and seals, can be found along the coast (USACE 1999). The nearest known Steller's sea lion haulout is located on the northern coast of Atka Island approximately 12 miles from PMA-BG-003.

SITE HISTORY

In 1913, Atka Island became part of the Aleutian Islands National Wildlife Refuge via Executive Order (EO) 1733, which states establishment of the refuge "shall not interfere with the use of the islands for lighthouse, military, or naval purposes, or with the extension of the work of the Bureau of Education on Unalaska and Atka Islands."

In September 1942, the U.S. Department of War acquired 6,800 land acres on Atka Island from the Department of the Interior (USACE 2019). The 83 inhabitants of Atka Island at that time were interned by the U.S. government and eventually resettled in Southeast Alaska on Killisnoo Island. On September 10, 1942, the Army Air Corps initiated construction of the military installation, including a 3,000-foot-long runway made of Marston matting. A naval air facility was established at Atka by the Eleventh Air Force on November 20, 1942, and the runway was completed on December 27, 1942. The Atka base was intended for long-range fighter and medium bomber operations against Japanese-held Kiska Island. Atka was reestablished as an auxiliary air facility on February 13, 1943. On September 1, 1943, the naval air facility was decommissioned, and a weather unit remained as the only naval activity (USACE 2019). Atka was primarily used for weather and radio communications and as a waystation between Fort Glenn on Umnak and Adak Islands.

Improvements at Atka included an airfield, hangar, dock, housing and storage facilities, and radio range outputs (USACE 2019). However, adverse weather, lack of materials, and poor docking facilities hampered work, and the higher priority of westward stations such as the one on Adak Island curtailed development. The resulting lack of materials halted construction of permanent facilities and forced the use of prefabricated structures. Improvements were abandoned in place when the site was vacated circa 1945-1946. In 1986, USACE removed more than 400 structures and miscellaneous debris from Atka AF AUX FLD FUDS, during which the large piles of creosote-coated timbers present at PMA-BG-003 were placed (Berg 1986).

The U.S. Air Force relinquished the Atka AF AUX FLD to the Department of the Interior on October 22, 1953. Atka Island remained a part of the Aleutian Islands National Wildlife Refuge, which then became part of the Alaska Maritime National Wildlife Refuge in 1980. The surface estate was made available for selection under the Alaska Native Claims Settlement Act of 1971. The Department of the Interior transferred the site to the Atxam Native Corporation by Interim Conveyance No. 159 dated February 27, 1979, and the Atxam Native Corporation remains the predominant property owner, including PMA-BG-003 (Alaska Department of Natural Resources 2020). The Alaska Department of Transportation & Public Facilities (ADOT&PF) owns and manages the airfield and adjacent taxiway at the City of Atka airport (Figure 2).



Creosote timbers remaining at PMA-BG-003

PREVIOUS INVESTIGATION RESULTS

Environmental investigations at the site have been ongoing since 1977 (USACE 1977, 1979, 1999, 2006, 2014; Berg 1986; DOI 1995; ODUUSD-ES/EQ 2001; ADOT&PF 2002; EPA 2002); these efforts culminated in a four-phase remedial investigation (RI) that addressed 28 unique geographical areas of interest that may have been affected by historical military activities at Atka AF AUX FLD. Most of the features identified within these areas of interest were recommended for No Further Action under CERCLA; a separate Proposed Plan has been developed to present those findings to the public. PMA-BG-003, the subject of this Proposed Plan, is the only feature identified for remedial action under CERCLA.

A comprehensive description of RI activities is available in the individual phase reports (USACE 2016, 2017, 2019). A brief timeline of investigation results specific to PMA-BG-003 is provided as follows:

2014: 28 Areas of Interest were identified via geospatial analysis. PMA-BG-003 is located within the Port and Materials Area.

2015: PMA-BG-003 was one of the assessed features warranting further environmental investigation during Phase I of the RI.

2016: PMA-BG-003 was assessed together with PMA-BG-010 due to their spatial proximity. Field screening for fuel contamination took place, and soil samples were collected and analyzed by an off-site laboratory for fuels, volatile organic compounds, PAHs, polychlorinated biphenyls, and metals.

RI screening levels were established as the most conservative of several different sources including ADEC migration to groundwater criteria, one-tenth the human health cleanup levels, and EPA regional screening levels for residential soil. PAHs and metals were detected at PMA-BG-003.

2017: PMA-BG-003 was revisited and 20 soil samples were collected from the surface and subsurface to assess vertical and lateral delineation of affected soil and to further evaluate field screening locations from 2016. PAHs and fuels were detected; only one PAH Exceedance [benzo(a)pyrene] was reported above the human health cleanup level.

2018: Additional soil borings were advanced and discrete sampling at PMA-BG-003 revealed two PAHs above human health cleanup levels. Several other PAHs and fuels were detected. The investigation area was enlarged, and additional samples were collected to measure the extent of potential contamination in soil. Incremental sampling was conducted at the surface using a gridded approach, and results were used to assess the potential for unacceptable human health risks. The Phase III/IV RI (USACE 2019) concluded that the distribution of PAHs in soil did not exhibit any comprehensible pattern that would indicate a single point source, and in fact appeared random, and the large piles of creosote-coated timbers in the area and potential surface grading contributed to the random presence of PAHs in the surface soil. A groundwater sample collected from monitoring well MW-108 (Figures 3 and 4) did not contain any human health cleanup level exceedances for fuels, volatile organic compounds, or PAHs.

