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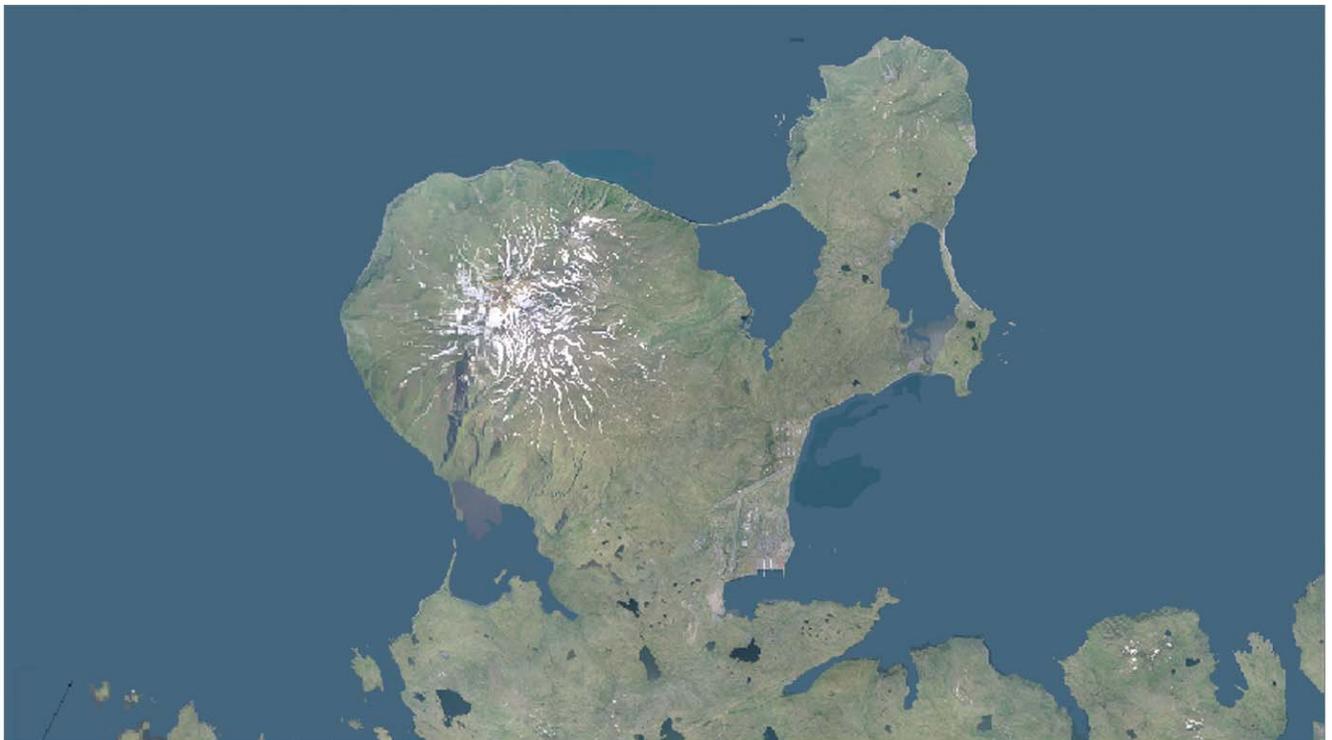
Remedial Action Completion Report

Operable Unit A, Former Adak Naval Complex

NAS Adak

Adak, Alaska

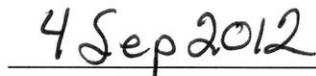
Department of the Navy
Naval Facilities Engineering Command
Engineering Field Activity, Northwest
19917 Seventh Avenue NE
Poulsbo, WA 98370-7570



Remedial Action Completion Report signature sheet for soils and surface water
Operable Unit A, Former Adak Naval Complex, Adak, Alaska

Approved by:


Cindy L. O'Hare, PE
Adak BRAC Environmental Coordinator (BEC)
U.S. Navy


Date

FINAL REMEDIAL ACTION COMPLETION REPORT
OU A, Former Adak Naval Complex
Naval Facilities Engineering Command Northwest

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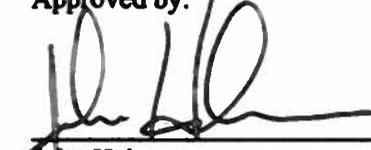
Approved by:

Cami Grandinetti
Cami Grandinetti
Program Manager, Remedial Cleanup Program
U.S. Environmental Protection Agency, Region 10

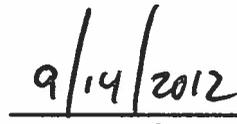
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Date

Remedial Action Completion Report signature sheet for soils and surface water
Operable Unit A, Former Adak Naval Complex, Adak, Alaska

Approved by:



John Halverson
DoD Cleanup Unit Lead, Federal Facilities
Environmental Restoration Program,
Division of Spill Prevention and Response
Alaska Department of Environmental Conservation



Date

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ABBREVIATIONS AND ACRONYMS

AAC	Alaska Administrative Code
AIMD	Aircraft Intermediate Maintenance Detachment
Alaska DEC	Alaska Department of Environmental Conservation
AST	above ground storage tank
BEESC	Bristol Environmental and Engineering Services Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMP	Comprehensive Monitoring Plan
COC	chemical of concern
COPC	chemical of potential concern
CRP	community relations plan
DCE	dichloroethene
DEC	Department of Environmental Conservation (State of Alaska)
DoD	U.S. Department of Defense
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
FFA	Federal Facilities Agreement
FS	feasibility study
HI	hazard index
HQ	hazard quotient
HSWF	Hazardous Waste Container Storage Facility
IC	institutional control
ICMP	Institutional Control Management Plan
MCL	maximum contaminant level
µg/kg	microgram per kilogram
mg/kg	milligram per kilogram
mm	millimeter
Navy	U.S. Navy
NFA	no further action
NPL	National Priorities List
O&M	operation and maintenance
OSWER	Office of Solid Waste and Emergency Response
OU	operable unit
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl

PSE	preliminary source evaluation
QA/QC	quality assurance/quality control
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RAO	remedial action objective
RBAL	risk-based action level
RBSC	risk-based screening concentration
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
ROD	Record of Decision
SA	source area
SAERA	State-Alaska Environmental Restoration Agreement
SOP	standard operating procedure
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TAC	The Aleut Corporation
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound

1.0 INTRODUCTION

This Remedial Action Completion Report (RACR) documents that the U.S. Navy (Navy), under the oversight of the U.S. Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (Alaska DEC), has completed the required response actions for soil and fresh surface water (including brackish water in Clam Lagoon) at all of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites within Operable Unit (OU) A of the former Adak Naval Complex (former Complex), Adak, Alaska. (Note: Groundwater and marine organisms are not included in this deletion; see additional information in Section 4.0.) In general, OU A encompasses the entire military reservation with respect to chemical contamination, and OU B encompasses the entire military reservation with respect to ordnance contamination. This RACR also includes the soil at two additional sites (SWMU 24 and SA 77) within the geographic boundaries of OU A that were closed under the Resource Conservation and Recovery Act (RCRA) program. This report is consistent with the requirements of the joint U.S. Department of Defense (DoD) and EPA guidance *Streamlined Site Close Out and National Priorities List, Deletion Process for DoD Facilities* (DoD and EPA 2005).

The purpose of this document is to provide all the necessary information regarding completion of response actions in preparation for requesting that soil and fresh surface water at OU A be removed from the National Priorities List (NPL). This will be a partial deletion because groundwater and sediment/marine organisms (specifically, Sweeper Cove and Kuluk Bay) will not be included in the request to delete, since deletion criteria for these media and areas have not been met. The EPA deletion criteria are as follows (EPA, 2011):

- All required response actions have been implemented.
- No further response actions are necessary.
- There is no health threat above EPA's target health goals to humans or the environment.

Soil and fresh surface water at OU A have met the above criteria.

The former Complex was proposed for the EPA NPL in October 1992 (57 FR 47204) and formally listed in May 1994 (59 FR 27989). In November 1993, a Federal Facilities Agreement (FFA) among the Navy, EPA, and the Alaska DEC specified the procedural requirements for the environmental investigations and cleanups to be performed under CERCLA. The FFA also identified petroleum-related sites that would be evaluated under a two-party agreement between the Navy and the State of Alaska. This agreement—the State-Adak Environmental Restoration Agreement (SAERA)—was signed in April 1994. In early 1998, the FFA was amended to designate OU B for ordnance sites. The Navy is the lead agency for environmental cleanup at the former Complex under Executive Order 12580.

This RACR is based on a document prepared for signature in 2006. Subsequent monitoring has occurred, as well as completion of two five-year reviews and updates to the Institutional Control Monitoring Plan (ICMP). The additional monitoring and updates do not change the intent of the RACR or the partial delisting status. Therefore, the monitoring periods and results, as well as the references, are not updated from the 2006 document.

2.0 SUMMARY OF SITE CONDITIONS

2.1 SITE DESCRIPTION

Adak Island is located off the Alaskan mainland near the center of the Aleutian Islands chain, approximately 1,200 miles west-southwest of Anchorage, Alaska. Its geographic position is 176°45'W longitude and 51°45'N latitude. With an area of 280 square miles, it is the largest of the Andreanof group of the Aleutian Islands. The former Complex occupied 76,800 acres on the northern portion of the island (Figure 2-1). It was used for national defense purposes pursuant to Public Land Order 1949, and it was closed operationally on March 31, 1997. During September 2000, the federal government entered into a land transfer agreement with The Aleut Corporation (TAC), as documented in the Agreement Concerning the Conveyance of Property at the Adak Naval Complex, Adak, Alaska, dated September 20, 2000, as amended. This agreement resulted in the conveyance of approximately 47,000 acres of the former Complex property to TAC during March of 2004. The land transfer includes all of the downtown area, housing units, and industrial facilities. Land not included in the land transfer was any offshore islands, islets, rocks, reefs, and spires. Other exclusions from the land transfer were fixtures and equipment owned by the United States and associated with the airfield, and those improvements owned by the United States and managed by the Fish and Wildlife service. The U.S. Fish and Wildlife Service (USFWS) manages the southern 117,265 acres of the island, which is a designated wilderness within the Alaska Maritime Wildlife Refuge system. TAC transferred the portion of the former Adak Naval Complex known as Adak Airport and associated facilities and aviation easements to the State of Alaska.

2.2 REMEDIAL INVESTIGATION/FEASIBILITY STUDY PROCESS

In 1998, the former Complex CERCLA response actions under the FFA were divided into OU A and OU B. In 2001, OU B was further divided into OU B-1 and OU B-2 to accommodate land transfer. OU A addresses non-ordnance chemical releases to the environment (i.e., the CERCLA sites), while OU B addresses ordnance explosive safety hazards and human health and ecological risks associated with ordnance-related chemicals. Figure 2-2 presents the locations of the 57 sites that comprise OU A, and Figure 2-3 shows the 146 sites that comprise OU B-1. Investigation at OU B-1 sites was completed in 2010. The Navy is currently drafting the close-out documentation for the OU B-1 sites. The OU B-2 sites are still under investigation and are not candidates for deletion (see Figure 2-3). The following sites were moved from OU A to OU B-2 and remain active for munitions concerns:

- OU A (three sites deferred to OU B-2):
 - Solid Waste Management Unit (SWMU) 1, Andrew Lake Waste Ordnance Demolition Range.
 - SWMU 8, Andrew Lake Landfill and Shoreline. CERCLA issues not evaluated due to safety issues concerning ordnance. Includes ALSW-01 (RAA-05) aspect of OU B-2.
 - Source Area (SA) 93, World War II Mortar Impact Area. Includes SA-93-01 (RAA-04) aspect of OU B-2.

The discovery, investigation, and remediation of OU A sites involved state regulations as well as CERCLA and RCRA procedures. Figure 2-4 presents an overview of the process used to evaluate OU A sites. The FFA listed 84 SWMUs and SAs that needed to be evaluated within OU A. Twenty-six of the original 84 sites were petroleum-only sites administered under the SAERA agreement and are, therefore, not included in this discussion. Petroleum sites are specifically excluded under CERCLA (see further discussion regarding the OU A Record of Decision [ROD] amendment in Section 2.3). Three of the remaining 58 sites were consolidated into one site (SWMU 52 now also includes SWMUs 53 and 59),

and four were deferred to either OU B-2 (SWMUs 1, 8, and 93) or to the SAERA process (SWMU 12), leaving a total of 52 CERCLA sites. Subsequent to the FFA, the five water bodies that could be impacted by site contamination were added to the OU A site list: Sweeper Cove, South Sweeper Creek, Clam Lagoon, Andrew Lake, and Kuluk Bay. This increased the total number of individual sites within OU A to 57. Two of the 57 OU A sites, Sweeper Cove and Kuluk Bay (marine water bodies), are not proposed for deletion in this RACR because marine tissue sampling has not met remedial action objectives (RAOs).

Most of the OU A sites (41 sites) went through the preliminary source evaluation (PSE) process. Based on historical use information, the sites were divided into those sites that were expected to not require further evaluation (Batch 1) and those sites that were expected to require some kind of remedial action (Batch 2). The PSE is a risk-based screening approach used to determine which potentially hazardous source areas pose a risk to human health or the environment. The PSE is a two-level process. The first level, the PSE-1, used available data to identify the chemicals of potential concern (COPCs), to estimate volumes of contamination of COPCs, and to predict the impact on human and ecological receptors. If the results of the PSE-1 determined the need for additional information to fill data gaps, then a PSE-2 was conducted. During a PSE-2, field sampling was conducted and cumulative risks were calculated for human and ecological receptors to determine whether the site warranted further investigation in the basewide remedial investigation/feasibility study (RI/FS).

In risk assessments, carcinogenic effects and noncarcinogenic effects are evaluated separately. Cancer risks are expressed as the increased likelihood of cancer due to exposure to a particular chemical (i.e., in excess of a background cancer risk of one chance in three, or 3×10^{-1}). EPA's target cancer risk range is 1×10^{-6} to 1×10^{-4} . Cancer risks less than 1×10^{-6} generally do not need further evaluation, and cancer risks greater than 1×10^{-4} generally require some type of action to reduce cancer risks. The potential for adverse health effects other than cancer (noncancer effects) is characterized by dividing the estimated chemical intake by the reference dose (i.e., the accepted safe level). The resulting ratio is the hazard quotient (HQ). EPA risk assessment guidelines (EPA, 1989) consider the additive effects associated with simultaneous exposure to several chemicals by specifying that all HQs initially be summed across exposure pathways and chemicals to estimate the total hazard index (HI). If the HI is less than 1, exposures to COPCs are considered unlikely to result in an adverse effect. If the HI is greater than 1, further evaluation is generally warranted. Note, ecological receptors are only evaluated for noncarcinogenic effects. Therefore, only HQs and HIs are calculated in ecological risk assessments.

Table 2-1 presents site details, including site background, removal actions (if any), RI/FS results (if the site was included in the RI/FS process, otherwise PSE results are reported), ROD findings, and cleanup actions (if any) for the 32 sites proposed for deletion that were identified as requiring no further action (NFA) in the OU A ROD. Table 2-2 presents similar information for the 23 sites proposed for deletion where the ROD identified that some response action was required.

2.3 RECORD OF DECISION FINDINGS

Two RODs and one ROD amendment have been signed for OU A at the former Complex:

- Interim ROD for SWMUs 11 and 13 in OU A: May 1995 (U.S. Navy et al., 1995)
- OU A: April 2000 (U.S. Navy et al., 2000)
- OU A Amendment 1: September 2003 (U.S. Navy et al., 2003)

While some petroleum sites were included in the OU A ROD in 2000, the petroleum sites requiring further action were removed from the CERCLA process through the 2003 OU A ROD amendment (U.S. Navy et al., 2003). The petroleum sites continue to be managed under SAERA and are not included in this RACR. See Appendix B for a list of the 62 petroleum sites removed from the OU A ROD.

ROD findings can be divided into two broad categories: The first are sites designated as NFA in the ROD, because contamination had either been removed prior to the ROD, or was never found to exceed target health goals and/or cleanup levels (see Table 2-1). The second category is sites found in the ROD to require some type of action to protect human health and the environment (see Table 2-2). For the sites where some action was required, the ROD established RAOs and specified a remedy.

For the 25 sites where the April 2000 ROD required some type of response action, the ROD identified the following three major categories of sites with three primary sets of RAOs:

- Landfills where landfill covers were installed (six sites)
- Sites with long-term monitoring and/or institutional controls (ICs) only (17 sites)
- Sites where soil and/or sediment were removed (two sites)

The RAOs are described below, followed by a general summary of remedy requirements.

Remedial Action Objectives

Landfills with Covers. Landfill covers have been installed at the following sites: SWMUs 4, 11, 13, 18/19, and 25. These were done as requirements under the 1995 interim ROD for SWMUs 11 and 13, under the 2000 OU A final ROD for SWMU 4, or as requirements of permit conditions for landfills permitted by the State of Alaska for SWMUs 18/19 and 25. The RAOs for these sites are the following:

- Prevent ingestion of and contact with chemically affected subsurface soils within the landfill debris and protect ecological receptors that may ingest on-site plants. (The plants may uptake subsurface chemicals.)
- Limit off-site migration of chemicals and materials from the landfill.

Sites with Institutional Controls Only. The following chemical-release sites administered under CERCLA require ICs only under the OU A ROD: former landfills at SWMUs 2 and 29; the water bodies Sweeper Cove and Kuluk Bay; and SWMUs 10, 14, 15, 16, 20, 21A, 23, 52, 55, 67, and 76. Two additional sites, SWMU 24 and SA 77, were closed under RCRA, but also have ongoing IC requirements. (Note that ICs are also required at the landfills and SWMU 17 [see Section 5].)

- The RAOs for the landfills at SWMUs 2 and 29 are to protect human or ecological receptors (or both) from exposure to landfill debris and soil that could result in a cancer risk greater than 1×10^{-5} or a noncancer risk above a hazard risk (HI) of 1.0.
- The RAOs for Sweeper Cove and Kuluk Bay entail the protection of subsistence fishers from ingestion of fish (rock sole) and shellfish (blue mussel) containing Aroclors 1260 and 1254, respectively, that could result in a cancer risk greater than 1×10^{-5} or a noncancer risk above an HI of 1.0.
- The RAOs for the remaining SWMUs involve protection of human or ecological exposure to soil or groundwater. This exposure could result in a cancer risk greater than 1×10^{-5} , or a

noncancer risk above an HI of 1.0 under a conservative residential risk exposure scenario for these commercial/industrial sites.

SWMU 17, Power Plant 3 Area, and South Sweeper Creek. The RAOs at the SWMU 17 waste oil and retention ponds are to prevent uptake of and contact with impacted freshwater sediments by benthic infauna and impacted surface water by birds.

The RAOs at South Sweeper Creek are to protect benthic infauna from contacting and ingesting sediments affected by chemicals of concern (COCs).

Selected Remedies

Selected remedies are detailed on Table 2-2 for each site where the ROD required a remedy.

2.4 SELECTED REMEDIES AT OU A

2.4.1 Sites with Institutional Controls

Of the 17 sites selected in the ROD for long-term monitoring and/or ICs, 13 sites were selected as requiring ICs due to risk assessment findings showing residential or ecological risks in excess of target health goals (Table 2-2). Two of the 13 only had minor ecological risks. One site (SWMU 55) was included only because of groundwater risks due to using the water as a drinking source. Therefore, the soils do not represent health risks and the groundwater is not included in the RACR. The remaining 10 of the 13 sites were found to have human health risks based on residential land use due to soil only (six sites) or a combination of soil and groundwater exposures (four sites). Soils at these sites were deemed to represent an acceptable risk for industrial/commercial exposures but not for residential. Hence, the remedial strategy is to control land use. Details regarding ICs and objectives are provided in Section 5.1.

The remaining four of the 17 total sites with either long-term monitoring and/or ICs are the two water bodies (Sweeper Cove and Kuluk Bay) which are not included in the RACR, and two landfills (SWMU 11 and SWMU 13) which are discussed in Section 2.4.2.

2.4.2 Design Criteria and Cleanup Activities at Landfills

Design criteria are applicable to the six landfills where caps were installed: SWMUs 4, 11, 13, 18, 19, and 25. Caps were installed either as a requirement under the 1995 interim ROD (SWMUs 11 and 13), under the 2000 OU A ROD (SWMU 4), or as requirements of permit conditions for landfills permitted by the State of Alaska (SWMUs 18/19 and 25). The design criteria and cleanup and construction activities for these landfills are discussed below by site. The relevant source documents (i.e., construction and closeout reports) are listed on Table 2-2. Details from the source documents are summarized in the sections below. For these six landfills, ICs are in place to ensure that the caps are maintained. ICs are discussed in Section 5.

There are five additional landfills within OU A (SWMUs 2, 3, 5, 29, and 30) for which no covers were designed, because the landfills did not require any additional remedial actions to protect human health and the environment. For three of the landfills (SWMUs 3, 5, and 30), NFA designations were given in the ROD because of low chemical concentrations and low potential for mobilization of landfill contents (see Table 2-1). SWMUs 2 and 29 were low risk sites where the existing covers were found to be sufficiently

protective, such that no risks are present if ICs are maintained. SWMUs 2 and 29 are included in the ICs program for the site (see Table 2-2).

SWMU 4, South Davis Road Landfill

The cap for SWMU 4 was successfully completed in 1998 and the 2000 OU A ROD accepted this action as the appropriate remedy for the site. The elements of cap construction were as follows:

- First, surficial metal debris was removed from the landfill.
- Second, the site was recontoured to provide positive drainage.
- Third, a drainage system was installed, consisting of two drainage ditches lined with geotextile to prevent contact with landfill contents.
- Fourth, a 4-foot layer of fill was spread over the landfill and compacted.
- Last, a layer of topsoil was added and the site was revegetated.

The regulatory agencies approved the cover design and installation and agreed that the requirements of the ROD had been met (Cora, 1998). Site completion documentation is provided in Table 2-2.

SWMU 11, Palisades Landfill, and SWMU 13, Metals Landfill

Landfill cap requirements for SWMUs 11 and 13 were documented in the 1995 interim ROD and further documented in the 2000 OU A ROD. The landfill cap design was the same for both landfills. Recontouring and capping occurred in 1996. Specifically, the remedy consisted of installation of a cover with a surficial jute mat and seed layer underlain by a maximum 2-foot-thick layer of compacted soil, which in turn was underlain by a leveling soil layer over the landfill debris. The leveling soil layer is approximately 6 inches thick (the thickness varies, based on the undulating nature of the debris). All ROD requirements regarding cap construction have been met. The integrity of the landfill caps are inspected as part of annual ICs (see Section 5). Site completion documentation is provided in Table 2-2.

SWMUs 18/19, White Alice Landfill

Remedy selection at SWMUs 18/19 was completed pursuant to the State of Alaska Solid Waste Management Regulations Title 18 Alaska Administrative Code Chapter 60 for landfill closures. SWMUs 18/19 are being administered under the state solid waste regulations (permit number 0225-BA001). The landfill was successfully closed and capped in 1997.

The elements of cap construction were as follows:

- First, refuse was consolidated into several trenches within one area of the landfill.
- Second, the trenches were completely filled, and the entire landfill was covered with a minimum of a 2-foot layer of compacted fill.
- Third, the landfill was graded and stormwater control features were installed (a storm water retention pond and drainage ditches).
- Fourth, a layer of topsoil was added, erosion control matting was placed where needed, and the site was revegetated.

- Last, fences were installed around the landfill to provide access control.

In July and August of 2005, reseeded and erosion control (placement of biodegradable fiber matting) activities were conducted on approximately 2.6 acres of the landfill. These restoration activities were conducted as part of ongoing measures to maintain the integrity and effectiveness of the final cover in compliance with the post-closure requirements.

Site completion documentation is provided in Table 2-2.

SWMU 25, Roberts Landfill

SWMU 25 was operated and closed according to the State of Alaska Solid Waste Management Regulations, and the landfill inspection requirements are being administered under the state solid waste regulations (permit number 9425-BA007). The majority of SWMU 25 was closed in 1998. The 1998 closure included the placement of a low-permeability soil cover over a majority of the landfill, grading and contouring, the installation of surface water/erosion controls, the installation of access restrictions, and the placement of vegetative cover over filled areas.

From 1999 through 2000, the still active portion of the landfill, the domestic-waste area cell, continued to be used as a repository of chemically inert wastes (e.g., Davis Lake Lagoon sludge and demolition debris from the Roberts Housing area). The domestic-waste cell was covered and capped at all areas, except the active open-cell area, in August of 2000. During the summer of 2000, repair of the original 1998 cap also occurred.

In 2001, two new cells were constructed, a new inert-debris monofill and an asbestos-debris monofill. Construction debris and asbestos debris were placed in their respective cells until the fall of 2001. In 2001, the landfill was closed in what was thought to be the final closure. This closure consisted of proper capping of the three remaining active cells: domestic, construction, and asbestos.

In 2002, the landfill was re-permitted according to Alaska DEC regulations and reopened to receive additional building debris (including asbestos) associated with the demolition of 52 recreational cabins and World War II-era Quonset huts. The asbestos debris was separated from the inert building materials and placed in the reopened asbestos cell described above. Subsequent to receipt of the demolition debris, the landfill was permanently closed. Final closure work consisted of the following:

- Cells were filled with intermediate cover material.
- A minimum of 32 inches of cover was placed over the top of each cell.
- 4 inches of topsoil was placed over the cover.
- The site was graded, hydroseeded, and the cap surveyed.
- Final closure and recording of the final plat was provided to the Alaska Department of Natural Resources.

In July and August of 2005, reseeded activities were conducted on approximately 6.5 acres of the landfill. These restoration activities were conducted as part of ongoing measures to maintain the integrity and effectiveness of the final cover in compliance with the post-closure requirements.

Site completion documentation is provided in Table 2-2.

2.4.3 Cleanup Activities at Sediment Removal Sites

For two sites, SWMU 17 and South Sweeper Creek, sediment removal actions were required in the ROD, primarily to protect ecological receptors from exposures to polychlorinated biphenyls (PCBs) above the remediation goal of 1 mg/kg. The information presented below is summarized from the closure reports listed on Table 2-2.

SWMU 17, Power Plant 3 Area

As required by the ROD, PCB-impacted sediment was removed from the waste oil and retention ponds at SWMU 17. Removal activities occurred in 1999 and consisted of the following:

- Draining the waste oil and retention ponds
- Dewatering the excavation sites
- Excavation of all sludge/sediment with PCB concentrations greater than 1 mg/kg
- Treating sediments using low-temperature thermal desorption to remove diesel range organics (DRO)
- Placing treated sediment in Robert's Landfill once DRO levels met daily fill requirements
- Backfilling the waste oil pond and seeding with native grasses
- Backfilling the retention pond sufficiently to recreate preexisting wetland contours

Drained water was sampled and, based on acceptable results (concentrations below Alaska DEC cleanup levels), pumped through a constructed water filter pond and then into the sanitary sewer system. The water filter pond consisted of a lined pit separated from a second lined pit by a berm constructed of pea gravel, sand, and fabric mesh.

The approximate ex situ volume of sediment removed from both ponds was 4,500 cubic yards. Specific amounts for removal were determined by field sampling to ensure that all PCB-impacted materials above 1 mg/kg were removed. ICs remain in place at this site to prevent the use of groundwater (which is impacted with volatile organic compounds [VOCs] from a nearby former dry cleaner) as a drinking water source. Groundwater cleanup levels from the ROD have not been met in this area. However, soils and surface water now meet all remedial goals and all ROD requirements have been met.

South Sweeper Creek

Sediment removal in South Sweeper Creek occurred west of the south end of Runway 36 and approximately 4,000 feet south of the SWMU 17 waste oil ponds in 1999 (U.S. Navy, 1999b; 2004d).

Sediment removal was accomplished through mechanical excavation after the creek was temporarily rerouted. Approximately 5,400 cubic yards of sediment were removed. Confirmatory sampling was conducted after removal, and, in some cases, additional sediment was removed if confirmatory sampling indicated concentrations exceeded the remediation goal. The sediments were treated by low-temperature thermal desorption to meet Alaska DEC criteria for fill at Roberts Landfill and were used as daily cover during 1999. Confirmatory sampling of the substrate of South Sweeper Creek indicated that remedial goals were achieved. The Navy also placed clean fill, redistributed remaining sediment, and placed

gravel, rocks, and boulders in various locations on the creek bottom to encourage the reestablishment of aquatic plants and to provide habitat for marine organisms.

No ICs or long-term monitoring are required because remedial actions for South Sweeper Creek have met the remedial goals. All ROD-required actions are complete. See the *Closure Report, South Sweeper Creek* (U.S. Navy 2004d) for details.

2.5 COMMUNITY INVOLVEMENT

The Navy has sought community input for all phases of the cleanup efforts within OU A. There are specific requirements pursuant to CERCLA Section 117(a), as amended, that require certain reports to be released to the public and that the public be notified of proposed cleanup plans and remedial actions. All CERCLA requirements regarding communication with the public have been met.

Community relations activities have established communication among the citizens living near the site, other interested organizations, the Navy, EPA, and Alaska DEC. The actions taken to satisfy the statutory requirements also provided a forum for citizen involvement and input to the proposed plan and the ROD. These actions included the creation of a community relations plan and periodic meetings between the public and the agencies in the form of Restoration Advisory Board (RAB) meetings. The first community relations plan (CRP) was prepared in 1993. There have been a number of revisions and updates over the years, the last one occurring in October of 2001. RAB meetings have occurred periodically throughout the investigation and cleanup process. The Adak RAB was formed in 1996 and generally meets on a biannual basis.

The purpose of the RAB is to act as a forum for the discussion and exchange of information among the Navy, regulatory agencies, and the community on environmental restoration topics. RAB meetings provide an opportunity for the stakeholders to review progress and participate in the decision-making process by reviewing and commenting on actions and proposed actions involving releases or a threatened release at the installation.

The RAB will be the public forum used by the Navy throughout the site close out and deletion process. The public forum Web site is located at <http://www.adakupdate.com> and contains the latest information, fact sheets, and contact information on cleanup activities. This RACR will be posted on the Web site to facilitate public review. In addition the document will be available at the Adak information repository and University of Alaska, Anchorage library.

2.6 REDEVELOPMENT

As discussed in Section 2.1, the Navy has relinquished 71,171 of the 76,280 acres that it originally occupied pursuant to a Public Land Order. The property reverted back to the Department of Interior, which has conveyed a substantial portion of the property to TAC. TAC conveyed portions of Adak to the City of Adak and State of Alaska. The land transfer agreement requires that the existing land use be maintained for designated residential, commercial, and industrial activities (as documented in the Agreement Concerning the Conveyance of Property at the Adak Naval Complex, Adak, Alaska, dated September 20, 2000, as amended March 12, 2004; Interim Conveyance, dated March 17, 2004). Therefore, any future property development activities that take place will maintain the existing land uses as specified in the land transfer agreement.

The Navy has responsibility to ensure the continued effectiveness of all CERCLA remedies, as well as selected remedies related to petroleum sites under the jurisdiction of Alaska DEC. The Navy also has responsibility to respond to any potential ordnance encounters that might occur in the future. The Interim Conveyance contains the statutory covenant that delineates the Navy's right to access sites on Adak to respond to releases of hazardous substances, including ordnance materials, related to past DoD activities.

