PROPOSED PLAN
U.S. Coast Guard Base Ketchikan
Ketchikan, Alaska

Mark Your Calendar
Public Comment Period
22 January – 20 February 2020

The USCG will accept written comments on the Proposed Plan during the public comment period. Comment letters must be postmarked by 20 February 2020 and should be submitted to the USCG at:

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Public Meeting
Date: 4 February 2020
Time: 2:00—5:00 pm
Ketchikan Public Library
1110 Copper Ridge Lane
Ketchikan, AK 99901

The USCG will provide the public an opportunity for comment and a public meeting to explain the Proposed Plan and all the alternatives presented in the Focused Feasibility Study. Oral and written comments will also be accepted at the meeting.

For more information, see the online ADEC resource at:
http://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/SiteReport/1184.

The Focused Feasibility Study and this Proposed Plan can be viewed at the following location:

Ketchikan Public Library
1110 Copper Ridge Lane
Ketchikan, AK 99901
(907) 225-3331
Mon–Wed: 10 am—8 pm
Thurs-Sat: 10 am—6 pm
Sun: 1—5 pm

U.S. COAST GUARD ANNOUNCES PROPOSED PLAN

This Proposed Plan describes remedial alternatives considered for four Areas of Concern (AOCs) located at U.S. Coast Guard (USCG) Base Ketchikan:

1. Soil at the Buoy Storage Yard (BSY)
2. Intertidal sediment at the Inner Boathouse
3. Intertidal sediment at the Inner Marine Ways
4. Subtidal sediment near the pier

What's Inside

The objectives of this Proposed Plan are to introduce the preferred remedy at each AOC, highlight the key factors that lead to identifying the preferred remedies, and facilitate community involvement in remedial decision-making.

The USCG is the lead agency for site cleanup activities and is issuing this Proposed Plan as part of its public participation responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) 42 USC § 9617(a) and Section 300.430 (f)(3) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

USCG, in consultation with Alaska Department of Environmental Conservation (ADEC), will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period.

This Proposed Plan summarizes information that can be found in greater detail in the 2010 remedial investigation (RI), the 2012 Supplemental RI (SRI), and the 2018 Focused Feasibility Study (FFS). The USCG, in consultation with ADEC, encourages the public to review these documents to gain a more comprehensive understanding of the site and remedial activities that have been conducted at the site.

Additionally, after the FFS was issued, subtidal sediment at Base Ketchikan was evaluated for ecological risk by using the weight of evidence approach. This *Ecological Risk Evaluation* (2019) is now available for review. The evaluation concludes that the contaminants of concern (COCs) in subtidal sediments do not pose unacceptable risk to the environment. This new information is reflected in the alternative analyses in this Proposed Plan.

USCG and ADEC may modify the preferred alternatives or select different alternatives presented in this Proposed Plan based on new information and public comments. Therefore, the public is encouraged to review and comment on all the alternatives in this Proposed Plan.

The selected remedy will be documented in the Record of Decision (ROD). The ROD will contain responses to the public comments and will describe any changes to the preferred alternative presented in this Proposed Plan.

SITE HISTORY AND BACKGROUND

Base Ketchikan is located at 55°20'00"N and 131° 37'30"W, on Revillagigedo Island, 1 mile southeast of downtown Ketchikan, Alaska. Prior to being established as a Base Support Unit in the 1940s, Base Ketchikan operated as part of the Lighthouse Service at Lighthouse Depot, Ketchikan, Alaska. The main purpose of the facility prior to the 1940s was to build pilings for the acetylene lamps used for navigation in the Tongass Narrows. After the acetylene lamps were replaced with electric- and battery- powered alternatives during the 1920s and 1930s, the facility was repurposed for maintenance of navigational aids and vessels.

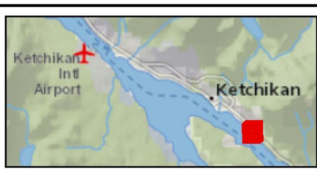
Based on historical records and known operational practices at the Ketchikan facility, the primary source of contamination and release mechanisms are historical cleaning operations; miscellaneous spills, leaks, and discharge of sandblasting grit associated with vessel fueling; maintenance; and repair activities. Additionally, discharges from nearby areas and industrial and urban activities were possible source and release mechanisms.

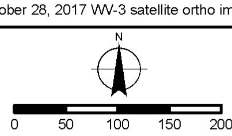
The offshore area was first investigated due to concerns about debris from sandblasting and maintenance activities and rumored waste dumping. In the late 1980s, metals were identified as preliminary COCs in sediment. Piles of debris were removed from the seafloor around the facility. Since 1988, multiple remedial and investigative activities as well as removal actions have occurred at Base Ketchikan. In the decades following, several land□based soil investigations and removal actions were conducted. Further details of time-critical removal actions and investigation activities are presented in the RI and FFS.