CONTAMINANTS OF POTENTIAL CONCERN

Soil and groundwater were sampled for CERCLA hazardous substances and Petroleum, Oil, and Lubricants (POL) at PMA-BG-003. Only PAHs in soil had concentrations above human health cleanup levels. Eleven different PAHs were detected but only two of them, benzo(a)pyrene and benzo(b)fluoranthene, constituted exceedances. PAH contamination results from creosote leaching from the timber pile. Creosote refers to a variety of products including wood creosote, coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles (Agency for Toxic Substances and Disease Registry 2002). Coal tar creosote is a mixture of naturally occurring PAHs derived from the distillation of coal tar (North American Wood Pole Council 2020). Creosote has been used to protect wood for approximately 200 years and is the most widely used wood preservative in the United States.

NATURE AND EXTENT OF CONTAMINATION

The RI investigated both surface and subsurface soil, and identified and delineated surface soil contamination using a grid approach with both discrete (collected from a single location) and incremental (several small samples from randomized locations mixed together over a larger area) procedures. Results indicated the presence of PAHs above human health cleanup levels, which are equivalent to the preliminary remediation goals (PRGs) proposed in this document, in three locations based on discrete sample results and one larger area (exposure unit [EU] 34) based on incremental sample results. Although neither discrete nor incremental exceedances are present, EU37 was conservatively retained following the risk assessment due to elevated cancer risk to subsistence consumers, proximity to the unmitigated source area, incomplete delineation, and the lack of available data to support a more robust calculation. Table 1 provides exceedance values with locations that correspond to those shown on Figure 3.

Table 1 – Surface Soil Sample Results above Preliminary Remediation Goals

Location ID	Contaminant of Concern	PRG (mg/kg)	Result (mg/kg)
DISCRETE			
SO0553	Benzo(a)pyrene	1.2	1.9
SO0549	Benzo(a)pyrene	1.2	6.1
	Benzo(b)fluoranthene	12	18
SO028	Benzo(a)pyrene	1.2	1.3
INCREMENTAL			
SO0424 (EU34)	Benzo(a)pyrene	1.2	3.8 J

Notes:

PRGs are based on the human health cleanup levels as defined in Title 18 of the Alaska Administrative Code (AAC), Section 75.341 (18 AAC 75.341), Table B1 (ADEC 2023).

None of the subsurface soil samples collected at PMA-BG-003 exceeded PRGs.

J = A laboratory data review indicator explaining that the result should be considered an estimated value due a quality control failure.

For the benzo(a)pyrene result at location ID SO0424, the result is considered estimated due to significant differences in concentrations between primary (original) and laboratory quality control samples.

PRG = preliminary remediation goal | mg/kg = milligrams per kilogram

Monitoring well MW-108 was installed at discrete sample location SO040, which is approximately downgradient from the timber pile and soil exceedances. One subsurface soil sample was collected from 6 to 8 feet bgs during installation of the well. Soil was analyzed for diesel-range organics and PAHs. One groundwater sample was collected and analyzed for fuels, PAHs, and volatile organic compounds. Neither soil nor groundwater results exceeded ADEC human health cleanup levels (ADEC 2023).

PAH impacts to soil were not laterally delineated at PMA-BG-003, and the volume of contaminated soil was not estimated during the RI (USACE 2019). However, benzo(a)pyrene and benzo(b)fluoranthene are known to have poor mobility through organic soils. For the Feasibility Study (USACE 2023), contaminated soil associated with PMA-BG-003 was conservatively estimated to extend to 2 feet bgs over 0.62 acres under and around the creosote-treated poles (Figure 4). In place, this represents approximately 2,500 bulk cubic yards of soil. In addition, approximately 113 timbers have the potential to act as a continuing source leaching PAHs into the soil if left unaddressed.