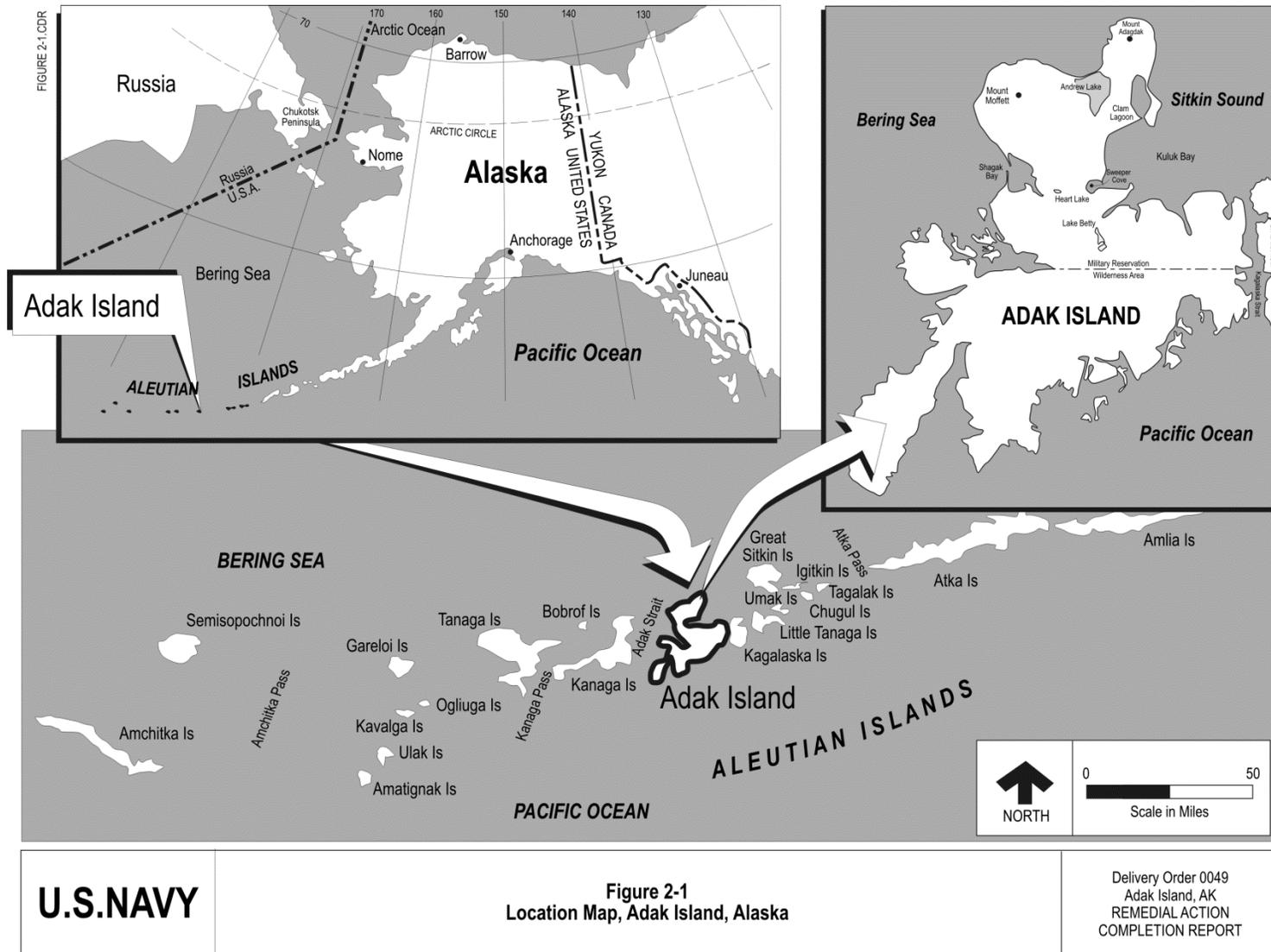


Figure 2-1. Location Map, Adak Island, Alaska

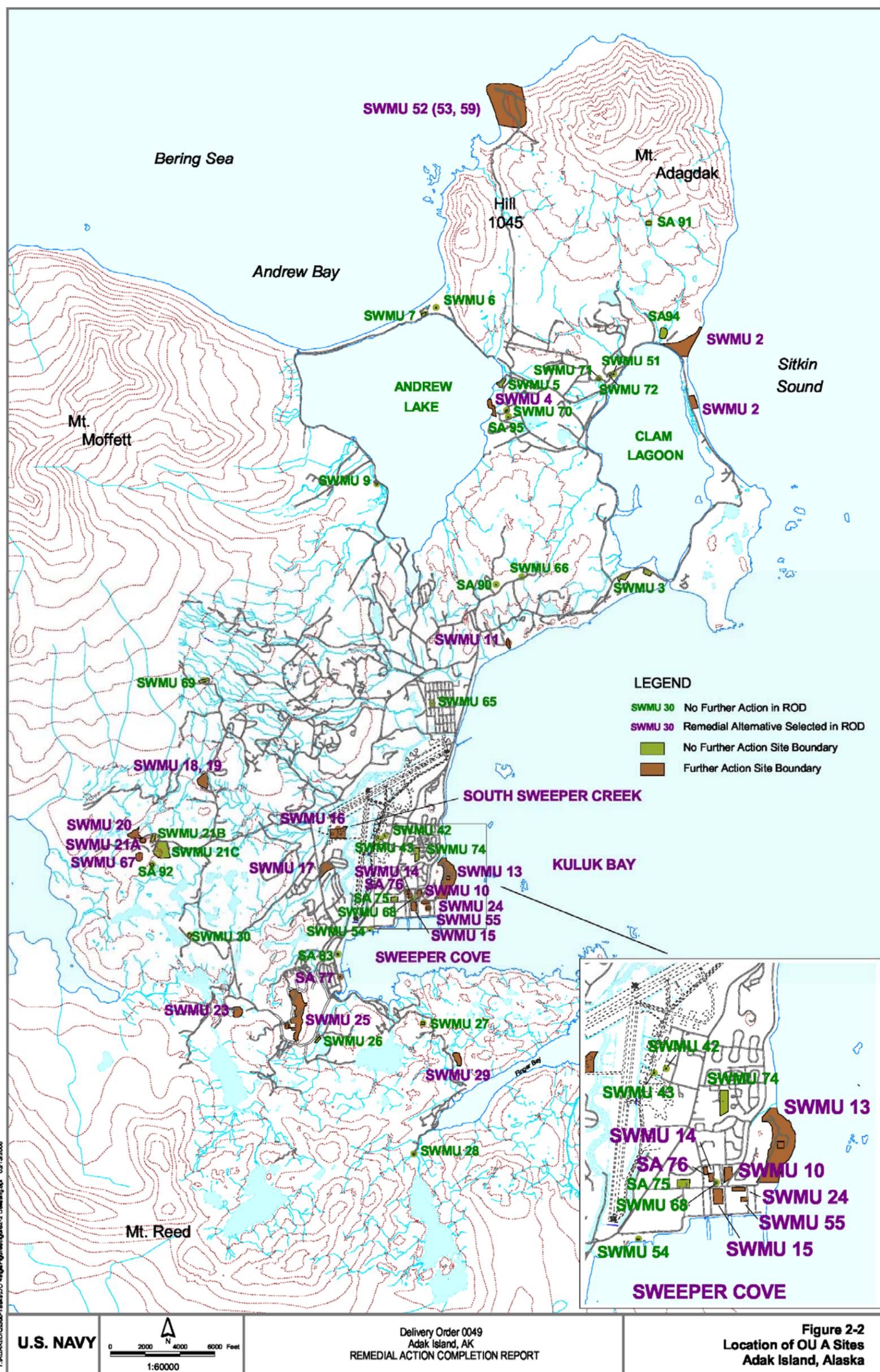
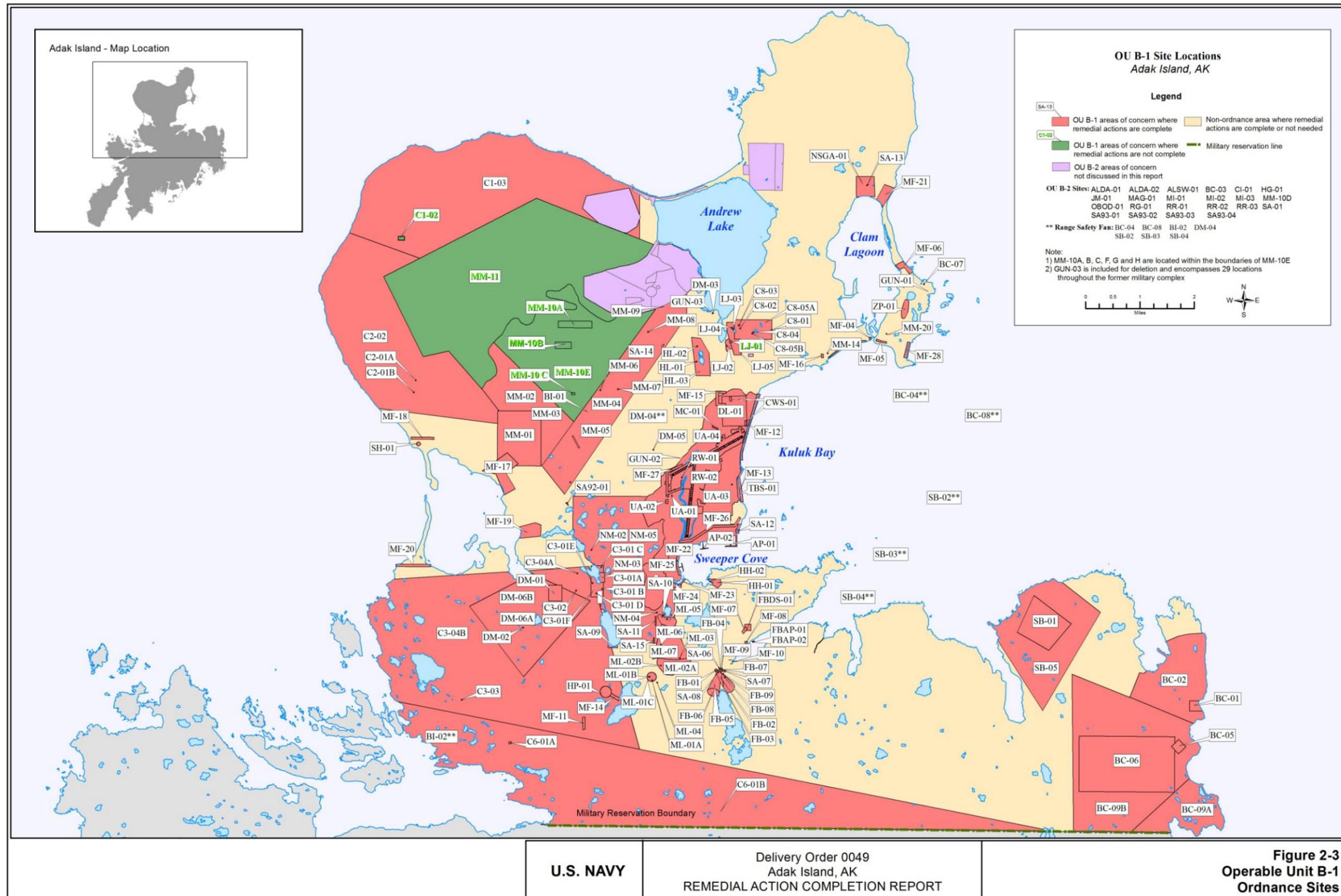
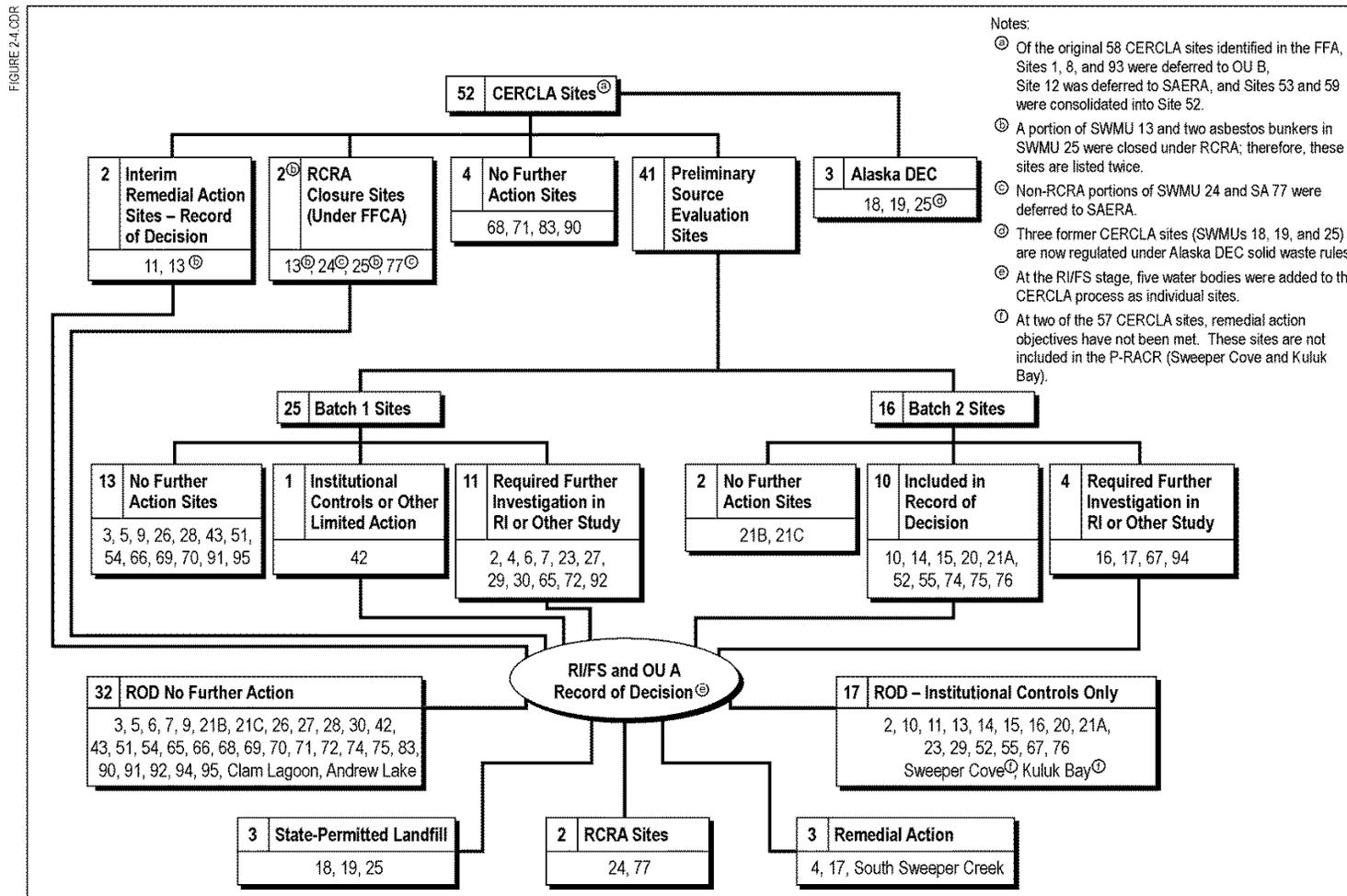


Figure 2-2. Location of OU A Sites, Adak Island, Alaska



March 13, 2006 T:\ADAK\DIQ\Sub-Tasks\DO49\gis\Figures\OUB1_sites_11x17.mxd

Figure 2-3. Operable Unit B-1 Ordnance Sites



U.S.NAVY

Figure 2-4
 Summary of CERCLA Site Process at Former Adak Naval Complex

Delivery Order 0049
 Adak Island, AK
 REMEDIAL ACTION
 COMPLETION REPORT

Figure 2-4. Summary of CERCLA Site Process at Former Adak Naval Complex

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 3	Clam Lagoon Landfill	Operated from 1959 to the early 1970s, Clam Lagoon Landfill was reportedly a landfill site; aside from the presence of empty drums, no other evidence of a landfill was observed.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-2 evaluation of this site (U.S. Navy, 1995b) recommended NFA, based on the absence of COCs and the lack of evidence to indicate that the area was used for a landfill. NFA determination was agreed to by EPA correspondence (April 27, 1995) and Alaska DEC correspondence (May 12, 1995).</p> <p>The FS concluded that NFA was warranted because of no evidence of contamination based on visual inspection.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u></p> <p>PSE-2, Batch 1 (U.S. Navy, 1995b)</p> <p>EPA correspondence (Jones, 1995b)</p> <p>Alaska DEC correspondence (Pexton, 1995a)</p> <p>OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 5	North Davis Road Landfill	Operated between the early 1940s and late 1960s and used for disposal of sanitary refuse, including construction debris, rubble, and wood crates.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-2 evaluation of this site (U.S. Navy, 1995b) determined that there is minimum potential for release of COPCs above RBSCs and recommended NFA. No further action determination was agreed to by EPA correspondence (April 27, 1995) and Alaska DEC correspondence (May 12, 1995).</p> <p>The FS concluded that no further action was warranted, because of no evidence of contamination based on visual inspection.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u></p> <p>PSE-2, Batch 1 (U.S. Navy, 1995b)</p> <p>EPA correspondence (Jones, 1995b)</p> <p>Alaska DEC correspondence (Pexton, 1995a)</p> <p>OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 6	Andrew Lake Drum Disposal Area 1	Relatively level area covered by several hundred 55-gallon, closed-top drums believed to have contained fuel. Most of the drums appeared to be empty.	<p>The RI found beryllium detected above human health cleanup levels in groundwater. No COPCs were identified for ecological receptors. A human health risk assessment was conducted and results are summarized here.</p> <p>Human Health: Beryllium in groundwater was the only COPC found at the site. The resulting risk of 9×10^{-6} for a residential drinking water scenario was within EPA's target risk range of 10^{-6} to 10^{-4}. Noncancer hazards were < 0.01.</p> <p>The FS concluded that NFA was warranted, because risks to human health were below target health goals.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 7	Andrew Lake Drum Disposal Area 2	This area is located on the northeast end of the causeway separating Andrew Lake from Andrew Bay and the Bering Sea. Andrew Bay was used during the 1940s as an anti-aircraft training center gunnery range. Approximately 15 55-gallon drums were scattered in a slight depression. The drums could have been used to supply fuel to the anti-aircraft facilities for power generation.	<p>The RI found chemicals detected above cleanup levels in groundwater and subsurface soil. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Beryllium, antimony, and manganese in groundwater were the only COPCs found at the site. The resulting risk of 1×10^{-6} for a residential drinking water scenario was at the low end of EPA's target risk range of 10^{-6} to 10^{-4}. Noncancer hazards were 1.1, very close to the target of 1.</p> <p>Ecological Health: One COPC was identified for ecological risks: benzene. Benzene was detected in only one subsurface soil sample, and the HI of 3 only slightly exceeded the target of 1.</p> <p>The FS concluded that NFA was warranted, because risks to human and ecological health were minimal.</p>	<p><u>Pre-ROD Remedial Actions:</u> Removal of soil and drums in 1994 as part of the PSE-2 evaluation</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-1, Batch 1 (U.S. Navy, 1995b) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 9	Black Powder Club	This area is located near the southwest shore of Andrew Lake. The site was used as a recreational firing range.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-1 evaluation of this site (U.S. Navy, 1994a) determined that there is minimum potential for contamination to be present at this site and recommended NFA. NFA determination was agreed to by EPA correspondence (April 4, 1995) and Alaska DEC correspondence (April 13, 1995).</p> <p>The FS concluded that NFA was warranted, because of no evidence of contamination based on visual inspection.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-1, Batch 1 (U.S. Navy, 1994a) Alaska DEC correspondence (Hartung, 1994) RI/FS (U.S. Navy, 1997a) OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 21B	White Alice Lower Quarry	The White Alice quarry is located approximately 2 miles west of downtown Adak. The quarry supplied foundation materials used during road and building construction. Between 1980 and 1982, the quarry was used as a disposal area. Potential sources of contamination were transformer oil, drums, construction debris, scrap metal, and asphalt.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-1 evaluation of this site (U.S. Navy, 1995c) determined that the cumulative risk for this site is acceptable, and possible off-site concerns were addressed under SWMU 20, which is downgradient of SWMU 21B. No COPCs were in downgradient sediment at SWMU 20. Contamination at SWMU 20 was addressed separately. NFA was recommended for SWMU 21B in the PSE-1 evaluation.</p> <p>The FS concluded that NFA was warranted, because no evidence of contaminants exists that would cause risks to human and ecological health.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-1, Batch 2 (U.S. Navy, 1995c) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 21C	White Alice East Disposal Area	The White Alice quarry is located approximately 2 miles west of downtown Adak. The quarry supplied foundation materials used during road and building construction. Between 1980 and 1982, the quarry was used as a disposal area. Potential sources of contamination were transformer oil, drums, construction debris, scrap metal, and asphalt.	No detailed evaluation of this site was conducted for the RI/FS. The PSE-1 evaluation of this site (U.S. Navy, 1995c) determined that the cumulative risk for this site is acceptable for both human and ecological receptors. NFA was recommended in the PSE-1 evaluation. The FS concluded that NFA was warranted because of no risks to human and ecological health.	<u>Pre-ROD Remedial Actions:</u> None <u>ROD Remedy:</u> NFA in ROD <u>Site Completion Documentation:</u> PSE-1, Batch 2 (U.S. Navy, 1995c) OU A ROD (U.S. Navy et al., 2000)
SWMU 26	Mitt Lake Drum Disposal Area	This site is located on the northwest corner of Mitt Lake, about ½ mile southwest of Sweeper Cove. The site was used as a drum disposal area during the 1940s and 1950s.	No detailed evaluation of this site was conducted for the RI/FS. The PSE-1 evaluation of this site (U.S. Navy, 1994a) recommended NFA. NFA determination was agreed to by Alaska DEC correspondence (April 13, 1995) and meeting with EPA on January 8 and 9, 1996.	<u>Pre-ROD Remedial Actions:</u> Removal of drums from concrete slab between 1980 and 1982 <u>ROD Remedy:</u> NFA in ROD <u>Site Completion Documentation:</u> PSE-1, Batch 1 (U.S. Navy, 1994a) Alaska DEC correspondence (Hartung, 1994) OU A ROD (U.S. Navy et al., 2000)
SWMU 27	Lake Leone Drum Disposal Area	During the late 1970s and early 1980s, approximately 100 30-gallon drums were deposited in the pond at Lake Leone Drum Disposal Area. Drum contents were tested and found to be hazardous, because content's corrosivity exceeded the allowed limit for nonhazardous material.	The RI found chemicals detected above cleanup levels in groundwater and subsurface soil. A risk assessment was conducted and results are summarized here. Human Health: Six PAHs, carbazole, Aroclor 1260, arsenic, and manganese in sediment were the human health COPCs found at the site. The resulting risk of 2×10^{-7} for both a residential and recreational scenario is below the EPA target risk range of 10^{-6} to 10^{-4} . Noncancer hazards were <0.01 below the target of 1.	<u>Pre-ROD Remedial Actions:</u> Drum removal and capping of pond bottom sediments impacted by drum leakage. Work completed in 1997 (U.S. Navy, 1998g). <u>ROD Remedy:</u> The 1997 time-critical removal of drums and covered sediment eliminated ecological exposure. Risks to human health were below target health goals. NFA in ROD.

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 27 (Continued)	Lake Leone Drum Disposal Area		<p>Ecological Health: 14 PAHs, 2-methylnaphthalene, dibenzofuran, Aroclor 1260, copper, lead, manganese, and zinc in sediment were the ecological COPCs found at the site. The ecological hazard of 698 exceeded the target and is 94 percent attributable to SVOCs associated with a single sediment sample. The drums in the pond were the likely source of the SVOCs and were recommended for removal in the RI.</p> <p>The FS recommended drum removal, sediment removal, or cap placement over contaminated sediment to protect ecological health.</p>	<p><u>Site Completion Documentation:</u> Final Closeout Report (U.S. Navy, 1998g) OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 28	Lake Betty Drum Disposal Area	<p>Area is located 2 miles south of downtown and just north of Lake Betty. Thirteen 30-gallon drums containing powdered bleach used during WWII and several 55-gallon drums containing waste oil.</p>	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-1 evaluation of this site (U.S. Navy, 1994a) determined that there is minimum potential for release of COPCs above RBSCs. Removal of drums and solid material that had spilled out of drums in 1988 (U.S. Navy, 1994a). No evidence of contamination, based on visual inspection after drum removal. The PSE-1 evaluation recommended NFA. NFA determination was agreed to by EPA correspondence (April 4, 1994) and Alaska DEC correspondence (May 31, 1995).</p> <p>The FS concluded that NFA was warranted, because of no risks to human and ecological health.</p>	<p><u>Pre-ROD Remedial Actions:</u> Removal of drums and solid material that had spilled out of drums in 1988 (U.S. Navy, 1994a).</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-1, Batch 1 (U.S. Navy, 1994a) EPA correspondence (Jones, 1994) Alaska DEC correspondence (Pexton, 1995b) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 30	Magazine 4 Landfill	Operated between the late 1950s and the early 1960s and used for disposal of drummed waste and possible other unknown materials.	<p>No COPCs were identified in the PSE-2 evaluation of this site (U.S. Navy, 1995b). Therefore, no cumulative risk analysis was performed in the RI.</p> <p>The FS concluded that, based on the field survey and environmental sampling, it appears a landfill never existed at this site. Since no COPCs were identified, NFA was recommended.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-2, Batch 1 (U.S. Navy, 1995b) OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 42	GSE Steam Clean Oil/Water Separator	Located in Building No. 27044 in the central naval Complex. The materials handled during maintenance operations in Building No. 27044 included lube oil, used oil, hydraulic fluid, freon, Stoddard solvent, chlorinated solvents, paints, paint removers/thinners, alkaline detergent and waste fuel.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>PSE-2 (U.S. Navy, 1995b) evaluations of this site determined that the integrity of the oil/water separator is sound and the catch basin does not appear to be leaking. Because the catch basin is not leaking, soils are unlikely to have been impacted by COPCs. No sampling was conducted at the site.</p> <p>The FS concluded that there is no evidence of contamination based on visual inspections. The FS recommended no further work is required at this site if the oil/water separator is no longer in use, or, if in use, only normal maintenance would be required to verify that the structural integrity remains intact.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-2, Batch 1 (U.S. Navy, 1995b) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 43	AIMD Acid Battery Storage Area	The AIMD Acid Battery Storage Area is located in the central naval Complex about 600 feet east of Runway 18-36 and 1,000 feet west of Main Road. The battery storage area is located outside the AIMD hangar Building 102009 and covers an area of about 10 by 20 feet. Thirteen batteries lying upside down and drained were found on a wood pallet. The concrete beneath the pallets had corrosive stains and had been etched. It is unknown when the startup of this operation occurred.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-1 evaluation of this site (U.S. Navy, 1994a) determined that there is minimum potential for contamination to be present at this site and recommended NFA. It is estimated that the batteries were removed from the site in 1992. NFA determination was agreed to by EPA correspondence (October 19, 1993) and Alaska DEC correspondence (April 13, 1994).</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> EPA correspondence (Jones, 1993) PSE-1, Batch 1 (U.S. Navy, 1994a) Alaska DEC correspondence (Hartung, 1994) OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 51	NSGA Transportation Bldg. 10354 Waste Storage Area	Activities at the Waste Storage Area are assumed to have occurred from early 1950 to 1993. The site was used for temporary storage of a 500-gallon used petroleum oil and lubricants tank, potential solvents, and old batteries. The site was also used as a refueling area with two USTs and two ASTs.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-2 (U.S. Navy, 1995b) evaluation of this site determined that negligible amounts of chemicals would have been spilled had a spill actually occurred and recommended NFA at the site. NFA determination was agreed to by EPA correspondence (April 27, 1995).</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-2, Batch 1 (U.S. Navy, 1995b) EPA correspondence (Jones, 1995b) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 54	NMCB Battery Storage	The acid battery storage was located in the downtown area on the south side of former Building T-1416, south of Seawall Road. Batteries were stored on pallets and the ground at this location.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-1 evaluation for this site (U.S. Navy, 1994a) determined that the site does not present a hazard, because of the absence of a contaminant source. Because the number of batteries reported to have been stored at this site were few in number, and have since been removed, and no physical indication of contamination is present (i.e., staining of soils), SWMU 54 was recommended for NFA. NFA determination was agreed to by EPA correspondence (October 19, 1993) and Alaska DEC correspondence (April 13, 1994).</p> <p>The FS concluded that no further action was warranted, because no evidence of contamination based on visual inspection.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> EPA correspondence (Jones, 1993) Alaska DEC correspondence (Hartung, 1994) PSE-1, Batch 1 (U.S. Navy, 1994a) OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 65	Contractor's Camp Fire/Demolition Site	Warehouse and storage area for the supplies needed by contractors and the Navy. In the early to mid-1980s, a fire destroyed this mobile housing complex.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>No chemicals detected above EPA Region 10 RBSCs and Adak-specific ecological RBSCs. Therefore, no COPCs were identified in the PSE-1 evaluation of this site (U.S. Navy, 1994a). Therefore, no cumulative risks analysis was performed.</p> <p>The FS concluded that NFA was warranted, because no COPCs were identified.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-1, Batch 1 (U.S. Navy, 1994a) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 66	Palisades Lake PCB Spill	The site is located near Palisades Lake, approximately 2 miles northeast of downtown. A buried wooden storage tank and a transformer leaking between 10 and 15 gallons were the suspected sources of contamination.	No detailed evaluation of this site was conducted for the RI/FS. The PSE-1 evaluation of this site (U.S. Navy, 1994a) recommended NFA. No chemicals detected above EPA Region 10 RBSCs and Adak-specific ecological RBSCs. NFA determination was agreed to by EPA correspondence (October 19, 1993) and Alaska DEC correspondence (April 13, 1994).	<u>Pre-ROD Remedial Actions:</u> None <u>ROD Remedy:</u> NFA in ROD <u>Site Completion Documentation:</u> EPA correspondence (Jones, 1993) Alaska DEC correspondence (Hartung, 1994) PSE-1, Batch 1 (U.S. Navy, 1994a) OU A ROD (U.S. Navy et al., 2000)
SWMU 68	New Pesticide Storage Area (no action under FFA)	The New Pesticide Storage Area is located in Building 42008, directly south of the Public Works Building. The storage area has been in operation since 1987. Insecticides are stored in a room approximately 8 feet by 10 feet, while rodenticides are stored in a separate but smaller room 5 feet square.	No detailed evaluation of this site was conducted for the RI/FS. The RCRA Facility Assessment (EPA, 1991) concluded that there is low potential for contaminant release to air, soil, groundwater, and surface water because the chemicals are stored inside a concrete block building. Other than the RCRA Facility Assessment, no other evaluation of the site has been performed. The site was designated for NFA designation under the FFA.	<u>Pre-ROD Remedial Actions:</u> None <u>ROD Remedy:</u> NFA in ROD <u>Site Completion Documentation:</u> RCRA Facility Assessment (EPA, 1991) FFA of 1993 OU A ROD (U.S. Navy et al., 2000)
SWMU 69	Ski Lodge Waste Pile	The site is located on the east side of Mt. Moffett approximately 3 miles from Kuluk Bay. The area was scattered with wood and metal debris.	No detailed evaluation of this site was conducted for the RI/FS. The PSE-1 evaluation of this site (U.S. Navy, 1994a) recommended NFA. NFA determination was agreed to by EPA correspondence and Alaska DEC correspondence. Therefore, this site was not evaluated in the RI. The FS concluded that NFA was warranted, because of no evidence of contamination based on visual inspection.	<u>Pre-ROD Remedial Actions:</u> Removal of petroleum-affected soil, rubble, and debris in 1994 (estimated) <u>ROD Remedy:</u> NFA in ROD <u>Site Completion Documentation:</u> PSE-1, Batch 1 (U.S. Navy, 1994a) OU A ROD (U.S. Navy et al., 2000)

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 70	Davis Road Asphalt Drums	SWMU 70 is located beside Davis Road on a hill approximately 0.75 mile east of Andrew Lake and 0.1 mile northwest of Shotgun Lake. In 1991, several drums of asphalt were observed at this site.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>In 1993, a site visit showed a depression, perhaps caused by a removed drum. During this site visit, no asphalt drums or stained soils were observed along Davis Road. Drum removal and disposal likely occurred in 1991 (U.S. Navy, 1994a). The PSE-1 evaluation of this site (U.S. Navy, 1994a) recommended for NFA. NFA determination was agreed to by EPA correspondence (October 19, 1993) and Alaska DEC (April 13, 1994).</p> <p>The FS concluded that NFA was warranted, because of no evidence of contamination based on visual inspection.</p>	<p><u>Pre-ROD Remedial Actions:</u> Removal of asphalt drums in 1991</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> EPA correspondence (Jones, 1993) Alaska DEC correspondence (Hartung, 1994) PSE-1, Batch 1 (U.S. Navy, 1994a) OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 71	NSGA Fueling Facility (no action under FFA)	The NSGA Fueling Facility is located approximately 5 miles north of downtown Adak on the lower, southern slope of Mount Adagdak, near the northwestern shore of Clam Lagoon. It is located at the southern edge of the former NSGA complex. This site is co-located with SWMU 58 and SA 73, Heating Plant No. 6, a SAERA site that is part of the focused FS for free-product sites.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>This site was referred for investigation under CERCLA because of the presence of numerous unlabeled drums at the site containing an unknown liquid. During site investigation activities, the content of these drums was determined to be linseed oil (U.S. Navy, 2004h). Subsequently, the SWMU 71 site received a NFA designation under FFA.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> FFA of 1993 OU A ROD (U.S. Navy et al., 2000)</p>
SWMU 72	NSGA Transportation Building 10354	NSGA Building No. 10354 was used as the NSGA transportation maintenance shop from 1950 until 1991. Wastes generated through operations at the maintenance facility include petroleum oil and lubricants, solvents, old batteries, and battery acids.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-2 evaluation of this site found no source of contamination and no record of release from the building; recommended NFA.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> The ROD recommended the site for NFA, because the petroleum contamination associated with the USTs is being evaluated for SA 78, which is co-located with SWMU 72. NFA in ROD.</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 72 (Continued)	NSGA Transportation Building 10354 (Continued)		The RI/FS recommended deferring the petroleum-impacted portion of this site to the SAERA process because of fuel storage tanks that were formerly present on the site and the detection of fuel constituents in soil and groundwater. The site was included in the SAERA process as SA 78.	<u>Site Completion Documentation:</u> PSE-2, Batch 1 (U.S. Navy, 1995b) OU A ROD (U.S. Navy et al., 2000)
SWMU 74	Old Batch Facility	The Old Batch Plant is located in an open field in the downtown area of Adak. This site is the location of a former asphalt batch plant, which provided asphalt for Naval Air Facility Adak roads and runways. The site is not currently in use. PCBs, selected inorganics, and SVOCs were detected in soil and groundwater.	The RI found chemicals detected above cleanup levels in groundwater and subsurface soil. A risk assessment was conducted and results are summarized here. Human Health: Cumulative risk of 3×10^{-5} and 1×10^{-6} were calculated for residential and occupational exposures, respectively. The greatest contributors to total risk for both scenarios are Aroclor 1254, Aroclor 1260, and arsenic. Cumulative cancer risks are within the EPA target risk range of 10^{-6} to 10^{-4} . Noncancer hazards were below the target of 1. Ecological Health: The ecological hazard of 89 exceeded the maximum target of 10. The greatest contributors to total risk are Aroclor 1254, Aroclor 1260, and copper. Ecological risks, based on exposure to surface soil, were determined to be minimal in the downtown area because of limited suitable habitat. FS recommended possible removal of tar under SAERA.	<u>Pre-ROD Remedial Actions:</u> Removed surface soil and placed cover on soil in 1998 (U.S. Navy, 1998h) <u>ROD Remedy:</u> NFA in ROD <u>Site Completion Documentation:</u> Final Closure Report (U.S. Navy, 1998h) OU A ROD (U.S. Navy et al., 2000)
SA 75	Asphalt Storage Area	SA 75 consists of engineered structures, gravel and sand pads, and areas of native grass. Three 10,000-gallon motor gasoline ASTs were formerly located on the site. Asphalt and metal debris were observed on site in the summer of 1994.	The RI found chemicals detected above cleanup levels in groundwater and subsurface soil. A risk assessment was conducted and results are summarized here. Human Health: Cumulative risk of 1×10^{-6} was calculated for residential exposures to surface soil. The greatest contributors to total risk for both scenarios are Aroclor 1260 and beryllium.	<u>Pre-ROD Remedial Actions:</u> None <u>ROD Remedy:</u> NFA in ROD <u>Site Completion Documentation:</u> OU A ROD (U.S. Navy et al., 2000)

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SA 75 (Continued)	Asphalt Storage Area		<p>Cumulative cancer risks are within the EPA target risk range of 10^{-6} to 10^{-4}. Noncancer hazards were below the target of 1.</p> <p>Ecological Health: The ecological hazard of 2 was approximately equal to the risk threshold. The greatest contributor to total risk is Aroclor 1260.</p> <p>The FS recommended NFA, because risks to human health were below target health goals. Environmental health was minimally impacted.</p>	
SA 83	Former Chiefs Club Station (no action under FFA)	<p>SA 83 is located north of the former Chiefs Club and parallel to Transit Road. The site originally contained four concrete slabs, which housed the Navy Exchange Body Shop, Navy Exchange Garage, Hobby Shop, and Ordnance Repair. Fuel was pumped from a single 25,000-gallon AST located directly across the road. The AST remained in place from the mid-1940s until the early 1960s. At that time a fifth concrete slab was poured parallel to the other four slabs, and the AST was moved to this location. This station remained in operation until the early 1970s, when it was removed. All tanks and piping associated with this site have been removed with the demolition of the structure.</p>	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>This site received a NFA designation under the FFA.</p> <p>The FS recommended NFA, based on no evidence of contamination at the site.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> OU A ROD (U.S. Navy et al., 2000) Installation Restoration Management Plan (U.S. Navy, 1994b)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SA 90	Husky Road Landfill (no action under FFA)	The Husky Road Landfill was used as a construction debris disposal area during the demolition of Quonset huts in the early 1980s. This site was investigated as a source area, because the site was not permitted by the State of Alaska for construction debris. The debris was removed to the Metals Landfill and the White Alice Landfill.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>According to the Installation Restoration Management Plan (U.S. Navy, 1994b), since no debris remains at the site, it has been designated for NFA. This site received a NFA designation under the FFA.</p> <p>The FS recommended NFA based on no evidence of contamination at the site.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> OU A ROD (U.S. Navy et al., 2000) Installation Restoration Management Plan (U.S. Navy, 1994b)</p>
SA 91	Airplane Crash Sites	WWII plane crash sites are located in three areas on the slopes and near the summit of Mt. Adagdak. Locations of metal debris are overgrown by vegetation. Quantities and types of contamination are unknown.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-1 evaluation of this site (U.S. Navy, 1994a) determined that there is minimum potential for contamination to be present at this site and recommended NFA. NFA determination was agreed to by EPA and Alaska DEC in the meeting of October 19, 1993.</p> <p>The FS concluded that NFA was warranted, because no evidence of contamination based on visual inspection.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> EPA and Alaska DEC in the meeting of October 19, 1993 (Jones, 1993) PSE-1, Batch 1 (U.S. Navy, 1994a) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SA 92	Waste Ordnance Pile (Fin Field)	<p>In June 1995, approximately 20 napalm bombs and 60 incendiary bomblets were removed and burned as part of a disposal action conducted by the Navy. The undetonated/unburned ordnance apparently settled into deposits of peat, sand, and ash. The residuals following that disposal action characterize the contamination at SA 92.</p>	<p>The RI found chemicals detected above cleanup levels in sediment and subsurface soil. Site information used in the RI was collected during both the PSE-1 and PSE-2 investigations. A risk assessment was conducted during the RI and results are summarized here.</p> <p>Human Health: Benzo(a)pyrene, Aroclor 1260, 2,3,7,8-TCDD, arsenic and cadmium in sediment and 2,3,7,8-TCDD in soil were the human health COPCs found at the site. Risks and hazards calculated for residential and recreational exposures are below the EPA target risk goals. Therefore, NFA was recommended in the RI from a human health perspective.</p> <p>Ecological Health: Aroclor 1260, cadmium, copper, lead, manganese, and zinc in sediment and benzene and 2,3,7,8-TCDD in soil were the ecological COPCs found at the site. The ecological hazard for sediment is 23, greater than the maximum target of 10; the hazard for soil is 8, below the maximum target of 10.</p> <p>The ecological risk of 23 in sediment is not significantly greater than the target maximum of 10. More than 80 percent of the risk in sediment is attributable to the five inorganics detected at the site. Of these, only lead appears to be associated with past disposal practices. Copper and cadmium may also be associated with degradation of the metal debris removed in 1995. Since the source material has been removed, these risks should represent maximums that will gradually decrease over time. Therefore, NFA was recommended in the FS from an ecological perspective.</p>	<p>Pre-ROD Remedial Actions: Removed soil and bomblets containing napalm in 1995</p> <p>ROD Remedy: NFA in ROD</p> <p>Site Completion Documentation: PSE-2, Batch 1 (U.S. Navy, 1995b) PSE-1, Batch 1 (U.S. Navy, 1994a) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SA 94	Chemical Weapons Disposal Area	The designation SA 94 was added to serve as a repository for information pertaining to the storage, handling, or disposal of chemical warfare materials on Adak Island. Six sites were identified as potential chemical weapons disposal areas. Each of these six sites was visually inspected. It was determined that it is highly improbable that chemical warfare materials or contamination resulting from the storage or handling of chemical warfare material remain on Adak Island.	<p>No detailed evaluation of this site was conducted for the RI/FS.</p> <p>The PSE-1 evaluation (U.S. Navy, 1994a) concluded that there is little potential for contamination at the site. However, because of the uncertainty remaining as to the presence of chemical weapons and unexploded ordnance, potential for physical hazards was investigated in the RI. Site surveys revealed no evidence of chemical weapons disposal. No historical records identified chemical weapons disposal locations on Adak.</p> <p>Therefore, the FS recommended NFA because of no evidence of contamination based on visual inspection.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-1, Batch 1 (U.S. Navy, 1994a) OU A ROD (U.S. Navy et al., 2000)</p>
SA 95	Transformer Disposal Area	The site, located on the west side of Andrew Lake, consisted of two 85-gallon salvage drums, one 15-gallon open-top drum, and a small pond that contained a transformer. A power pole on which the transformers were mounted was apparently knocked over and the transformers fell loose off the pole. During the site investigation, two of the transformers were placed in overpack drums, and were left on the site. A third transformer was left in the pond. A removal of transformers and sediment occurred in 1994.	<p>The PSE-2 found chemicals detected above cleanup levels. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risks of 8×10^{-6} were calculated for residential exposures. The greatest contributors to total risk are Aroclor 1260 and benzo(k)fluoranthene. Cumulative cancer risks are within the EPA target risk range of 10^{-6} to 10^{-4}. Noncancer hazards were below the target of 1. Therefore, the PSE-2 recommended NFA from a human health perspective.</p> <p>Ecological Health: The ecological hazard of 17 exceeded the maximum target of 10. The greatest contributors to total risk are Aroclor 1260, 4,4-DDD, endrin, lead, and zinc. Ecological risk from residual Aroclors remaining in sediments after removal action is no significantly higher than the threshold value of</p>	<p><u>Pre-ROD Remedial Actions:</u> In 1994, removed transformer and sediment from small pond, and removed overpacked transformers from the site.</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> PSE-2, Batch 1 (U.S. Navy, 1995b) OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SA 95 (Continued)	Transformer Disposal Area		<p>10 and is driven by a relatively low concentration in only one sample. Therefore, the RI recommended NFA from an ecological perspective.</p> <p>The FS recommended NFA based on minimal residual risk after removal of contaminated material.</p>	
None	Clam Lagoon	<p>Clam Lagoon is located on the northeastern side of Adak Island. The Clam Lagoon drainage basin is characterized by short, steep-gradient streams draining from Mount Adagdak and other upland areas. It is expected that Clam Lagoon is increasingly saline with depth, because of the tidal influences at the southern end and infiltration of saltwater along the causeway on the northeast side of the basin. There are approximately 8 miles of shoreline surrounding Clam Lagoon. Terrestrial vegetation above the exposed shoreline generally consists of herbaceous vegetation. Brown and green algae are present in Clam Lagoon. Terrestrial and marine birds and waterfowl frequent the shoreline environment of Clam Lagoon. Marine invertebrates found in the intertidal zone include shellfish, such as bivalves. Marine mammals commonly observed include harbor seals and sea otters. Many fish are commonly found in Clam Lagoon.</p>	<p>The RI found chemicals detected above cleanup levels. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Human health risks were calculated as 5×10^{-4} for cancer and a health index of 5 for noncancer for subsistence fishers, primarily based on the ingestion of fish with bis(2-ethylhexyl)phthalate and arsenic the primary risk drivers. However, there are insufficient quantities of fish to support subsistence use. In contrast, the calculated risks associated with the viable scenario of recreational use of the lagoon were considerably below action levels, with a cancer risk of 5×10^{-7} and noncancer HI of 0.03.</p> <p>Ecological Health: Some small, individual chemical risks and one bioassay exceedance were identified for Clam Lagoon. However, a linkage between chemicals at upland source areas and target receptors cannot be defined. No sediment risks with an HI greater than 2.2 were identified. The single high-level detection of bis(2-ethylhexyl)phthalate in mussel tissue was rejected as an anomaly. Overall, little ecological risk can be defined for Clam Lagoon.</p> <p>The FS recommended NFA, because risks to human health were below target health goals and environmental health was minimally impacted.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Details for Sites Requiring No Further Action in Record of Decision (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
None	Andrew Lake	<p>Andrew Lake is located on the Northern portion of Adak Island. The Andrew Lake drainage basin is characterized by short, steep-gradient streams draining from Mount Moffett, Mount Adagdak, and other upland areas. The surface of Andrew Lake is 15 feet above mean lower low water. Therefore, due to the hydraulic gradient, saltwater does not intrude into the Andrew Lake basin. Andrew Lake is a freshwater body. Wildlife in the shoreline area near the lake includes terrestrial birds, waterfowl, invertebrates, subterranean invertebrates, aquatic invertebrates, and mammals.</p>	<p>The RI found chemicals detected above cleanup levels. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Human health risks were calculated as 1×10^{-4} for cancer and an HI of 4 for noncancer for subsistence fishers, primarily based on the ingestion of fish, with Aroclor 1254 and antimony the primary risk drivers. However, there are insufficient quantities of fish to support subsistence use. In contrast, the calculated risks associated with the viable scenario of recreational use of Andrew Lake were below action levels with a cancer risk of 1×10^{-6} and noncancer hazard index of 0.2.</p> <p>Ecological Health: Chemicals in Andrew Lake are believed to pose no significant risk to ecological receptors. No individual chemical had a hazard quotient greater than 10 in either sediments or food-chain model evaluations. The sediment HI was 2. The overall HI for Dolly Varden was 9. Metals are the greatest risk drivers in Dolly Varden. However, metals concentrations are likely within the range of background concentrations for Adak Island. Overall, little ecological risk exists for ecological receptors of Andrew Lake.</p> <p>The FS recommended NFA, because risks to human health were below target health goals and environmental health was minimally impacted.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> NFA in ROD</p> <p><u>Site Completion Documentation:</u> OU A ROD (U.S. Navy et al., 2000)</p>

Table 2-1. Site Details for Sites Requiring No Further Action in Record of Decision (Continued)

^aSee Section 9 for cited references.