These investigations have identified AOCs that have soil or sediment with contaminant concentrations above the identified cleanup levels (Figure 1). The locations and estimated volume of contaminated media, including a bulk factor upon removal, are: 3,170 cubic yards (cy) of soil within BSY, 118 cy of sediment within the inner boathouse, 308 cy of sediment in the inner marine ways, and 408 cy of subtidal (or subaqueous) sediment near the pier and outer boathouse.

High Tide at USCG Ketchikan Base harbor

Imagery: E-Terra, Digital Globe Source Data - October 28, 2017 WV-3 satellite ortho image of the Ketchikan Coast Guard Base area, Alaska. 0.3 meter pixel resolution.





WGS 1984 UTM Zone 9N

USCG BASE KETCHIKAN
SITE MAP WITH AREAS OF CONCERN

BASE KETCHIKAN, ALASKA

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Site Characteristics

Base Ketchikan consists of a long, narrow parcel of coastal land bisected lengthwise into an Upper and Lower Base by the South Tongass Highway. The Upper Base is located inland and consists mainly of residential and support facilities. The Lower Base is located southwest (seaward) of the highway; structures include the administration building, supply warehouse, marine ways shed, marine railway, buoy shed, north and south shops, gymnasium, security building, and hazardous waste storage building.

Current daily operations include industrial shop work and administrative support. The Coast Guard is expected to continue operating this facility for the foreseeable future. Anecdotal references reveal activity of recreational fishing and clamming along the shoreline and docks, creating a possibility for human consumption. The Tongass Narrows are used regularly by cruise ships, recreational kayakers, and floatplanes for both private use and commercial tours.

The four AOCs at USCG Base Ketchikan are located at Lower Base. Several structures exist here which may impede remedial actions, including tracked railways, a boathouse, and pillars, which are discussed further below. Contamination exists in soil and sediment. Sediment contamination is primarily in the intertidal zone as well as the subtidal. Sediment mixes and redistributes with the tidal currents, wind, and waves, and intermittent bedrock outcrops making it difficult to find continuous areas of sediment. Contaminants include polychlorinated biphenyls (PCBs) and heavy metals in soil and sediment originating from site activities and discarded batteries, sand blast grit, removed paint, and other debris:

Blue mussels in the intertidal area

- Contamination at the BSY (AOC 1) is likely associated with historical site activities including buoy storage and maintenance activities. This area was expanded in 1994 using locally available fill now understood to have contained arsenic. Bedrock lies at approximately 3 feet below ground surface (bgs). Arsenic has been identified between 0 to 3 feet bgs in an area approximately 120 by 160 feet. PCBs were identified in two areas (“hotspots” approximately 15 by 15 feet) between 2 and 3 feet bgs.
- Intertidal sediment at the inner boathouse (AOC 2) lies underneath a platform where the boathouse and north shops are located. The buildings are raised above the intertidal zone on piles and outcropping bedrock, creating a pier structure. As a result, this area has a low ceiling where PCB and metal contamination are difficult to access. The majority of shoreline at this AOC is bedrock with shifting pockets of sediment, ranging from a few inches up to a foot deep. One area of PCB contamination has been identified at a size of approximately 15 by 15 feet at the western edge of metal contaminated area, which ranges approximately 45 by 110 feet.
- The inner marine ways (AOC 3) is an area that is used regularly for maintenance activities. Vessels are transported up a tracked railway to an elevated dock at the marine ways shed where maintenance occurs. Sediment obstructing the rails is regularly removed from the tracks to allow access for operations that may have been impeded by accumulated sediment. Heavy metal contamination in sediment is assumed to be related to sandblasting grit from maintenance activities. Sediment ranges from 0 to 1.25 feet deep at AOC 3. Contaminated sediment stretches approximately 250 feet by 75 feet but does not occupy the entire area.
- Subtidal sediment (AOC 4) located near the pier and outer boathouse remains submerged by 30 to 100 feet of water, dependent on the tides. This area of metal contaminated sediment is practically inaccessible to humans because it can only be reached by divers. There is a steep underwater cliff located to the southwest of the pier.

WHAT ARE THE "CONTAMINANTS OF CONCERN"?

A COC is a constituent related to site use (not naturally occurring) that is identified as posing potential risk to human health or the environment. The USCG and ADEC have identified two groups of contaminants that require cleanup at Base Ketchikan: PCBs and metals.