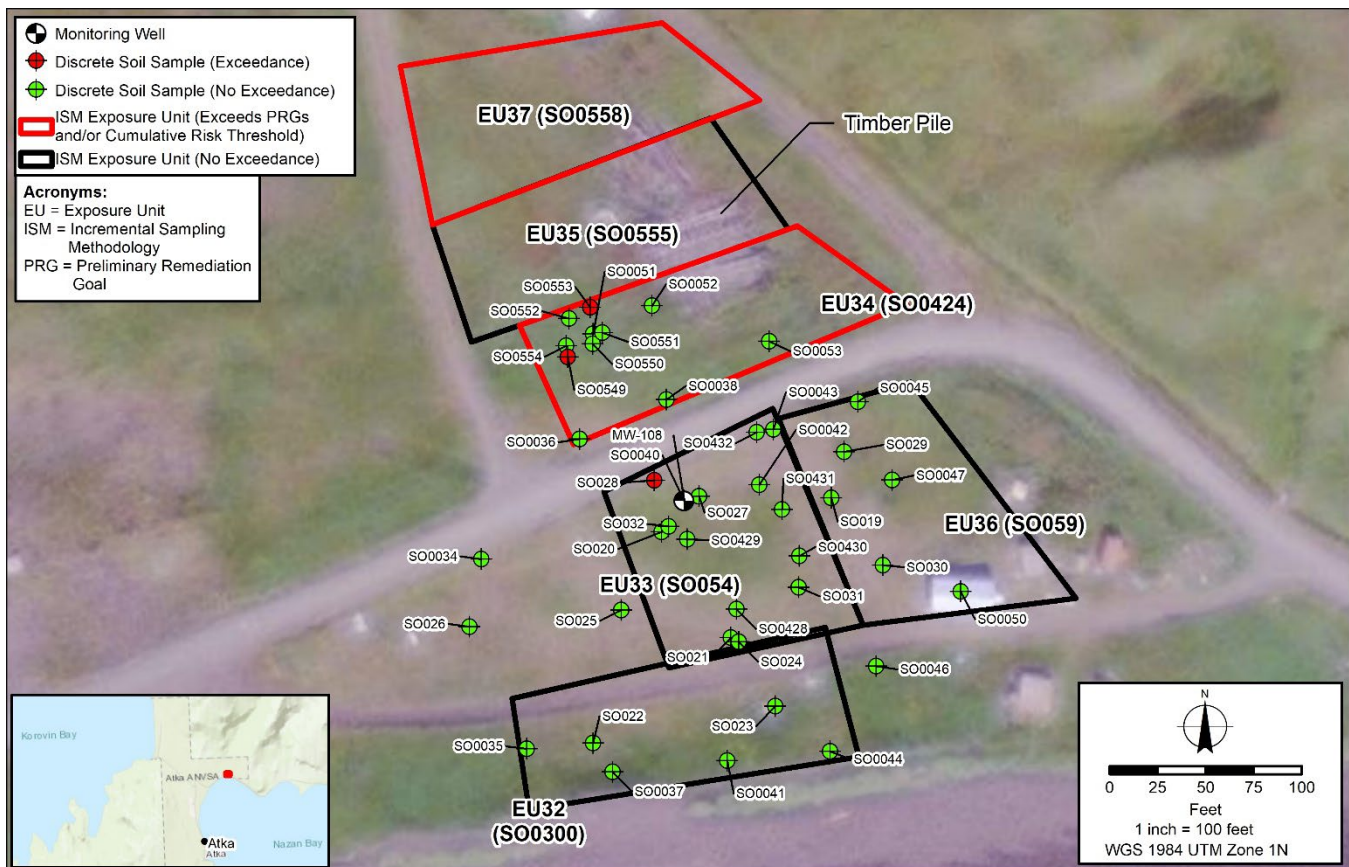


Figure 3 – Nature and Extent of Contamination

SCOPE AND ROLE OF THE RESPONSE ACTION

USACE considers remedial actions under CERCLA for sites that have unacceptable risk to human health or the environment from historical U.S. Department of Defense activities. At PMA-BG-003, remedial action under CERCLA is being considered based on the unacceptable risk presented by the existence of a continuing source of contamination that may elevate current risk levels. PMA-BG-003 is the only CERCLA-regulated feature that has been retained for remedial action at the Atka AF AUX FLD FUDS; petroleum contamination and military munitions sites are managed under separate authorities.

SUMMARY OF SITE RISKS

The risk assessment estimates what risks the site poses if no action were to be taken. It also provides a basis for determining whether action is appropriate and identifies the contaminants and exposure pathways that would need to be addressed by remedial action.

PMA-BG-003 was separated into six EUs (areal subsets) of the site upon which remedial decisions can be made. EUs were designated EU32, EU33, EU34, EU35, EU36, and EU37 (as shown on Figures 3 and 4).