Notes:

AIMD - Aircraft Intermediate Maintenance Detachment
AST - above ground storage tank
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
COPC - chemical of potential concern
DDD - dichlorodiphenyldichloroethane
DEC - Department of Environmental Conservation
EPA - U.S. Environmental Protection Agency
FFA - Federal Facilities Agreement
FS - feasibility study
GSE - ground support equipment
HI - hazard index
NFA - no further action
NMCB - Naval Mobile Construction Battalion
NSGA - Naval Security Group Activity
OU - operable unit
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PSE - preliminary source evaluation
RBSC - risk based screening concentration
RCRA - Resource Conservation and Recovery Act
RI - remedial investigation
ROD - Record of Decision
SA - source area
SAERA - State-Adak Environmental Restoration Agreement
SVOC - semivolatile organic compound
SWMU - solid waste management unit
TCDD - tetrachlorodibenzo-p-dioxin
UST - underground storage tank
WWII - World War II

Table 2-2. Sites Where Remedial Alternatives Were Selected

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 2	Causeway Landfill and Minefield	This is the site of a former 2- to 3-acre landfill that was operated from the mid-1950s to the early 1960s. The landfill is about 4 to 6 feet thick. It is located about 7 miles from downtown on the eastern side of Clam Road on a narrow strip of land separating Clam Lagoon from Sitkin Sound. The landfill reportedly received waste materials that included sanitary trash, construction debris, scrap equipment, and other refuse generated by NSGA. Site features are generally flat, with a predominantly cobble and gravel surface cover.	<p>The RI found chemicals detected above cleanup levels in groundwater and subsurface soil collected from within the landfill. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risk of 1×10^{-5} for the residential scenario from exposures to subsurface soil. Risk drivers were benzo(a)pyrene, 2,3,7,8-TCDD, Aroclor 1254, and n-nitrosodi-n-propylamine. Occupational scenario risks were below target level of 10^{-6}. Groundwater was not evaluated because it was considered an incomplete pathway.</p> <p>Ecological Health: HI of 85 for exposure to chemicals in subsurface soil. Risk drivers were lead, zinc, and 2,3,7,8-TCDD.</p> <p>The FS considered the following remedial alternatives for this site: no action, ICs only, and source control/containment.</p>	<p><u>Pre-ROD Remedial Actions:</u> Cleared ordnance materials in minefield in 1998.</p> <p><u>ROD Remedy:</u> ICs only was selected, based on ecological exposure to chemicals in subsurface soil.</p> <p>This remedy was selected because ICs will minimize potential human exposure to site chemicals by implementing restrictions on residential land use and soil excavations. Protection of human and/or ecological receptors will be accomplished by inspection and maintenance of cover systems. Monitoring requirements will allow assessment of risks and natural recovery processes over time and verify that there are no downgradient impacts. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) OU A RI/FS (U.S. Navy, 1997a)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 4	South Davis Road Landfill	This is the site of a former 3-acre landfill that was operated from the early to late 1940s. The site was presumably closed with a soil and rock cover in the late 1940s. The former landfill is on the eastern shore of Andrew Lake, about 3 miles north of downtown. It is believed to be filled with construction debris and waste generated by the demolition of Albert Mitchell Airfield. Site features generally consist of a flat rocky surface, with a small stream, some wet depressions, and various grasses.	<p>The RI found chemicals detected above cleanup levels in sediment, subsurface soil, and groundwater. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risk of 5×10^{-5} for the residential scenario from exposure to chemicals in subsurface soil. Cancer risk of 1×10^{-8} for recreational scenario from exposure to sediment and 2×10^{-6} for occupational scenario from exposure to subsurface soil. Arsenic, Aroclor 1254, Aroclor 1260, and 2,3,7,8-TCDD were the risk drivers for soil. Risks were not calculated for groundwater because it was considered an incomplete pathway.</p> <p>Ecological Health: HI of 22 from exposures to chemicals in sediment and 126 from exposures to chemicals in subsurface soil. Risk drivers were Aroclor 1254, Aroclor 1260, 2,3,7,8-TCDD, lead, and zinc.</p> <p>The FS considered the following remedial alternatives for this site: no action, ICs only, and source control/containment.</p>	<p><u>Pre-ROD Remedial Actions:</u> Placed soil cover over landfill in 1998.</p> <p><u>ROD Remedy:</u> ICs and containment by landfill cap were selected. Containment completed in 1998.</p> <p>This remedy was selected because ICs will minimize potential human exposure to site chemicals by implementing restrictions on residential land use and soil excavations. Protection of human and/or ecological receptors will be accomplished by inspection and maintenance of cover systems. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) Memo re: SWMU 4 Const. Closeout Rpt. (Cora, 1998) CCRP and Execution RD (U.S. Navy, 1998f) OU A RI/FS (U.S. Navy, 1997a)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 10	Old Baler Building	<p>This site was used as a facility for processing and baling domestic refuse. It is located in downtown Adak, about 1,200 feet from Sweeper Cove. The site is a flat, open area with a concrete foundation pad where the baler building once stood. Prior to the 1950s, the building was used as an auto repair shop and living quarters. It was converted for use as the municipal waste baling facility in the 1950s and was demolished in 1992. The site consists of an area of about 1½ acres.</p>	<p>The PSE-1, Batch 2 and RI found chemicals detected above cleanup levels in surface soil. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risk of 6×10^{-5} for the residential scenario and 3×10^{-6} for the occupational scenario from exposure to chemicals in surface soil. Risk drivers were indeno(1,2,3-cd)pyrene, arsenic, and Aroclor 1260. Recreational scenario risks were below target level of 10^{-6}.</p> <p>Ecological Health: HI of 59 from exposure to chemicals in surface soil. Risk driver was Aroclor 1260. Ecological risks based on exposure to surface soil are minimal because of limited suitable habitat.</p> <p>The FS considered the following remedial alternatives for this site: no action, ICs only, source control/containment, and removal.</p>	<p><u>Pre-ROD Remedial Actions:</u> Building removal in 1992.</p> <p><u>ROD Remedy:</u> ICs only was selected, based on the human health residential scenario from chemicals in surface soil. This remedy was selected because no unacceptable risks were posed under the existing land use, but ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D Final CMP; U.S. Navy, 2004a) PSE-1, Batch 2 (U.S. Navy, 1995c)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 11	Palisades Landfill	<p>Palisades Landfill, located about 2/3 of a mile north of downtown Adak, was used as the primary disposal area for all of Adak Island from the 1940s to about 1970. The 6-acre landfill covers portions of the coastal uplands adjacent to Kuluk Bay and part of the ravine, which opens immediately to the bay. The ravine is about 1,200 feet long, 5 to 300 feet wide, and 5 to 150 feet deep, with a small stream (Palisades Creek) running through it. Wastes within the landfill include, but are not limited to, sanitary trash, construction waste, and scrap vehicles. About 80,000 to 100,000 cubic yards of solid waste are located in the landfill.</p>	<p>Interim remedial actions reduced exposures to human and ecological receptors; therefore, closure was completed. No risk assessment was conducted. Downgradient receiving water body (Kuluk Bay) was evaluated. RI/FS recommended NFA other than ICs and long-term monitoring.</p>	<p><u>Pre-ROD Remedial Actions:</u> As an interim action, the upper portion of the landfill was capped, recontoured, and revegetated in 1996.</p> <p><u>ROD Remedy:</u> ICs only was selected, with monitoring (marine sediment, fresh surface water, sediment, and marine fish/shellfish tissue).</p> <p>This remedy was selected because ICs will minimize potential human exposure to site chemicals by implementing restrictions on residential land use and soil excavations. Protection of human and/or ecological receptors will be accomplished by inspection and maintenance of cover systems. Monitoring requirements will allow assessment of risks and natural recovery processes over time and verify that there are no downgradient impacts. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> Remedial Action Report (U.S. Navy, 1997f) OUA ROD (U.S. Navy et al., 1995)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 13	Metals Landfill	<p>Metals Landfill is located immediately southeast of downtown Adak and is bounded by Monument Hill to the west and Kuluk Bay to the east. The landfill received wastes consisting of, but not limited to, construction debris, metal debris, and scrap vehicles. The total volume of waste and soil in Metals Landfill is approximately 400,000 cubic yards.</p> <p>Metals Landfill was used from the 1940s until about 1989. In 1970, restrictions were placed on the types of materials that could be disposed of in the landfill. A sludge press was installed at the sewage treatment plant in 1988. Dewatered sewage sludge was disposed of on the southeastern end of the landfill.</p>	<p>Interim remedial actions reduced exposures to human and ecological receptors; therefore, closure was completed. No risk assessment was conducted. Downgradient receiving water body (Kuluk Bay) was evaluated. RI/FS recommended NFA other than ICs and long-term monitoring.</p>	<p><u>Pre-ROD Remedial Actions:</u> Removal of shoreline debris, surface water erosion controls, a landfill cap, and a vegetative cover were completed in 1997.</p> <p><u>ROD Remedy:</u> ICs only was selected, with monitoring (groundwater and marine fish/shellfish tissue samples collected from the downgradient water body, Kuluk Bay).</p> <p>This remedy was selected because ICs will minimize potential human exposure to site chemicals by implementing restrictions on residential land use and soil excavations. Protection of human and/or ecological receptors will be accomplished by inspection and maintenance of cover systems. Monitoring requirements will allow assessment of risks and natural recovery processes over time and verify that there are no downgradient impacts. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) IR (U.S. Navy, 2004b) OU A RI/FS (U.S. Navy, 1997a) PSE-2, Batch 1 (U.S. Navy, 1995b)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 14	Old Pesticide Storage and Disposal Area	<p>This site consists of a currently vacant property located in the downtown area about 1,500 feet from Sweeper Cove. The site includes the foundation of former Building 1471. The site is a flat, open area covering about 0.9 acre. Building 1471 was used from 1950 to 1987 for handling a variety of pesticides. The building was also used as a motor vehicle filling station from about 1950 to 1985.</p>	<p>The PSE-2, Batch 2, found chemicals detected above cleanup levels in soil and groundwater. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risk of 4×10^{-5} for the residential scenario from exposures to chemicals in soil and groundwater and 1×10^{-6} for the occupational scenario from exposures to chemicals in soil. The cumulative noncancer hazard of 0.3 was for residential scenario from exposure to chemicals in groundwater (OU A ROD incorrectly reported an HI of 2 and the risk driver as thallium). Risk drivers were PAHs in soil and PCE and bromodichloromethane in groundwater.</p> <p>Ecological Health: No COCs evaluated because of limited suitable habitat.</p> <p>The FS recommended NFA under CERCLA. Site petroleum constituents to be evaluated under SAERA.</p>	<p><u>Pre-ROD Remedial Actions:</u> Building removal.</p> <p><u>ROD Remedy:</u> ICs only was selected, with groundwater monitoring based on human health exposure to chemicals in soil and groundwater. Compliance monitoring under CERCLA (non-petroleum chemicals) and natural attenuation (petroleum-related chemicals) monitoring under SAERA is occurring at this site.</p> <p>This remedy was selected because no unacceptable risks were posed under the existing land use, but that ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) PSE-2, Batch 2 (U.S. Navy, 1996e)</p>
SWMU 15	Future Jobs/DRMO	<p>This site was previously used to store construction materials, paint, solvents, transformers, petroleum and lubricant compounds, and other materials. The site, located between two warehouses near the dock facilities on Sweeper Cove, is 3½ acres, rectangular, flat, and fenced. The site consists of compact gravel with concrete and asphalt paved areas. It was operated from the 1950s until 1992.</p>	<p>The PSE-2, Batch 2, found chemicals detected above cleanup levels in sediment, soil, and groundwater. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risk of 7×10^{-5} for the residential scenario from exposure to soil and groundwater and 2×10^{-6} for the occupational scenario from exposure to surface and subsurface soil. Risk drivers were PCE for groundwater and 2,3,7,8-TCDD and Aroclor 1260 for soil. Recreational scenario risks were below a target level of 10^{-6} for sediment.</p> <p>Ecological Health: No COCs evaluated because of limited suitable habitat.</p>	<p><u>Pre-ROD Remedial Actions:</u> Approximately 252 cubic yards of chemically impacted surface soil were removed in 1992.</p> <p><u>ROD Remedy:</u> ICs only was selected with groundwater monitoring based on human health exposure to chemicals in soil and groundwater. Compliance monitoring under CERCLA (non-petroleum chemicals) and natural attenuation (petroleum-related chemicals) monitoring under SAERA is occurring at this site.</p> <p>This remedy was selected because no</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
			<p>The FS recommended NFA under CERCLA. Site petroleum constituents to be evaluated under SAERA.</p>	<p>unacceptable risks were posed under the existing land use, but that ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) PSE-2, Batch 2 (U.S. Navy, 1996e)</p>
SWMU 16	Former Firefighting Training Area (including SWMUs 32 and 33)	<p>This site was used for firefighter training from 1970 to 1989. It was included in the CERCLA investigations because petroleum, waste oil, and solvents were ignited on site during training exercises. The site was cleared of training materials in 1992. It encompasses an abandoned hardstand off of former Taxiway E, near the west end of Runway 5-23 and consists of an area of about 4 acres.</p>	<p>The PSE-2, Batch 2, and RI found chemicals detected above cleanup levels in sediment, surface soil, and groundwater. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risk of 4×10^{-5} for the residential scenario from exposure to chemicals in groundwater. Aroclor 1260 is the main risk driver. Recreational and occupational scenarios were equal to or below a target level of 10^{-6} for sediment and surface soil.</p> <p>Ecological Health: The RI reported an HI of 27 from exposure to chemicals in surface soil, HI of 5 from exposure to chemicals in subsurface soil, and an HI of 5 from exposure to chemicals in sediment. Aroclor 1260 was the main risk driver in surface soil.</p> <p>The FS recommended removal of soils containing Aroclors to reduce risks to ecological and human receptors. The FS also concludes given the industrial nature of this site, it is considered unlikely that a residential well would be developed.</p>	<p><u>Pre-ROD Remedial Actions:</u> In 1989, a pre-investigation removal action was performed prior to the 1990 site investigation. During this removal action, ponded surface water was removed from the burn pads, and the soil berms that created the burn pits were graded into stockpiles and capped. In 1997, there were approximately 250 to 275 cubic yards of PCB-contaminated surficial soil removed from the site and disposed of off island, and stockpiled soil from SWMUs 15, 20, and 21A were removed from the site and placed under the cap at SWMU 67.</p> <p><u>ROD Remedy:</u> ICs only was selected, based on human and ecological health exposure to chemicals in soil.</p> <p>This remedy was selected because no unacceptable risks were posed under the existing land use, but that ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 16 (Continued)				<u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) Action Memorandum (U.S. Navy, 1997g) Soil Sampling and Non-Time-Critical PCB RA (U.S. Navy, 1997h) PSE-2, Batch 2 (U.S. Navy, 1996e)
SWMU 17	Power Plant 3 Area (including SWMUs 36–40 and 63)	This site is the current power-generating facility for Adak Island. It is adjacent to Yakutat Creek in the central portion of the Adak Complex. The site was segregated into a number of areas of potential concern for the purpose of investigation: <ul style="list-style-type: none"> • The waste oil pond • The north pond • The bulk storage waste oil tank • Two former oil/water separators (O/W 1, which served the power plant floor sumps, and O/W 2, which received discharge from unknown sources) • Two temporary drum accumulation areas (Area 1, north of the power plant, and Area 2, southeast of the plant) • The power plant tank farm 	The PSE-2, Batch 2, and RI found chemicals detected above cleanup levels in sediment, soil, surface water, and groundwater. A risk assessment was conducted and results are summarized here. Human Health: Cumulative cancer risk of 4×10^{-4} for the residential scenario from exposure to chemicals in soil, sediment, surface water, and groundwater. The surface water and groundwater pathways contributed a cancer risk of 3×10^{-4} and 7×10^{-5} , respectively. Recreational and occupational scenarios were equal to or slightly above the target level of 10^{-6} for soil, sediment, and surface water. The cumulative noncancer HI of 45 was for the residential scenario from exposure to chemicals in surface water and groundwater, and 15 was for the recreational scenario from exposure to chemicals in surface water. The risk drivers were arsenic, beryllium, copper, manganese, thallium, Aroclor 1254, and Aroclor 1260.	<u>Pre-ROD Remedial Actions:</u> Removed and treated soil, and installed recovery trench in 1996. <u>ROD Remedy:</u> ICs, groundwater monitoring, and removal were selected. The removal occurred in 2000 and included draining surface water and removing sediment and replacing it with clean fill for both the waste oil pond and retention pond. ICs were selected based on the human health residential drinking water scenario. <u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) Completion Rpt. Biocells (U.S. Navy, 2004c)

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 17 (Continued)	Power Plant 3 Area (including SWMUs 36-40 and 63)	<ul style="list-style-type: none"> • The seepage area along the slope below the power plant • A Quonset hut once used to store transformers • The dry cleaning facility • Stained areas within the ditches along both sides of Akutan Way 	<p>Ecological Health: The RI reported HIs of 790 from exposure to chemicals in sediment, 74 from exposure to chemicals in soil, and 950 from exposure to chemicals in surface water. Risk drivers were Aroclor 1260, fluorene, 2-methylnaphthalene, endrin, copper, mercury, and lead.</p> <p>The FS considered the following remedial alternatives for this site: no action, ICs only, source control/containment, and removal.</p>	<p>Completion Rpt. Interim RA (U.S. Navy, 2003a)</p> <p>Completion Rpt. RA (U.S. Navy, 2000d)</p> <p>Completion Rpt. Biocells (U.S. Navy, 1999a)</p> <p>PSE-2, Batch 2 (U.S. Navy, 1996e)</p>
SWMUs 18/19	White Alice Landfill (South Sector Drum Disposal Area/Quarry Metal Disposal Area)	White Alice Landfill is located in an abandoned quarry about 2 miles west of downtown. The landfill site encompasses 9.2 acres. The landfill contained predominantly wood debris in one half and asbestos in the other. It was closed and covered per State of Alaska Regulations in 1997.	The site was capped in 1997 as part of the White Alice Landfill. A risk assessment was not conducted at this site. RI/FS concluded NFA.	<p><u>Remedy:</u> Closure activities include placement of a soil cover over the landfill, grading and contouring, surface water/erosion controls, access restrictions, installation of a vegetative cover, and ongoing ICs to ensure continued integrity of the cap. The site was closed per Alaska solid waste landfill regulations and is maintained and the cap monitored in accordance with these regulations.</p> <p><u>Site Completion Documentation:</u></p> <p>ICMP (Appendix D of Final CMP; U.S. Navy, 2004a)</p> <p>Construction Requirements (U.S. Navy, 1996g)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 20	White Alice/Trout Creek Disposal Area	This 11½-acre site occupies a hillside and floodplain area below the former White Alice complex about 2 miles west of downtown. The site consists of two distinct topographic environments: (1) a steep northwest-facing hillside, approximately 200 feet wide and 500 feet long, covered with native vegetation and debris, and (2) a portion of the heavily vegetated, marshy Trout Creek floodplain at the base of the hillside. It was originally investigated because several 55-gallon drums and other debris (apparently originating from the closure of the White Alice facility in the 1980s) were disposed of on the hillside and in the valley below.	<p>The PSE-2, Batch 2, and RI found chemicals detected above cleanup levels in soil and surface water. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risk of 2×10^{-5} for the residential scenario from exposure to chemicals in surface soil. The risk driver was Aroclor 1260. Recreational and occupational scenarios were below target level of 10^{-6} for surface soil.</p> <p>Ecological Health: HI of 42 from exposure to chemicals in surface soil, 160 from exposure to chemicals in subsurface soil, and 29 from exposure to chemicals in surface water. Risk drivers were Aroclor 1260 for soil and silver for surface water.</p> <p>The FS considered the following remedial alternatives for this site: no action, ICs only, and removal.</p>	<p><u>Pre-ROD Remedial Actions:</u> In 1992, removed about 100 55-gallon drums and other debris. About 7 cubic yards of PCB-affected soils were also removed.</p> <p><u>ROD Remedy:</u> ICs only was selected based, on human and ecological health exposure to chemicals in soil.</p> <p>This remedy was selected because no unacceptable risks were posed under the existing land use, but ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) PSE-2, Batch 2 (U.S. Navy, 1996e)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 21A	White Alice Upper Quarry	<p>This 3-acre site is an abandoned quarry along the access road to the former White Alice radar array facility, located about 2 miles west of downtown Adak. The site was evaluated under CERCLA because drums of PCB-containing oil were disposed of in the area and PCBs were identified in the soil at SWMU 21A. Although there are no formal records to confirm this, anecdotal information indicates that during demolition of the White Alice facility (1980 to 1982), drums containing transformer oil were disposed of at (or in the vicinity of) SWMU 21A.</p>	<p>The PSE-1, Batch 2, and RI found chemicals detected above cleanup levels in surface soil. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: The RI reported a cumulative cancer risk of 3×10^{-5} for the residential scenario and 2×10^{-6} for the occupational scenario from exposure to chemicals in surface soil. Risk driver was Aroclor 1260. Recreational scenario was below target level of 10^{-6} for surface soil.</p> <p>Ecological Health: The RI reported a HI of 32 from exposure to chemicals in surface soil. The risk driver was Aroclor 1260.</p> <p>The FS recommended NFA. A 20-mil liner was installed in 1992 over soils containing residual levels of PCBs to prevent adverse human health and ecological risks.</p>	<p><u>Pre-ROD Remedial Actions:</u> In 1992, removed 780 cubic yards of PCB-affected soils. A 20-mil liner and soil cover were placed over areas of residual PCBs. Removed soils were disposed of beneath the SWMU 67 cap.</p> <p><u>ROD Remedy:</u> ICs only was selected based on human and ecological health exposure to chemicals in soil.</p> <p>This remedy was selected because no unacceptable risks were posed under the existing land use, but ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) OU A RI/FS (U.S. Navy, 1997a) PSE-1, Batch 2 (U.S. Navy, 1995c)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 23	Heart Lake Drum Disposal Area	<p>This site is located in an undeveloped field about 2 miles southwest of downtown Adak. It occupies a hillside between two small unnamed lakes less than ½ mile from Heart Lake. The site, 8 acres of a grassy open field, was apparently used to dispose of about 20 drums and one storage tank in the 1940s. The original contents of the drums are unknown. When they were removed in 1994, all the drums and the storage tank were empty, and no evidence of releases was observed.</p>	<p>The RI found chemicals detected above cleanup levels in sediment and surface soil. A risk assessment was conducted and results are summarized here:</p> <p>Human Health: Cumulative cancer risk of 1×10^{-5} for the residential scenario from exposure to chemicals in surface soil. The risks calculated for residential scenario for exposure to chemicals in sediment, the recreational scenario for exposure to chemicals in sediment and surface soil, and the occupational scenario for exposure to chemicals in surface soil were below target level of 10^{-6}. A cumulative noncancer hazard of 6.5 was the residential scenario from exposure to chemicals in surface soil. Arsenic and manganese were the risk drivers for surface soil.</p> <p>Ecological Health: HI of 51 from exposure to chemicals in sediment and 92 from exposure to chemicals in surface soil. Risk driver was manganese for sediment and surface soil.</p> <p>The FS recommended NFA to protect human or ecological health, because risks considered very conservative and an over calculation of site conditions. Risks were within the target range of 10^{-6} to 10^{-4}.</p>	<p><u>Pre-ROD Remedial Actions:</u> Removed empty drums and a tank from the site in 1994.</p> <p><u>ROD Remedy:</u> ICs only was selected, based on human health exposure to chemicals in soil and ecological exposure to chemicals in soil and sediment.</p> <p>This remedy was selected because no unacceptable risks were posed under the existing land use, but that ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) OU A RI/FS (U.S. Navy, 1997a)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 24	Hazardous Waste Container Storage Facility (HWSF)	The HWSF was operated as a RCRA interim-status container storage facility. The HWSF is located between Buildings T-1443 and T-1441 on the south side of Public Works Road. The only structure at the HWSF is Building 30006, which was used to store, categorize, sort, and label wastes.	No detailed evaluation of this site was conducted for the RI/FS, because the site was addressed under RCRA. RCRA closure activities consisted of cleaning the PCB-contaminated floor of Building 30006, removal of PCB-contaminated asphalt, collection of sediment samples from a nearby drainage ditch, and confirmatory wipe sampling of PCB cleanup areas. The work completed satisfied the requirements of the RCRA closure plan. The site was closed in 1995, provided that ICs restricting residential land use and excavation notifications are implemented. Portions of this site were evaluated under SAERA, because of TPH contamination in soil (U.S. Navy et al., 2000).	Remedy: The site was closed under RCRA in 1995. ICs are currently in place, restricting land use to commercial/industrial and requiring excavation notification prior to a non-emergency intrusive activity being conducted. Site Completion Documentation: ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) RCRA Certification (U.S. Navy, 1995a)
SWMU 25	Roberts Landfill	Roberts Landfill is located on a hilltop west of downtown. The boundary of Roberts Landfill encompasses 59 acres, including a main portion, a designated asbestos disposal area, and partially buried metal bunkers filled with asbestos material. The areal extent of refuse within the main portion of the landfill is 28.5 acres. The landfill started as a rock quarry, then expanded to include waste disposal in the mid-1960s. The landfill was not permitted until the 1980s. The landfill was closed in 2000 according to Alaska solid waste regulations. Two cells of the landfill were reopened in 2002 to receive construction debris and closed again in 2003.	The landfill was capped in 1997 to prevent potential exposure to human or ecological receptors. A risk assessment was not conducted at this site. RI/FS concluded NFA.	Remedy: Closure activities include a low-permeability soil cover over the landfill, grading and contouring, implementing access restrictions, installing surface water/erosion controls, placing a vegetative cover, maintaining cover, and periodic monitoring. The site was closed per Alaska solid waste landfill regulations and is maintained and monitored in accordance with these regulations. ICs were implemented. Site Completion Documentation: Completion Rpt. Cabin Demo. (U.S. Navy, 2003b) Completion Rpt. Cap Inst. (U.S. Navy, 2002) Completion Rpt. Demo. (U.S. Navy, 2000e) Construction Requirements (U.S. Navy, 1996h)

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 29	Finger Bay Landfill	<p>SWMU 29 is located about ½ mile south of Sweeper Cove and 1,800 feet north of Finger Bay, adjacent to Finger Bay Road. It is situated in a low-lying area at the base of a hill. The hill slope forms the east boundary of the site. The areal extent of the landfill is about 6.7 acres; the average surface elevation is about 100 feet above MLLW. A perennial stream is located near the north boundary of the landfill. Smaller intermittent streams are located both on and adjacent to the landfill.</p> <p>The depth of the landfill is about 5 to 10 feet. It was reportedly used for waste disposal between 1972 and 1975. The materials placed in it include, but are not limited to, municipal and industrial refuse and construction debris.</p>	<p>The RI found chemicals detected above cleanup levels in sediment, groundwater, and subsurface soil. The subsurface soil and groundwater samples were collected within the landfill debris. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: Cumulative cancer risk of 3×10^{-5} for the residential scenario from exposure to chemicals in soil and 2×10^{-6} for occupational scenario from exposure to chemicals in soil. The risks calculated for the residential and recreational scenarios were below target level of 10^{-6} for sediment. Benzo(a)pyrene, 2,3,7,8-TCDD, Aroclor 1260, and Aroclor 1254 for subsurface soil. Risks were not calculated for groundwater because it is an incomplete pathway.</p> <p>Ecological Health: Hazard of 23 from exposure to chemicals in sediment and 172 from exposure to chemicals in subsurface soil. Risk drivers were Aroclor 1260 in sediment and 2,3,7,8-TCDD, 4-methylphenol, lead, zinc, Aroclor 1254, and Aroclor 1260 in soil.</p> <p>The FS considered the following remedial alternatives for this site: no action, ICs only, and source control/containment.</p>	<p><u>Pre-ROD Remedial Actions:</u> In 1996, approximately 17 15-gallon drums were removed from an adjacent creek.</p> <p><u>ROD Remedy:</u> ICs only was selected, based on ecological exposure to chemicals in subsurface soil and sediment.</p> <p>This remedy was selected because ICs will minimize potential human exposure to site chemicals by implementing restrictions on residential land use and soil excavations. Protection of human and/or ecological receptors will be accomplished by inspection and maintenance of cover systems. Monitoring requirements will allow assessment of risks and natural recovery processes over time and verify that there are no downgradient impacts. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) OU A RI/FS (U.S. Navy, 1997a)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 52	Former Loran Station (including SWMUs 53 and 59)	The site was constructed between 1948 and 1950 to support naval and Coast Guard navigation, and the station was closed in 1979. The former Loran (long-range navigation) Station is located on a northwest-facing promontory along the Bering Sea coastline on the northwest flank of Mount Adagdak. The station, which consisted of three buildings in varying stages of disrepair, occupies a bench on a promontory about 150 feet above MLLW. Building V-149, a one-story metal structure, was demolished in the summer of 2001 (BEESC, 2001). In addition to the buildings, there are two debris disposal areas, one along the western slope below the building bench and the other on the northern slope accessed by a higher road. There are no other developments within about a mile radius of the site. The station is about 6½ miles from downtown Adak, and roads to the site have not been maintained for several years.	<p>The PSE-2, Batch 2, and RI found chemicals detected above cleanup levels in surface soil. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: The cumulative cancer risk of 5×10^{-5} was for residential and 2×10^{-6} for the occupational scenario from exposure to chemicals in surface soil. The risk drivers were benzo(a)pyrene, arsenic, and dibenz(a,h)anthracene. Recreational scenario was below the target level of 10^{-6} for surface soil.</p> <p>Ecological Health: HI of 260 from exposure to chemicals in surface soil. The risk drivers were lead, zinc, 4-methylphenol, and 2,4-dimethylphenol.</p> <p>The FS recommended NFA, because it was described as unlikely that permanent residences could be established on site in the future.</p>	<p><u>Pre-ROD Remedial Actions:</u> Debris and unused hazardous material were removed from the site in 1990 and 1991. In addition, two 10,000-gallon JP-5 tanks and one 10,000-gallon gasoline tank were removed.</p> <p><u>ROD Remedy:</u> ICs only was selected, based on human and ecological health exposure to chemicals in soil and debris. This remedy was selected because no unacceptable risks were posed under the existing land use, but that ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) PSE-2, Batch 2 (U.S. Navy, 1996e)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SWMU 55	Public Works Transportation Department Waste Storage Area	This site is located between two warehouses near the Sweeper Cove dock. It consists of a graded gravel open area with a small (about 700-square-foot) steel shed at one end. The site was historically used for vehicle maintenance and product storage, including storage of flammable materials. New oil, hydraulic and transmission fluids, and other vehicle-care products were also stored inside of and adjacent to the steel shed. The site consists of an area of about 0.7 acre.	The PSE-2, Batch 2, and RI found chemicals detected above cleanup levels in sediment, surface soil, and groundwater. A risk assessment was conducted and results are summarized here. Human Health: Cumulative cancer risk of 1×10^{-4} for the residential scenario from exposures to chemicals in groundwater. The risk driver was PCE. Recreational risks from exposure to chemicals in surface soil and sediment and occupational risks from exposure to chemicals in surface soil were below the target level of 10^{-6} . Ecological Health: No COCs selected because there is no suitable habitat onsite. The FS recommended NFA because, given the industrial nature of this site, it is considered unlikely that a residential well would be developed, because of ICs.	Pre-ROD Remedial Actions: None ROD Remedy: ICs only was selected, with groundwater monitoring based on human health exposure to chemicals in groundwater. This remedy was selected because no unacceptable risks were posed under the existing land use, but that ICs were required to restrict residential land use. See Table 5-1 for further ICs information. Site Completion Documentation: ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) PSE-2, Batch 2 (U.S. Navy, 1996e)
SWMU 67	White Alice PCB Spill Site	This site is a former military communications complex located about 2 miles west of downtown Adak. It is situated on a flattened hilltop about 595 feet above MLLW. It consists of three building foundations and abandoned concrete pads surrounded by graded gravel. Given the relative elevation and the lack of vegetation and structures, the site does not provide any valuable habitat. The White Alice complex, constructed in 1956, consisted of large transmitting and receiving dish antennas. The site was dismantled between 1980 and 1982. During demolition, PCB-containing oil was spilled throughout the complex.	The RI found chemicals detected above cleanup levels in sediment and surface soil. A risk assessment was conducted and results are summarized here. Human Health: Post-removal cumulative cancer risk of 7×10^{-7} for the recreational scenario from exposure to chemicals in surface soil and 2×10^{-6} for occupational scenario from exposures to chemicals in surface soil. Aroclor 1260 was the risk driver for surface soil. Sediment did not significantly contribute to risk. The residential scenario was determined to be nonviable. Subsurface soil with known contamination was removed or covered as a result of the removal action. Ecological Health: HI of 68 from exposure to chemicals in sediment and 86 from exposure to chemicals in post-removal soil. Aroclor 1260 was the risk driver in sediment and soil. The FS recommended monitoring. The interim capping reduced human health and ecological risks to chemicals in soil.	Pre-ROD Remedial Actions: Placed cover and impermeable geotextile membrane over the PCB-contaminated area in 1997. ROD Remedy: ICs only was selected, based on human and ecological health exposure to chemicals in soil. This remedy was selected because no unacceptable risks were posed under the existing land use, but that ICs were required to restrict residential land use. See Table 5-1 for further ICs information. Site Completion Documentation: ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) Action Memorandum (U.S. Navy, 1997g) Soil Sampling and Non-Time Critical PCB RA (U.S. Navy, 1997h) OU A RI/FS (U.S. Navy, 1997a)