PCBs are man-made chemicals used industrially and commercially from 1929 until 1979 when they were banned. PCBs were commonly used as plasticizers and in electrical equipment and transformers. PCBs are probable human carcinogens. They do not dissolve well in water but sorb strongly to soil and sediment particles. PCBs may accumulate in biological tissue and may biomagnify as they are consumed by upper trophic levels.

Arsenic is a COC in soil and copper, lead, and zinc are COCs in sediment. In soil, metals are generally relatively immobile and are not easily leached. In sediment, metals may be dispersed via tidal interaction. Metals in their elemental form are persistent in the environment.

SCOPE AND ROLE OF THE ACTION

The overall goals of this project are to reduce risk to human health and the environment by the prevention of contact with contaminated soil and sediment above the cleanup levels presented in the remedial action objectives (RAOs) and to ensure compliance with applicable federal and state laws and regulations. Soil at the BSY is contaminated with arsenic and PCBs and intertidal and subtidal sediment is contaminated with PCBs, copper, lead, and zinc. Lead in sediment could be considered a principal threat waste because residual concentrations exceed the EPA regional screening levels for industrial soil (800 milligrams per kilogram [mg/kg]) as well as the EPA standard for non-play areas of 1,200 mg/kg.

The Proposed Plan presents the preferred alternatives to eliminate or reduce the potential for human or ecological receptors to be exposed to COCs in soil and sediment at concentrations that pose a potentially unacceptable risk.

SUMMARY OF SITE RISKS

"Risk" is the possible harm to people or wildlife from exposure to chemicals. Two types of health risks for people are evaluated: the risks that can cause cancer and the risks that can cause other health effects. People and wildlife (receptors) can contact contaminants (source) through exposure pathways.

Previous investigations at Base Ketchikan identified potential risks associated with exposure to contaminants based on both current and likely future uses of the area.

Potential exposure pathways include ecological exposure of aquatic resources, marine birds, and mammals to contaminants in sediment, surface water, and in the food chain, as well as to local fishermen who consume aquatic resources.

For soil, potential human exposure pathways at the BSY include physical contact and inhalation for site workers. For sediment the potential human exposure pathways are, physical contact with sediment in the intertidal zone as well as consumption of bivalves harvested from the affected area.

Based on toxicity data resulting from previous sampling efforts, the following sections discuss results and risks posed to human health and the environment (HHE).

Human Health Risks

Risks to human health include exposure to PCBs and arsenic in soil, direct exposure to contaminated sediments, and potential exposure through harvested fish or bivalves.

Exposure pathways for soil include physical contact and inhalation. Dry soil has the potential to be airborne; therefore, inhalation is a risk to those working in the area. Contaminant migration to groundwater is not a viable human exposure pathway. Drinking water at Base Ketchikan has been determined to not be a current or potential future source of drinking water based on aquifer properties. Human exposure to contaminated sediment in an AOC includes physical contact with sediment in the intertidal zone and consumption of bivalves harvested from the affected area.

The risk associated with physical contact to contaminated sediment is considered minimal due to sediment being washed off by the water.

During a 2002 survey, sediment and tissue samples were collected from bivalves (clams and mussels) to evaluate the risk of human consumption. Tissue levels of lead were of concern for human health consumption at three locations directly beneath the pier. Although the potential risk from consuming these shellfish is considered marginal to low, restrictions to fishing/gathering from these areas should be enforced. Current institutional controls (ICs) are in place including warning signs to prevent harvesting of marine organisms.

Ecological Risks

Ecological risks were evaluated for organisms living in and exposed to contaminated sediment. A toxicity evaluation was conducted using sediment collected from within the harbor and underneath the pier, and bivalve tissue was collected and sampled from mussels and clams. Toxicity tests showed a correlation with three metals (copper, lead, and zinc) and tissue samples collected showed the uptake of some metals.

The highest concentrations of metals and organics were found in the intertidal and subtidal sediment under and adjacent to the pier. Based on the size of their foraging areas, sediment and bivalve tissue concentrations are not considered high enough to pose unacceptable risk to piscivorous birds or marine mammals that may forage at the site. Although the combination of lead, copper, and zinc could pose adverse effects to shellfish, which in turn could be consumed by humans, the area impacted would only affect a small percentage of the population of shellfish. For the subtidal sediments, the entire body of evidence concerning potential ecological risk was evaluated in 2019. The conclusion is that COCs in subtidal sediments do not pose an unacceptable risk to the environment.

Exposure pathways in soil to terrestrial organisms are considered minimal. The contaminated area of the BSY is a gravel lot void of vegetation and wildlife where bedrock lies at approximately 3 feet bgs. Evidence collected from previous RIs indicate the migration to groundwater pathway should be eliminated. Additionally, migration of dust to marine water is considered an insignificant risk.