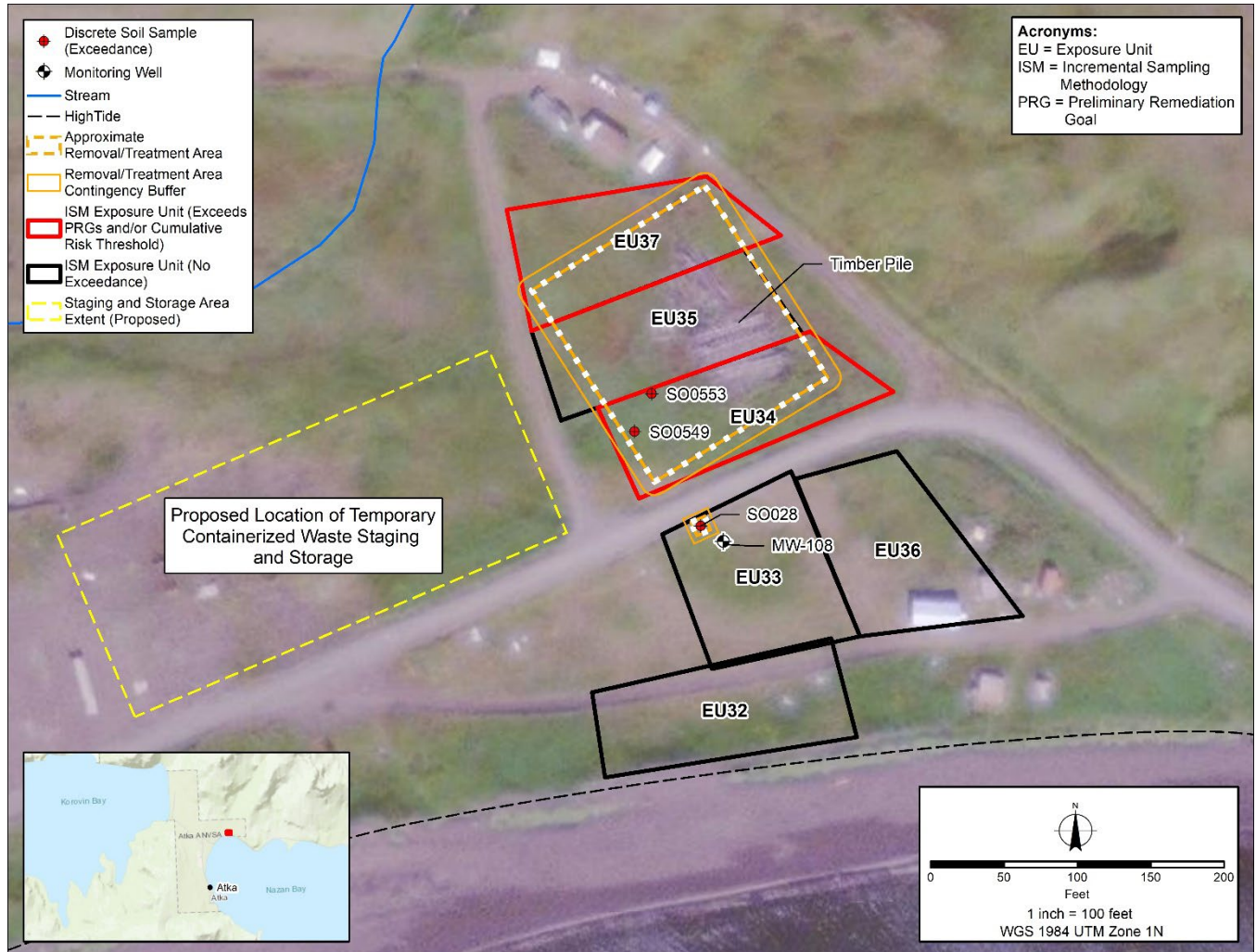


Figure 4 – Estimated Extent of Contaminant Exceedances

Reasonably anticipated current and future site users were evaluated for exposure to contaminated soils including construction workers, industrial/commercial workers, recreational users, subsistence consumers, and the most conservative scenario, residential users. Risk assessment results are expressed as the potential for cancer and non-cancer effects and compared to nationally designated acceptable risk thresholds (40 CFR 300.430). Results within or below a cumulative Incremental Lifetime Cancer Risk range of 1×10^{-6} to 1×10^{-4} and a cumulative non-cancer Hazard Index equal to or below 1 are considered acceptable.

Risk values are within EPA acceptable risk thresholds and, therefore, are not anticipated to pose unacceptable risks or hazards to reasonably anticipated current and future site users. However, USACE maintains that evaluating alternatives to address the present risk is warranted at PMA-BG-003 due to extenuating circumstances that prompt unique, site-specific concern for human health or the environment. The circumstances include an elevated cumulative lifetime cancer risk of 8×10^{-5} , which is at the higher end of the acceptable risk range, combined with an unmitigated source (pile of creosote poles that extends through EUs 34, 35, and 37), the inability of previous investigations to sample soil directly beneath the log pile where contamination is likely to be highest, and the local community's heavy reliance on subsistence resources. Therefore, remediation is being considered that will address both PAH exceedances and, if identified above PRGs, other PAHs known to be associated with the decomposition of creosote that have been detected at PMA-BG-003. Uncertainties regarding the nature and extent of contamination beneath the timber pile prompted USACE to retain contaminants of potential concern (i.e., those associated with the source but not known to exceed risk thresholds) as human health Contaminants of Concern (COCs) for further remedial action.

Human health risks from short-term exposure to high concentrations of PAHs may include skin and eye irritation or burning, skin rash or dryness, thickening and darkening of the skin, nausea and vomiting, headache, dizziness, suppressed immune system, and red blood cell damage possibly leading to anemia. Following exposure to high concentrations of PAHs, exposure to sunlight can greatly aggravate adverse skin and eye effects. Inhaling can irritate the nose and throat causing coughing and wheezing. Long-term exposure can result in cancer and developmental and reproductive effects.

As part of the Phase IV RI (USACE 2019), ecological risk was evaluated to assess the impact of PAHs on local flora and fauna. The ecological risk evaluations indicated potentially unacceptable risks. However, due to the relatively small size of the site, limited potential for bird and mammal habitat over a complete life cycle, and several conservative (unlikely) quantitative assumptions regarding exposure, no ecological COCs were retained for PMA-BG-003.

Based on remedial investigation sample results, groundwater is not considered a medium of concern. However, it will be possible to collect samples from soil directly beneath the creosote timber pile after the timbers have been removed, and results from this previously inaccessible area will be informative. The top 2 to 2.5 feet of soil from beneath the timbers will be excavated, and samples will be collected to determine whether deeper excavation is necessary to remove additional contamination (i.e., where concentrations are above PRGs at the base of the excavation). Additional groundwater samples may be collected if soil contamination extends to the depth of groundwater at approximately 10.6 feet below the ground surface.



BASIS FOR ACTION

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, is necessary to protect human health and the environment from actual or threatened releases of a hazardous substance into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) describe the remedial goal specific to each contaminated medium (i.e., surface soil). Achievement of these criteria will be necessary to be protective of human health and the environment considering both current and future site use. RAOs can be accomplished by ensuring exposure pathways are not completed or by reducing concentrations of COCs to acceptable levels. The following RAOs were developed for PMA-BG-003:

- RAO 1 – Prevent further PAH migration from the contaminant source (creosote-coated timbers) into underlying soil.
- RAO 2 – Prevent potential human exposure from direct contact with or ingestion of soil containing benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)-anthracene, and indeno(1,2,3-cd)pyrene above their respective PRGs.