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SA 76	Old Line Shed Building	The site is a 2-acre, rectangular open area with a concrete foundation pad surrounded by gravel. At the time of the investigation, the site was used to stockpile gravel. Historically, the site was used for office space, line crew living quarters, and storage space for a variety of materials. The structure was removed after it was damaged in a 1982 storm and rendered uninhabitable.	<p>The PSE-1, Batch 2, and RI found chemicals detected above cleanup levels in soil and groundwater. A risk assessment was conducted and results are summarized here.</p> <p>Human Health: The PSE-1 reported cumulative cancer risk of 1×10^{-4} for the residential scenario from exposure to chemicals in soil and groundwater and a cumulative cancer risk of 4×10^{-6} for the occupational scenario from exposure to chemicals in soil. Aroclor 1260, lead, arsenic, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene were the risk drivers.</p> <p>Ecological Health: HI of 11 from chemicals in surface soil. Aroclor 1260 and lead are the risk drivers.</p> <p>The FS recommended NFA. Ecological risks based on exposure to chemicals in surface soil are minimal in the downtown area, because of limited suitable habitat. Given the industrial nature of this site, it is considered unlikely that a residential well would be developed, because of ICs.</p>	<p><u>Pre-ROD Remedial Actions:</u> Building removal in 1982.</p> <p><u>ROD Remedy:</u> ICs only was selected, with groundwater monitoring based on human health exposure to chemicals in groundwater and ecological exposure to chemicals in soil.</p> <p>This remedy was selected because no unacceptable risks were posed under the existing land use, but that ICs were required to restrict residential land use. See Table 5-1 for further ICs information.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) PSE-1, Batch 2 (U.S. Navy, 1995c)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
SA 77	Fuel Division Area Drum Storage (a.k.a., small drum storage area [SDSA])	<p>The SDSA is located in the southwest corner of a fenced area east of Transit Road. The SDSA is not a permitted RCRA interim-status container storage facility. The basis for the area's inclusion in the RCRA closure process is an observation made by EPA Region 10 representatives in June 1989. EPA representatives thought the facility was operating as an unpermitted storage area, because they observed drums on site, assumed they contained hazardous wastes, and assumed the drums had been on site more than 90 days. Through provisions of the Federal Facilities Compliance Agreement, the Navy agreed to the EPA's RCRA designation for the SDSA and agreed to perform closure of the area.</p>	<p>No detailed evaluation of this site was conducted for the RI/FS. In addition, this site received a NFA designation under Federal Facilities Agreement. However, this site was evaluated under RCRA in 1993. The work completely satisfied the requirements of the RCRA closure plan. The site was "clean-closed" under RCRA in 1995, with ICs that restrict the property from future residential land use development. The facility was investigated to determine if past activities related to drum storage had left residual contamination that would pose a future risk to Adak residents, or that exceeded relevant regulations. The RCRA investigation found:</p> <ul style="list-style-type: none"> • No unacceptable immediate or future risks to human health are posed by chemicals detected in soil. • No exceedances of Toxic Substances Control Act regulations for PCBs were found. • TPH was detected in a widespread area above Alaska DEC-regulated levels • No data gaps were identified that pose a need for additional characterization. <p>The FS recommended NFA under CERCLA, because no evidence of contamination. Site petroleum constituents to be evaluated under SAERA</p>	<p><u>Remedy:</u> Because of the TPH detected in soils, the SDSA was added to the SAERA evaluation sites. The selected remedy for the site in the ROD is limited soil removal.</p> <p><u>Site Completion Documentation:</u> ICMP (Appendix D of Final CMP; U.S. Navy, 2004a) RCRA Cert. (U.S. Navy, 1995a)</p>

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

Site No.	Site Name	Description	Remedial Investigation/Feasibility Study Results	Status ^a
None	South Sweeper Creek	South Sweeper Creek is the principal drainage feature for downtown Adak, collecting most of the area's surface runoff and groundwater seepage. In addition, water collected in the runway canals (diversionary structures that provide drainage and dewatering for the airport) is discharged to lower South Sweeper Creek via a pair of pumps.	<p>The RI found chemicals detected above cleanup levels in tissue and sediment. A risk assessment was conducted and results are summarized here:</p> <p>Human Health: Cumulative cancer risk of 2×10^{-4} for the subsistence and 2×10^{-6} for the recreational scenarios from exposure to chemicals in fish tissue (Dolly Varden). Noncancer hazard index of 2 for subsistence from exposure to chemicals in fish tissue. The risk driver was primarily Aroclor 1260.</p> <p>Ecological Health: HI of 45 from chemical exposure to sediment and a HI of 32 from chemical exposure to fish tissue (Dolly Varden). Risk driver in sediment is Aroclor 1260 and lead is the risk driver for fish tissue.</p> <p>The FS considered the following remedial alternatives for this site: no action, ICs only, source control/containment, and removal.</p>	<p><u>Pre-ROD Remedial Actions:</u> None</p> <p><u>ROD Remedy:</u> Removal was selected, based on ecological receptor exposure to sediment. Removal of 5,392 cubic yards of sediment occurred in 1999 and 2000. Marine fish/shellfish tissue monitoring in Sweeper Cove is ongoing.</p> <p><u>Site Completion Documentation:</u></p> <p>Completion Rpt. Biocells (U.S. Navy, 2004c)</p> <p>Closure Rpt. (U.S. Navy, 2004d)</p> <p>Completion Rpt. Airport Ditch Culvert Inst. (U.S. Navy, 2001g)</p> <p>Closure Rpt. Runway Seep Elim. (U.S. Navy, 2001h)</p> <p>Completion Rpt. Biocells (U.S. Navy, 1999a)</p> <p>Closure Rpt. (U.S. Navy, 1999b)</p> <p>OU A RI/FS (U.S. Navy, 1997a)</p>

^aSee Section 9 for references cited.

Notes:

- BEESC - Bristol Environmental and Engineering Services Corporation
- CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
- CMP - Comprehensive Monitoring Plan
- COC - chemical of concern
- DEC - Department of Environmental Conservation
- DRMO - Defense Reutilization Marketing Office
- EPA - U.S. Environmental Protection Agency
- FS - feasibility study
- HI - hazard index
- HWSF - Hazardous Waste Container Storage Facility

Table 2-2. Sites Where Remedial Alternatives Were Selected (Continued)

IC - institutional control
ICMP – Institutional Control Management Plan
IR - installation restoration
MLLW - mean lower low water
NFA - no further action
NSGA - Naval Security Group Activity
OU - operable unit
O/W - oil/water separator
PAHs - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCE - tetrachloroethene
PSE - preliminary source evaluation
RA - remedial action
RCRA - Resource Conservation and Recovery Act
RD - remedial design
RI - remedial investigation
ROD - Record of Decision
SA - source area
SAERA - State-Adak Environmental Restoration Agreement
SDSA - small drum storage area
SWMU - solid waste management unit
TCDD - tetrachlorodibenzo-p-dioxin
TPH - total petroleum hydrocarbon

3.0 DEMONSTRATION OF CLEANUP ACTIVITY QUALITY ASSURANCE AND QUALITY CONTROL

Activities at the former Complex on Adak were completed in compliance with the two RODs, an OU A ROD Amendment, remedial design plans, and specifications (see references on Tables 2-1 and 2-2 for the site-specific documents). The quality assurance project plans for the remedial actions incorporated EPA and state quality assurance/quality control (QA/QC) procedures and protocols. Chemical analyses were conducted using EPA analytical methods. The QA/QC program used throughout the OU A remedial actions was rigorous and conformed with EPA and state standards. Therefore, EPA and Alaska DEC determined that the analytical results were accurate to the degree needed to ensure satisfactory execution of the remedial action.

4.0 MONITORING RESULTS

Ten sites and two water bodies within OU A have long-term monitoring programs with requirements established in the ROD: SWMUs 11, 13, 14, 15, 17, 18, 19, 25, and 55, SA 76, Kuluk Bay, and Sweeper Cove. Groundwater monitoring is being conducted at all sites except SWMU 11, Kuluk Bay, and Sweeper Cove. Fresh water and sediment monitoring is occurring at SWMU 11. Fresh water monitoring is also occurring at SWMUs 18/19 and 25. Fish/shellfish tissue monitoring related to SWMUs 11 and 13 is being conducted in Kuluk Bay. Additional tissue sampling is being conducted in Sweeper Cove. Table 4-1 describes long-term monitoring details for each of the 12 OU A sites. In addition, Appendix A includes figures with sampling locations and a summary of monitoring results from 2000 to 2004 for each site and 2000 to 2005 for fish/shellfish tissue monitoring in Kuluk Bay and Sweeper Cove.

This RACR is based on a document prepared for signature in 2006. Subsequent monitoring has occurred, as well as completion of two five-year reviews and updates to the ICMP. The additional monitoring and updates do not change the intent of the RACR or the partial delisting status. Therefore, the monitoring periods and results, as well as the references, are not updated from the 2006 document.

Concentrations of COCs in groundwater and fish/shellfish tissue still exceed remedial goals at many locations, and therefore these media are not part of this RACR. Note that fish/shellfish tissues are being monitored as the appropriate human health endpoint to assess when Kuluk Bay and Sweeper Cove surface water have met remedial goals. Chemical exceedances over remedial goals in the most recent round of groundwater monitoring data available at this time are briefly discussed in Section 4.1. Surface water, sediment, and tissue sampling are discussed in Section 4.2 on a site-by-site basis.

At two sites, SWMU 17 and South Sweeper Creek, remedial actions consisting of sediment removal have occurred, as required by the OU A ROD (U.S. Navy et al., 2000). Post-construction samples demonstrating that remedial goals have been met at these locations are discussed in Section 2.4. No long-term monitoring of sediment is required at these sites.

4.1 GROUNDWATER MONITORING RESULTS

For the nine sites where groundwater is being monitored, the OU A ROD (U.S. Navy et al., 2000) required groundwater monitoring where federal maximum contaminant levels (MCLs) or state criteria were exceeded. The monitoring frequency was quarterly for the first year and then semiannually or annually thereafter. At the majority of sites, groundwater monitoring is occurring on an annual basis. There are a few sites and locations where the frequency has been reduced to every other year (U.S. Navy, 2005b). At a minimum, the following compounds (excluding petroleum-related compounds, e.g., benzene, toluene, ethylbenzene, and xylenes) are monitored because of MCL exceedances:

- Bis(2-ethylhexyl)phthalate
- Methylene chloride
- Tetrachloroethene
- Trichloroethene
- 1,1-Dichloroethene (DCE)
- Cis-1,2-DCE
- Trans-1,2-DCE
- Vinyl chloride
- Lead

The ROD states that the groundwater monitoring data will be used for the following purposes:

- Determine the impact and effectiveness of the landfill cap and shoreline protection system on groundwater quality at SWMU 13.
- Establish trends of groundwater quality over time using the Mann-Kendall test to evaluate whether concentrations are decreasing, increasing, or staying the same.
- Determine the monitoring endpoint at a given well location if the chemical concentration is below the MCL for groundwater and below state and federal surface water quality criteria between impacted areas and downtown surface water. Levels below these two criteria must be achieved for two consecutive sampling rounds before monitoring is considered complete.

Monitoring for thallium and bis(2-ethylhexyl)phthalate at some locations has been discontinued because the constituents have not been detected or have been consistently detected below endpoint criteria (U.S. Navy, 2005b). As groundwater is not included in this partial deletion, the trend analysis is not included in this report. Trend analysis is included in the latest available final annual groundwater monitoring report (U.S. Navy, 2005b) for SWMUs 11, 13, 14, 15, 17, 18, 19, 25, and 55 and SA 76.

4.2 MONITORING RESULTS FOR MEDIA OTHER THAN GROUNDWATER

SWMUs 11, 13, 18, 19, and 25, Sweeper Cove, and Kuluk Bay are sites where media other than groundwater are being monitored per the OU A ROD (U.S. Navy et al., 2000). The details for each site are described below and summarized in Table 4-1. Appendix A includes figures with sampling locations and a summary of monitoring results for 2000 to 2004.

4.2.1 SWMU 11, Palisades Landfill

Fish/shellfish samples (blue mussels) have been collected in Kuluk Bay downgradient of SWMU 11. Tissue sample results are discussed in Section 4.2.4. Sediment and surface water have been sampled at Palisades Landfill periodically since May 1996. Two locations are being sampled for freshwater sediment and surface water (101 and 102), and one location is being sampled for marine sediment (103). Sampling locations are included in Figure A-1 of Appendix A. As of September 2004, 12 sampling events have been conducted at the Palisades Landfill.

In 2004, samples were analyzed for the following target analytes for surface water and sediment, as specified in the Final Comprehensive Monitoring Plan (CMP), Revision 1 (U.S. Navy, 2004a):

- Total PCBs
- Aroclors
- Bis(2-ethylhexyl)phthalate
- Selected polycyclic aromatic hydrocarbons (PAHs)
- Antimony
- Arsenic
- Chromium
- Nickel

Remediation goals for sediment and surface water were not established in the 2000 OU A ROD for SWMU 11, although sampling requirements were detailed and some sediment “remedial action criteria”

were listed for other sites (U.S. Navy et al., 2000). Endpoint criteria for sediment and surface water at SWMU 11 were presented in the Final CMP, Revision 1 (U.S. Navy, 2004a).

Surface water at SWMU 11 has met the endpoint criteria goals. Some metals exceeded endpoint criteria in the 2003 sampling (U.S. Navy, 2004e). However, there were no exceedances of endpoint criteria in any surface water samples in 2004 (U.S. Navy, 2005c). Surface water will continue to be monitored annually for metals until the Navy, EPA, and Alaska DEC determine that a reduced frequency is appropriate. Due to lack of detections, surface water monitoring for PCBs has been terminated.

There have been occasional exceedances over endpoint criteria for the target chemicals in sediment over the last 5 years of monitoring. However, exceedances have been intermittent and relatively low. Table 4-2 summarizes the 2004 sediment data for the target analytes and includes the endpoint criteria. Benzo(a)pyrene, arsenic, and nickel were detected above endpoint criteria in 2004; however, arsenic concentrations appear to represent natural background. The paragraphs below describe the monitoring results for the last five years.

The PAHs, specifically, acenaphthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, fluoranthene, and indeno(1,2,3-cd)pyrene have not been detected at concentrations above the endpoint criteria during the 2000, 2001, 2002, 2003, and 2004 sampling events. However, the reporting limits for some of the PAHs in 2001 and 2004 were above the endpoint criteria. Benzo(a)pyrene and chrysene are the only two SVOCs that were included on the target list that have ever been detected more than once at concentrations greater than the endpoint criteria. Benzo(a)pyrene was detected at locations 101 and 102 in September 2004, at location 103 in October 2003, at location 101 in October 2002, and at locations 102 and 103 in November 2000 (Figure A-1). In the 2004 sampling event, the benzo(a)pyrene concentration did not exceed an ecological threshold, although a human health-based endpoint criteria (based on residential exposures) was exceeded. Chrysene was detected at location 101 in October 2003 and at location 102 in November 2000. There appears to be no clear concentration trend for PAHs during the 2000 to 2004 time period. In addition, exceedances occur at the upgradient location (101, Figure A-1) almost as frequently as the downgradient location, indicating SWMU 11 is not an ongoing source. Concentration trend interpolation has a high degree of uncertainty because of the high reporting limits during the 2001 and 2004 sampling events.

The only PCBs that were detected during the 2000 to 2004 time period are Aroclors 1254 and 1260. Aroclor 1254 was detected above the endpoint criterion at location 102 at SWMU 11 during the October 2001 sampling event. Aroclor 1260 was detected above the endpoint criterion at all three locations at SWMU 11 during the November 2000 sampling event and at location 102 during the October 2001 and September 2004 sampling events. Based on the results of the latest long-term monitoring report for the landfills, the frequency of sediment sampling for PCBs will be reduced from annually to every other year due to the low frequency of detection of PCBs in sediment and the lack of partitioning into surface water (U.S. Navy, 2005c).

Arsenic and nickel are the only metals that have been consistently detected above the endpoint criteria. However, many arsenic concentrations are below background concentrations. Arsenic was detected above endpoint criteria in all samples collected during the 2000, 2001, 2002, 2003, and 2004 sampling events; however, only samples from location 102 exceed background. Nickel was detected in the sediment sample from location 102 at a concentration greater than the endpoint criterion during 2000, 2001, 2003, and 2004, and it was detected at a concentration greater than the endpoint criterion in the sample collected from location 103 during 2002. In general, the concentrations of the inorganic compounds included on the target analyte list appear to have decreased slightly, when comparing the

2004 analytical results to the 2003 results (see Appendix A). Long-term sediment monitoring for metals will continue on an annual basis as part of the Adak-wide long-term monitoring program.

In conclusion, although there continue to be intermittent exceedances above criteria for some of the target analytes in sediment, the existing ICs program (see Section 5) prevents human access to SWMU 11-impacted sediments. Only nickel has exceeded an ecological endpoint criterion, and the exceedances were not large. Therefore, ecological hazards are unlikely to be present. The remedial goals for SWMU 11, protection of human and ecological receptors from exposure to landfill debris and soil, have been met. Surface water endpoint criteria have been met and the minor, intermittent exceedances of sediment endpoint criteria confirm the existing cap and ICs are functioning to prevent mobilization of landfill leachate. Therefore, sediment and surface water at SWMU 11 are included as part of the site deletion process.

4.2.2 SWMU 13, Metals Landfill

Beginning in 1996, annual monitoring activities have been conducted to assess natural recovery and the effectiveness of previous actions and to verify that there are no downgradient impacts to human or ecological receptors. Other than groundwater, only tissue monitoring samples have been collected for SWMU 13. Several locations in Kuluk Bay are being monitored for blue mussels and rock sole tissue for both SWMUs 11 and 13 (see Section 4.2.4).

4.2.3 State-Permitted Landfills (SWMUs 18/19 and 25)

At SWMUs 18/19, White Alice Landfill, quarterly monitoring was conducted in 1996 and annual monitoring has been ongoing since 1997. Samples have been collected from two monitoring wells and three surface water locations since 1996 and results reported on an annual basis.

Quarterly monitoring at SWMU 25, Roberts Landfill, was conducted in 1996, and annual monitoring has been ongoing since 1997 at four monitoring wells and five surface water seeps. Monitoring results are reported on an annual basis.

For both SWMUs 18/19 and SWMU 25, the first five-year site review (U.S. Navy, 2001d) reported that the remedies for these landfills were protective of human and ecological receptors from exposure to landfill debris and subsurface soil. In addition, the five-year review reported that the surface water and groundwater monitoring at SWMUs 18/19 and 25 indicates rare exceedances of applicable cleanup levels, and, in general, no appreciable increases in concentrations of detected chemicals.

The endpoint criteria that have been established in the Final CMP, Revision 1 (U.S. Navy, 2004a) for SWMUs 18/19 are listed in Table 4-3 (fresh surface water) and for SWMU 25 are listed in Table 4-4 (fresh surface water). As with SWMU 11, remedial goals for surface water for these sites were not established in the 2000 OU A ROD (U.S. Navy et al., 2000). Upon review of the fresh surface water collected from 2000 to 2004, no endpoint criterion level has been exceeded for the target analytes for SWMUs 18/19 (all years) or SWMU 25 (2004). Based on these results, the frequency of surface water and groundwater monitoring will be reduced to every other year for all chemicals at SWMUs 18/19. The endpoint criteria have been met for surface water at these three sites. Meeting the endpoint criteria for these sites fulfills the ROD requirements; therefore, the RAOs have been met. Monitoring results for surface water from 2000 to 2004 are provided in Appendix A.

4.2.4 Kuluk Bay and Sweeper Cove

Because of potential human health concerns associated with PCBs, shellfish and rock sole subsistence harvesting restrictions were imposed in Kuluk Bay and Sweeper Cove. The OU A ROD (U.S. Navy et al., 2000) required a marine monitoring program to determine when the shellfish are safe to eat and restrictions may be terminated.

The primary conclusions drawn from the evaluation of the tissue data collected from 1999 through 2005 (U.S. Navy, 2005d) are that (1) total PCB concentrations in rock sole from Sweeper Cove and Kuluk Bay have decreased since 2003, (2) total PCB concentrations in rock sole from Sweeper Cove and Kuluk Bay exceed the risk-based action level (RBAL) of 6.5 $\mu\text{g}/\text{kg}$, (3) mean total PCB concentrations in blue mussels from Sweeper Cove and Kuluk Bay appear to be increasing, and (4) mean total PCB concentrations in blue mussels collected in 2005 from both embayments exceed the RBAL of 31 $\mu\text{g}/\text{kg}$ and were affected by localized areas of relatively higher concentrations.

Table 4-1. Long-Term Monitoring Summary

Site No.	Site Name	Sampling Media					Long-Term Monitoring Details
		GW	SD	SW	MS	TI	
SWMU 11	Palisades Landfill		X	X	X	X	<p>Marine sediment analyzed for pesticides, Aroclors, and inorganics. Samples were collected from one sampling point, location 103. Sampling events have occurred since 1996, happening approximately once per year (multiple sampling events occurred during 1996 and 1997).</p> <p>Freshwater sediment and surface water were analyzed for pesticides, Aroclors, and total and dissolved inorganics. Samples were collected from two sampling points, locations 101 and 102. Sampling events have occurred since 1996, happening approximately once per year (multiple sampling events occurred during 1996 and 1997).</p> <p>Blue mussel tissue and rock sole tissue were analyzed for SVOCs, total inorganics, pesticides, and Aroclors (during all sampling events, except in 2003). In 1996, samples were collected from two initial sampling points, locations 103 and 104, near SWMU 11. In 1996, samples were collected from four initial sampling points, locations 609, 610, 611 (blue mussel) and 612 (rock sole), near SWMU 13. Ten additional sampling locations have been established for monitoring SWMUs 11 and 13, including KB101–KB105 (blue mussels) and KB201–KB205 (rock sole). Sampling events have occurred from 1996 to 2005 and will continue until RBALs are met.</p>

Table 4-1. Long-Term Monitoring Summary (Continued)

Site No.	Site Name	Sampling Media					Long-Term Monitoring Details
		GW	SD	SW	MS	TI	
SWMU 13	Metals Landfill	X				X	<p>Groundwater was analyzed for VOCs, SVOCs, and total and dissolved inorganics. Samples were collected from nine sampling points, including locations MW 13-1, MW 13-2, MW 13-3, MW 13-4, MW 13-5, MW-602 (only sampled in 2001), MW-603, MW-604, and MW-605. Sampling events have occurred since 1996, approximately once per year (multiple sampling events occurred during 1996 and 1997).</p> <p>Blue mussel tissue and rock sole tissue were analyzed for SVOCs, total inorganics, pesticides, and Aroclors (during all sampling events, except in 2003). In 1996, samples were collected from two initial sampling points, locations 103 and 104, near SWMU 11. In 1996, samples were collected from four initial sampling points, locations 609, 610, 611 (blue mussel) and 612 (rock sole), near SWMU 13. Ten additional sampling locations have been established for monitoring SWMUs 11 and 13, including KB101–KB105 (blue mussels) and KB201–KB205 (rock sole). Sampling events have occurred from 1996 to 2005 and will continue until RBALs are met.</p>
SWMU 14	Old Pesticide Storage and Disposal Area	X					<p>Groundwater was analyzed for VOCs, SVOCs, and total and dissolved inorganics. Samples were collected from three sampling points, including locations 01-153, MW14-5, and MW14-423. MW14-5 was sampled from 2000 to 2004, MW14-423 was sampled in 2000 and 2001, and 01-153 was sampled in 2003 and 2004.</p>
SWMU 15	Future Jobs/DRMO	X					<p>Groundwater was analyzed for VOCs. Samples were collected from two sampling points, locations MW15-3 and MW15-424. MW15-3 was sampled from 2000 to 2004 and MW15-424 was sampled from 2000 to 2003.</p>
SWMU 17	Power Plant 3 Area (including SWMUs 36-40 and 63)	X					<p>Groundwater was analyzed for VOCs and SVOCs. Samples were collected from three sampling points, including locations 05-735, R-1, and R-6. Monitoring well 5-735 was sampled between 2001 and 2004, R-1 in 2001 and 2003, and R-6 in 2002 and 2003.</p>

Table 4-1. Long-Term Monitoring Summary (Continued)

Site No.	Site Name	Sampling Media					Long-Term Monitoring Details
		GW	SD	SW	MS	TI	
SWMUs 18/19	White Alice Landfill (South Sector Drum Disposal/Quarry Metal Disposal Area)	X		X			Groundwater was analyzed for VOCs and total and dissolved inorganics. Samples were collected from two sampling points, locations 21-3 and 21-4. Sampling events occurred between 1996 and 2004 on an annual basis. Surface water was analyzed for VOCs and total inorganics. Samples were collected from three sampling points, locations WASW01, WASW02, and WASW03. Sampling events occurred between 1996 and 2004 on an annual basis.
SWMU 25	Roberts Landfill	X		X			Groundwater was analyzed for VOCs and total and dissolved inorganics. Samples were collected from four sampling points, locations A-2, A-3, A-5, and B-1. Sampling events occurred between 1996 and 2004 on an annual basis. Surface water was analyzed for VOCs and total inorganics. Samples were collected from five sampling points, locations RLSW01, RLSW02, RLSW03, RLSW04, and RLSW05. Sampling events occurred between 1996 and 2004 on an annual basis.
SWMU 55	Public Works Transportation Department Waste Storage Area	X					Groundwater was analyzed for VOCs, SVOCs, and total and dissolved inorganics. Samples were collected from two sampling points, locations 55-145 and 55-146. Both locations were sampled from 2001 to 2004.
SA 76	Old Line Shed Building	X					Groundwater was analyzed for VOCs, SVOCs, and total and dissolved inorganics. Samples were collected from two sampling points, locations 76-147 and 76-148. Both locations were sampled from 2001 and 2002. Endpoint criteria were met in 2002; no further monitoring (U.S. Navy, 2004e).
None	Sweeper Cove					X	Blue mussel tissue and rock sole tissue were analyzed for pesticides and Aroclors. Samples were collected from four initial sampling points, locations 718, 719, 720 (blue mussel), and 722 (rock sole). Ten additional sampling locations have been established for monitoring South Sweeper Creek, including SW101–SW105 (blue mussels) and SW201–SW205 (rock sole). Sampling events have occurred from 1996 to 2005 and will continue until RBALs are met.

Table 4-1. Long-Term Monitoring Summary (Continued)

Site No.	Site Name	Sampling Media					Long-Term Monitoring Details
		GW	SD	SW	MS	TI	
None	Kuluk Bay					X	Blue mussel tissue and rock sole tissue were analyzed for SVOCs, total inorganics, pesticides, and Aroclors (during all sampling events, except in 2003). In 1996, samples were collected from two initial sampling points, locations 103 and 104, near SWMU 11. In 1996, samples were collected from four initial sampling points, locations 609, 610, 611 (blue mussel) and 612 (rock sole), near SWMU 13. Ten additional sampling locations have been established for monitoring SWMUs 11 and 13, including KB101–KB105 (blue mussels) and KB201–KB205 (rock sole). Sampling events have occurred from 1996 to 2005 and will continue until RBALs are met.

Notes:

DRMO - Defense Reutilization Marketing Office

GW - groundwater

MW - monitoring well

MS - marine sediment

RBAL – risk-based action level

SA - source area

SD - sediment (freshwater)

SVOCs - semivolatile organic compounds

SW - surface water

SWMU - solid waste management unit

TI - tissue

VOCs - volatile organic compound

Table 4-2. Summary of Sediment Analytical Results, September 2004, for SWMU 11, Palisades Landfill

Target Analyte	Location 101 ^d 9/24/2004	Location 101 ^{d,f} 9/24/2004	Location 102 ^d 9/24/2004	Location 102 ^{d,f} 9/24/2004	Location 103 ^e 9/24/2004	Location 103 ^{e,f} 9/24/2004	Adak Background Concentrations		Endpoint Criteria			
							Freshwater	Marine	Human Health RBSC ^h		Ecological RBSC ^h	
									Freshwater and Marine		Freshwater	Marine
<i>SVOCs—bis(2-ethylhexyl)phthalate and PAHs (µg/kg)</i>												
Acenaphthene	660 U ^c	NA	1620 U ^c	NA	660 U	NA	NA	NA	1,640,000	150	NE	
Anthracene	660 U ^c	NA	1620 U ^c	NA	660 U	NA	NA	NA	8,210,000	85	NE	
Benzo(a)anthracene	660 U ^c	66667 U	1620 U ^c	85714 U	660 U ^c	NA	NA	NA	87.5	110,000 ^g	NE	
Benzo(a)pyrene	29.2^b	NA	63.8^b	NA	19.9^b	NA	NA	NA	8.75	400	NE	
Benzo(b)fluoranthene	660 U ^c	66667 U	1620 U ^c	85714 U	660 U ^c	NA	NA	NA	87.5	230,000 ^g	NE	
Benzo(g,h,i)perylene	660 U	NA	1620 U	NA	660 U	NA	NA	NA	821,000	NE	NE	
Benzo(k)fluoranthene	660 U	66667 U	1620 U ^c	85714 U	660 U	NA	NA	NA	875	230,000 ^g	NE	
bis(2-Ethylhexyl)phthalate	4000 U	404040 U ^c	9800 U ^c	518519 U ^c	4000 U	800000 U ^c	NA	NA	4,560	47,000 ^g	47,000 ^g	
Chrysene	660 U ^c	NA	1620 U ^c	NA	660 U	NA	NA	NA	8,750	40	NE	
Fluoranthene	660 U ^c	NA	1620 U ^c	NA	660 U	132000 U	NA	NA	1,100,000	600	160,000 ^g	
Fluorene	660 U ^c	NA	1620 U ^c	NA	660 U	NA	NA	NA	1,100,000	35	NE	
Indeno(1,2,3-cd)pyrene	11.1	1121	30.9	1635	7.66	NA	NA	NA	87.5	34,000 ^g	NE	
Phenanthrene	660 U ^c	NA	1620 U ^c	NA	660 U ^c	NA	NA	NA	1,100,000	225	225	
Pyrene	660 U ^c	NA	1620 U ^c	NA	660 U	132000 U	NA	NA	821,000	350	1,000,000 ^g	
<i>PCBs (Aroclors)(µg/kg)</i>												
Aroclor 1016	16.6 U ^c	NA	40.8 U ^c	NA	16.6 U ^c	NA	NA	NA	8.3	7	NE	
Aroclor 1221	33.5 U	NA	82.1 U	NA	33.5 U	NA	NA	NA	NE	NE	NE	
Aroclor 1232	16.6 U ^c	NA	40.8 U ^c	NA	16.6 U ^c	NA	NA	NA	8.3	NE	NE	
Aroclor 1242	16.6 U	NA	40.8 U	NA	16.6 U	NA	NA	NA	NE	NE	NE	
Aroclor 1248	16.6 U ^c	NA	40.8 U ^c	NA	16.6 U ^c	NA	NA	NA	8.3	30	NE	
Aroclor 1254	16.6 U ^c	NA	40.8 U ^c	NA	16.6 U ^c	NA	NA	NA	8.3	60	NE	
Aroclor 1260	16.6 U ^c	NA	33.6 J^b	NA	16.6 U ^c	NA	NA	NA	8.3	5	NE	
<i>Total Inorganic Compounds (mg/kg)^f</i>												
Antimony	0.5 UJ	NA	1.03 J	NA	0.5 UJ	NA	10	1.5	11	2	2	
Arsenic	4.3^b	NA	10.4^{a,b}	NA	3.83^b	NA	5.46	7.5	0.0365	33	57	
Chromium	6.71	NA	25 ^a	NA	6.41 ^a	NA	12.91	6.04	27,400	80	260	
Nickel	9.13	NA	39^{a,b}	NA	15.5 ^a	NA	10.05	5.01	203	30	30	

^aValue exceeds Adak background concentration.

^bValue exceeds endpoint criteria.

^cReporting limit exceeds endpoint criteria.

^dFreshwater sediment sample

^eMarine sediment sample

^fUnits are in µg/kg total organic carbon (carbon normalized concentration).

^gUnits are in µg/kg total organic carbon.

^hFinal preliminary source evaluation 2 guidance document for Adak (U.S. Navy 1996d)

Notes:

Bolded values exceed the endpoint criteria.

Blanks indicate no analysis was performed for the compound.

J - estimated value
 µg/kg - microgram/kilogram
 mg/kg - milligram/kilogram
 NA - not applicable
 NE - not established

PAHs - polycyclic aromatic hydrocarbon
 PCBs - polychlorinated biphenyls
 RBSC - risk-based screening criteria
 SWMU - solid waste management unit
 SVOCs - semivolatile organic compounds

U - not detected (Value shown is the reporting limit.)

Table 4-3. Endpoint Criteria for Fresh Surface Water at SWMUs 18/19, White Alice Landfill

Analyte	Alaska Water Quality Standards, 18 AAC 70 ^a	
	Aquatic Life (Chronic) (µg/L)	Human Health (Organisms Only) (µg/L)
<i>Inorganic Compounds</i>		
Arsenic	190 (As III) dissolved	1.4 ^b
Barium	None	None
Chromium III	210 TR at 100 mg/L hardness	None
Chromium VI	11 TR	None
Nickel	160 TR at 100 mg/L hardness	100

^a Criteria existing in 18 Alaska Administrative Code (AAC) 70 when ROD for OU A and landfills were signed. (Changes to some of these criteria were adopted in an 18 AAC 70 amendment on March 24, 2003, but these changes are not shown in this table.)

^b Human health criteria for carcinogens come from EPA promulgation of human health criteria for carcinogens for Alaska at the 10⁻⁵ risk level in the National Toxics Rule (40 CFR 131.36), in accordance with on-line Alaska DEC guidance at <www.state.ak.us/dec/dawq/wqs/documents/carcinogens.htm>, accessed April 10, 2003.

Notes:

µg/L - microgram per liter

mg/L - milligram per liter

SWMUs - solid waste management units

TR - total recoverable

Table 4-4. Endpoint Criteria for Fresh Surface Water at SWMU 25, Roberts Landfill

Analyte	Alaska Water Quality Standards, 18 AAC 70 ^a	
	Aquatic Life (Chronic) (µg/L)	Human Health (Organisms Only) (µg/L)
<i>Volatile Organic Compounds</i>		
1,1-Dichloroethene	None	320
Benzene	None	710 ^b
Cis-1,2-dichloroethene	None	None
Toluene	None	424,000
Trans-1,2-dichloroethene	None	None
Trichloroethene	None	810
Ethylbenzene	None	3,280
Total xylenes	None	None
<i>Inorganic Compounds</i>		
Antimony	None	45,000
Arsenic	190 (As III) dissolved	1.4 ^b
Beryllium	190	1.4
Cadmium	1.1 TR at 100 mg/L hardness	None
Chromium III	210 TR at 100 mg/L hardness	None
Chromium VI	11 TR	None
Copper	12 TR at 100 mg/L hardness	None
Lead	3.2 TR at 100 mg/L hardness	None
Mercury	0.012 TR	0.15
Nickel	160 TR at 100 mg/L hardness	100
Selenium	5 TR	None
Silver	None	None
Thallium	None	48
Zinc	110 TR at 100 mg/L hardness	None

^a Criteria existing in 18 Alaska Administrative Code (AAC) 70 when ROD for OU A and landfills were signed. (Changes to some of these criteria were adopted in an 18 AAC 70 amendment on March 24, 2003, but these changes are not shown in this table.)