The current judgment of the USCG is that the preferred alternatives identified in this Proposed Plan, or one of the other active measures considered in this Proposed Plan, are necessary to protect public health, welfare, or the environment 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.

Starting a dive survey offshore of Base Ketchikan

REMEDIAL ACTION OBJECTIVES

The RAOs describe what the proposed remediation effort is expected to accomplish. RAOs designed for soil are:

- Prevent human exposure to soil containing arsenic in excess of the site-specific alternative cleanup level (ACL) of 33 mg/kg
- Prevent human exposure to soil containing PCBs exceeding 1 mg/kg
- Reduce the potential for COCs to migrate from the site

The RAOs identified for sediment are:

- Prevent human exposure to sediment containing PCBs exceeding 1 mg/kg
- Minimize or eliminate ecological exposure to sediment containing PCBs exceeding 65 mg/kg (normalized for organic carbon)
- Minimize or eliminate ecological exposure to sediment containing the following analytes in excess of (concentration): Copper (330 mg/kg), Zinc (550 mg/kg), Lead (540 mg/kg), and the total of Copper, Zinc, and Lead (1,420 mg/kg)
- Minimize or eliminate the potential for bioaccumulation and biomagnification to upper trophic level consumers from the ingestion of benthic organisms

The final RAO and cleanup level to be achieved by the final remedy will be defined in the ROD.

SUMMARY OF REMEDIAL ALTERNATIVES

Alternative 1 is retained as a no action baseline comparison for each AOC as required under the NCP; however, this alternative is not discussed in the following sections as it fails to comply with the threshold criteria.

AOC 1: Soil at the Buoy Storage Yard

The preferred alternative for the BSY is Alternative 5. This alternative removes all contaminated soil and is the only alternative that significantly reduces toxicity and volume of contaminants while remaining protective of the community and workers during implementation.

Alternative 2: Limited PCB Removal and Land Use Controls (LUCs)

Estimated Capital Cost: $566,529
Estimated Annual O&M Cost: $14,917
Estimated Present Worth Annual Cost: $41,501

The PCB hotspots in soil would be removed and LUCs would be implemented to restrict invasive activities and protect HHE from remaining arsenic in soil. Five-year reviews would be required to inspect for erosion and evaluate long-term effectiveness, which would continue indefinitely or until the contaminated material is removed.

Alternative 3: Concrete Cap and LUCs

Estimated Capital Cost: $636,770
Estimated Annual O&M Cost: $19,376
Estimated Present Worth Annual Cost: $162,931

PCB and arsenic contaminated soil would be capped with a 1-foot concrete cap and LUCs would be implemented to restrict invasive activities and protect HHE. Long-term monitoring (LTM) would be implemented to ensure the integrity of the cap and five-year reviews to evaluate the long-term effectiveness, which would continue indefinitely or until the contaminated material is removed.

Buoys stored at the BSY

Alternative 4: Gravel Cap and LUCs

Estimated Capital Cost: $553,166
Estimated Annual O&M Cost: $19,376
Estimated Present Worth Annual Cost: $162,931

PCB and arsenic contaminated soil would be capped with a 1-foot gravel cap, geogrid, and leveling layer. LUCs would be implemented to restrict invasive activities and protect HHE. LTM would be implemented to ensure the integrity of the cap and five-year reviews performed to evaluate the long-term effectiveness. The cap would be inspected annually for the first five years and then every five years, which would continue indefinitely or until the contaminated material is removed.

Alternative 5: Excavation, Onsite Treatment, and Offsite PCB Disposal

Estimated Capital Cost: $1,101,648
Estimated Annual O&M Cost: $0
Estimated Present Worth Annual Cost: $0

PCB-contaminated subsurface soil would be permanently removed from the site via excavation. Arsenic contaminated soil would be treated in place by mixing soil with an EcoBond technology compound, a solution that converts metals into highly insoluble minerals, so they will not leach into the groundwater. The ACL for this site is protective of site workers and the addition of EcoBond reduces the potential for arsenic to leach from the site.

Alternative 6: Excavation, Gravel Fill, and Offsite Disposal

Estimated Capital Cost: $3,373,335
Estimated Annual O&M Cost: $0
Estimated Present Worth Annual Cost: $0

All PCB and arsenic contaminated gravel would be excavated and containerized for offsite treatment/disposal. Excavation would occur at 4 feet bgs and the original ground surface level would be restored with fill.