To achieve the RAOs listed above, PRGs were set for the site COCs, as summarized in Table 2. The PRGs are considered in evaluating the overall effectiveness of remedial process options and alternatives. The human health cleanup levels defined in Alaska Administrative Code (AAC) Title 18, Chapter 75, §341 (18 AAC 75.341), Table B1 (ADEC 2023) for the over 40-inch precipitation zone were determined to be an Applicable or Relevant and Appropriate Requirement (ARAR). These PRGs are considered protective of human health and the environment for the COCs identified at PMA-BG-003.

Table 2 – Preliminary Remediation Goals

COC	PRG (mg/kg) ¹
Benzo(a)anthracene	12
Benzo(a)pyrene	1.2
Benzo(b)fluoranthene	12
Dibenzo(a,h)anthracene	1.2
Indeno(1,2,3-cd)pyrene	12

Notes:

¹ Based on 18 AAC 75.341, Table B1 for the over 40-inch zone. For a complete list of ARARs, refer to Table 3.

SUMMARY OF ALTERNATIVES

Six remedial alternatives were developed to address PAH contamination at PMA-BG-003:

- **Alternative 1 – No Action**

Under the No Action alternative, the creosote-coated timbers and PAH-contaminated soil would remain in place, and no remedial actions would be implemented to treat or prevent exposure to the COCs present on site. Alternative 1 would not achieve the PRGs or RAOs. The No Action alternative is included as required under the NCP to provide a baseline comparison with other actions.

Costs: Capital = \$0 / Operations and Maintenance = \$0 / Periodic = \$0 / Total Estimated Cost = \$0

- **Alternative 2 – Creosote Timber Off-site Landfilling and Land Use Controls with Monitored Natural Attenuation and Long-Term Management and Maintenance**

Alternative 2 would involve first removing and transporting the creosote timbers to an appropriately permitted landfill in the Pacific Northwest. Contaminated soil PMA-BG-003 would remain in place where it would naturally attenuate. Contaminant concentrations and soil conditions would be routinely monitored to ensure that natural processes are sufficient to break down PAHs to achieve PRGs (estimated at 30 years). Meanwhile, Land Use Controls to prevent exposure would include warning signs and community awareness education/advisory notices.

Costs: Capital = \$2.2M / Operations and Maintenance = \$0.7M / Periodic = \$0.8M / Total Estimated Cost = \$3.7M.

- **Alternative 3 – Creosote Timber Off-site Landfilling with In Situ Chemical Oxidation and In Situ Soil Mixing**

Alternative 3 would involve first removing and transporting the creosote timbers to an appropriately permitted landfill in the Pacific Northwest. The top grassy layer would be removed and temporarily piled at the edge of the contaminated source area. Then a chemical called sodium persulfate would be mechanically blended directly into 2 to 2.5 feet PAH-contaminated soil. Once the chemical has been applied, the entire treatment area would be irrigated with water from nearby Dock Creek to activate the chemical oxidation process. Warning signs and temporary construction fencing would be emplaced, and community notices would be distributed to warn of potential hazards while treatment is underway. A second and possibly third round of this process may be needed to achieve the RAOs; the project duration is estimated at 0.5 to 2 years. Confirmation samples would be collected from treated soils to ensure no contamination remained above PRGs. A 4- to 6-inch-thick layer of clean soil from a local source would then be placed over the treatment area, graded to a natural contour, and re-vegetated with native species.

Costs: Capital = \$8.4M / Operations and Maintenance = \$0 / Periodic = \$0 / Total Estimated Cost = \$8.4M.

- **Alternative 4 – Creosote Timber Off-site Landfilling with Ex Situ Composting**

Alternative 4 would involve first removing and transporting the creosote timbers to an appropriately permitted landfill in the Pacific Northwest. The top vegetative layer and the upper 2 to 2.5-feet of PAH-contaminated soil would be excavated and piled at the edge of the contaminated source area. Organic material would be added to the removed soil to enhance natural breakdown processes. Confirmation samples would be collected from the excavation to ensure no contamination remained above PRGs. Excavated soils, along with the organic additives, would be placed into a large, aerated, irrigated, and covered compost pile where the composting process increases the soil temperature and speeds up decomposition. Water from nearby Dock Creek would be used for irrigation of the compost pile. Warning signs and temporary construction fencing would be emplaced, and community notices would be distributed to warn of potential hazards while treatment is underway. Once treatment is completed, confirmation samples would be collected to verify that soils can be returned to the excavation and the site restored. The timeframe to implement this alternative is estimated at 0.5 to 3 years.

Costs: Capital = \$8.2M / Operations and Maintenance = \$3.4M / Periodic = \$1.3M / Total Estimated Cost = \$12.9M.