^b Human health criteria for carcinogens come from EPA promulgation of human health criteria for carcinogens for Alaska at the 10⁻⁵ risk level in the National Toxics Rule (40 CFR 131.36), in accordance with on-line Alaska DEC guidance at <www.state.ak.us/dec/dawq/wqs/documents/carcinogens.htm>, accessed April 10, 2003.

Notes:

µg/L - microgram per liter

mg/L - milligram per liter

SWMU - solid waste management unit

TR - total recoverable

**Table 4-5. Endpoint Criteria for Blue Mussel and Rock Sole Tissue
at Kuluk Bay and Sweeper Cove**

Analyte	Endpoint Criteria (wet weight mg/kg)	Basis for Criteria
Blue Mussel		
Total PCBs	0.031	Human health risk-based screening criteria ^a
Rock Sole		
Total PCBs	0.0065	Human health risk-based screening criteria ^a

^aFinal RI/FS for Adak (U.S. Navy, 1997a).

Note:

mg/kg - milligram per kilogram

PCBs – polychlorinated biphenyls

5.0 OPERATION AND MAINTENANCE PROGRAM

The OU A ROD required that the selected remedy for 22 sites within OU A include an operation and maintenance (O&M) program (U.S. Navy et al., 2000). The O&M program for OU A consists of managing the ICs program, maintaining landfill covers and access controls (i.e., fencing), and fulfilling ROD-mandated monitoring requirements. Monitoring requirements and results were discussed in Section 4. This section discusses the IC management and landfill maintenance program. The Navy is responsible for O&M activities, which are conducted in accordance with the Final CMP, Revision 5, (U.S. Navy, 2012). The CMP includes, as an appendix, the Adak Island ICMP. The plan is updated as necessary, with the review and concurrence of Alaska DEC and EPA. The CMP was developed as a dynamic and flexible document, with procedures for modifying standard operating procedures (SOPs) governing the various inspection and maintenance activities over time. Modifications can be made based on both field experience and the future need to conduct certain activities. Modifications and revisions to the CMP must be documented for future reference.

O&M activities began at the site at two landfills in 1997, following completion of the remedial actions contained in the 1995 interim ROD for SWMUs 11 and 13 (U.S. Navy et al., 1995). Five post-2000 ROD landfill monitoring events have occurred at all the capped landfills to date, which included inspection, maintenance, and repair of the functional features of the landfill caps. These functional features include the landfill cap system, stormwater drainage system, ICs, and vegetated areas. O&M is ongoing and annual reports are generated detailing activities (U.S. Navy, 2004g; 2005a).

The ICs that have been implemented at the former Complex are land and groundwater use restrictions and soil excavation prohibitions (included in the Interim Conveyance) and fishing advisories and soil excavation procedures. The specific controls vary with the site or area. Table 5-1 summarizes the types of ICs implemented at each of the 22 sites identified in the OU A ROD as requiring ICs. An initial evaluation of the selected remedies, including the ICs, for each of these sites, was conducted as part of the five-year review (U.S. Navy, 2001d). It was determined that the selected ICs and O&M plans were in place and were sufficient to maintain the protectiveness of the remedy. The effectiveness of ICs is monitored, inspected, and documented in accordance with the procedures in the ICMP (see Appendix D of the CMP [U.S. Navy, 2004a]). The ICMP also includes a detailed schedule of inspections, inspection maintenance record forms for discrete elements of the remedy, recommended repair and maintenance procedures, and information regarding the construction materials used in the remedies.

Additional details regarding the ICs that have been implemented at the former Complex are discussed specifically below. Table 5-1 summarizes the specific OU A ICs that were selected for each of the 22 sites. Two additional sites, Kuluk Bay and Sweeper Cove, have ICs; however, these sites have not met remedial goals and are not included in site deletion from the NPL.

5.1 INSTITUTIONAL CONTROLS

The OU A ROD included land and groundwater use restrictions and soil excavation prohibitions, which were later made part of the Interim Conveyance, and fishing advisories and soil excavation notification procedures. These ICs have been implemented through the ICMP.

5.1.1 OU A Land Use Restrictions

Each of the 22 sites identified in the OU A ROD as requiring ICs has land use restrictions prohibiting the future use of the property for residential purposes (U.S. Navy et al., 2000).

The purpose of ICs is to ensure compliance with land use assumptions used to establish cleanup levels. The reasonably anticipated future use of land is an important consideration in determining the extent of cleanup necessary to achieve the required protectiveness. Cleanup at all of the OU A sites assumed either industrial or, for a few outlying sites, recreational land use. In some cases, residual soil contamination may exceed residential levels and, therefore, residential land use is precluded. The inspection requirements in the ICMP include visual inspection for signs of land use inconsistent with the ROD cleanup assumptions (see Appendix D of CMP; U.S. Navy, 2004a). The Interim Conveyance transferred portions of the former Complex to TAC and included land use restrictions and excavation prohibitions that “run with the land” and are binding on all subsequent transferees.

5.1.2 OU A Soil Excavation

There are two types of ICs that address soil excavation:

- **IC Excavation Notifications.** The excavation notification is required for each proposed excavation deeper than 2 feet at each of the 22 IC sites. The notifications will be evaluated by the Navy to determine whether a proposed project at an IC site is consistent with the land use assumptions. The notifications are an additional tool for the Navy to receive timely information (in the absence of local zoning requirements) to monitor land use restrictions. The primary purpose of the IC excavation notification is to apprise the Navy of changes to land use. Information regarding the depth of contamination and type of contamination present is available on the IC section of the *AdakUpdate.com* Web site, or in the information repository on the second floor of Bob Reeves High School, Adak, Alaska.
- **Absolute Excavation Prohibitions.** At the former landfills (SWMUs 2, 4, 11, 13, 18/19, 25, and 29) or where the remedy in place is a protective cover (SWMUs 21A and 67), excavation by non-Navy personnel is absolutely prohibited, although recreational land uses that add additional cover (e.g., ball field, golf course) may be permissible. Navy personnel will be allowed to excavate for the purposes of repairing caps, etc. Additionally, excavation for the purpose of digging a domestic use well in the downtown area is prohibited. The excavation prohibitions are included in the Interim Conveyance.

5.1.3 OU A Downtown Groundwater Use Prohibition

Domestic use of groundwater in the downtown area is restricted because of the potential presence of petroleum compounds and other chemicals in the groundwater. Domestic groundwater use is defined as that used by households or transients for human and animal consumption, cooking, bathing, showering, gardening, and irrigation, or for use on consumable food products, watering animals, and any other domestic use. The excavation notification program at individual sites provides one barrier to drilling, and enforcement of the prohibition will also occur through periodic visual inspections. The visual inspections will focus on unauthorized wells in the restricted area. Groundwater use restrictions are included in the Interim Conveyance. The groundwater use restrictions apply to all of the sites in the Downtown Exchange Area (SWMUs 10, 13, 14, 15, 16, 17, 24, 25, and 55; and SAs 76 and 77 [U.S. Navy, 2004a]).

5.1.4 OU A Fishing Advisory

Under the OU A ROD, fishing advisory signs were posted for subsistence fishers because of low levels of PCBs detected in the bottom fish (rock sole) and shellfish (blue mussels) of Sweeper Cove and Kuluk Bay (U.S. Navy et al., 2000). The OU A ROD Amendment (U.S. Navy et al., 2003) removes the requirement for fish advisory signs. Instead, the Navy has provided information pamphlets to residents of the City of Adak, because they are the most likely people to eat locally caught fish and shellfish as part of a subsistence diet. Pamphlets were mailed to residents in October 2003 and July 2004, and copies can be found at <http://www.adakupdate.com/news.html> and at the City of Adak and USFWS offices on the island. Existing fish information pamphlets will be updated as new information is collected and trends are analyzed. Currently, the occasional consumption of rock sole or blue mussels by recreational fishers poses no unacceptable health risks.

5.2 SITE INSPECTIONS AND/OR MONITORING FOR OU A

The ICMP requires the Navy to perform annual inspections of the IC sites including visual site inspections of monitoring wells, sampling locations, and landfills. As described in the ICMP, the ICs identified for each site are inspected and reported as a necessary part of the O&M of the ICs (see Appendix D of CMP; U.S. Navy, 2004a).

Site inspections ensure the following (not all sites require all the items listed below):

- Land use is consistent with restrictions
- No evidence of soil excavations
- Fishing advisory is in effect
- Educational program is functioning
- Soil cover is intact and effective
- Fencing and gates are intact and effective

Particular remedial activities require annual monitoring of site conditions or inspections of site facilities and repair as necessary to ensure long-term effectiveness. Examples include inspection and repair on containment land surface covers; inspection and repair of warning signs and fences; and annual surface water, sediment, and biota sampling. Periodic inspection and/or monitoring will continue as long as the ICs are necessary.

In addition, photographs documenting conditions and specific record-keeping procedures are required.

5.3 REPORTING OF INSTITUTIONAL CONTROLS

IC inspections have taken place annually since the signing of the OU A ROD (U.S. Navy et al., 2000) in 2000. The ICMP requires that written reports are submitted to EPA and Alaska DEC within 60 days after the completion of the inspection (see Appendix D of CMP; U.S. Navy, 2004a). The reports assess the need for any additions to, or reductions in, inspection requirements, as well as determine whether the ICs in place are effective. Each of these reports evaluates the selected ICs, and determines whether the selected ICs and O&M plans are in place and are sufficient to maintain the protectiveness of the remedy. Issues identified in the reports are either addressed upon discovery or, when larger, programmed for subsequent repair, etc.

Table 5-1. Summary of Institutional Controls, Operation and Maintenance, and Long-Term Monitoring

Site	Institutional Controls					Operation and Maintenance			Long-Term Monitoring
	Land Use Restrictions ^a	Interim Conveyance ^b	Groundwater Restrictions ^c	Soil Excavation Restrictions ^d	Goals ^e	Site/Remedy Condition Inspections and Reporting ^f	Sign Inspection ^g	Soil Cover Inspections ^h	Comprehensive Monitoring
SWMU 2, Causeway Landfill	X	X		X	2	X	X	X	
SWMU 4, South Davis Road Landfill	X	X		X	3	X	X	X	
SWMU 10, Old Baler Building	X	X	X	X	1	X			
SWMU 11, Palisades Landfill	X	X		X	2	X	X	X	X
SWMU 13, Metals Landfill	X	X	X	X	2	X	X	X	X
SWMU 14, Old Pesticide Disposal Area	X	X	X	X	1	X			X
SWMU 15, Future Jobs/DRMO	X	X	X	X	1	X			X
SWMU 16, Former Firefighting Training Area	X	X	X	X	1	X			
SWMU 17, Power Plant 3 Area	X	X	X	X	4	X			X
SWMUs 18/19, White Alice Landfill (South Sector Drum Disposal Area/Quarry Metal Disposal Area)	X	X		X	3	X	X	X	X
SWMU 20, White Alice/Trout Creek Disposal Area	X	X		X	1	X			
SWMU 21A, White Alice Upper Quarry	X	X		X	1	X		X	
SWMU 23, Heart Lake Drum Disposal Area	X	X		X	1	X			
SWMU 24, Hazardous Waste Storage Facility	X	X	X	X	6	X			
SWMU 25, Roberts Landfill	X	X	X	X	3	X	X	X	X
SWMU 29, Finger Bay Landfill	X	X		X	2	X	X	X	
SWMU 52, Former Loran Station	X	X		X	1	X			
SWMU 55, Public Works Transportation Department Waste Storage Area	X	X	X	X	1	X			X

Table 5-1. Summary of Institutional Controls, Operation and Maintenance, and Long-Term Monitoring (Continued)

Site	Institutional Controls					Operation and Maintenance			Long-Term Monitoring
	Land Use Restrictions ^a	Interim Conveyance ^b	Groundwater Restrictions ^c	Soil Excavation Restrictions ^d	Goals ^e	Site/Remedy Condition Inspections and Reporting ^f	Sign Inspection ^g	Soil Cover Inspections ^h	Comprehensive Monitoring
SWMU 67, White Alice PCB Spill Site	X	X		X	1	X	X	X	
SA 76, Old Line Shed Building	X	X	X	X	1	X			X
SA 77, Small Drum Storage Area	X	X	X	X	5	X			

^aLand use restrictions are required to ensure that the land will never be used in a way inconsistent with the land use assumptions set forth in the Adak Island RODs.

^bLand use restrictions/prohibitions have been included in the Interim Conveyance.

^cThe downtown groundwater is restricted from domestic use.

^dExcavation notification is required at all sites. Excavation is prohibited at the landfills and sites with a soil cover.

^eThese ICs were selected for each site to achieve the following goals:

- (1) No unacceptable risks were posed under the existing land use, but ICs were required to restrict residential land use.
- (2) ICs will minimize potential human exposure to site chemicals by implementing restrictions on residential land use and soil excavations. Protection of human and/or ecological receptors will be accomplished by inspection and maintenance of cover systems. Monitoring requirements will allow assessment of risks and natural recovery processes over time and verify that there are no downgradient impacts.
- (3) ICs will minimize potential human exposure to site chemicals by implementing restrictions on residential land use and soil excavations. Protection of human and/or ecological receptors will be accomplished by inspection and maintenance of cover systems.
- (4) ICs will minimize potential human exposure to site chemicals and removal will minimize ecological exposure.
- (5) Soil removal is required because concentrations exceed 18 AAC 75.
- (6) Human and ecological risks were not evaluated, but ICs were required to restrict residential land use and excavation.

^fInspection and reporting of ICs is to be done annually, or as necessary. Assessing the need to take additional action or to reduce controls is to be done as appropriate. A review of these sites will be reported every five years. The downtown area groundwater will be inspected by driving existing roads for evidence of domestic wells in use.

^gPlace and annually inspect signage for landfill hazards.

^hAnnually inspect soil covers to ensure they remain intact.

AAC - Alaska Administrative Code

DRMO - Defense Reutilization Marketing Office

PCB - polychlorinated biphenyl

SA - source area

SWMU - solid waste management unit

6.0 CONTACT INFORMATION

Points of contact for OU A are:

Justin Peach, PG, PE

Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315
Phone: (360) 396-0082
Fax: (360) 396-0857
justin.peach@navy.mil

Christopher Cora

Project Manager, Office of Environmental Cleanup
United States Environmental Protection Agency, Region X
1200 Sixth Avenue, Suite 900, ECL-115
Seattle, WA 98101-3140
Phone: (206) 553-1478
Fax: (206) 553-0124/0957
cora.christopher@epamail.epa.gov

Guy Warren

Contaminated Sites Program, Federal Facilities
Division of Spill Prevention and Response
Alaska Department of Environmental Conservation
555 Cordova St.
Anchorage, AK 99501
Phone: (907) 269-7528
Fax: (907) 269-7649
guy.warren1@alaska.gov

7.0 FIVE-YEAR REVIEW

After the completion of the remedial action, hazardous substances remain at the site above health-based levels for unrestricted land use. Pursuant to CERCLA Section 121(c) and as provided in Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-03B-P (EPA, 2001), the Navy must conduct a statutory five-year review. The first five-year review report was completed in November 2001 (U.S. Navy, 2001d). Subsequent five-year reviews will be completed no later than 5 years after the date of the previous five-year review. There is no provision for the discontinuation of statutory five-year reviews (EPA, 2001). The next five-year review will be completed in 2016.

8.0 SUMMARY AND CONCLUSIONS

The remedial actions for soils and surface water, as specified in the Interim and Final RODs for OU A, have been completed and no further response actions are necessary. Therefore, with the exception of groundwater and marine tissue in Kuluk Bay and Sweeper Cove, these sites and media are candidates for deletion from the NPL.

The RAOs for soils and surface water specified in the RODs have been achieved although ongoing ICs are necessary to ensure that human health and the environment are protected. The EPA (2011) allows close out and deletion from the NPL even though ongoing O&M programs are required. The EPA does not define O&M as a “response”; therefore, a site with an O&M program may still be deleted.

The Navy, EPA, and Alaska DEC have determined that all response actions for soils and surface waters at this site are complete, and that no further remediation-related construction is anticipated. The only remaining activities to be performed are the Navy’s long-term inspection, maintenance and monitoring activities at those sites with limited surface and subsurface soil concentrations above unrestricted land use (i.e., residential) levels. No human or ecological health risk exists from exposure to residual chemicals in soil as long as the land uses remain the same. The ICs and associated land use restrictions were specified in the Interim Conveyance documents as an equitable servitude when the property was transferred out of federal ownership by the Department of the Interior. Ongoing monitoring is limited to groundwater within the downtown area, groundwater, surface water and sediment at isolated locations outside the downtown area, and marine tissue in Kuluk Bay and Sweeper Cove. Long-term monitoring requirements are presented, reviewed, and updated in the Comprehensive Monitoring Plan (U.S. Navy, 2012).

Remedial goals are still exceeded at many groundwater locations and in parts of the marine environments in Kuluk Bay and Sweeper Cove. Therefore, groundwater and the two water bodies, Kuluk Bay and Sweeper Cove, in OU A are not included as part of the deletion in this RACR.

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APPENDIX A

Long-Term Monitoring Results

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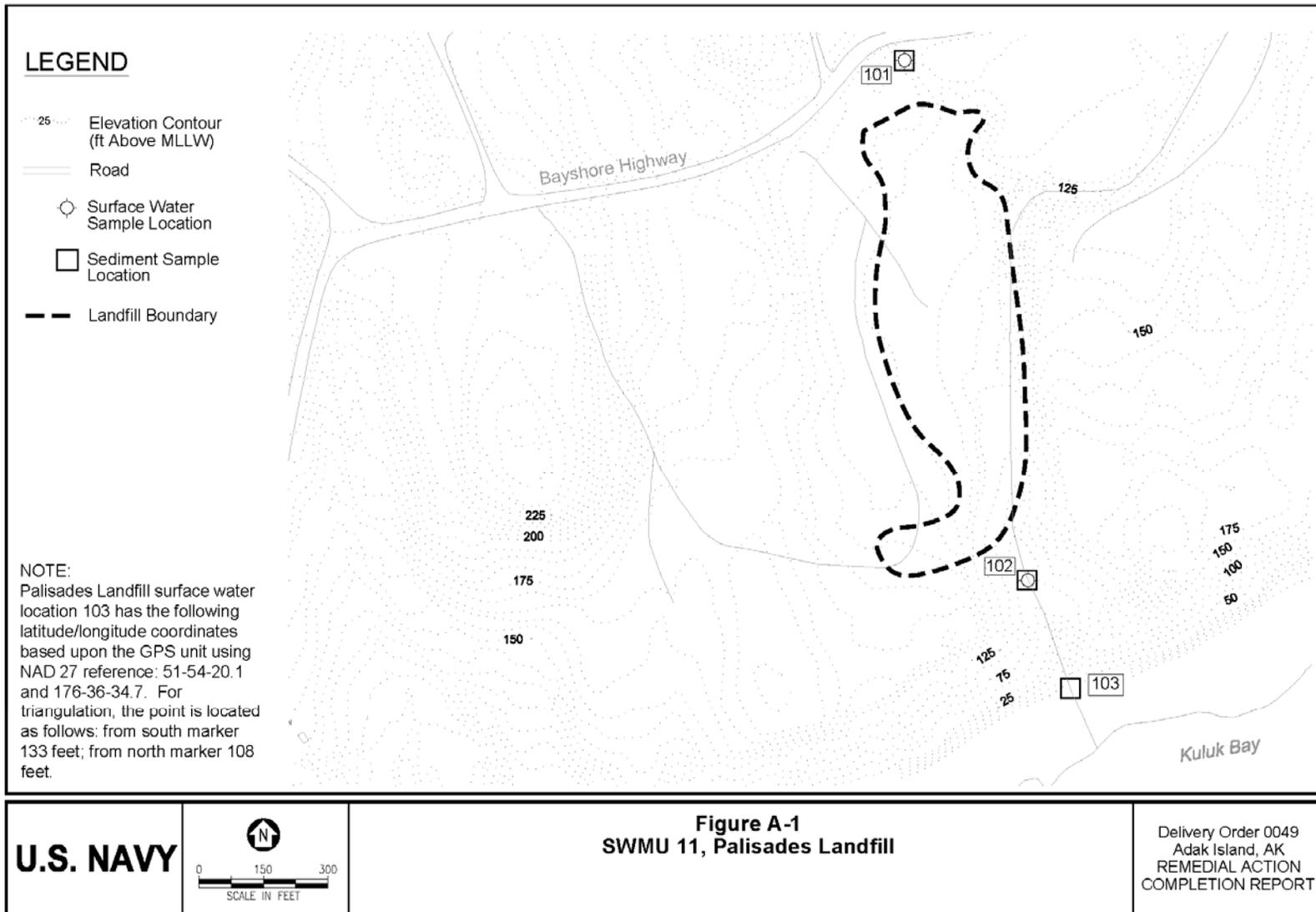
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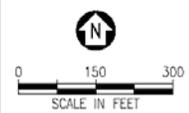
INTRODUCTION

This data summary includes only those chemicals that were detected at least once during the 2000 to 2004 monitoring period. Therefore, there may be more chemicals that were analyzed for, but are not included in this appendix. However, chemicals were included that have endpoint criteria specified in the Final Comprehensive Monitoring Plan, Revision 1 (U.S. Navy, 2004a) and were not detected. Below is a summary of table and figure numbers for this appendix.

Site No.	Site Name	Table No.	Figure No.
SWMU 11	Palisades Landfill		A-1
	Freshwater sediment	A-1	
	Fresh surface water	A-2	
	Marine sediment	A-3	
	Groundwater	A-4	
SWMU 13	Metals Landfill		A-2
SWMU 14	Old Pesticide Storage and Disposal Area		A-3
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SWMUs 18/19	White Alice Landfill (South Sector Drum Disposal/Quarry Metal Disposal Area)		A-6
	Groundwater	A-8	
	Fresh surface water	A-9	
SWMU 25	Roberts Landfill		A-7
	Groundwater	A-10	
	Fresh surface water	A-11	
SWMU 55	Public Works Transportation Department Waste Storage Area		A-8
	Groundwater	A-12	
SA 76	Old Line Shed Building		A-9
	Groundwater	A-13	
None	Sweeper Cove		A-10
	Tissue	A-14	
None	Kuluk Bay		A-10
	Tissue	A-14	



U.S. NAVY



**Figure A-1
 SWMU 11, Palisades Landfill**

Delivery Order 0049
 Adak Island, AK
 REMEDIAL ACTION
 COMPLETION REPORT

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Figure A-1. SWMU 11, Palisades Landfill

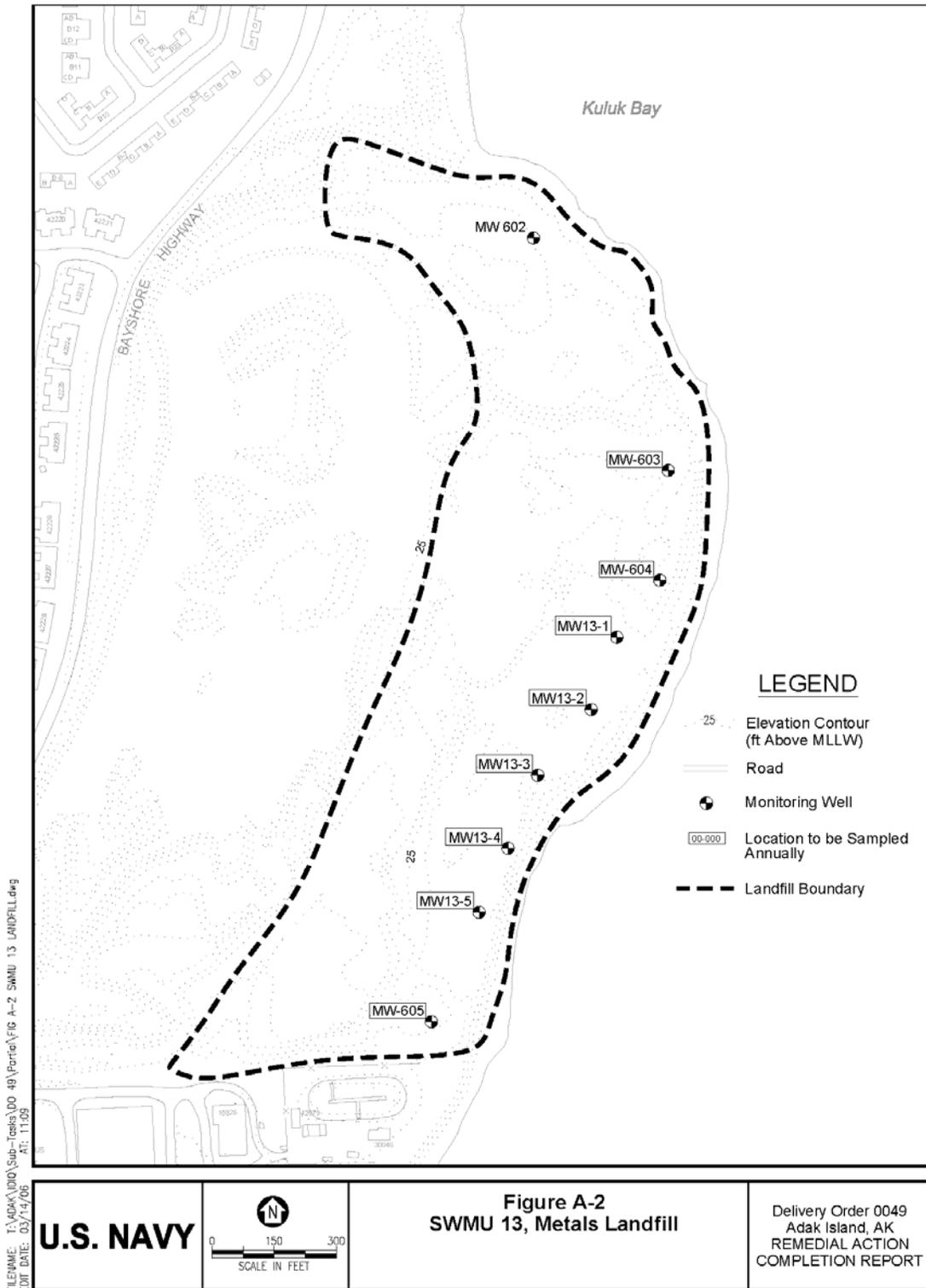
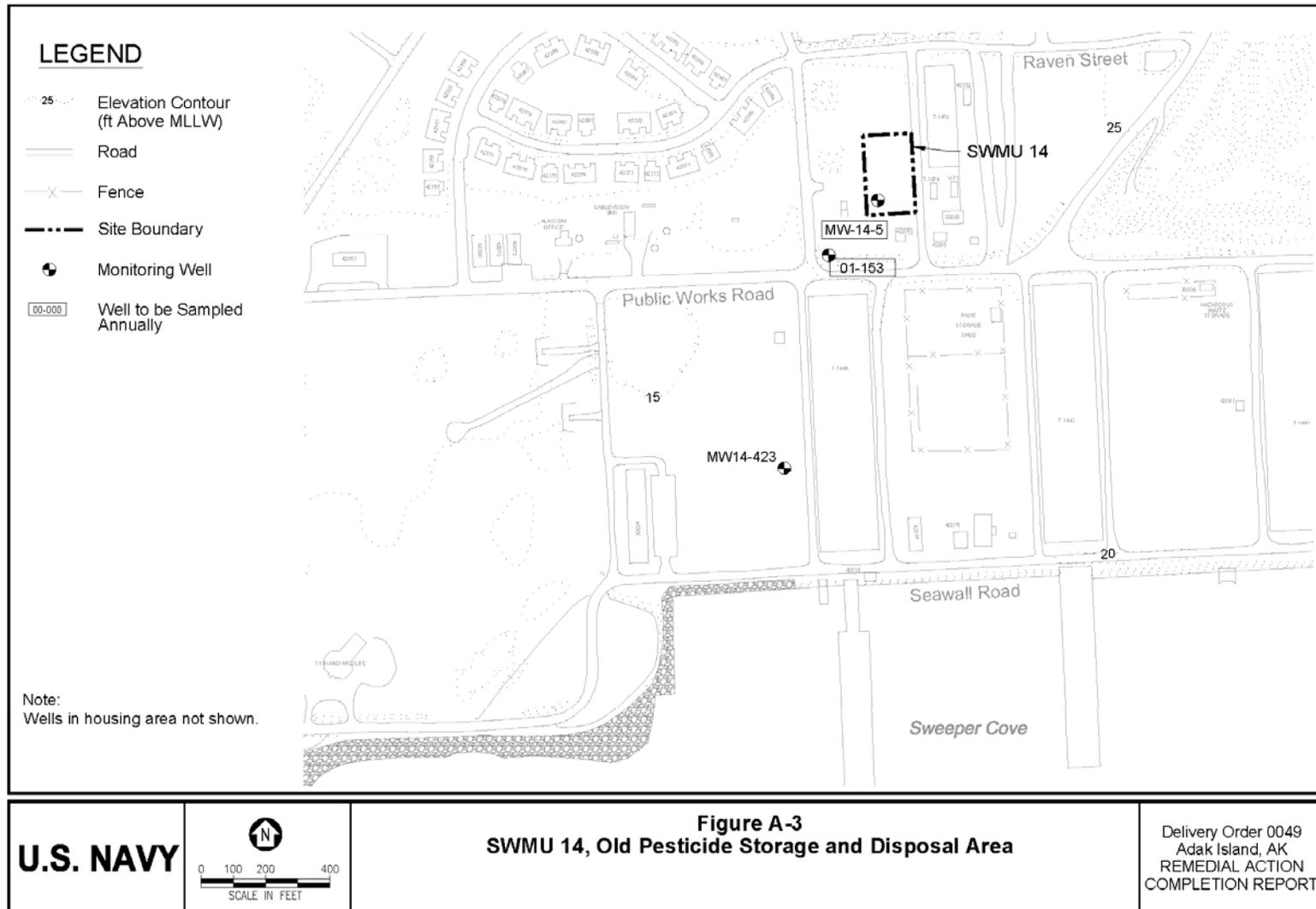
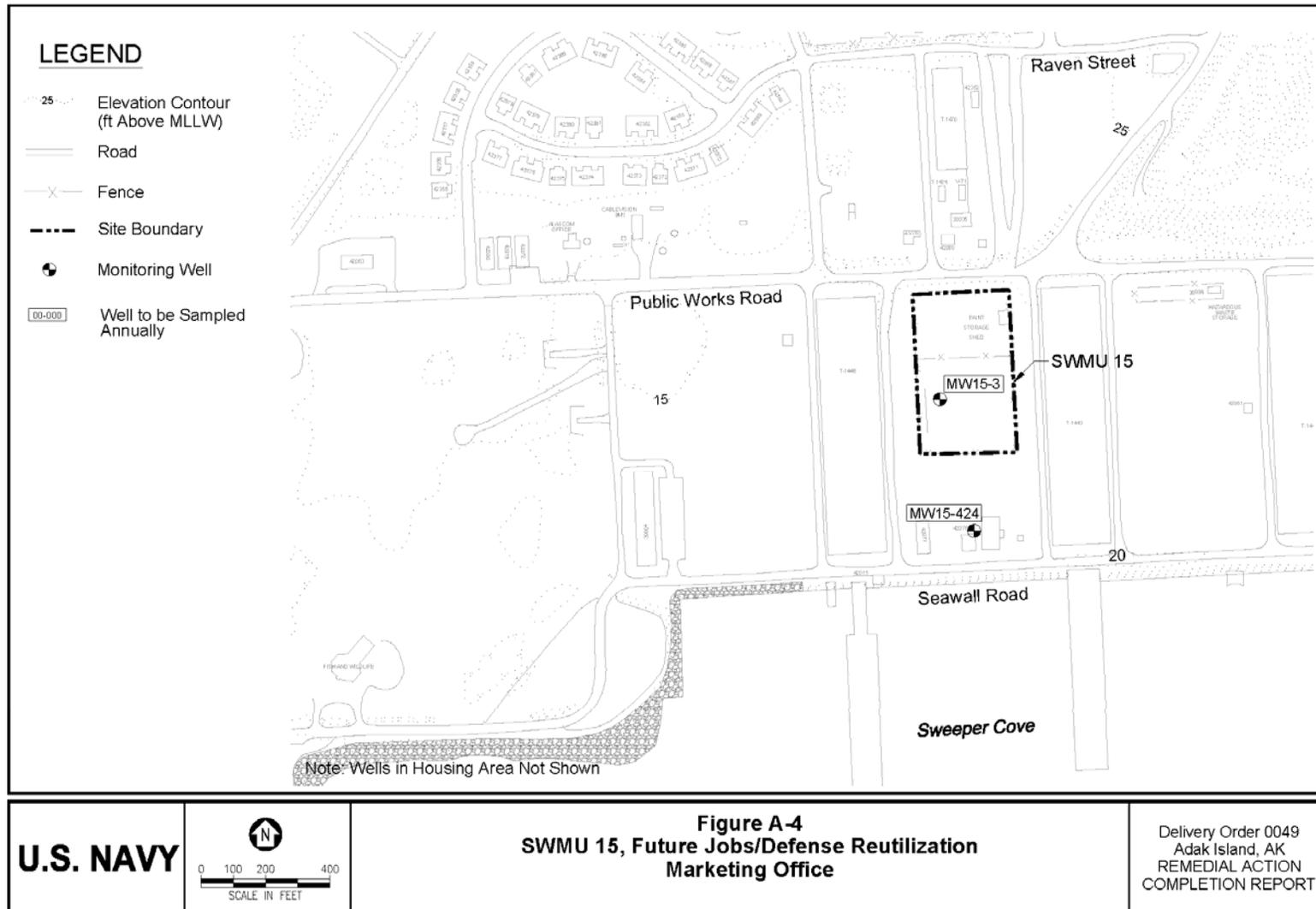


Figure A-2. SWMU 13, Metals Landfill



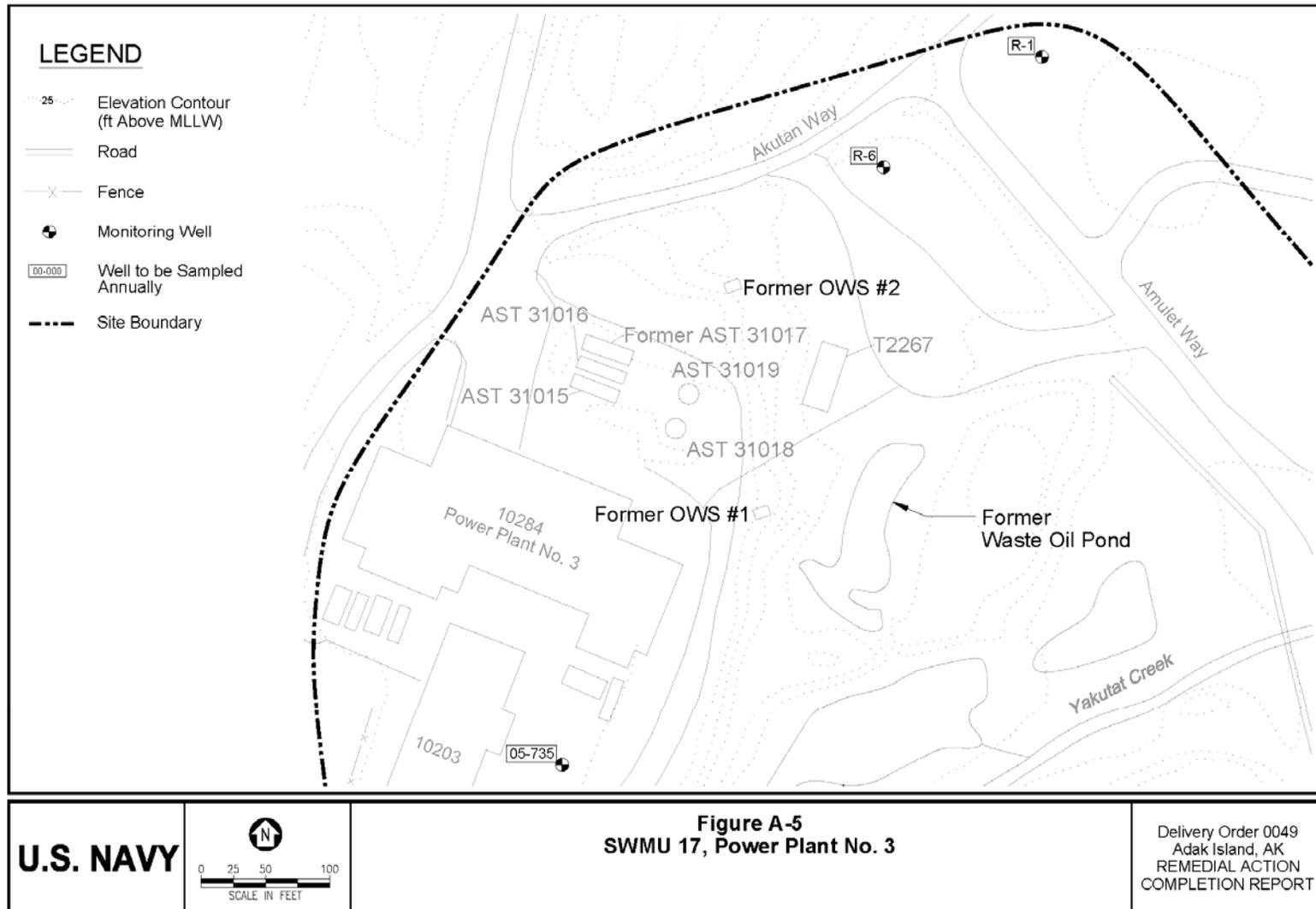
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Figure A-3. SWMU 14, Old Pesticide Storage and Disposal Area