View underneath the Inner Boathouse

AOC 2: Intertidal Sediment at the Inner Boathouse

Alternative 4 is the preferred alternative. This alternative offers the most permanent removal of contaminants and the least exposure to workers. Alternative 1 (No Action) and Alternative 5 (in situ stabilization) were not evaluated further because they did not meet the balancing criteria for effectiveness or implementability.

Alternative 2: PCB Removal and LUCs

PCB hotspots would be removed and LUCs would be implemented to restrict invasive activities and protect HHE. This alternative was not evaluated further because it failed to comply with the threshold criterion of overall protection of HHE balancing criteria of effectiveness. Although it addresses the main human health risk from PCBs, it does not adequately address additional potential ecological risk from metal exposure in an intertidal area.

Alternative 3: Limited Cap and LUCs

Estimated Capital Cost: $520,068
Estimated Annual O&M Cost: $82,185
Estimated Present Worth Annual Cost: $1,010,908

Marine sediment would be covered with riprap to cover the affected area, preventing direct exposure to humans and organisms living on the surface of the sediment by covering their habitat. LUCs would be implemented to restrict invasive activities and protect HHE.

Alternative 4: Removal and Offsite Disposal

Estimated Capital Cost: $1,420,644
Estimated Annual O&M Cost: $0
Estimated Present Worth Annual Cost: $0

Removal of PCB and metal contaminated sediment from underneath the boathouse and offsite disposal. Due to the location of contamination and obstruction of piers and pilings, excavation and removal of sediment would need to occur using hand tools and manual labor.

AOC 3: Intertidal Sediment at the Inner Marine Ways

Alternative 3 is the preferred alternative. It is the easiest to implement for the retained alternatives and the most cost efficient of the two excavation alternatives. Alternative 3 meets the threshold criteria and reduces mobility and volume of contaminants to the greatest extent; it is the most effective and permanent.

Alternative 5 (limited removal and capping) was not evaluated further because it did not meet the balancing criteria for implementability. A cap could interfere with maintaining operation of the railway after construction.

Alternative 2: LUCs

Estimated Capital Cost: $292,294
Estimated Annual O&M Cost: $12,844
Estimated Present Worth Annual Cost: $35,732

LUCs would be implemented to restrict invasive activities and five-year reviews would be required to evaluate long-term effectiveness, which would continue indefinitely or until the contaminated material is removed. Although this addresses the potential human health risk, it does not adequately address additional potential ecological risk from metal exposure in an intertidal area.

Alternative 3: Limited Land-Based Excavation, Offsite Disposal, and LUCs

Estimated Capital Cost: $1,143,956
Estimated Annual O&M Cost: $12,844
Estimated Present Worth Annual Cost: $81,275

At low tide, land-based excavation would occur to remove the majority of contaminated sediment with LUCs. Although some subtidal contamination may remain, it would be virtually inaccessible to humans. The remaining volume of contamination posing an ecological exposure risk would be minimal, and the total volume greatly reduced under this alternative. Inspection would occur annually for the first five years and then every five years, this would continue indefinitely or until the contaminated material is removed.

Alternative 4: Dredging and Limited Land-Based Excavation

Estimated Capital Cost: $1,715,158
Estimated Annual O&M Cost: $0
Estimated Present Worth Annual Cost: $0

At high tide, dredging would occur using a barge mounted excavator. Additional excavation at low tide may be necessary to remove all contaminated sediment, which would be accomplished using hand tools and manual labor from shore.

Inner Marine Ways sediment along the rails

Large sea star in the intertidal sediment at Ketchikan Base

AOC 4: Subtidal Sediment near the Pier

Alternative 2 is the preferred alternative. Although the FFS indicated Alternative 3 was the only alternative to comply with applicable or relevant and appropriate requirement (ARARs) and provide protection of HHE, the ecological risk evaluation (2019) demonstrated that COCs in subtidal sediments do not pose an unacceptable risk to the environment. Alternative 2 also meets the requirements to protect HHE.

Alternative 2: LUCs and LTM

Estimated Capital Cost: $367,307
Estimated Annual O&M Cost: $49,267
Estimated Present Worth Annual Cost: $181,353

The FFS indicated that this alternative did not pass the threshold criterion of compliance with ARARs; however, an ecological risk evaluation has since been completed indicating that COCs in subtidal sediments are not reasonably expected to cause a toxic or deleterious effect on aquatic life. There is no promulgated chemical-specific ARAR, but by evaluating ecological risk and limiting human health risk, this alternative meets the expectation of State law. In addition, LUCs would be implemented to restrict invasive activities and protect human health by restricting harvest of marine organisms for consumption. LTM would be required to inspect site conditions and evaluate long-term effectiveness. Inspections would occur once every five years and would continue indefinitely or until the contaminated material is removed. Actual costs for implementing this alternative may be lower than presented in the FFS and this Proposed Plan because the estimate includes potential sediment sample collection, which may not be necessary to implement the final remedy of LUCs and site inspection.