Alternative 5 – Creosote Timber Off-site Landfilling with On-site High Temperature Thermal Desorption

Alternative 5 would involve first removing and transporting the creosote timbers to an appropriately permitted landfill in the Pacific Northwest. The top vegetative layer and the upper 2 to 2.5 feet of PAH-contaminated soil would then be excavated and treated on site by passing the contaminated soil through a mobile treatment unit that bakes the soil at between 600 to 1,000 degrees Fahrenheit. The high temperatures within the treatment unit break down and release the PAHs as a gas that is captured and further treated at greater temperatures in an after-burner before releasing it into the air. Warning signs and temporary construction fencing would be emplaced, and community notices would be distributed to warn of potential hazards while treatment is underway. Confirmation samples would be collected from the excavation to ensure no contamination remained above PRGs. Once cooled and confirmed below PRGs, the treated soil would be returned to the excavation and the site restored. This process is estimated to take 3 to 6 months.

Costs: Capital = \$14.8M / Operations and Maintenance = \$0 / Periodic = \$0 / Total Estimated Cost = \$14.8M.

Alternative 6 – Creosote Timber and Soil Removal with Off-site Landfilling

Alternative 6 would involve first removing and transporting the creosote timbers. The top vegetative layer and the upper 2 to 2.5 feet of PAH-contaminated soil would then be excavated, containerized, and loaded onto a barge. Confirmation samples would be collected from the excavation to ensure that no contamination remained above PRGs. The Atka municipal dock and port facility located southeast of PMA-BG-003 would be used to load the timbers and contaminated soil onto a departing marine barge for disposal at an appropriately permitted landfill in the Pacific Northwest. The excavation source and any disturbed areas would be backfilled with clean soil from a local source, restored to a natural contour, and revegetated with native species. Removal could take as long as 3 to 6 months.

Costs: Capital = \$8.5M / Operations and Maintenance = \$0 / Periodic = \$0 / Total Estimated Cost = \$8.5M.

EVALUATION OF ALTERNATIVES

In accordance with the NCP, the response alternatives were evaluated against the criteria described in §121(b) of CERCLA and the NCP [40 CFR 300.430(f)(1)(f)] except state and community acceptance, which will be evaluated after public comments are received. These criteria are used to evaluate and compare the different remediation alternatives to select a remedy.

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 Alternatives 2, 3, 4, 5, and 6 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. Several ARARs were considered; for PMA-BG-003, only the following chemical and action-specific ARARs were retained in the 2023 Feasibility Study (Table 3).

Threshold Criteria
Overall Protection of Human Health and the Environment
Compliance with ARARs

Primary Balancing Criteria
Long-Term Effectiveness and Permanence
Reduction in Toxicity, Mobility, and/or Volume through Treatment
Short-Term Effectiveness
Implementability
Cost

Modifying Criteria
State Acceptance
Community Acceptance

Table 3 – Applicable or Relevant and Appropriate Requirements

ARARs	Citation or Reference	Requirements	Applicable Alternatives	Comments and Analysis / Rationale for Decision
Oil and Hazardous Substances Pollution Control Regulations	Table B1 (18 AAC 75.341)	Provides cleanup standards for soil COCs at PMA-BG-003.	Alternatives 2, 3, 4, 5, and 6.	Soil standards for human health were considered as PRGs.
Fugitive Dust Emissions	40 CFR 63	Regulates dust emissions during any on-site activity.	Alternatives 3, 4, 5, and 6	Ex situ on-site soil treatment options may be selected.

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. It will not be retained for comparative analysis. All other alternatives are retained based on their ability to satisfy the ARARs. Alternative 2 will not achieve the chemical-specific ARAR (i.e., the PRGs) within a reasonable timeframe; however, measures in place to prevent exposure would adequately achieve the RAO for contamination remaining in place and no dust emissions would be

generated as a result of implementation. Alternatives 3, 4, and 5 address the PRGs through on-site soil treatment and include the use of dust suppression measures to manage the potential for dust. Confirmation sampling from the excavation and post-treatment soils prior to backfilling would ensure that the PRGs have been met. Alternative 6 achieves the ARARs through removal and disposal with similar excavation confirmation sampling and dust suppression measures.

Key ARARs Consideration

ADEC did not concur with the Feasibility Study for PMA-BG-003 based on a preference that the preliminary remediation goals consider more stringent soil cleanup levels, the migration-to-groundwater criteria under 18 AAC 75.341(c). The ADEC migration-to-groundwater cleanup levels are based on the potential for soil contaminants to migrate from soil to groundwater. USACE looked at potential groundwater impacts in the Remedial Investigation. Groundwater was found not to be impacted and is not considered a medium of concern. However, USACE plans to evaluate potential impacts to groundwater once the timbers are removed to ensure that assumptions affecting the risk assessment conclusions remain valid.

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 as follows:

Long-term effectiveness and permanence 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 PAH contamination would remain on site under Alternative 2 requiring continued monitoring and maintenance, it is a less permanent solution than Alternatives 3, 4, 5 and 6.

CERCLA has a statutory preference for any remedy that has the ability to **reduce the toxicity, mobility, and volume of contamination through treatment**. For PMA-BG-003, Alternatives 3, 4, and 5 include treatment as a component of the remedy. Alternatives 1, 2, and 6 do not.

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 2, which allows PAH contamination to remain on site, is preferred, as it requires no soil handling. However, this alternative takes the longest to implement at an estimated 30 years, and during that timeframe, exposures to residual contamination will need to be controlled. Alternatives 3 and 5 have the greatest potential to expose workers to PAHs and may require multiple iterations of treatment to be successful. Alternative 4 takes relatively longer to complete (up to 3 years) but involves a passive treatment technology. Alternative 6 may take 3 to 6 months, and risk for exposures may occur during excavation and along the complex transportation chain (barge to truck or train); however, exposures can be reliably controlled through waste characterization, containerization and labeling, proper personal protective equipment, and safe handling procedures.