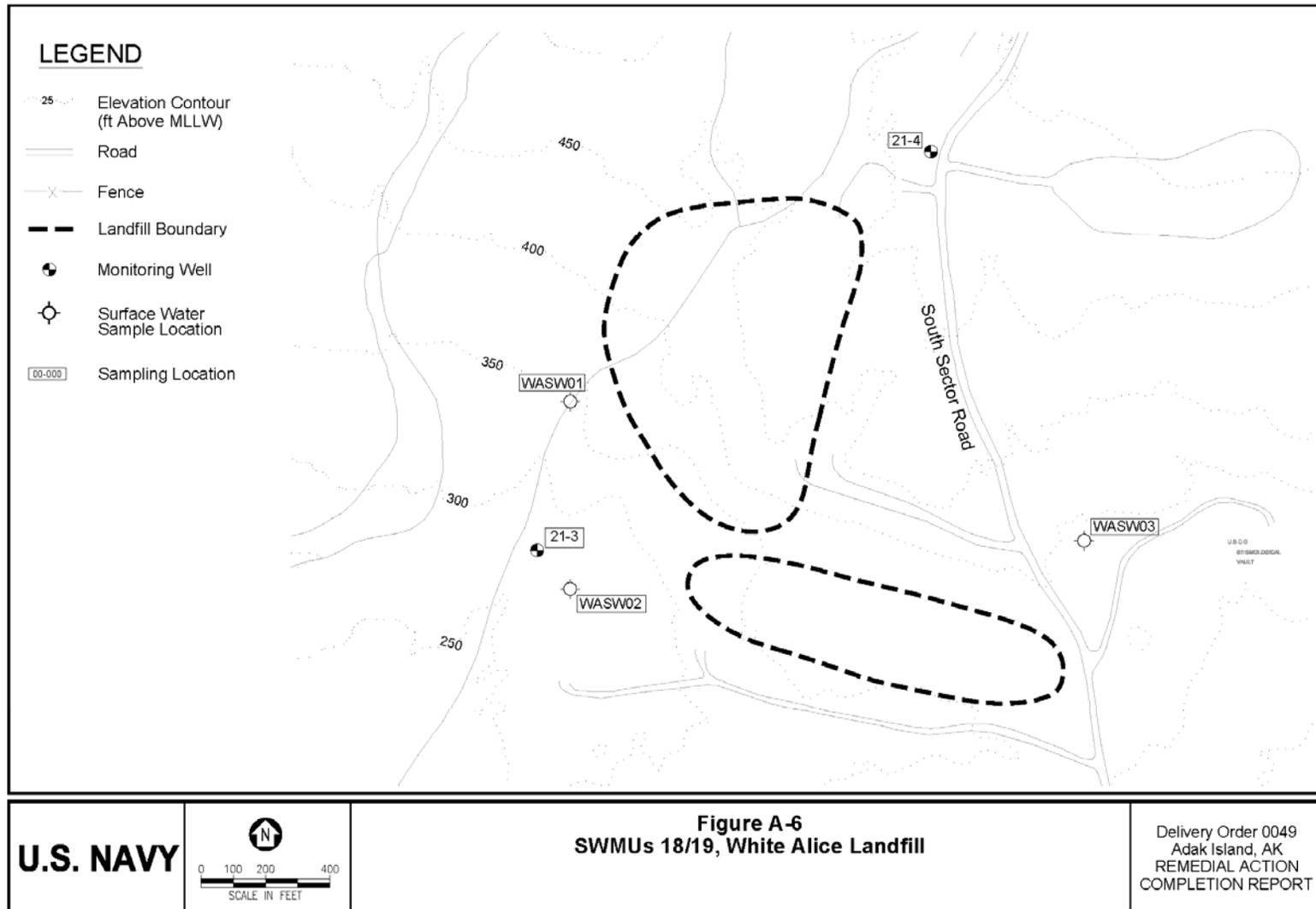
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Figure A-4. SWMU 15, Future Jobs/Defense Reutilization Marketing Office



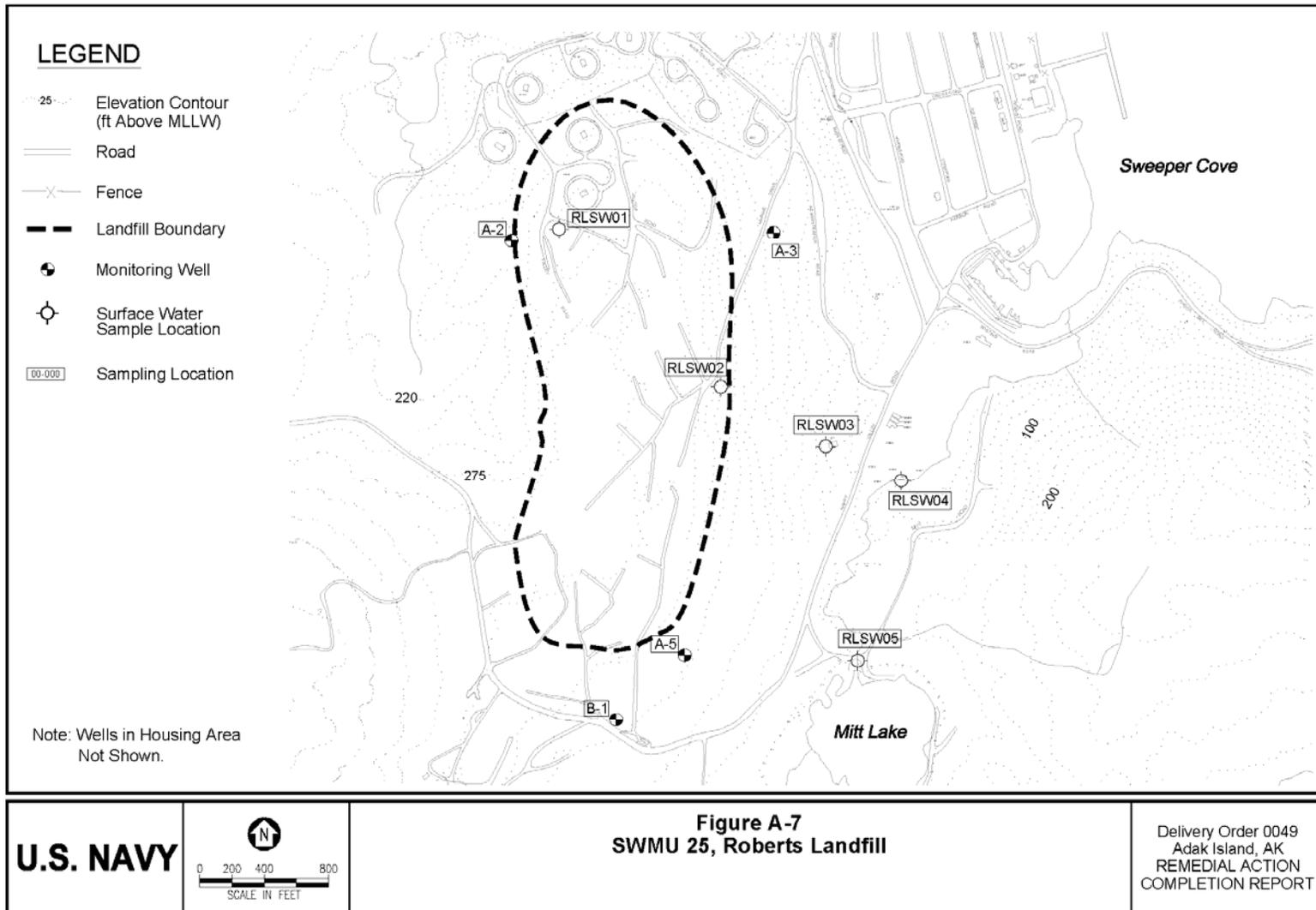
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Figure A-5. SWMU 17, Power Plant No. 3



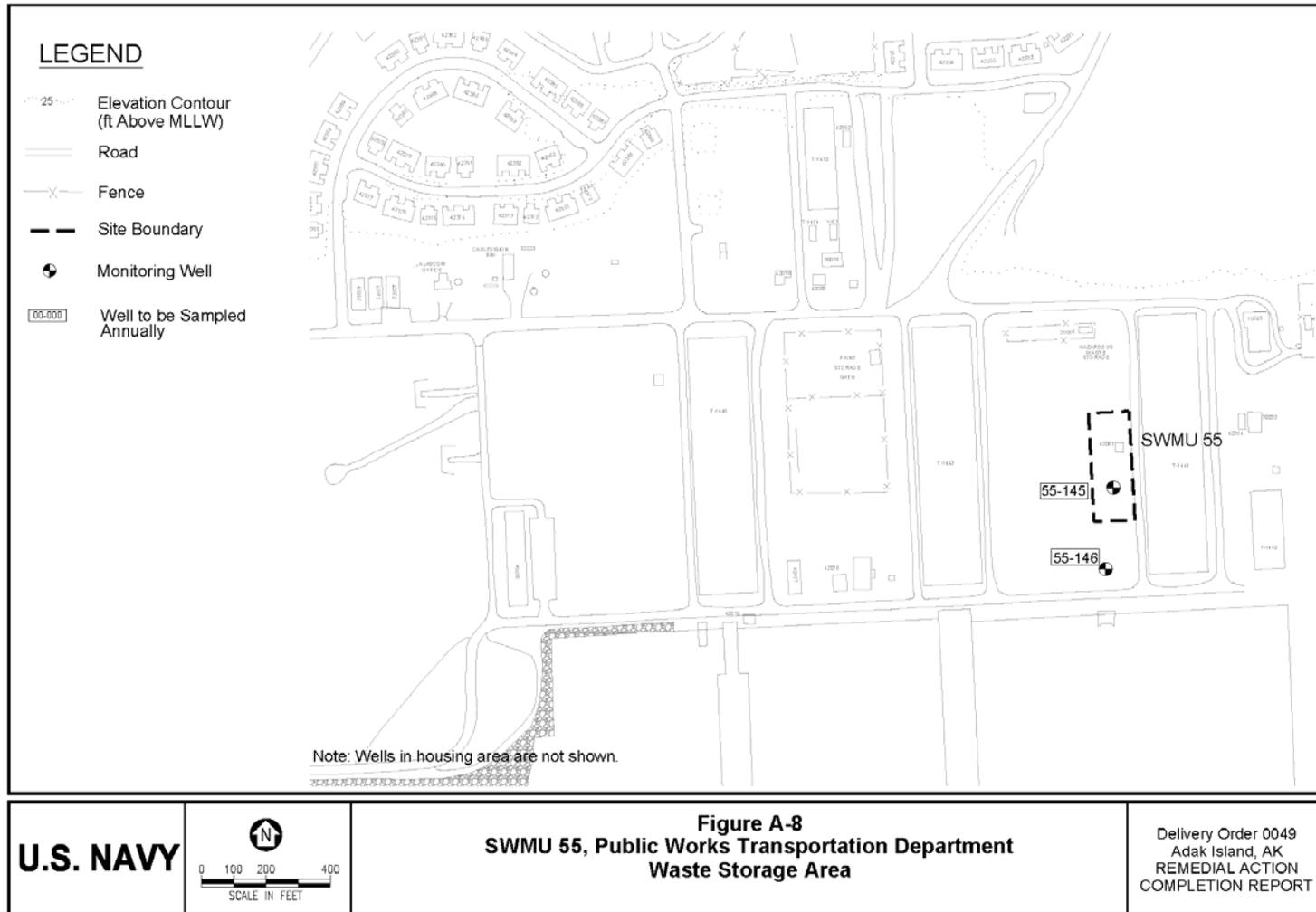
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Figure A-6. SWMUs 18/19, White Alice Landfill



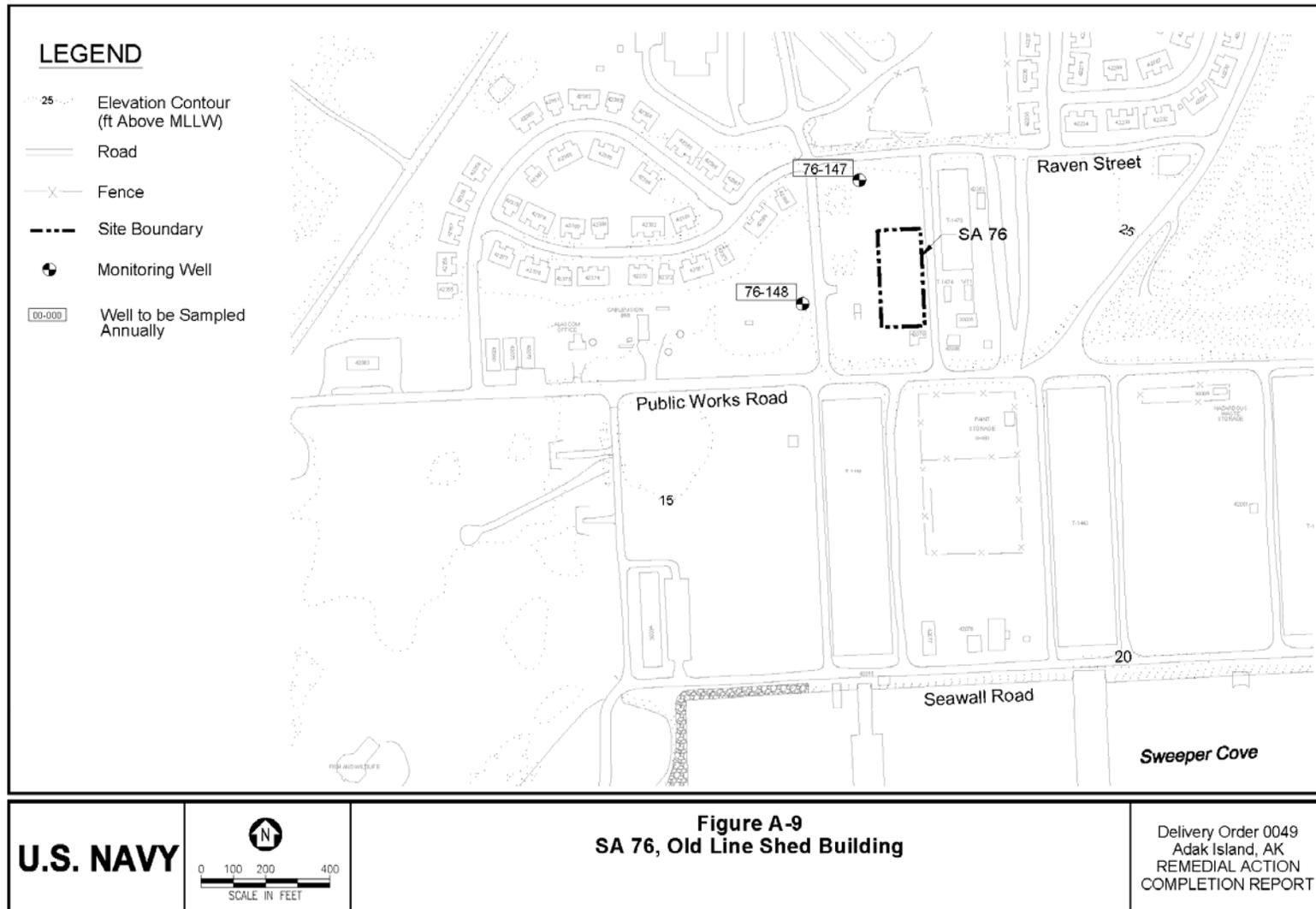
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Figure A-7. SWMU 25, Roberts Landfill



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Figure A-8. SWMU 55, Public Works Transportation Department Waste Storage Area



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Figure A-9. SA 76, Old Line Shed Building

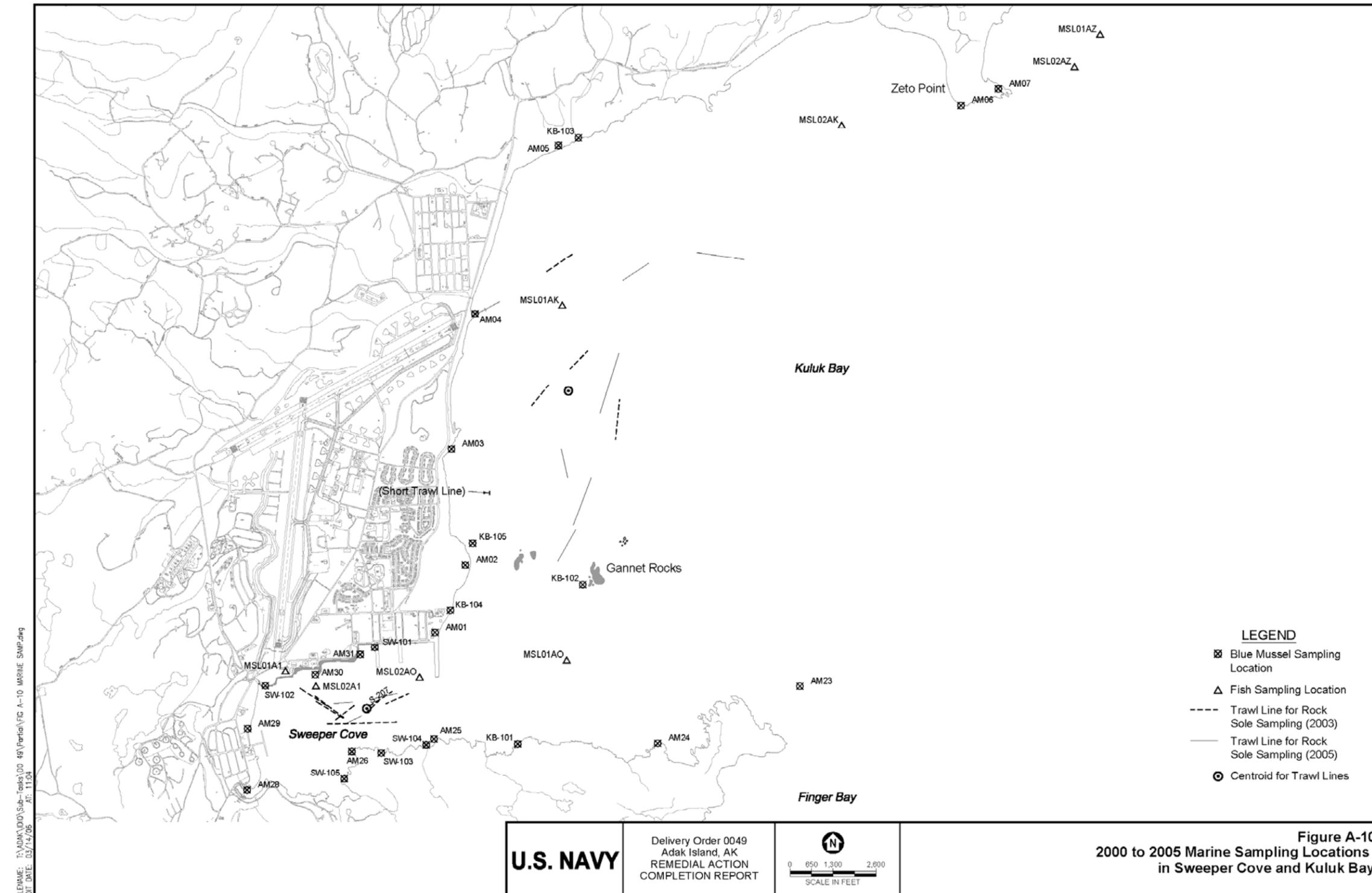


Figure A-10. 2003 and 2005 Marine Sampling Locations in Sweeper Cove and Kuluk Bay

Table A-1. SWMU 11, Palisades Landfill, Freshwater Sediment

Location	Location Cross-Reference	Analyte	CAS ID	Freshwater Sediment Concentration (mg/kg)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
101	101	Pesticides and Aroclors								
		Aroclor 1016	12674-11-2	0.0081 U	0.0395 U	0.01 U	0.015 U	0.0166 U		
		Aroclor 1221	11104-28-2	0.016 U	0.0395 U	0.01 U	0.015 U	0.0335 U		
		Aroclor 1232	11141-16-5	0.0081 U	0.0395 U	0.01 U	0.015 U	0.0166 U		
		Aroclor 1242	53469-21-9	0.0081 U	0.0395 U	0.01 U	0.015 U	0.0166 U		
		Aroclor 1248	12672-29-6	0.0081 U	0.0395 U	0.01 U	0.015 U	0.0166 U		
		Aroclor 1254	11097-69-1	0.0081 U	0.0395 U	0.01 U	0.015 U	0.0166 U		
		Aroclor 1260	11096-82-5	0.012 A	0.0395 U	0.01 U	0.015 U	0.0166 U	0.005	NO
		beta-BHC	319-85-7	0.00042 U	0.002 U	0.0012 J				
		delta-BHC	319-86-8	0.00042 U	0.002 U	0.0042 J				
		Semivolatile Organic Compounds								
		2-Methylnaphthalene	91-57-6	0.008 U	0.909 U	0.096 A	0.02 A			
		Acenaphthene	83-32-9	0.008 U	0.65 U	0.048 A	0.002 U	0.66 U		
		Acenaphthylene	208-96-8	0.008 U	0.65 U	0.037 A	0.0023 U			
		Anthracene	120-12-7	0.008 U	0.65 U	0.021 A	0.002 U	0.66 U		
		Benzo(a)anthracene	56-55-3	0.008 U	0.65 U	0.028 A	0.002 U	0.66 U	0.0875	NO
		Benzo(a)pyrene	50-32-8	0.008 U	0.65 U	0.026 A	0.0034 U	0.0292 A	0.00875	YES
		Benzo(b)fluoranthene	205-99-2	0.008 U	0.909 U	0.039 A	0.061 J	0.66 U	0.0875	NO
		Benzo(g,h,i)perylene	191-24-2	0.008 U	0.909 U	0.019 A	0.002 U	0.66 U	821	NO
		Benzo(k)fluoranthene	207-08-9	0.008 U	0.65 U	0.013 A	0.002 U	0.66 U	0.875	NO
		bis(2-Ethylhexyl)phthalate	117-81-7	0.41 U	0.65 U		0.2 U	4 U	4.56	NO
		Chrysene	218-01-9	0.008 U	0.65 U	0.03 A	0.12 J	0.66 U		
		Di-n-butylphthalate	84-74-2	0.41 U	0.65 U		0.27 A	2 U		
		Di-n-octylphthalate	117-84-0	0.46 J	0.65 U		0.2 U	0.66 U		
		Dibenz(a,h)anthracene	53-70-3	0.008 U	0.909 U	0.0071 A	0.002 U			
		Fluoranthene	206-44-0	0.017 A	0.65 U	0.06 A	0.1 J	0.66 U		
		Fluorene	86-73-7	0.008 U	0.65 U	0.042 A	0.002 U	0.66 U		
		Indeno(1,2,3-cd)pyrene	193-39-5	0.008 U	0.65 U	0.016 A	0.002 U	0.0111 A	0.0875	NO
		Naphthalene	91-20-3	0.008 U	1.3 U	0.11 A	0.008 A			
		Phenanthrene	85-01-8	0.008 U	0.65 U	0.042 A	0.002 U	0.66 U		
		Pyrene	129-00-0	0.019 A	0.65 U	0.048 A	0.086 J	0.66 U		

Table A-1. SWMU 11, Palisades Landfill, Freshwater Sediment (Continued)

Location	Location Cross-Reference	Analyte	CAS ID	Freshwater Sediment Concentration (mg/kg)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
		Total Inorganic Compounds								
		Aluminum	7429-90-5	17200 A	14300 A		19100 A			
		Antimony	7440-36-0	0.14 U	0.296 U		1.43 UJ	0.5 UJ	2	NO
		Arsenic	7440-38-2	2.7 A	3.99 A		3.64 J	4.3 A	0.0365	YES
		Barium	7440-39-3	22.4 A	24 A		24.5 A			
		Beryllium	7440-41-7	0.05 U	0.12 A		0.858 U	0.147 J		
		Calcium	7440-70-2	7880 A	6870 A		8400 A			
		Chromium	7440-47-3	16.7 A	9.03 A		10.6 A	6.71 A	80	NO
		Cobalt	7440-48-4	12.4 A	7.53 A		8.53 A			
		Copper	7440-50-8	44.2 A	17.2 A		40.8 J	29.9 A		
		Iron	7439-89-6	30300 A	30700 A		34000 A			
		Lead	7439-92-1	4.7 A	13.8 A		4.55 A	5.24 A		
		Magnesium	7439-95-4	10100 A	4600 A					
		Manganese	7439-96-5	452 A	819 A		438 A			
		Mercury	7439-97-6	0.03 U			0.047 U	0.0127 J		
		Nickel	7440-02-0	18.2 A	7.3 A		13.4 J	9.13 A	30	NO
		Potassium	9/7/7440	773 A	228 A		360 A			
		Selenium	7782-49-2	1.2 A	0.987 U		2.86 U	0.5 U		
		Sodium	7440-23-5	1200 A			1900 A			
		Thallium	7440-28-0	0.66 J	0.102 A		0.715 U	0.5 U		
		Vanadium	7440-62-2	81.8 A	90.7 A		74.5 A			
		Zinc	7440-66-6	59.5 A	93.3 A		71.3 A	76.6 A		
102	102	Pesticides and Aroclors								
		4,4-DDD	72-54-8	0.015 J	0.024 U	0.0035 U				
		Aroclor 1016	12674-11-2	0.01 U	0.0479 U	0.01 U	0.014 U	0.0408 U		
		Aroclor 1221	11104-28-2	0.02 U	0.0479 U	0.01 U	0.014 U	0.0821 U		
		Aroclor 1232	11141-16-5	0.01 U	0.0479 U	0.01 U	0.014 U	0.0408 U		
		Aroclor 1242	53469-21-9	0.01 U	0.0479 U	0.01 U	0.014 U	0.0408 U		
		Aroclor 1248	12672-29-6	0.01 U	0.0479 U	0.01 U	0.014 U	0.0408 U		
		Aroclor 1254	11097-69-1	0.01 U	0.0787 A	0.01 U	0.014 U	0.0408 U		
		Aroclor 1260	11096-82-5	0.041 A	0.0986 A	0.01 U	0.014 U	0.0336 J	0.005	YES

Table A-1. SWMU 11, Palisades Landfill, Freshwater Sediment (Continued)

Location	Location Cross-Reference	Analyte	CAS ID	Freshwater Sediment Concentration (mg/kg)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
		Endosulfan sulfate	1031-07-8	0.001 U	0.024 U	0.00033 J				
		Endrin ketone	53494-70-5	0.0021 J	0.024 U	0.0014 U				
		beta-BHC	319-85-7	0.00052 U	0.024 U	0.00075 J				
		Semivolatile Organic Compounds								
		2-Methylnaphthalene	91-57-6	0.014 A	1.12 U	0.018 U	0.017 U			
		Anthracene	120-12-7	0.12 J	0.797 U	0.0019 U	0.0018 U	1.62 U		
		Benzo(a)anthracene	56-55-3	0.26 J	0.797 U	0.0019 J	0.0018 U	1.62 U	0.0875	NO
		Benzo(a)pyrene	50-32-8	0.19 J	0.797 U	0.0032 U	0.003 U	0.0638 A	0.00875	YES
		Benzo(b)fluoranthene	205-99-2	0.24 J	1.12 U	0.0019 J	0.0018 U	1.62 U	0.0875	NO
		Benzo(g,h,i)perylene	191-24-2	0.12 J	1.12 U	0.0027 A	0.0018 U	1.62 U	821	NO
		Benzo(k)fluoranthene	207-08-9	0.01 U	0.797 U	0.0019 U	0.0018 U	1.62 U	0.875	NO
		bis(2-Ethylhexyl)phthalate	117-81-7	0.15 J	0.797 U		0.18 U	9.8 U	4.56	NO
		Chrysene	218-01-9	0.27 J	0.797 U	0.0023 A	0.0018 U	1.62 U		
		Di-n-butylphthalate	84-74-2	0.51 U	0.797 U		0.31 A	4.9 U		
		Fluoranthene	206-44-0	0.59 A	0.797 U	0.0027 A	0.0021 U	1.62 U		
		Indeno(1,2,3-cd)pyrene	193-39-5	0.016 A	0.797 U	0.0019 U	0.0018 U	0.0309 A	0.0875	NO
		Isophorone	78-59-1	0.51 U	0.797 U		0.18 U			
		Naphthalene	91-20-3	0.11 J	1.59 U	0.0023 A	0.0018 U			
		Phenanthrene	85-01-8	0.79 A	0.797 U	0.003 A	0.0018 U	1.62 U		
		Pyrene	129-00-0	0.56 A	0.797 U	0.0023 U	0.0022 U	1.62 U		
		bis(2-Ethylhexyl)phthalate	117-81-7	0.15 J	0.797 U		0.18 U	9.8 U		
		Total Inorganic Compounds								
		Aluminum	7429-90-5	15800 A	15700 A		16900 A			
		Antimony	7440-36-0	0.17 U	6.1 A		1.58 A	1.03 J	2	NO
		Arsenic	7440-38-2	19.4 A	25.5 A		32.8 A	10.4 A	0.0365	YES
		Barium	7440-39-3	77.2 A	88.6 A		75.6 A			
		Beryllium	7440-41-7	0.06 U	0.144 U		0.799 U	0.27 J		
		Cadmium	7440-43-9	5 A	0.646 A		2.21 A	2.59 A		
		Calcium	7440-70-2	5910 A	7510 A		3600 A			
		Chromium	7440-47-3	42.8 A	66.7 A		95.2 A	25 A	80	NO
		Cobalt	7440-48-4	19.8 A	20.3 A		30.9 A			
		Copper	7440-50-8	157 A	247 A		415 A	121 A		

Table A-1. SWMU 11, Palisades Landfill, Freshwater Sediment (Continued)

Location	Location Cross-Reference	Analyte	CAS ID	Freshwater Sediment Concentration (mg/kg)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
		Iron	7439-89-6	160000 A	193000 A		92000 A			
		Lead	7439-92-1	287 A	377 A		132 A	208 A		
		Magnesium	7439-95-4	5880 A	4560 A					
		Manganese	7439-96-5	2020 A	2880 A		2520 A			
		Mercury	7439-97-6	0.05 A			0.044 U	0.295 A		
		Nickel	7440-02-0	53.2 A	92.7 A		125 A	39 A	30	YES
		Potassium	9/7/7440	676 A	286 A		580 A			
		Selenium	7782-49-2	2.5 A	1.44 U		2.66 U	1.51 A		
		Silver	7440-22-4	0.08 U	0.336 A		0.429 J	0.319 J		
		Sodium	7440-23-5	1060 A			510 A			
		Thallium	7440-28-0	3.8 U	0.0616 A		0.666 U	1.23 U		
		Vanadium	7440-62-2	50.9 A	67.9 A		41.8 A			
		Zinc	7440-66-6	1430 A	820 A		752 A	920 A		

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Table A-2. SWMU 11, Palisades Landfill, Surface Water

Location	Location Cross-Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
101	101	Dissolved Inorganic Compounds								
		Aluminum	7429-90-5	116 J	5.32 A	17.1 A	2.79 A			
		Antimony	7440-36-0	1.6 J	0.5 U	0.119 A	0.274 J	1 UJ	45000	NO
		Arsenic	7440-38-2	2.9 U	2 U	0.378 A	0.295 J	1 U	1.4	NO
		Barium	7440-39-3	10.4 J	7.25 A	7.38 A	7.87 A			
		Calcium	7440-70-2	15700 A	21800 A	14800 A	24000 A			
		Chromium	7440-47-3	0.4 U	2.63 A	1.91 A	1.07 J	1 U		
		Cobalt	7440-48-4	0.5 U	0.4 U	0.5 U	3.32 A			
		Copper	7440-50-8	1.1 U	3 U	0.772 A	1.06 J	1.69 J		
		Iron	7439-89-6	87.6 J	1000 U	59.9 A	890 A			
		Lead	7439-92-1	1.6 U	0.3 U	0.1 U	0.101 J	1 U		
		Magnesium	7439-95-4	5680 A	5330 A	4950 A	6200 A			
		Manganese	7439-96-5	19.3 A	57.9 A	23.5 A	20.9 A			
		Mercury	7439-97-6	0.2 U	0.2 U		0.2 U	0.2 U		
		Nickel	7440-02-0	0.7 U	1 U	0.841 A	1.01 J	1 J	100	NO
		Potassium	9/7/7440	1660 J	1120 A	1890 A	1200 A			
		Selenium	7782-49-2	1.9 J	2.5 U	1.07 A	0.517 A	1.2 J		
		Sodium	7440-23-5	20000 A		11900 A	18000 A			
		Thallium	7440-28-0	3.5 U	0.5 U	0.175 A	0.0661 A	0.06 UJ		
		Zinc	7440-66-6	15 J	10 U	8.78 A	2.7 A	4.18 J		
		Semivolatile Organic Compounds								
		Benzo(a)pyrene	50-32-8	0.097 U	20 U	0.066 U			0.31	NO
		Benzo(b)fluoranthene	205-99-2	0.19 U	20 U	0.052 U			0.31	NO
		Benzo(g,h,i)perylene	191-24-2	0.19 U	25 U	0.094 U				
		Benzo(k)fluoranthene	207-08-9	0.097 U	25 U	0.1 U			0.31	NO
		bis(2-Ethylhexyl)phthalate	117-81-7	5 U	20 U				59	NO
		Naphthalene	91-20-3	3.1 J	20 U	0.25 U				
		Pesticides/Aroclors								
		Aroclor 1016	12674-11-2	0.2 U	0.1 U		0.54 UJ	0.5 U	0.0045	NO
		Aroclor 1221	11104-28-2	0.39 U	0.1 U		0.54 UJ	1 U	0.0045	NO
		Aroclor 1232	11141-16-5	0.2 U	0.1 U		0.54 UJ	0.5 U	0.0045	NO
		Aroclor 1242	53469-21-9	0.2 U	0.1 U		0.54 U	0.5 U	0.0045	NO
		Aroclor 1248	12672-29-6	0.2 U	0.1 U		0.54 UJ	0.5 U	0.0045	NO
Aroclor 1254	11097-69-1	0.2 U	0.1 U		0.54 UJ	0.5 U	0.0045	NO		
Aroclor 1260	11096-82-5	0.2 U	0.1 U		0.54 UJ	0.5 U	0.0045	NO		

Table A-2. SWMU 11, Palisades Landfill, Surface Water (Continued)

Location	Location Cross-Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
		Total Inorganic Compounds								
		Aluminum	7429-90-5	192 J	20 U	316 A	134 A			
		Antimony	7440-36-0	1.9 J	1 U	0.5 U	0.5 U	1 U	45000	NO
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO
		Barium	7440-39-3	10.2 J	7.22 A	9.35 A	8.36 A			
		Calcium	7440-70-2	15300 A	21900 A	18400 A				
		Chromium	7440-47-3	0.4 U	6 U	0.352 A	0.252 J	0.73 J		
		Cobalt	7440-48-4	0.5 U	0.8 U	0.1 U	0.123 A			
		Copper	7440-50-8	1.4 J	6 U	1.69 A	0.5 U	5.3 A		
		Iron	7439-89-6	306 A	1000 U	1070 A				
		Lead	7439-92-1	1.6 U	2 U	0.431 A	0.15 U	0.67 J		
		Magnesium	7439-95-4	5470 A	5290 A	4570 A				
		Manganese	7439-96-5	22.3 A	57.3 A	52.9 A	28.6 A			
		Nickel	7440-02-0	0.7 U	2 U	1.33 A	0.803 A	3.67 A	100	NO
		Potassium	9/7/7440	1590 J	1140 A	1760 A				
		Selenium	7782-49-2	1.1 U	5 U	0.652 A	0.5 U	1 U		
		Silver	7440-22-4	0.7 U	2 U	0.35 U	0.368 J	1 U		
		Sodium	7440-23-5	19100 A		18100 A				
		Vanadium	7440-62-2	0.8 J	20 U	1.62 A	2.12 A			
		Zinc	7440-66-6	16.1 J	25 U	7.66 A	5.4 J	17.5 A		
102	102	Dissolved Inorganic Compounds								
		Aluminum	7429-90-5	108 J	3.22 A	3.71 A	2.84 A			
		Antimony	7440-36-0	1.6 U	0.5 U	0.165 A	0.293 A	0.25 J	45000	NO
		Arsenic	7440-38-2	2.9 U	2 U	0.199 A	0.259 A	1 U	1.4	NO
		Barium	7440-39-3	11.4 J	7.74 A	7.58 A	7.85 A			
		Calcium	7440-70-2	14900 A	22100 A	19400 A	25000 A			
		Chromium	7440-47-3	0.4 U	2.4 A	1.25 A	0.61 A	1 U		
		Cobalt	7440-48-4	0.5 U	0.4 U	0.5 U	4.99 A			
		Copper	7440-50-8	1.4 J	3 U	0.495 A	1.49 J	3.11 A		
		Iron	7439-89-6	63.3 J	1000 U	50 U	150 A			
		Lead	7439-92-1	1.8 J	0.3 U	0.1 U	0.131 A	1 UJ		
		Magnesium	7439-95-4	5850 A	5570 A	5770 A	6300 A			
		Manganese	7439-96-5	15.4 A	10.3 A	11.8 A	15.6 A			
		Nickel	7440-02-0	0.7 U	1 U	0.986 A	1.16 A	0.78 J	100	NO
		Potassium	9/7/7440	1990 J	1110 A	1150 A	1100 A			