Alternative 3: Limited Removal and Offsite Disposal with LUCs

Estimated Capital Cost: $2,168,872
Estimated Annual O&M Cost: $15,417
Estimated Present Worth Annual Cost: $102,083

Accessible sediment would be removed by dredging approximately 25 percent of the affected area and disposing of the sediment offsite. The remaining contaminated sediment would remain in place in pockets in between outcropping bedrock or directly under the subtidal area of the pier. Five-year reviews would occur annually for the first five years then every five years thereafter, continued indefinitely or until the contaminated material is removed. to inspect site conditions and evaluate long-term effectiveness.

EVALUATION OF ALTERNATIVES

Following the evaluation process outlined in CERCLA and using the nine criteria established in the NCP, the alternatives developed in the FFS are assessed individually and against each other to select a remedy.

This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration.

The nine criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria. A description of the purposes of the three groups follows:

- Threshold criteria, which are requirements that each alternative must meet to be eligible for selection.
- Primary balancing criteria, which are used to weigh major tradeoffs among alternatives.
- Modifying criteria, which may be considered to an extent based on information available during the FFS, but fully considered only after public comment is received on the Proposed Plan.

It is the final balancing tradeoffs between alternatives that informs the selection of the final remedy. The nine evaluation criteria and ranking of each alternative are discussed for each AOC in the following subsections. The seven threshold and primary balancing criteria for each AOC are summarized within the tables below; the two modifying criteria are applicable to all AOCs and discussed in the succeeding section. A comparative analysis can be found in the FFS for a more detailed explanation.

EVALUATION CRITERIA FOR REMEDIAL ALTERNATIVES
THRESHOLD CRITERIA
Overall Protectiveness of HHE determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through ICs, engineering controls, or treatment.
Compliance with 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.
PRIMARY BALANCING CRITERIA
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of HHE over time.
Reduction of Toxicity, Mobility, or Volume (TMV) 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.
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.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual operations and maintenance (O&M) costs calculated as present worth annual cost. Present worth annual cost 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.
MODIFYING CRITERIA
Coast Guard as the Lead Agency and ADEC Acceptance considers whether the State agrees with the USCG analyses and recommendations, as described in the FFS and this Proposed Plan.
Community Acceptance considers whether the local community agrees with USCG analyses and preferred alternatives. Comments received on the Proposed Plan are an important indicator of community acceptance.

AOC 1-BSY

Remedial Alternative	Overall Protectiveness of HHE	Compliance with ARARs	Long-Term Effectiveness	Reduction of TMV of Contaminants through Treatment	Short-Term Effectiveness	Implementability	Cost
No Action	No	No	No	No	None	High	NA
2. Limited PCB Removal and LUCs	Yes	Yes	Some contaminants removed	No	Moderate	Moderate	$608,446
3. Concrete Cap and LUCs	Yes	Yes	Moderate to high; dependent on maintenance of the cap	No	Moderate	Moderate	$799,701
4. Gravel Cap and LUCs	Yes	Yes	Moderate to high; dependent on maintenance of the cap	No	Moderate	Moderate	$716,097
5. Excavation, Onsite Treatment, and Offsite PCB Disposal	Yes	Yes	High	Yes	High	Moderate	$1,101,648
6. Excavation, Gravel Fill, and Offsite Disposal	Yes	Yes	High	No	Moderate to high	Moderate	$3,373,335

The No Action alternative (1) does not meet the criteria. The capping alternatives (3 and 4) are relatively easy to implement and protect human health by limiting exposure but do not meet the preference for reduction of volume of contaminants through treatment. The hotspot removal (2) will be easier to implement and removes one contaminant but does not address exposure to or mobility of the arsenic in soil. All of the alternatives are effective in a short amount of time. Alternative 5 is the only option that meets the preference for treatment. Complete excavation (6) is much more expensive than onsite treatment of metals after the PCB-contaminated hotspots are excavated and removed for offsite disposal.