Major **implementability** considerations relative to PMA-BG-003 include the need to mobilize and safely operate heavy equipment for excavation and/or treatment systems to a remote location, as well as the fact Atka Island does not have a treatment or disposal facility permitted to accept CERCLA waste and, therefore, requires coordination of multiple modes of transportation to the final disposal destination. Under this criterion, Alternative 2 is somewhat more implementable than the soil treatments proposed as Alternatives 3, 4, 5 or soil removal proposed as Alternative 6. However, the need for continued monitoring and maintenance over time proposed under Alternative 2 makes it more difficult to implement. Alternatives 3, 4, and 5 have increased complexity due to the need for bench testing to optimize the treatment processes and ensure effectiveness. Because the creosote timbers are planned for removal and disposal under Alternatives 3, 4, and 5, the additional removal of soil under Alternative 6 adds minimal extra effort over the removal already being conducted as part of the on-site treatment options.

Costs are only rough order-of-magnitude estimates at this stage in the CERCLA process. Cost estimates were developed for comparative purposes and are considered accurate within -30 to +50 percent of actual expected costs. Cost estimates were calculated in total present value terms to account for the time value of money over a future duration and provide an equal comparison in today's dollars (2023).

A preferred remedial alternative should not be selected solely on cost, but this criterion is used to evaluate the best balance of tradeoffs between alternatives and the most efficient use of monetary resources. The least expensive option of those that passed threshold criteria is Alternative 2. Alternative 5 is the most expensive option. An evaluation of the remedies considered with regard to the threshold and primary balancing criteria is provided in Table 4.

Modifying Criteria

In addition to the threshold and balancing criteria, there are two modifying criteria: state acceptance and community acceptance. Together, these criteria may be used to modify aspects of the final remedy when preparing the Record of Decision. State acceptance is not anticipated (Table 4) based on review comments received during the 2023 Feasibility Study. Because community reviews are pending, evaluation of Community Acceptance is not presented in Table 4.

State Acceptance considers the technical and administrative issues and concerns that the ADEC and other state agencies may have regarding the remedial alternative. ADEC's nonconcurrence applies to all proposed alternatives (Alternatives 1 through 6) because soil in excess of the most stringent of human health and migration to groundwater cleanup levels [18 AAC 75.341(c)] may be left in place. ADEC did not concur with the Feasibility Study for PMA-BG-003 based on a preference for remediation to consider a more stringent soil cleanup level, the migration-to-groundwater criteria under 18 AAC 75.341(c).

At present, USACE does not consider the migration to groundwater to be a viable pathway for PMA-BG-003 based on actual groundwater concentrations showing that groundwater is not impacted, subsurface soil sample results (no exceedances reported), and the low potential for PAHs to migrate through the soil column. USACE acknowledges ADEC's concerns and plans to evaluate potential impacts to groundwater once the creosote timbers are removed and any contaminated soil beneath the source has been removed. Soil data, and possibly also groundwater data, obtained from beneath the creosote timbers will be assessed as an additional line of evidence to ensure that the remedial investigation conclusions remain valid and the preferred remedy, once implemented, remains protective of all potential exposure pathways.

Community Acceptance considers issues and concerns that the public may have regarding the alternatives. Community input from the public comment period will be presented in the Record of Decision for PMA-BG-003.

PREFERRED ALTERNATIVE

Based on information currently available, USACE believes that Alternative 6, **Creosote Timber and Soil Removal with Off-site Landfilling**, meets the threshold criteria, provides the best balance of tradeoffs among the other alternatives while achieving remediation goals and federal, state, and local standards and requirements, and considers the State of Alaska's technical and administrative issues and concerns. The removal proposed under Alternative 6 is protective of human health and the environment, provides both short-term and long-term effectiveness, and although it fails to satisfy the CERCLA preference for on-site treatment, it presents fewer uncertainties than the treatments proposed as Alternatives 3, 4, and 5. Although Alternative 6 is challenging to implement based on the remote site logistics, it achieves substantial risk reduction by removing source materials and contamination from the site. Alternative 6 is more expensive than Alternative 2, comparably priced with regard to Alternative 3, and less expensive than Alternatives 4 and 5, which require mobilizing and operating complex treatment systems.

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 – in this case, the remote site location and limited resources would make implementing a treatment technology difficult and costly. 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 Record of Decision.