Table A-2. SWMU 11, Palisades Landfill, Surface Water (Continued)

Location	Location Cross-Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
		Selenium	7782-49-2	1.1 U	2.5 U	0.5 U	0.761 A	1 U		
		Sodium	7440-23-5	22900 A		16700 A	19000 A			
		Zinc	7440-66-6	48.2 A	10 U	17 A	5.95 A	12.6 A		
		Semivolatile Organic Compounds								
		Benzo(a)pyrene	50-32-8	0.097 U	20 U	0.065 U			0.31	NO
		Benzo(b)fluoranthene	205-99-2	0.19 U	20 U	0.052 U			0.31	NO
		Benzo(g,h,i)perylene	191-24-2	0.19 U	25 U	0.093 U				
		Benzo(k)fluoranthene	207-08-9	0.097 U	25 U	0.1 U			0.31	NO
		bis(2-Ethylhexyl)phthalate	117-81-7	5 U	20 U				59	NO
		Pesticides/Aroclors								
		Aroclor 1016	12674-11-2	0.2 U	0.102 U		0.53 UJ	0.5 U	0.0045	NO
		Aroclor 1221	11104-28-2	0.4 U	0.102 U		0.53 UJ	1 U	0.0045	NO
		Aroclor 1232	11141-16-5	0.2 U	0.102 U		0.53 UJ	0.5 U	0.0045	NO
		Aroclor 1242	53469-21-9	0.2 U	0.102 U		0.53 U	0.5 U	0.0045	NO
		Aroclor 1248	12672-29-6	0.2 U	0.102 U		0.53 UJ	0.5 U	0.0045	NO
		Aroclor 1254	11097-69-1	0.2 U	0.102 U		0.53 UJ	0.5 U	0.0045	NO
		Aroclor 1260	11096-82-5	0.2 U	0.102 U		0.53 UJ	0.5 U	0.0045	NO
		Total Inorganic Compounds								
		Aluminum	7429-90-5	347 A	20 U	16 A	25.3 A			
		Antimony	7440-36-0	1.6 U	1 U	0.5 U	0.5 U	0.3 J	45000	NO
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO
		Barium	7440-39-3	13.6 J	8.64 A	9.23 A	8.56 A			
		Calcium	7440-70-2	15100 A	22400 A	20600 A				
		Chromium	7440-47-3	0.8 J	6 U	0.156 A	0.175 J	1.11 A		
		Copper	7440-50-8	3.6 J	6 U	0.665 A	0.5 U	4.75 A		
		Iron	7439-89-6	1190 A	1000 U	199 A				
		Lead	7439-92-1	7 J	2 U	0.326 A	0.331 A	0.93 J		
		Magnesium	7439-95-4	5940 A	5430 A	6080 A				
		Manganese	7439-96-5	72.6 A	12.2 A	15.6 A	12 A			
		Nickel	7440-02-0	0.7 U	2 U	0.886 A	0.921 A	0.78 J	100	NO
		Potassium	9/7/7440	2010 J	1040 A	1140 A				
		Selenium	7782-49-2	1.1 U	5 U	0.714 A	0.5 U	1 U		
		Silver	7440-22-4	0.7 U	2 U	0.35 U	0.466 J	1 U		
		Sodium	7440-23-5	23100 A		17100 A				
		Vanadium	7440-62-2	1.1 J	20 U	1 U	1 U			

Table A-2. SWMU 11, Palisades Landfill, Surface Water (Continued)

Location	Location Cross-Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
		Zinc	7440-66-6	67.5 A	25 U	11.4 A	5.39 A	22.2 A		

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-3. SWMU 11, Palisades Landfill, Marine Sediment

Location	Location Cross-Reference	Analyte	CAS ID	Marine Sediment Concentration (mg/kg)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
103	103	Pesticides and Aroclors								
		4,4-DDT	50-29-3	0.00078 U	0.019 U	0.0014 J				
		Aroclor 1016	12674-11-2	0.0078 U	0.0384 U	0.013 U	0.032 U	0.0166 U	0.0083	NO
		Aroclor 1221	11104-28-2	0.016 U	0.0384 U	0.013 U	0.032 U	0.0335 U	0.0083	NO
		Aroclor 1232	11141-16-5	0.0078 U	0.0384 U	0.013 U	0.032 U	0.0166 U	0.0083	NO
		Aroclor 1242	53469-21-9	0.0078 U	0.0384 U	0.013 U	0.032 U	0.0166 U	0.0083	NO
		Aroclor 1248	12672-29-6	0.0078 U	0.0384 U	0.013 U	0.032 U	0.0166 U	0.0083	NO
		Aroclor 1254	11097-69-1	0.0078 U	0.0384 U	0.013 U	0.032 U	0.0166 U	0.0083	NO
		Aroclor 1260	11096-82-5	0.032 A	0.0384 U	0.013 U	0.032 U	0.0166 U	0.0083	NO
		Endrin ketone	53494-70-5	0.0015 J	0.019 U	0.0015 U				
		beta-BHC	319-85-7	0.0004 U	0.019 U	0.00097 J				
		delta-BHC	319-86-8	0.0004 U	0.019 U	0.0082 A				
		Semivolatiles								
		Benzo(a)anthracene	56-55-3	0.021 A	0.653 U	0.0022 J	0.012 A	0.66 U		
		Benzo(a)pyrene	50-32-8	0.016 A	0.653 U	0.0036 U	0.012 A	0.0199 A		
		Benzo(b)fluoranthene	205-99-2	0.038 A	0.915 U	0.0065 A	0.0022 U	0.66 U		
		Benzo(g,h,i)perylene	191-24-2	0.008 U	0.915 U	0.0078 A	0.0022 U	0.66 U		
		Benzo(k)fluoranthene	207-08-9	0.008 U	0.653 U	0.0026 A	0.0022 U	0.66 U		
		bis(2-Ethylhexyl)phthalate	117-81-7	0.39 U	0.653 U		0.21 U	4 U	4.56	NO
		Chrysene	218-01-9	0.02 A	0.653 U	0.0044 A	0.02 A	0.66 U		
		Di-n-butylphthalate	84-74-2	0.079 J	0.653 U		0.22 A	2 U		
		Dibenz(a,h)anthracene	53-70-3	0.008 U	0.915 U	0.003 A	0.0022 U			
		Fluoranthene	206-44-0	0.029 A	0.653 U	0.012 A	0.099 J	0.66 U		
		Indeno(1,2,3-cd)pyrene	193-39-5	0.008 U	0.653 U	0.0039 A	0.0022 U	0.00766 A		
		Naphthalene	91-20-3	0.008 U	1.31 U	0.0051 A	0.0034 A			
		Phenanthrene	85-01-8	0.011 A	0.653 U	0.0038 A	0.054 J	0.66 U		
		Pyrene	129-00-0	0.03 A	0.653 U	0.0072 A	0.048 J	0.66 U		
		Total Inorganic Compounds								
		Aluminum	7429-90-5	15700 A	19000 A	14700 A	25700 A			
		Antimony	7440-36-0	0.13 U	0.36 U	0.479 A	1.51 U	0.5 UJ	2	NO
		Arsenic	7440-38-2	4.2 A	3.87 A	9.89 A	5.74 A	3.83 A	0.0365	YES
		Barium	7440-39-3	38 A	10.9 A	103 A	11.8 A			
		Beryllium	7440-41-7	0.09 J	0.12 U	0.251 A	0.908 U	0.189 J		
Cadmium	7440-43-9	0.81 A	0.24 U	2.67 A	0.605 U	0.5 U				

Table A-3. SWMU 11, Palisades Landfill, Marine Sediment (Continued)

Location	Location Cross-Reference	Analyte	CAS ID	Marine Sediment Concentration (mg/kg)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
		Calcium	7440-70-2	15700 A	11500 A	5670 A	9800 A			
		Chromium	7440-47-3	4.5 A	4.42 A	25.7 A	6.18 A	6.41 A	260	NO
		Cobalt	7440-48-4	10.6 A	4.44 A	14.6 A	9.36 A			
		Copper	7440-50-8	72 A	11.3 A	82 A	29.5 A	19.5 A		
		Iron	7439-89-6	26300 A	17000 A	117000 A	26000 A			
		Lead	7439-92-1	139 A	1.64 A	210 A	4 A	6.79 A		
		Magnesium	7439-95-4	10000 A	3680 A	9390 A				
		Manganese	7439-96-5	986 A	227 A	2100 A	489 A			
		Mercury	7439-97-6	0.04 U		0.0249 A	0.056 U	0.00738 J		
		Nickel	7440-02-0	10.5 A	3.67 A	35.7 A	6.36 A	15.5 A	30	NO
		Potassium	9/7/7440	611 A	408 A	1070 A	610 A			
		Selenium	7782-49-2	0.72 J	1.2 U	0.454 J	3.03 U	0.5 U		
		Silver	7440-22-4	0.06 U	0.12 U	1.38 A	0.349 J	0.5 U		
		Sodium	7440-23-5	930 A		693 A	2700 A			
		Thallium	7440-28-0	2.9 U	0.024 U	0.084 J	0.757 U	0.5 U		
		Vanadium	7440-62-2	40.1 A	63.4 A	38.6 A	71 A			
		Zinc	7440-66-6	307 A	25.7 A	583 A	57.8 J	92.8 A		

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Dissolved Inorganic Compounds									
Aluminum	7429-90-5	401	MW13-1		21.7 A	14.4 A	10.5 A		
		402	MW13-2	80.6 U	9.89 A	2.62 A	3.66 A		
		403	MW13-3	80.6 U	12.6 A	18.8 A	2.43 A		
		404	MW13-4		8.79 A	1.75 A	1.87 A		
		405	MW13-5	238 A	3.71 A	3.85 A	3.74 A		
		602	MW-602		110 A				
		603	MW-603	80.6 U	2.5 U	1.82 A	5 U		
		604	MW-604	80.6 U	10.1 A	16.9 A	8.69 A		
Antimony	7440-36-0	401	MW13-1		0.5 U	0.112 A	0.213 A	1 U	6
		402	MW13-2	1.6 U	0.5 U	0.125 A	0.151 J	1 U	
		403	MW13-3	1.6 U	0.5 U	0.612 A	0.48 A	1 U	
		404	MW13-4		0.835 A	0.872 A	2.93 A	1.67 UJ	
		405	MW13-5	2 J	1.27 A	1.82 A	1.94 A	1.77 UJ	
		603	MW-603	1.6 U	0.557 A	0.87 A	1.73 A	0.9 UJ	
		604	MW-604	1.6 U	0.578 A	0.771 A	1 A	0.54 UJ	
		605	MW-605	1.6 U		0.105 A	0.321 A	1 U	
Arsenic	7440-38-2	401	MW13-1		7.75 A	5.55 A	5.18 A	4.74 A	
		402	MW13-2	2.9 U	3.98 A	1.3 A	3.19 A	4.57 A	
		403	MW13-3	2.9 J	2.09 A	1.53 A	0.929 A	1 UJ	
		404	MW13-4		2 U	1.06 A	3.07 A	1.07 UJ	
		405	MW13-5	2.9 U	2 U	1.18 A	1.42 A	0.88 UJ	
		602	MW-602		3.5 A				
		603	MW-603	2.9 U	2 U	1.74 A	35.9 A	1.67 UJ	
		604	MW-604	2.9 U	2 U	1.03 A	0.694 A	1.5 UJ	
Barium	7440-39-3	401	MW13-1		13.8 A	9.05 A	9.13 A		
		402	MW13-2	3 J	2.87 A	2.71 A	2.06 A		
		403	MW13-3	3.2 J	1.58 A	3.02 A	2.86 A		
		404	MW13-4		2.42 A	1.73 A	6.04 A		
		405	MW13-5	3.4 J	3.28 A	2.69 A	4.59 A		
		602	MW-602		61.5 A				
		603	MW-603	5.5 J	1 U	0.631 A	11.2 A		

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
		604	MW-604	1.7 J	1.5 A	1.34 A	0.9 A		
		605	MW-605	70.2 J		59.3 A	61.4 A		
Cadmium	7440-43-9	603	MW-603	0.3 U	2 U	1.48 A	1 U	1 U	
Calcium	7440-70-2	401	MW13-1		77100 A	50400 A	64000 A		
		402	MW13-2	19500 A	19900 A	20400 A	23000 A		
		403	MW13-3	28300 A	17500 A	27500 A	37000 A		
		404	MW13-4		13500 A	14500 A	60000 A		
		405	MW13-5	45200 A	66500 A	53800 A	68000 A		
		602	MW-602		95500 A				
		603	MW-603	111000 A	20400 A	19800 A	220000 A		
		604	MW-604	11900 A	6910 A	4530 A	5700 A		
Chromium	7440-47-3	605	MW-605	96000 A		89500 A	85000 A		
		401	MW13-1		14.2 A	1.44 A	2.54 A	1 U	
		402	MW13-2	0.4 U	5.02 A	1.53 A	4.08 A	1 U	
		403	MW13-3	0.5 J	4.44 A	1.75 A	5.86 A	1 U	
		404	MW13-4		9.99 A	2.92 A	6.5 A	1.05 UJ	
		405	MW13-5	0.4 J	14 A	0.295 A	6.05 A	0.94 UJ	
		603	MW-603	0.6 J	6.77 A	4.71 A	6.92 A	1.04 UJ	
		604	MW-604	0.4 U	4.96 A	2.78 A	1.78 A	0.84 UJ	
Cobalt	7440-48-4	605	MW-605	0.7 J		0.195 A	3.86 A	1 U	
		401	MW13-1		0.4 U	0.5 U	3.15 A		
		402	MW13-2	0.5 U	0.4 U	0.5 U	1.28 A		
		403	MW13-3	0.5 U	0.4 U	0.5 U	3.5 A		
		404	MW13-4		0.4 U	0.5 U	3.92 A		
		405	MW13-5	0.5 U	0.4 U	0.5 U	5.14 A		
		602	MW-602		3.87 A				
		603	MW-603	0.5 U	0.4 U	0.5 U	3.02 A		
Copper	7440-50-8	604	MW-604	0.5 U	0.4 U	0.5 U	3.27 A		
		605	MW-605	4.4 J		4.14 A	8.27 A		
		401	MW13-1		3 U	0.32 A	4.71 J	2 U	
		402	MW13-2	1.1 U	3 U	1.89 A	2.05 J	1.95 J	
		403	MW13-3	2.8 J	3 U	3.21 A	5.48 A	3.03 A	
		404	MW13-4		3.3 A	2.85 A	5.18 A	3.44 A	
		405	MW13-5	4.6 J	4.44 A	4.92 A	6.05 A	4.83 A	
		603	MW-603	2.6 J	3 U	2.58 A	13 A	2.85 A	

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
		604	MW-604	1.6 J	3 U	1.9 A	2.71 J	2.12 A	
		605	MW-605	1.1 U		0.389 A	0.595 A	2 U	
Iron	7439-89-6	401	MW13-1		27500 A	13200 A	13000 A		
		402	MW13-2	12.8 U	1000 U	50 U	330 A		
	7439-89-6	403	MW13-3	21.4 J	1000 U	50 U	740 A		
		405	MW13-5	17 J	1000 U	50 U	50 U		
		602	MW-602		6380 A				
		603	MW-603	12.8 U	1000 U	50 U	1800 A		
		604	MW-604	27.3 J	1000 U	172 A	1100 A		
		605	MW-605	6690 A		6240 A	7100 A		
Lead	7439-92-1	401	MW13-1		0.3 U	0.113 A	0.425 A	1 U	15
		402	MW13-2	1.6 U	0.3 U	0.1 U	0.133 A	1 UJ	
		403	MW13-3	1.6 U	0.3 U	0.1 U	0.301 A	1 U	
		404	MW13-4		0.3 U	0.1 U	0.251 A	1 U	
		405	MW13-5	1.6 U	0.3 U	0.102 A	0.45 A	1 U	
		603	MW-603	1.6 U	0.3 U	0.206 A	0.52 A	1 U	
		604	MW-604	1.6 U	0.3 U	0.139 A	0.294 J	1 U	
	605	MW-605	1.6 U		0.111 A	0.177 A	1 U		
Magnesium	7439-95-4	401	MW13-1		24800 A	17400 A	17000 A		
		402	MW13-2	14200 A	13200 A	14700 A	13000 A		
		403	MW13-3	9880 A	8040 A	9960 A	19000 A		
		404	MW13-4		14900 A	17000 A	58000 A		
		405	MW13-5	24200 A	28800 A	23800 A	28000 A		
		602	MW-602		28200 A				
		603	MW-603	213000 A	30500 A	29000 A	640000 A		
		604	MW-604	11000 A	5830 A	5280 A	6800 A		
	605	MW-605	29000 A		30300 A	27000 A			
Manganese	7439-96-5	401	MW13-1		2940 A	1840 A	1430 A		
		402	MW13-2	0.9 J	10 U	0.974 A	9.22 A		
		403	MW13-3	3.1 J	13.7 A	3.89 A	274 A		
		404	MW13-4		10 U	0.219 A	6.04 A		
		405	MW13-5	0.2 U	10 U	0.504 A	8.07 A		
		602	MW-602		3680 A				
		603	MW-603	0.2 U	10 U	9.91 A	24 A		
		604	MW-604	5.1 J	10 U	1.12 A	6.75 A		

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Mercury	7439-97-6	605	MW-605	4070 A		3890 A	3800 A		2
		401	MW13-1		0.2 U		0.2 U	0.24 A	
		605	MW-605	0.2 U			0.2 U	0.545 A	
Nickel	7440-02-0	401	MW13-1		1.62 A	1.71 A	2.39 A	1.07 UJ	
		402	MW13-2	0.7 U	1.16 A	0.786 A	0.931 A	0.5 J	
		403	MW13-3	0.7 U	1 U	1.08 A	1.58 A	0.65 J	
		404	MW13-4		1 U	0.641 A	2.61 A	0.54 UJ	
		405	MW13-5	0.7 U	1.52 A	2.34 A	2.81 A	1.03 UJ	
		602	MW-602		2.42 A				
		603	MW-603	0.7 U	1 U	0.748 A	10.4 A	0.66 UJ	
		604	MW-604	0.7 U	1 U	0.252 A	0.545 A	2 U	
Potassium	9/7/7440	605	MW-605	2 J		4.39 A	4.17 A	2.15 A	
		401	MW13-1		8140 A	7300 A	8200 A		
		402	MW13-2	5820 J	6160 A	4800 A	5100 A		
		403	MW13-3	5320 J	5040 A	4330 A	8600 A		
		404	MW13-4		11100 A	11400 A	24000 A		
		405	MW13-5	11600 J	8060 A	7120 A	8500 A		
		602	MW-602		9970 A				
		603	MW-603	132000 J	19600 A	18200 A	230000 A		
Selenium	7782-49-2	604	MW-604	12200 J	7630 A	7280 A	7900 A		
		605	MW-605	13500 J		9410 A	9000 A		
		401	MW13-1		2.5 U	0.541 A	2.51 A	1 U	
		402	MW13-2	1.1 U	2.5 U	0.5 U	0.958 J	1 U	
		403	MW13-3	1.5 J	2.5 U	0.767 A	1.7 A	1 U	
		404	MW13-4		2.5 U	1.41 A	10.2 A	2.77 A	
		405	MW13-5	1.4 J	2.5 U	0.666 A	2.31 A	1.92 A	
		603	MW-603	1.1 U	3.22 A	2.52 A	156 A	3.32 A	
Silver	7440-22-4	604	MW-604	1.1 U	2.5 U	1.21 A	2.13 A	1.75 A	
		605	MW-605	1.7 J		0.5 U	0.892 A	1.61 A	
		405	MW13-5	0.7 U	1 U	0.225 A	0.1 U	1 U	
Sodium	7440-23-5	605	MW-605	0.7 U		0.346 A	0.1 U	1 UJ	
		401	MW13-1			85400 A	110000 A		
		402	MW13-2	61100 J		47600 A	51000 A		
		403	MW13-3	42400 J		40300 A	110000 A		
		404	MW13-4			150000 A	440000 A		

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
		405	MW13-5	84100 J		69600 A	120000 A		
		603	MW-603	1240000 J		223000 A	5800000 A		
		604	MW-604	116000 J		149000 A	150000 A		
		605	MW-605	66400 J		71600 A	67000 A		
Thallium	7440-28-0	401	MW13-1		0.5 U	0.05 U	0.0503 A	1 U	2
		402	MW13-2	3.5 U	0.5 U	0.05 U	0.052 A	1 U	
		403	MW13-3	3.5 U	0.5 U	0.05 U	0.123 A	1 U	
		404	MW13-4		0.5 U	0.05 U	0.13 A	1 U	
		405	MW13-5	3.5 U	0.5 U	0.05 U	0.104 A	1 U	
		602	MW-602		0.563 A				
		603	MW-603	3.5 U	0.5 U	0.05 U	0.433 A	1 U	
		604	MW-604	3.5 U	0.5 U	0.05 U	0.0912 J	1 U	
Vanadium	7440-62-2	401	MW13-1		10 U	5 U	7.54 A		
		402	MW13-2	0.5 J	10 U	5 U	6.37 A		
		403	MW13-3	1.3 J	10 U	5 U	5 U		
		404	MW13-4		10 U	5 U	7.07 A		
		405	MW13-5	3.1 J	10 U	5 U	5 U		
		603	MW-603	0.8 J	10 U	5 U	149 A		
		604	MW-604	0.5 J	10 U	5 U	13.8 A		
		605	MW-605	1.1 J		5 U	5 U		
Zinc	7440-66-6	401	MW13-1		10 U	9.19 A	4.69 A	5 U	
		402	MW13-2	5.1 U	10 U	10.5 A	1.6 A	5 U	
		403	MW13-3	5.1 U	17.7 A	7.4 A	4.64 A	2.48 J	
		404	MW13-4		10 U	8.97 A	10.4 A	5.73 A	
		405	MW13-5	108 A	31.9 A	7.43 A	6.38 A	4.83 J	
		603	MW-603	6.6 J	19.3 A	9.78 A	9.6 A	5 U	
		604	MW-604	5.1 U	21.7 A	5.51 A	2.77 A	5 U	
		605	MW-605	5.1 U		11 A	2.31 A	1.92 UJ	
Semivolatile Organic Compounds									
1,4-Dichlorobenzene	106-46-7	605	MW-605	3 J	22 U				
2-Methylnaphthalene	91-57-6	605	MW-605	5 U	28 U	0.0521 J	0.052 UJ		
Fluoranthene	206-44-0	401	MW13-1		23 U	0.051 U	0.058 U	0.0572 J	
		605	MW-605	0.21 U	22 U	0.0625 A	0.052 UJ	0.0968 J	
Naphthalene	91-20-3	405	MW13-5	0.98 U	23 U	0.122 J	0.26 U	0.1 U	1460

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
		603	MW-603	0.97 U	22 U	0.25 U	0.37 A	0.1 U	
		605	MW-605	1 U	22 U	0.115 J	0.25 UJ	0.1 U	
Pyrene	129-00-0	605	MW-605	0.1 U	22 U	0.0521 U	0.065 A	0.0912 J	1100
bis(2-Ethylhexyl)phthalate	117-81-7	402	MW13-2	5 J	22 U		5.1 U	0.571 UJ	6
		403	MW13-3	4 J	22 U		5.1 U	0.727 UJ	
		405	MW13-5	3 J	23 U		5.1 U	1.17 UJ	
		603	MW-603	28 A	22 U		5.1 U	2.45 UJ	
		604	MW-604	4 J	23 U		5.1 U	0.5 U	
		605	MW-605	29 A	22 U		5.3 U	0.558 UJ	
Total Inorganic Compounds									
Aluminum	7429-90-5	401	MW13-1		95.2 A	25.8 A	50.2 A		
		402	MW13-2	102 J	1120 A	40.1 A	109 A		
		403	MW13-3	113 J	1020 A	133 A	269 A		
		404	MW13-4		54.7 A	27.5 A	12 A		
		405	MW13-5	80.6 U	105 A	197 A	397 A		
		603	MW-603	157 J	20.2 A	9.41 A	53.6 A		
		604	MW-604	152 J	37.2 A	45.7 A	56.2 A		
		605	MW-605	80.6 U	876 A	81.8 A	732 A		
Antimony	7440-36-0	404	MW13-4		1.42 A	0.893 A	2.9 A	1.49 A	6
		405	MW13-5	2.3 J	1.34 A	1.64 A	1.76 A	1.65 A	
		603	MW-603	1.6 U	1 U	0.834 A	5 U	0.92 J	
		604	MW-604	1.6 U	1 U	0.665 A	0.884 A	0.4 J	
Arsenic	7440-38-2	401	MW13-1		7.24 A	5.35 A	6.44 A	5.4 A	
		402	MW13-2	2.9 U	5 U	1.36 A	3.02 A	5.07 A	
		403	MW13-3	2.9 U	5 U	1.51 A	1.36 A	1 U	
		404	MW13-4		5 U	1.42 A	3.79 A	1.23 A	
		405	MW13-5	2.9 U	5 U	1.15 A	1.63 A	0.82 J	
		603	MW-603	2.9 U	5 U	2.02 A	38.8 A	2.82 A	
		604	MW-604	2.9 U	5 U	1.58 A	1.3 A	3.11 A	
		605	MW-605	3.7 J	7.07 A	4.33 A	6.47 A	4.33 A	
Barium	7440-39-3	401	MW13-1		15.3 A	9.58 A	9.5 A		
		402	MW13-2	4.6 J	5.67 A	2.96 A	2.39 A		
		403	MW13-3	3.7 J	3.87 A	3.33 A	3.41 A		
		404	MW13-4		3 U	1.8 A	6.43 A		

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
		405	MW13-5	3.1 J	3.97 A	3.35 A	5.76 A		
		603	MW-603	5.5 J	3 U	0.753 A	10.8 A		
		604	MW-604	2 J	3 U	1.92 A	1.22 A		
		605	MW-605	66.8 J	66.4 A	59.8 A	69 A		
Calcium	7440-70-2	401	MW13-1		76700 A	49500 A			
		402	MW13-2	19400 A	21000 A	19500 A			
		403	MW13-3	27100 A	19900 A	25400 A			
		404	MW13-4		13800 A	14000 A			
		405	MW13-5	45100 A	69000 A	47400 A			
		603	MW-603	112000 A	21000 A	18100 A			
		604	MW-604	11700 A	7030 A	4370 A			
Chromium	7440-47-3	605	MW-605	95300 A	98000 A	94000 A			
		401	MW13-1		6.11 A	0.223 A	0.432 J	1 U	
		402	MW13-2	0.6 J	6 U	0.291 A	0.546 J	1.68 U	
		403	MW13-3	0.5 J	8.55 A	0.278 A	0.456 A	1 U	
		404	MW13-4		6 U	0.265 A	0.738 A	1 U	
		405	MW13-5	0.4 J	6 U	0.397 A	0.653 A	1 UJ	
		603	MW-603	0.4 U	6 U	0.333 A	4.41 A	1 U	
		604	MW-604	0.6 J	6 U	0.252 A	0.373 J	1 UJ	
Cobalt	7440-48-4	605	MW-605	1.6 J	9.57 A	0.229 A	0.452 A	1 U	
		401	MW13-1		0.8 U	0.169 A	0.214 A		
		402	MW13-2	0.5 U	1.15 A	0.153 A	0.207 A		
		403	MW13-3	0.5 J	0.8 U	0.1 U	0.212 A		
		404	MW13-4		0.8 U	0.1 U	0.133 A		
		405	MW13-5	0.5 U	0.8 U	0.16 A	0.291 A		
Copper	7440-50-8	605	MW-605	4.7 J	4.56 A	4.24 A	4.52 A		
		402	MW13-2	1.8 J	6 U	2.22 A	0.5 U	5.54 J	
		403	MW13-3	3.1 J	6.13 A	3.67 A	3.32 A	4.1 A	
		404	MW13-4		6 U	3.13 A	3.51 A	3.68 A	
		405	MW13-5	5.4 J	6 U	27.8 A	5.23 A	4.54 A	
		603	MW-603	2.8 J	6 U	2.73 A	5.67 A	4.46 A	
		604	MW-604	1.1 U	6 U	2.09 A	0.5 U	4.35 A	
		605	MW-605	1.1 U	6 U	0.839 A	2.08 J	2 U	

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Iron	7439-89-6	401	MW13-1		27300 A	13900 A			
		402	MW13-2	225 A	1000 U	50 U			
		403	MW13-3	342 A	1000 U	77.7 A			
		405	MW13-5	13.1 J	1000 U	69.3 A			
		603	MW-603	47 J	1000 U	148 A			
		604	MW-604	301 A	1000 U	1450 A			
Lead	7439-92-1	403	MW13-3	1.6 U	2 U	0.201 A	0.351 A	1 U	15
		404	MW13-4		2 U	0.307 A	0.595 A	1 U	
		405	MW13-5	1.6 U	2 U	0.376 A	0.619 A	1 U	
		603	MW-603	1.6 U	2 U	0.476 A	3.49 A	1 U	
		604	MW-604	1.6 U	2 U	0.373 A	0.15 U	1 U	
		605	MW-605	1.6 U	2 U	0.15 U	0.219 A	1 U	
Magnesium	7439-95-4	401	MW13-1		26300 A	18300 A			
		402	MW13-2	13700 A	14300 A	15400 A			
		403	MW13-3	9400 A	9290 A	9790 A			
		404	MW13-4		15500 A	17600 A			
		405	MW13-5	23800 A	30300 A	24300 A			
		603	MW-603	215000 A	31600 A	26900 A			
		604	MW-604	10800 A	5690 A	5240 A			
Manganese	7439-96-5	401	MW13-1		2920 A	1890 A	1410 A		
		402	MW13-2	11.2 J	112 A	12 A	18.7 A		
		403	MW13-3	11 J	48.7 A	11.7 A	233 A		
		404	MW13-4		4 U	2.88 A	3.77 A		
		405	MW13-5	0.3 J	4 U	2.59 A	5.61 A		
		603	MW-603	3.6 J	14.2 A	11.7 A	46 A		
		604	MW-604	5.5 J	4 U	2.81 A	4.2 A		
Mercury	7439-97-6	401	MW13-1		0.2 U	0.2 U	0.2 U	0.202 A	2
		605	MW-605	0.2 U	0.2 U	0.2 U	0.2 U	0.56 A	
Nickel	7440-02-0	401	MW13-1		2 U	1.84 A	2.29 A	2.86 J	
		402	MW13-2	1.3 J	2 U	0.886 A	0.914 A	1.36 J	
		403	MW13-3	2.1 J	7.25 A	1.06 A	1.67 A	1.11 J	
		404	MW13-4		2 U	0.671 A	2.63 A	0.96 J	

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
		405	MW13-5	0.7 U	2 U	2.05 A	2.93 A	1.88 J	
		603	MW-603	0.7 U	2 U	0.828 A	10.2 A	0.66 J	
		605	MW-605	2.8 J	2.67 A	4.16 A	4.75 A	4.29 A	
Potassium	9/7/7440	401	MW13-1		8090 A	7420 A			
		402	MW13-2	5550 J	6080 A	4630 A			
		403	MW13-3	4990 J	5140 A	4000 A			
		404	MW13-4		11300 A	11700 A			
		405	MW13-5	11400 J	8170 A	7070 A			
		603	MW-603	5760 J	19300 A	16900 A			
		604	MW-604	11800 J	7770 A	6940 A			
		605	MW-605	13300 J	10100 A	9570 A			
Selenium	7782-49-2	401	MW13-1		5 U	0.568 A	0.573 A	1.28 U	
		402	MW13-2	1.1 U	5 U	0.538 A	0.5 U	1 U	
		403	MW13-3	1.1 U	5 U	0.771 A	1.35 A	1.01 U	
		404	MW13-4		5 U	1.79 A	13.4 A	3.6 A	
Selenium (cont.)	7782-49-2	405	MW13-5	1.1 U	5 U	1.21 A	2.56 A	2.28 A	
		603	MW-603	1.1 U	6.4 A	3.3 A	164 A	6.75 A	
		604	MW-604	1.1 J	5 U	1.62 A	1.35 A	4.28 A	
		605	MW-605	1.9 J	5 U	0.704 A	0.709 A	3.54 A	
Silver	7440-22-4	401	MW13-1		2 U	0.35 U	2.05 J	1 U	
		402	MW13-2	0.7 U	2 U	0.35 U	1.18 J	1 U	
		404	MW13-4		2 U	0.35 U	0.77 A	1 U	
		604	MW-604	0.7 U	2 U	0.35 U	1.32 J	1 U	
		605	MW-605	0.7 U	2 U	0.35 U	0.41 A	0.06 UJ	
Sodium	7440-23-5	401	MW13-1			93900 A			
		402	MW13-2	58000 J		49600 A			
		403	MW13-3	40400 J		44100 A			
		404	MW13-4			159000 A			
		405	MW13-5	84000 J		64500 A			
		603	MW-603	1240000 J		224000 A			
		604	MW-604	117000 J		156000 A			
605	MW-605	64500 J		65100 A					
Vanadium	7440-62-2	401	MW13-1		20 U	2.04 A	2.67 A		
		402	MW13-2	0.8 J	20 U	1.03 A	2.05 A		
		403	MW13-3	1.4 J	20 U	2.14 A	1.71 A		

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
		404	MW13-4		20 U	3.44 A	6.82 A		
		405	MW13-5	3.2 J	20 U	3.53 A	4.82 A		
		603	MW-603	0.7 J	20 U	2.29 A	52.7 A		
		604	MW-604	0.7 J	20 U	2.66 A	2.77 A		
		605	MW-605	1.2 J	20 U	1.57 A	3.24 A		
Zinc	7440-66-6	401	MW13-1		25 U	6.65 A	1.34 A	5 U	
		402	MW13-2	6.1 J	25 U	8.55 A	1.2 A	11.5 U	
		403	MW13-3	8.3 J	25 U	6.2 A	4.76 A	1.96 J	
		404	MW13-4		25 U	12.2 A	9.76 A	5.1 A	
		405	MW13-5	5.1 U	25 U	12.2 A	5.03 A	5.22 J	
		603	MW-603	16.2 J	25 U	8.76 A	12.6 A	5 U	
		604	MW-604	12.6 J	25 U	6.25 A	1.06 A	5.01 U	
605	MW-605	17.6 J	25 U	7.71 A	3.03 A	5 UJ			
Volatile Organic Compounds									
1,1,1-Trichloroethane	71-55-6	404	MW13-4		1 U	2 U	2 U	0.17 J	
1,1-Dichloroethane	75-34-3	402	MW13-2	1 U		2 U	2 U	0.33 J	
		403	MW13-3	1 U		2 U	2 U	0.52 J	
		404	MW13-4		3.18 A	2.3 A	2 U	2.82 J	
		605	MW-605	3.1 A	2.24 A	2.1 A	2 A	1.93 J	
1,2,4-Trichlorobenzene	120-82-1	401	MW13-1			2 U	2 U	0.57 J	
1,2,4-Trimethylbenzene	95-63-6	603	MW-603		1 U	2 U	2 A	1 UJ	
1,2-Dichlorobenzene	95-50-1	605	MW-605		1 U	2 U	2 U	0.28 J	
1,3-Dichlorobenzene	541-73-1	401	MW13-1			2 U	2 U	0.19 J	
		403	MW13-3			2 U	2 U	0.25 J	
		605	MW-605		1.53 A	1.4 J	1.1 J	1.35 J	
1,4-Dichlorobenzene	106-46-7	605	MW-605		6.21 A	5.4 A	4.7 A	5.1 J	
Acetone	67-64-1	403	MW13-3	5 U		50 U	3.2 J	25 UJ	
		405	MW13-5	5 U		50 U	4.5 J	25 UJ	
		605	MW-605	5 U		50 U	4.2 J	25 UJ	
Benzene	71-43-2	605	MW-605	0.5 J	0.54 A	0.54 J	0.42 J	0.64 J	
Carbon disulfide	75-15-0	401	MW13-1			2 U	1.2 J	10 UJ	
Chlorobenzene	108-90-7	605	MW-605	18 A	17.5 A	18 A	17 A	18 J	
Chloroethane	75-00-3	605	MW-605	5.2 A	3.42 A	3.6 J	4.7 J	4.43 J	
Dichlorodifluoromethane	75-71-8	603	MW-603	1 U	1 U	5 U	5 U	0.57 J	
		605	MW-605	0.6 J	1 U	5 U	5 U	1.21 J	