AOC 2-Intertidal Sediment at the Inner Boathouse

Remedial Alternative	Overall Protectiveness of HHE	Compliance with ARARs	Long-Term Effectiveness	Reduction of TMV of Contaminants through Treatment	Short-Term Effectiveness	Implementability	Cost
1. No Action	No	No	No	No	None	High	$0
3. Limited Cap and LUCs	Yes	Yes	Moderate to low, dependent on maintenance of the cap	No	Moderate	Moderate, access challenges	$1,530,976
4. Removal and Offsite Disposal	Yes	Yes	High	No	High	Moderate, logistic challenges	$1,420,664

Alternative 1, the No Action alternative, does not meet the criteria. Alternative 2, the partial removal alternative, does not meet the criterion for overall protection of HHE. Alternative 3, the capping option, does not have the long-term effectiveness that Alternative 4, the removal action, offers. The cap would require inspection and possibly maintenance, and although limiting exposure to contaminants, it does not meet the preference for reduction of volume of contaminants through treatment. Alternatives 3 and 4 would be somewhat difficult to implement due to the location of the contaminated sediment and would be effective in a short amount of time, and both alternatives temporarily increase the short-term risk of exposure to site workers.

Removing contaminated sediment along the Marine Railways

AOC 3-Intertidal Sediment at the Inner Marine Ways

Remedial Alternative	Overall Protectiveness of HHE	Compliance with ARARs	Long-Term Effectiveness	Reduction of TMV of Contaminants through Treatment	Short-Term Effectiveness	Implementability	Cost
1. No Action	No	No	None	No	None	High	$0
3. Limited Land-Based Excavation, Offsite Disposal, and LUCs	Yes	Yes	Moderate to high	No	Moderate to high	Moderate; Somewhat difficult	$1,225,231
4. Dredging and Limited Land-Based Excavation	Yes	Yes	High	No	Moderate	Moderate to low	$1,715,158

Alternative 1, the No Action alternative, does not meet the criteria. Alternative 2, the limited access alternative, would be protective of human health but not the environment; therefore, it does not meet the criteria. Alternatives 3 and 4, the excavation alternatives, would be somewhat difficult to implement. Alternative 3 would remove almost all of the contamination but may leave some at the margins where it is unreachable from shore. The total volume of contaminated sediment would be greatly reduced and sediment handling will be more straightforward. Alternative 4 is more expensive than Alternative 3, and in addition, excavating at high tide involves controlling re-suspended sediments during excavation and makes sediment handling during excavation operations more difficult with greater potential environmental impacts during implementation. Sediment de-watering would also take more space and time than the Alternative 3 land-based excavation.

Viewing USGS Base Ketchikan from the breakwater

AOC 4-Subtidal Sediment

Remedial Alternative	Overall Protectiveness of HHE	Compliance with ARARs	Long-Term Effectiveness	Reduction of TMV of Contaminants through Treatment	Short-Term Effectiveness	Implementability	Cost
1. No Action	No	No	None	No	None	High	$0
2. LUCs and LTM	Yes	Yes	Moderate	No	High	High	$548,660
3. Limited Removal and Offsite Disposal	Yes	Meets chemical-specific but not all contamination can be reached for removal	Moderate	No	Moderate	Low	$2,270,955

Alternative 1, the No Action alternative, does not meet the criteria. Restricting harvesting of marine organisms through Alternative 2, the LUCs alternative, meets the criteria by limiting risk to humans. Risk evaluation did not indicate an unacceptable risk to the environment. Short-term effectiveness is very high due to posing no risk to workers and its ability to be implemented immediately. Alternative 3, the removal alternative, would be very difficult to implement due to the depth and location of contamination; only a portion of contaminated sediment would be able to be removed. Short-term effectiveness is low due to re-suspending sediments, logistic difficulties in managing and dewatering sediments, and risk to remediation workers during offshore and nearshore work.

Ships docked at Base Ketchikan

State/Support Agency Acceptance

ADEC acceptance of the preferred alternatives will be evaluated after the public comment period ends and will be described in the ROD.

For further information on Base Ketchikan please contact:
Chris A. Rose
Environmental Protection Specialist
(907) 463-2421
chris.a.rose@uscg.mil

Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the ROD for each AOC of the site.

COMMUNITY PARTICIPATION

The USCG and ADEC provide the public information regarding the cleanup of Base Ketchikan through public meetings, the Administrative Record file for the site (the FFS and this Proposed Plan are available at the Ketchikan Public Library; for additional files, contact Chris A. Rose), and announcements published in the Ketchikan Daily News, Ketchikan, Alaska. The USCG and ADEC, encourage the public to gain a more comprehensive understanding of the site and the remedial activities that have been conducted at the site.

The dates for the public comment period, and the date, location, and time of the public meeting are provided on the front page of this Proposed Plan.

Viewing the Tongass Narrows in front of Base Ketchikan

Tree canopy

SUMMARIES OF PREFERRED ALTERNATIVES

AOC 1 BSY: Alternative 5 (Excavation, Onsite Treatment, and Offsite PCB Disposal) is costly but contaminants would be removed with no reoccurrence. This is the only alternative which significantly removes TMV through treatment with no residuals remaining after treatment. Alternative 5 is the only alternative which is protective of the community and workers during the remediation process with no environmental impacts and meets the RAOs rapidly, although it would be moderately difficult to implement.