Table 4 – Alternative Comparison

Criterion	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
	No Action	Creosote Timber Off-site Landfilling and LUCs with MNA and LTMM	Creosote Timber Off-site Landfilling with ISCO and ISSM	Creosote Timber Off-site Landfilling with Ex Situ Composting	Creosote Timber Off-site Landfilling with On-site HTTD	Creosote Timber and Soil Removal with Off-site Landfilling
Overall Protection	Fail	Pass	Pass	Pass	Pass	Pass
Compliance with ARARs	Fail	Pass	Pass	Pass	Pass	Pass
Long-Term Effectiveness	N/A	Low	High	High	High	Very High
Reduction in TMV	N/A	Very Low	High	High	Very High	Very Low
Short-Term Effectiveness	N/A	High	Moderate	Moderate	High	High
Implementability	N/A	High	High	Moderate	Moderate	Very High
Total Estimated Cost ¹	\$0	\$3.7M	\$8.4M	\$12.9M	\$14.8M	\$8.5M
Total Estimated Cost Range (-30 to +50%) ²	\$0	\$2.58M – \$5.52M	\$5.89M – \$12.61M	\$9.01M – \$19.31M	\$10.33M – \$22.13M	\$5.95M – \$12.75M
Total Present Value Cost ³	\$0	\$3.6M	\$8.4M	\$12.8M	\$14.8M	\$8.5M
State Acceptance	N/A	Very Low	Low	Low	Low	Low

Notes:

¹ Total Estimated Costs are the sum of capital, operations and maintenance, and periodic costs.

² Total Estimated Cost Ranges are based on -30 to +50% of the Total Estimated Costs.

³ Total Present Value Cost are based on the Total Estimated Costs presented in total present value terms to account for the time value of money over a future duration and provide an equal comparison in today's (2023) dollars.

Ratings are based on level of desirability/conformance: "Very High" = most desirable/conforming and "Very Low" = least desirable/conforming. Modifying criteria will be assessed by soliciting comments on this Proposed Plan.

HTTD = high temperature thermal desorption

LUC = land use control

ISCO = in situ chemical oxidation

MNA = monitored natural attenuation

ISSM = in situ soil mixing

N/A = Not applicable due to threshold criteria failure.

LTMM = long-term management and maintenance

TMV = toxicity, mobility, or volume

COMMUNITY PARTICIPATION

A public comment period follows submission of this CERCLA Proposed Plan for public and regulatory review, and a public meeting is planned to discuss the path forward introduced in this Proposed Plan.

A written response form is provided at the conclusion of this document. Public comments can be emailed to:

grant.m.lidren@usace.army.mil

Questions can be directed to:

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USACE will provide written responses to all significant comments. A summary of the responses will accompany the subsequent Record of Decision, which will be made available in the Administrative Record.

GLOSSARY

Administrative Record - The documents that form the basis for the selection of a response action compiled and maintained by the lead agency. The Administrative Record for the Atka FUDS is located at the Tribal Council Office.

Alaska Department of Environmental Conservation (ADEC) – The State of Alaska regulatory body that monitors the enforcement of Alaska’s environmental regulations.

Applicable or Relevant and Appropriate Requirements (ARAR) – *Applicable requirements* means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental 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. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. *Relevant and appropriate requirements* means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not “applicable” to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) – Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986.

Contaminant of Concern (COC) – Any contaminant determined to be a concern to human health based on exceedance of chemical-specific ARARs.

Defense Environmental Restoration Program – Under this program, the U.S. Department of Defense conducts environmental cleanup at active installations, FUDS properties, and Base Realignment and Closure locations. The U.S. Army oversees the USACE execution of the FUDS cleanup program.

Exceedance – A sample result that is above the screening level, cleanup level, regulatory limit, or preliminary remediation goal.

Feasibility Study – A study undertaken by the lead agency to develop and evaluate options for remedial action. The remedial investigation data are used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the study .

Hazard Index (HI) – A risk value used for human health risk assessments. The hazard index is generated by adding together the non-cancer risks associated with potential exposure to each chemical at the site representing the potential non-cancer health risk. A hazard index value of 1 or less is considered an acceptable exposure value.

Incremental Lifetime Cancer Risk – Cancer risk is assessed by examining the likelihood of cancer resulting from exposure to contaminants at a site. Cancer risk is expressed as the likelihood of an individual developing cancer over a lifetime as a result of exposure to carcinogens. For example, a 1 in 10,000 risk (usually written as 1×10^{-4}) means for every 10,000 people (receptors) exposed to site contaminants, one extra case of cancer may occur than normally would be expected from all other causes in the area.

Land Use Controls – Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property, to prevent or reduce risks to human health and the environment. Physical mechanisms encompass a variety of engineered remedies to contain or reduce contamination and physical barriers to limit access to real property, such as fences or signs. The legal mechanisms are generally the same as those used for institutional controls as discussed in the National Oil and Other Hazardous Substances Pollution Contingency Plan (NCP).

National Oil and Other Hazardous Substances Pollution National Contingency Plan (NCP) – The plan revised pursuant to 42 USC 9605 and found at 40 CFR 300 that sets out the plan for hazardous substance remediation under CERCLA.

No Further Action – A recommendation given to a site prior to closure indicating that it poses no unacceptable risk.

Petroleum, Oil, and Lubricants (POL) – Fuel-related compounds that are not considered hazardous substances under CERCLA but are regulated by ADEC and included under the Defense Environmental Restoration Program where they may pose imminent and substantial risk.

Record of Decision – A public document that reflects the decision of an authorized agency official selecting a remedial action to respond to a CERCLA release that requires a remedy at a CERCLA site. The U.S. Department of Defense uses the term Record of Decision for remedy selection decisions at all Defense Environmental Restoration Program sites.

Remedial Action Objective (RAO) – Specific cleanup objectives and criteria that guide the selection of remedies to eliminate, reduce, or control risk to human health and the environment.

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**Comments on the CERCLA Proposed Plan for PMA-BG-003 at the
Atka Air Force Auxiliary Field FUDS, Alaska**

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