AOC 2 Intertidal Sediment for the Inner Boathouse: Alternative 4 (Removal and Offsite Disposal) is preferred. This alternative provides the most permanent removal of contaminants, provides the least exposure to workers and community during implementation, and would not require implementation of LUCs after removal.

AOC 3 Intertidal Sediment for the Inner Marine Ways: Alternative 3 (Limited Land-Based Excavation, Offsite Disposal, and LUCs) is the preferred alternative for AOC 3. This alternative is more cost efficient and easier to implement than Alternative 4. Both alternatives reduce the mobility and volume of contaminants to the greatest extent and are the most efficient and permanent.

AOC 4 Subtidal Sediment: Alternative 2 (LUCs with LTM) is the preferred alternative for subtidal sediments. This is more cost efficient and effectively addresses potential human health risks. Ecological risks are considered minimal in the subtidal area.

Based on information currently available, the USCG believes the preferred alternatives meet the threshold criteria and provide the best balance of tradeoffs in comparison with other alternatives with respect to the balancing and modifying criteria. The USCG expects the preferred alternatives to satisfy the following statutory requirements of CERCLA §121(b):

(1) Be protective of HHE
(2) Comply with ARARs
(3) Be cost-effective
(4) Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable
(5) Satisfy the preference for treatment as a principal element

GLOSSARY OF TERMS

Applicable or relevant and appropriate requirements (ARARs): The Federal and State environmental cleanup standards and other substantive requirements that a selected remedy will meet. These requirements may vary among sites and alternatives.

Biomagnify: The increasing concentration of a substance, such as a toxic chemical, in the tissues of organisms at successively higher trophic levels.

Cap: An engineered cover that minimizes the potential for receptor exposure to contaminants on the surface. It is a common form of remediation and is generally less expensive than other technologies. A cap can effectively manage potential human and ecological risks. Design is site-specific and depends on its intended function. Material used in construction may include low-permeability material like concrete or high‑permeability material such as geosynthetic products. Low‑permeability materials divert water and prevent its passage into soil. High-permeability materials allow water to percolate into the cap.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA): The federal law that establishes a program to identify, evaluate, and remediate sites where hazardous substances have been released to the environment and that present an unacceptable risk to human health or the environment.

Contaminant of Concern (COC): A constituent related to site activities that is identified in a risk assessment as posting potential risk to human or ecological receptors.

In situ: Remediation of a medium (e.g., soil or water) without removing it from its original location.

Institutional Control (IC): Implementing a legal or administrative process to prevent intrusive activities at the site such as excavation. ICs are designed to prevent activities that could affect the performance of a cap, to prevent or control human exposure to contaminants, and to protect HHE.

Intertidal zone: Region of the tidal zone which is underwater at high tide and exposed at low tide.

Land Use Control (LUC): Implementing a legal or administrative process to prevent intrusive activities, for example, a boundary limiting land use in an area to minimize exposure to contaminants. LUCs are designed to supplement engineering controls and to prevent or control human exposure to contaminants and protect HHE.

Monitoring: Ongoing collection of information about the environment that helps gauge the effectiveness of a cleanup action.

Present Worth Cost: Cost of planning, coordination, and documentation involved in implementing the chosen alternative.

Remedial Action Objective (RAO): Narrative objectives that provide a general description of what a cleanup will accomplish. RAOs in combination with a review of ARARs are used to guide the selection of numerical cleanup levels and serve as the design basis for remedial alternatives.

Record of Decision (ROD): A public document that records and specifies the cleanup action selected for a site. Conditions for implementing the final remedial action and final cleanup standard are contained in the ROD and are signed by the USCG, ADEC, and EPA.

Subtidal zone: Region of the tidal zone which remains underwater at both high and low tides.

Trophic level: A step in the food chain of an ecosystem in which a group of organisms is classified by feeding behavior. Upper trophic level organisms feed on other organisms below them in the food chain.

Thank You for Your Comments on the Proposed Plan for USCG Base Ketchikan, Alaska

Your input on the response action alternative discussed in this Proposed Plan is important to the USCG. Comments provided by the public are valuable in helping us select a remedy.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by 20 February 2020. If you have questions about the comment period, please contact Chris Rose at 907-463-2421. Those with access to email may submit their comments to the USCG at the following address: chris.a.rose@uscg.mil.

Name:

Address:

City, State, Zip:

Email and/or Phone:

Comments on Proposed Plan for
USCG Ketchikan Base, Alaska

Return Address

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Commander
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