Table A-4. SWMU 11, Palisades Landfill, Groundwater Sampling (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Methylene chloride	75-09-2	605	MW-605	1 U	5 U	5 U	0.57 J	5 UJ	5
Naphthalene	91-20-3	401	MW13-1			2 U	0.88 J	2 UJ	1460
		403	MW13-3			2 U	38 A	2 UJ	
		603	MW-603		2 U	2 U	68 A	2 UJ	
		604	MW-604		2 U	2 U	3.6 A	2 UJ	
Tetrachloroethene	127-18-4	603	MW-603	1 U	1 U	2 U	2 U	0.35 J	5
Trichloroethene	79-01-6	401	MW13-1			1.1 J	0.72 J	0.37 J	5
		404	MW13-4		1 U	2 U	2 U	0.25 J	
		603	MW-603	1 U	1 U	0.56 J	2 U	0.43 J	
		604	MW-604	0.8 J	1 U	2 U	2 U	0.36 J	
cis-1,2-Dichloroethene	156-59-2	401	MW13-1			0.6 J	0.51 J	0.24 J	
		404	MW13-4		1 U	2 U	2 U	0.23 J	
		603	MW-603	1 U	1 U	2 U	2 U	0.21 J	
		604	MW-604	0.6 J	1 U	2 U	2 U	1 UJ	
		605	MW-605	0.8 J	1 U	0.65 J	2 U	0.52 J	
m,p-Xylene	-81	401	MW13-1			2 U	0.39 J	2 UJ	
		402	MW13-2	0.9 J		2 U	2 U	2 UJ	
		403	MW13-3	1 U		2 U	0.42 J	2 UJ	
		405	MW13-5	0.6 J	2 U	2 U	2 U	2 UJ	
		603	MW-603	1 U	2 U	2 U	1.8 J	2 UJ	
		604	MW-604	1 U	2 U	2 U	0.65 J	2 UJ	
o-Xylene	95-47-6	603	MW-603	1 U	1 U	2 U	0.64 J	1 UJ	

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-5. SWMU 14, Sample Locations

Analyte	CAS ID	Location ID	Location Cross-Reference	Groundwater Concentration (µg/l)						Alaska Cleanup Levels 18 AAC 75.345 (µg/L)	
				Feb. 2000	June 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
Dissolved Inorganic Compounds											
Lead	7439-92-1	153	01-153						11 A	45.1 A	15
		201	MW-14-5	32.6 A	24.2 J	29 A	21.7 A	84.6 A	25.3 A		
		423	MW14-423	0.1 UJ	1 U	0.3 U					
Semivolatile Organic Compounds											
bis(2-Ethylhexyl)phthalate	117-81-7	153	01-153							0.5 U	6
		201	MW-14-5			20 U		2.7 U	0.5 U		
		423	MW14-423			23 U					
Total Inorganic Compounds											
Lead	7439-92-1	153	01-153						12.3 A	51.3 A	15
		201	MW-14-5	31.9 A	21 J	30.6 A	29.8 A	83.6 A	21.5 A		
		423	MW14-423	0.1 UJ	1 U	2 U					
Thallium	7440-28-0	153	01-153						0.25 U	0.12 J	2
		201	MW-14-5				0.25 U	0.25 U	0.07 UJ		
Volatile Organic Compounds											
Tetrachloroethene	127-18-4	153	01-153						27 A	7.74 A	5
		201	MW-14-5			5 U	1.6 J	40 U	2.4 J		
		423	MW14-423			1 U					

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-6. SWMU 15, Sample Locations

Analyte	CAS ID	Location ID	Location Cross-Reference	Groundwater Concentration (µg/l)				Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Volatile Organic Compounds								
Tetrachloroethene	127-18-4	8	MW15-3	12.3 A	10 A	5.5 A	4.03 A	5
		424	MW15-424		2 U	2 U		
Trichloroethene	79-01-6	8	MW15-3	6.24 A	9.2 A	9.3 A	13.6 A	5
		424	MW15-424		2 U	2 U		

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-7. Power Plant 3 Groundwater

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				June 2001	Sept./Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Semivolatile Organic Compounds									
bis(2-Ethylhexyl)phthalate	117-81-7	4	R-1 (03-004)				5.2 U	0.328 J	6
		6	R-6 (03-006)				5.3 U	0.385 J	
Volatile Organic Compounds									
1,1-Dichloroethene	75-35-4	735	05-735		1 U	20 U	1.1 J	5 U	
1,2,4-Trimethylbenzene	95-63-6	4	R-1 (03-004)	1.18 A					
		6	R-6 (03-006)			0.49 J			
Acetone	67-64-1	735	05-735			57 J			
Benzene	71-43-2	4	R-1 (03-004)	1.01 A	0.586 A				
Ethylbenzene	100-41-4	4	R-1 (03-004)	2.06 A	0.5 U				
		6	R-6 (03-006)			2.7 A			
Isopropylbenzene	98-82-8	4	R-1 (03-004)	1 J					
		6	R-6 (03-006)			1.4 J			
Methylene chloride	75-09-2	735	05-735		5 U	15 J	5 U	25 U	5
Naphthalene	91-20-3	4	R-1 (03-004)	1 U					1460
		6	R-6 (03-006)			0.92 J			
		735	05-735		2 U	13 J			
Styrene	100-42-5	4	R-1 (03-004)	1 U					
Tetrachloroethene	127-18-4	4	R-1 (03-004)	1 U			2 U		5
		735	05-735		10 A	20 U	3.2 A	10.4 J	
Trichloroethene	79-01-6	735	05-735		4.45 A	20 U	3.5 A	5.1 J	5
Trichlorofluoromethane	75-69-4	4	R-1 (03-004)	1 U					
Vinyl chloride	75-01-4	735	05-735		4.18 A	5.6 J	7 A	6.7 J	
Xylenes	1330-20-7	4	R-1 (03-004)	1 U	1 J				
cis-1,2-Dichloroethene	156-59-2	735	05-735		189 A	420 A	730 A	483 J	
m,p-Xylene	-81	4	R-1 (03-004)	2.56 A					
n-Butylbenzene	104-51-8	6	R-6 (03-006)			2.5 A			
n-Propylbenzene	103-65-1	4	R-1 (03-004)	0.604 J					
		6	R-6 (03-006)			2.2 A			
sec-Butylbenzene	135-98-8	4	R-1 (03-004)	1.48 A					
		6	R-6 (03-006)			1.3 J			
trans-1,2-Dichloroethene	156-60-5	735	05-735		18.6 A	19 J	25 A	28.6 J	

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-8. White Alice Landfill Groundwater

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Total Inorganic Compounds									
Aluminum	7429-90-5	200	21-3	188 J	249 A	2300 A	4480 A		
		204	21-4	134 J	15300 A	47.7 A	251 A		
Antimony	7440-36-0	200	21-3	1.6 U	1 U	0.5 U	0.5 U	0.22 J	6
Arsenic	7440-38-2	200	21-3	2.9 U	5 U	2.04 A	2.12 A	2.22 A	
		204	21-4	2.9 U	8.41 A	1 U	1 U	1 U	
Barium	7440-39-3	200	21-3	6.7 J	12.4 A	12.6 A	16.7 A		
		204	21-4	1 J	56.7 A	0.878 A	1.28 A		
Calcium	7440-70-2	200	21-3	15300 A	14700 A	15600 A			
		204	21-4	7790 A	11300 A	7920 A			
Chromium	7440-47-3	200	21-3	0.5 J	6.5 U	2.09 A	4.07 A	6.1 A	
		204	21-4	0.5 J	32.8 A	0.1 U	0.363 J	0.85 J	
Cobalt	7440-48-4	200	21-3	0.5 U	0.8 U	1.04 A	2.32 A		
		204	21-4	0.5 U	2.16 A	0.1 U	0.1 U		
Copper	7440-50-8	200	21-3	2.8 J	6 U	5.4 A	8.22 A	14.6 A	
		204	21-4	1.1 U	26.9 A	0.5 U	0.5 U	2 U	
Iron	7439-89-6	200	21-3	8480 A	7780 A	10600 A			
		204	21-4	79.7 J	15100 A	50 U			
Lead	7439-92-1	200	21-3	1.6 U	2 U	0.826 A	1.16 A	1.87 A	15
		204	21-4	1.6 U	6.68 A	0.15 U	0.15 U	1 U	
Magnesium	7439-95-4	200	21-3	4900 J	4710 A	5690 A			
		204	21-4	2110 J	2570 A	2280 A			
Manganese	7439-96-5	200	21-3	311 A	274 A	312 A	279 A		
		204	21-4	10.8 J	354 A	9.66 A	10.3 A		
Nickel	7440-02-0	200	21-3	1.1 J	4 U	2.24 A	3.28 A	5.51 A	
		204	21-4	0.7 U	19.3 A	0.545 A	0.5 U	2 U	
Potassium	9/7/7440	200	21-3	1510 J	1610 A	1510 A			
		204	21-4	549 J	1100 A	625 A			
Selenium	7782-49-2	200	21-3	1.9 J	5 U	0.5 U	0.5 U	1 UJ	
		204	21-4	1.2 J	5 U	0.5 U	0.5 U	1 UJ	
Silver	7440-22-4	200	21-3	0.7 U	2 U	0.35 U	2.14 J	0.13 J	
Sodium	7440-23-5	200	21-3	16200 J		25900 A			
		204	21-4	7930 A		11300 A			

Table A-8. White Alice Landfill Groundwater (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Sept. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Thallium	7440-28-0	200	21-3	3.5 U	2 U	0.25 U	0.25 U	0.1 J	2
Vanadium	7440-62-2	200	21-3	2.6 J	20 U	18.9 A	25.4 A		
		204	21-4	1.5 J	35.9 A	1.67 A	2.19 A		
Zinc	7440-66-6	200	21-3	13.5 J	25 U	29.2 A	7.61 A	14.6 A	
		204	21-4	8.3 J	25 U	20.8 A	1.23 A	5 U	
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	95-63-6	200	21-3		1 U	0.68 J	2 U	1 U	
Naphthalene	91-20-3	200	21-3		2 U	1.6 J	2 U	2 U	1460
Toluene	108-88-3	200	21-3	1 U	1 U	2 U	2 U	0.25 J	
cis-1,2-Dichloroethene	156-59-2	200	21-3	1 U	1 U	2 U	2 U	0.21 J	
m,p-Xylene	-81	200	21-3	1 J	2 U	2 U	2 U	2 U	
		204	21-4	0.9 J	2 U	2 U	2 U	2 U	

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-9. White Alice Landfill Surface Water

Location ID	Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Sept. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
201	WASW01	Total Inorganic Compounds								
		Aluminum	7429-90-5	80.6 U	200 U	336 A	169 A			
		Arsenic	7440-38-2	2.9 U	5 U	1.08 A	1 U	0.48 J	1.4	NO
		Barium	7440-39-3	9.7 J	4 A	16.4 A	9.67 A			
		Calcium	7440-70-2	5270 A	5110 A	18800 A				
		Chromium	7440-47-3	0.4 J	6 U	0.205 A	0.1 U	1.37 A		
		Cobalt	7440-48-4	0.5 U	0.8 U	2.25 A	1.18 A			
		Copper	7440-50-8	1.1 U	6 U	1.68 A	0.5 U	1.3 J		
		Iron	7439-89-6	417 A	1000 U	26100 A				
		Lead	7439-92-1	1.6 U	2 U	0.923 A	0.15 U	0.26 J		
		Magnesium	7439-95-4	4100 J	1930 A	4390 A				
		Manganese	7439-96-5	18.5 A	4 U	438 A	261 A			
		Nickel	7440-02-0	0.8 J	2 U	1.25 A	0.86 A	2 U	100	NO
		Potassium	9/7/7440	1340 J	1070 A	5890 A				
		Selenium	7782-49-2	2.2 J	5 U	0.5 U	0.5 U	1 UJ		
		Silver	7440-22-4	0.7 U	2 U	0.35 U	0.621 J	0.11 J		
		Sodium	7440-23-5	18300 J		14600 A				
Thallium	7440-28-0	3.5 U	2 U	0.25 U	0.25 U	0.13 J				
Vanadium	7440-62-2	0.4 J	20 U	4.89 A	1 U					
Zinc	7440-66-6	9 J	25 U	5.82 A	1.33 A	3.18 J				
202	WASW02	Total Inorganic Compounds								
		Aluminum	7429-90-5	80.6 U	200 U	34.9 A	50 A			
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO
		Barium	7440-39-3	7.8 J	6.94 A	6.94 A	6.73 A			
		Calcium	7440-70-2	5600 A	14200 A	13900 A				
		Chromium	7440-47-3	0.4 J	6 U	0.1 U	0.1 U	0.91 J		
		Cobalt	7440-48-4	0.5 U	0.8 U	0.1 U	0.1 U			
		Copper	7440-50-8	1.1 U	6 U	0.5 U	0.5 U	1.3 J		
		Iron	7439-89-6	713 A	1460 A	561 A				
		Magnesium	7439-95-4	3100 J	3500 A	3050 A				
		Manganese	7439-96-5	40.3 A	103 A	41.4 A	29.9 A			
		Nickel	7440-02-0	0.7 U	2 U	0.85 A	0.596 A	2 U	100	NO
Potassium	9/7/7440	1140 J	1570 A	2060 A						

Table A-9. White Alice Landfill Surface Water (Continued)

Location ID	Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?		
				Nov. 2000	Sept. 2001	Oct. 2002	Oct. 2003	Sept. 2004				
		Silver	7440-22-4	0.7 U	2 U	0.35 U	0.605 J	1 U				
		Sodium	7440-23-5	13700 J		12900 A						
		Vanadium	7440-62-2	0.6 J	20 U	5.22 A	3.58 A					
		Zinc	7440-66-6	42.9 A	25 U	2.61 A	1 U	5 U				
		Volatile Organic Compounds										
		1,1,2,2-Tetrachloroethane	79-34-5	1 U	2 U	1.6 J	1.9 J	1.37 A				
		Trichloroethene	79-01-6	1 U	1 U	0.88 J	1 J	1.06 A				
203	WASW03	Total Inorganic Compounds										
		Aluminum	7429-90-5	732 A	200 U	80.9 A	323 A					
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO		
		Barium	7440-39-3	7.4 J	3 U	6.05 A	4.26 A					
		Calcium	7440-70-2	2370 J	1000 U	1430 A						
		Cobalt	7440-48-4	0.5 U	0.8 U	0.284 A	0.263 A					
		Copper	7440-50-8	2.3 J	6 U	0.992 A	0.5 U	5.29 A				
		Iron	7439-89-6	544 A	1000 U	474 A						
		Lead	7439-92-1	1.8 J	2 U	0.225 A	0.327 A	0.55 J				
		Magnesium	7439-95-4	3110 J	1220 A	1840 A						
		Manganese	7439-96-5	32.5 A	9.8 A	48.2 A	25.5 A					
		Nickel	7440-02-0	0.7 U	2 U	0.5 U	0.5 U	3.98 A	100	NO		
		Potassium	9/7/7440	1800 J	1250 A	684 A						
		Silver	7440-22-4	0.7 U	2 U	0.35 U	1.1 J	1 U				
		Sodium	7440-23-5	18300 A		8120 A						
		Vanadium	7440-62-2	1.4 J	20 U	1 U	1 U					
		Zinc	7440-66-6	6.7 J	25 U	13.2 A	6.34 A	16.8 A				
		Volatile Organic Compounds										
				Dichlorodifluoromethane	75-71-8	1 U	1 U	1.3 J	5 U	5 U		
				Iodomethane	74-88-4			1.2 J	5 U			

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-10. Roberts Landfill Groundwater

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Total Inorganic Compounds									
Aluminum	7429-90-5	306	B-1	730 A	801 A	841 A	975 A		
		307	A-3	1730 A	31600 A	1150 A	153000 A		
		308	A-5	80.6 U	205 U	50.5 A	61.2 A		
		320	A-2	282 A	200 U	507 A	221 A		
Arsenic	7440-38-2	307	A-3	2.9 U	5 U	1 U	4.52 A	1 U	
		308	A-5	2.9 U	5.11 U	1 U	1 U	1 U	
		320	A-2	2.9 U	5 U	1.83 A	1.52 A	0.73 J	
Barium	7440-39-3	306	B-1	14.8 J	16.5 A	15.9 A	16.7 A		
		307	A-3	5.9 J	140 A	4.68 A	547 A		
		308	A-5	4.3 J	4.81 A	4.88 A	5.27 A		
		320	A-2	7.8 J	11.1 A	14.8 A	13.5 A		
Beryllium	7440-41-7	307	A-3	0.6 U	1 U	0.5 U	0.827 A	1 U	
Cadmium	7440-43-9	307	A-3	0.3 U	2 U	0.2 U	0.46 A	1 U	
Calcium	7440-70-2	306	B-1	11300 A	12300 A	11300 A			
		307	A-3	5950 A	10500 A	5480 A			
		308	A-5	26500 A	25700 A	24900 A			
		320	A-2	33600 A	39400 A	40200 A			
Chromium	7440-47-3	306	B-1	0.4 U	6.46 A	0.1 U	0.122 A	1.13 A	
		307	A-3	1.1 J	79.3 A	1.27 A	323 A	7.73 A	
		308	A-5	0.4 J	6.14 U	0.1 U	0.202 J	0.81 J	
		320	A-2	0.5 J	6 U	0.968 A	0.423 A	1 U	
Cobalt	7440-48-4	306	B-1	7.9 J	8.57 A	9.12 A	8.49 A		
		307	A-3	3.1 J	5.34 A	2.05 A	17.5 A		
		308	A-5	5.4 J	5.4 A	5.99 A	5.89 A		
		320	A-2	2.5 J	1.92 A	1.64 A	1.34 A		
Copper	7440-50-8	306	B-1	27.5 A	31.3 A	32.2 A	29.7 A	33.3 A	
		307	A-3	232 A	318 A	134 A	1180 A	273 A	
		308	A-5	1.1 U	6.14 U	1.97 A	3.21 J	2 U	
		320	A-2	1.1 U	6 U	8.12 A	4.13 J	0.98 J	
Iron	7439-89-6	306	B-1	1340 A	1380 A	1320 A			
		307	A-3	298 A	41300 A	637 A			
		308	A-5	1830 A	2260 A	3530 A			

Table A-10. Roberts Landfill Groundwater (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Lead	7439-92-1	320	A-2	4320 A	4040 A	3890 A			15
		307	A-3	1.6 U	8.53 A	0.15 U	36.9 A	0.48 J	
		308	A-5	1.6 U	2.05 U	0.15 U	0.19 A	1 U	
Magnesium	7439-95-4	320	A-2	1.6 U	2 U	0.841 A	0.15 U	1 U	
		306	B-1	2620 J	2810 A	2750 A			
		307	A-3	2190 J	16300 A	2200 A			
		308	A-5	3070 J	3050 A	3160 A			
Manganese	7439-96-5	320	A-2	4490 J	5420 A	5980 A			
		306	B-1	195 A	193 A	204 A	206 A		
		307	A-3	24.5 A	269 A	19.6 A	1320 A		
		308	A-5	133 A	123 A	133 A	126 A		
Nickel	7440-02-0	320	A-2	323 A	325 A	359 A	332 A		
		306	B-1	4.6 J	4.65 A	4.76 A	4.28 A	4.52 A	
		307	A-3	2.4 J	20 A	1.78 A	113 A	3.72 A	
		308	A-5	1.5 J	2.05 U	2.57 A	2.32 A	2.23 A	
Potassium	9/7/7440	320	A-2	1.6 J	2.65 A	4.59 A	3.77 A	2.64 A	
		306	B-1	1710 J	1930 A	2050 A			
		307	A-3	770 J	3450 A	767 A			
		308	A-5	2390 J	2430 A	2560 A			
Selenium	7782-49-2	320	A-2	1.1 J	5 U	0.5 U	0.5 U	1 U	
		306	B-1	1.3 J	5 U	0.5 U	0.5 U	1 U	
		307	A-3	1.1 U	5 U	0.5 U	7 A	1 U	
		308	A-5	2 J	5.11 U	0.5 U	0.5 U	1 U	
Silver	7440-22-4	307	A-3	0.7 U	2 U	0.35 U	1.89 A	1 U	
Sodium	7440-23-5	320	A-2	12000 J		16500 A			
		306	B-1	8890 J		12400 A			
		307	A-3	8420 A		10600 A			
		308	A-5	9260 J		11300 A			
Thallium	7440-28-0	307	A-3	3.5 U	2 U	0.25 U	0.677 A	1 U	2
Vanadium	7440-62-2	306	B-1	0.3 U	20 U	1 U	1 U		
		307	A-3	0.7 J	71.4 A	1.24 A	299 A		
		308	A-5	0.3 U	20.5 U	1 U	1 U		

Table A-10. Roberts Landfill Groundwater (Continued)

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater Concentration (µg/l)					Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Zinc	7440-66-6	320	A-2	0.3 U	20 U	1.12 A	1 U		
		306	B-1	18 J	25 U	31.1 A	19.8 A	19.9 A	
		307	A-3	9.3 J	34.9 A	4.81 A	192 A	11 A	
		308	A-5	7.3 J	25.6 U	22.1 A	5.72 A	5.09 A	
		320	A-2	13.5 J	25 U	15.9 A	3.56 A	3.15 J	
Volatile Organic Compounds									
Ethylbenzene	100-41-4	307	A-3	1 A	1 U	2 U	2 U	1 U	
Methylene chloride	75-09-2	306	B-1	1 U	5 U	5 U	1.2 J	5 U	5
Naphthalene	91-20-3	320	A-2		2 U	2 U	2 U	1.71 J	1460
Toluene	108-88-3	307	A-3	0.5 J	1 U	2 U	2 U	1 U	
Trichlorofluoromethane	75-69-4	306	B-1	1 U	1 U	2 U	2.7 A	2.28 A	
m,p-Xylene	-81	306	B-1	0.6 J	2 U	2 U	2 U	2 U	
		307	A-3	3.2 A	2 U	2 U	2 U	2 U	
o-Xylene	95-47-6	307	A-3	0.9 J	1 U	2 U	2 U	1 U	

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-11. Roberts Landfill Surface Water

Location ID	Location Cross Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?		
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004				
301	RLSW01	Total Inorganics										
		Aluminum	7429-90-5	80.6 U	1090 A	13.4 A	27.4 A					
		Antimony	7440-36-0	1.6 U	1 U	0.5 U	0.5 U	0.21 J	45000	NO		
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO		
		Barium	7440-39-3	13.6 J	13.3 A	13.3 A	18.2 A					
		Beryllium	7440-41-7	0.6 U	1 U	0.5 U	0.5 U	1 U	1.4	NO		
		Cadmium	7440-43-9	0.4 J	2 U	0.2 U	0.2 U	1 U				
		Calcium	7440-70-2	30900 A	28400 A	30100 A						
		Chromium	7440-47-3	0.4 U	6 U	0.1 U	0.262 A	1 U				
		Cobalt	7440-48-4	0.5 U	0.8 U	0.1 U	0.1 U					
		Copper	7440-50-8	1.3 J	6.1 A	1.89 A	2.06 J	1.98 J				
		Iron	7439-89-6	90.7 J	1160 A	70.3 A						
		Magnesium	7439-95-4	7300 A	5770 A	9060 A						
		Manganese	7439-96-5	25.1 A	59 A	21.3 A	3.72 A					
		Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.15	NO		
		Nickel	7440-02-0	1.3 J	2 U	1.93 A	1.54 A	0.44 J	100	NO		
		Potassium	9/7/7440	2500 J	3080 A	3620 A						
		Sodium	7440-23-5	10900 A		10600 A						
		Thallium	7440-28-0	3.5 U	2 U	0.25 U	0.25 U	1 U	48	NO		
		Vanadium	7440-62-2	0.3 U	20 U	1 U	1 U					
		Zinc	7440-66-6	1290 A	85.4 A	283 A	115 A	57.3 A				
				Volatile Organic Compounds								
				1,1-Dichloroethene	75-35-4	1 U	1 U	2 U	2 U	1 U	320	NO
		Benzene	71-43-2	1 U	0.5 U	2 U	2 U	1 U	710	NO		
		Toluene	108-88-3	1 U	1 U	2 U	2 U	1 U	424,000	NO		
		Trichloroethene	79-01-6	1 U	1 U	2 U	2 U	1 U	810	NO		
		Ethylbenzene	100-41-4	1 U	1 U	2 U	2 U	1 U	3280	NO		
		Naphthalene	91-20-3		2 U	2 U	2 U	0.17 J				
302	RLSW02	Total Inorganics										
		Aluminum	7429-90-5	80.6 U	200 U	31.1 A	20.1 A					
		Antimony	7440-36-0	1.6 J	1 U	0.5 U	0.5 U	1 U	45000	NO		
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO		
		Barium	7440-39-3	8.8 J	7.25 A	7.89 A	7.67 A					
		Beryllium	7440-41-7	0.6 U	1 U	0.5 U	0.5 U	1 U	1.4	NO		
		Calcium	7440-70-2	27800 A	21900 A	23000 A						
		Chromium	7440-47-3	0.4 U	6 U	0.325 A	0.284 A	0.8 J				
		Copper	7440-50-8	1.2 J	6 U	2.11 A	2.2 J	3.83 A				
		Iron	7439-89-6	48 J	1000 U	50 U						
Magnesium	7439-95-4	4730 J	3530 A	4020 A								

Table A-11. Roberts Landfill Surface Water (Continued)

Location ID	Location Cross Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?	
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004			
		Manganese	7439-96-5	38.8 A	4 U	7.69 A	1.98 A				
		Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.15	NO	
		Nickel	7440-02-0	0.7 U	2 U	0.961 A	1.01 A	0.43 J	100	NO	
		Potassium	9/7/7440	1740 J	1890 A	2020 A					
		Sodium	7440-23-5	14000 A		9160 A					
		Thallium	7440-28-0	3.5 U	2 U	0.25 U	0.25 U	1 U	48	NO	
		Vanadium	7440-62-2	0.3 J	20 U	1 U	1 U				
		Zinc	7440-66-6	5.1 U	25 U	2.36 A	1.39 A	5 U			
		Volatile Organic Compounds									
		1,1-Dichloroethene	75-35-4	1 U	1 U	2 U	2 U	1 U	320	NO	
		Benzene	71-43-2	1 U	0.5 U	2 U	2 U	1 U	710	NO	
		Toluene	108-88-3	1 U	1 U	2 U	2 U	1 U	424,000	NO	
		Trichloroethene	79-01-6	1 U	1 U	2 U	2 U	1 U	810	NO	
		Ethylbenzene	100-41-4	1 U	1 U	2 U	2 U	1 U	3280	NO	
303	RLSW03	Total Inorganics									
		Aluminum	7429-90-5	6710 A	8590 A	2030 A	2540 A				
		Antimony	7440-36-0	1.6 U	1 U	0.5 U	0.5 U	1 U	45000	NO	
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO	
		Barium	7440-39-3	12.9 J	14.3 A	12.5 A	13.2 A				
		Beryllium	7440-41-7	0.6 U	1 U	0.5 U	0.5 U	1 U	1.4	NO	
		Calcium	7440-70-2	20200 A	24900 A	17600 A					
		Chromium	7440-47-3	0.4 U	6 U	0.1 U	0.208 A	0.77 J			
		Cobalt	7440-48-4	27 J	26.7 A	9.54 A	10.9 A				
		Copper	7440-50-8	525 A	480 A	184 A	156 A	65.5 A			
		Iron	7439-89-6	935 A	1000 U	74 A					
		Lead	7439-92-1	1.6 U	2.07 A	0.359 A	0.612 A	1 U			
		Magnesium	7439-95-4	3140 J	3470 A	2780 A					
		Manganese	7439-96-5	148 A	188 A	105 A	116 A				
		Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.15	NO	
		Nickel	7440-02-0	18.1 J	14.3 A	4.92 A	5.67 A	2.09 A	100	NO	
		Potassium	9/7/7440	3850 J	3470 A	2110 A					
		Selenium	7782-49-2	1.1 J	5 U	0.5 U	0.5 U	0.88 J			
		Sodium	7440-23-5	11500 A		12100 A					
303 (cont.)	RLSW03	Thallium	7440-28-0	3.5 U	2 U	0.25 U	0.25 U	1 U	48	NO	
		Vanadium	7440-62-2	0.3 J	20 U	1 U	1 U				
		Zinc	7440-66-6	42.9 A	61.5 A	18.1 A	22.3 A	9.65 A			

Table A-11. Roberts Landfill Surface Water (Continued)

Location ID	Location Cross Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
		Volatile Organic Compounds								
		1,1-Dichloroethene	75-35-4	1 U	1 U	2 U	2 U	1 U	320	NO
		Benzene	71-43-2	1 U	0.5 U	2 U	2 U	1 U	710	NO
		Toluene	108-88-3	1 U	1 U	2 U	2 U	1 U	424,000	NO
		Trichloroethene	79-01-6	1 U	1 U	2 U	2 U	1 U	810	NO
		Ethylbenzene	100-41-4	1 U	1 U	2 U	2 U	1 U	3280	NO
		cis-1,2-Dichloroethene	156-59-2	0.6 J	1 U	2 U	2 U	1 U		
		trans-1,4-Dichloro-2-butene	110-57-6			10 U	10 U			
304	RLSW04	Total Inorganics								
		Aluminum	7429-90-5	172 J	200 U	41.1 A	54.9 A			
		Antimony	7440-36-0	1.6 U	1 U	0.5 U	0.5 U	1 U	45000	NO
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO
		Barium	7440-39-3	5.7 J	5.88 A	5.97 A	7 A			
		Beryllium	7440-41-7	0.6 U	1 U	0.5 U	0.5 U	1 U	1.4	NO
		Calcium	7440-70-2	8900 A	21300 A	16200 A				
		Chromium	7440-47-3	0.4 U	6 U	0.1 U	0.277 A	1 U		
		Cobalt	7440-48-4	0.5 U	0.8 U	0.152 A	0.327 A			
		Copper	7440-50-8	13.1 J	6 U	2.75 A	3.26 J	2.88 A		
		Iron	7439-89-6	191 A	1000 U	122 A				
		Lead	7439-92-1	1.6 J	2 U	0.299 A	0.425 A	1 U		
		Magnesium	7439-95-4	1990 J	2980 A	2340 A				
		Manganese	7439-96-5	20.8 A	30 A	24 A	36.8 A			
		Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.15	NO
		Nickel	7440-02-0	0.7 U	2 U	0.694 A	0.954 A	2 U	100	NO
		Potassium	9/7/7440	819 J	1100 A	1040 A				
		Sodium	7440-23-5	6560 A		7930 A				
		Thallium	7440-28-0	3.5 U	2 U	0.25 U	0.25 U	1 U	48	NO
		Vanadium	7440-62-2	0.4 J	20 U	1 U	1 U			
		Zinc	7440-66-6	19.8 J	25 U	2.56 A	3.11 A	2.61 J		
		Volatile Organic Compounds								
		Acetone	67-64-1	5 U		3.6 J	50 U	25 U		
		1,1-Dichloroethene	75-35-4	1 U	1 U	2 U	2 U	1 U	320	NO
		Benzene	71-43-2	1 U	0.5 U	2 U	2 U	1 U	710	NO
		Toluene	108-88-3	1 U	1 U	2 U	2 U	1 U	424,000	NO
		Trichloroethene	79-01-6	1 U	1 U	2 U	2 U	1 U	810	NO
		Ethylbenzene	100-41-4	1 U	1 U	2 U	2 U	1 U	3280	NO
		trans-1,4-Dichloro-2-butene	110-57-6			10 U	10 U			

Table A-11. Roberts Landfill Surface Water (Continued)

Location ID	Location Cross Reference	Analyte	CAS ID	Surface Water Concentration (µg/l)					Endpoint Criteria	Last round exceed criteria?
				Nov. 2000	Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004		
305	RLSW05	Total Inorganics								
		Aluminum	7429-90-5	134 J	325 A	51.9 A	41.7 A			
		Antimony	7440-36-0	1.6 U	1 U	0.5 U	0.5 U	1 U	45000	NO
		Arsenic	7440-38-2	2.9 U	5 U	1 U	1 U	1 U	1.4	NO
		Barium	7440-39-3	5.9 J	9.64 A	13.4 A	12.9 A			
		Beryllium	7440-41-7	0.6 U	1 U	0.5 U	0.5 U	1 U	1.4	NO
		Calcium	7440-70-2	8920 A	13600 A	13600 A				
		Chromium	7440-47-3	0.4 U	6 U	0.1 U	0.154 A	0.85 J		
		Cobalt	7440-48-4	0.5 U	1.14 A	2.26 A	2.45 A			
		Copper	7440-50-8	1.8 J	23.8 A	49.5 A	32 A	37.4 A		
		Iron	7439-89-6	159 A	1000 U	99.2 A				
		Lead	7439-92-1	2 J	2 U	0.15 U	0.15 U	1 U		
		Magnesium	7439-95-4	2110 J	2680 A	2670 A				
		Manganese	7439-96-5	22.1 A	67.1 A	80.6 A	137 A			
		Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.15	NO
		Nickel	7440-02-0	0.7 U	2 U	1.63 A	1.56 A	0.94 J	100	NO
		Potassium	9/7/7440	827 J	1150 A	1310 A				
		Sodium	7440-23-5	6830 A		12400 A				
		Thallium	7440-28-0	3.5 U	2 U	0.25 U	0.25 U	1 U	48	NO
		Vanadium	7440-62-2	0.3 J	20 U	1 U	1 U			
		Zinc	7440-66-6	5.1 U	25 U	5.63 A	5.99 A	4.25 J		
		Volatile Organic Compounds								
		1,1-Dichloroethene	75-35-4	1 U	1 U	2 U	2 U	1 U	320	NO
Benzene	71-43-2	1 U	0.5 U	2 U	2 U	1 U	710	NO		
Toluene	108-88-3	1 U	1 U	2 U	2 U	1 U	424,000	NO		
Trichloroethene	79-01-6	1 U	1 U	2 U	2 U	1 U	810	NO		
Ethylbenzene	100-41-4	1 U	1 U	2 U	2 U	1 U	3280	NO		

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-12. SWMU 55 Sample Locations

Analyte	CAS ID	Location ID	Location Cross-Reference	Groundwater Concentration (µg/l)				Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Oct. 2001	Oct. 2002	Oct. 2003	Sept. 2004	
Dissolved Inorganic Compounds								
Antimony	7440-36-0	145	55-145	0.5 U	0.853 A	0.712 A		6
		146	55-146	0.5 U	0.1 U	0.235 A		
Semi-volatile Organic Compounds								
bis(2-Ethylhexyl)phthalate	117-81-7	145	55-145	24 U		2.6 U	0.5 U	6
		146	55-146	24 U			0.5 U	
Volatile Organic Compounds								
Methylene chloride	75-09-2	145	55-145	5 U	5 U	10 U	5 U	5
		146	55-146	5 U	5 U	0.54 U	5 U	
Tetrachloroethene	127-18-4	145	55-145	180 A	130 A	170 A	112 A	5
		146	55-146	1 U	2 U	0.79 J	0.15 J	

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-13. SA 76 Sample Locations

Analyte	CAS ID	Location	Location Cross-Reference	Groundwater		Alaska Cleanup Levels 18 AAC 75.345 (µg/L)
				Concentration (µg/l)		
				Oct. 2001	Oct. 2002	
Total Inorganic Compounds						
Lead	7439-92-1	147	76-147	2 U	0.224 A	15
Volatile Organic Compounds						
Tetrachloroethene	127-18-4	147	76-147	1 U	0.86 J	5
m,p-Xylene	-81	147	76-147	2.07 A	2 U	

A - detected concentration

J - estimated detected concentration

U - not detected; sample quantitation limit reported

Note: Blank cells indicate the chemical was not analyzed or the location may not have been sampled during that year of sampling.

Table A-14. Summary of Adak Rock Sole and Blue Mussel Total PCB Analytical Results for Samples Collected from Kuluk Bay and Sweeper Cove, 2000-2005

Embayment	Company Sample ID ^a	Location Cross-Reference	Number of Analytes Tested	Number of Analytes Detected	Sum of Detected Analytes	Units (wet weight)	Exceed Action Level? ^b	
Kuluk Bay <i>Blue Mussel</i>	AM03	AM03	58	37	3.682	µg/kg	NO	
	AM04	AM04	58	39	4.302	µg/kg	NO	
	AM05	AM05 (SWMU 11)	58	30	1.3022	µg/kg	NO	
	AM06	AM06	58	24	0.7893	µg/kg	NO	
	AM07	AM07	58	18	0.407	µg/kg	NO	
	AM23	AM23	58	26	1.672	µg/kg	NO	
	AM01	AM01	58	46	11.687	µg/kg	NO	
	AM02	AM02 (SWMU 13)	58	45	12.119	µg/kg	NO	
	AM24	AM24	58	29	2.8227	µg/kg	NO	
					2000 Mean Value	4.31	µg/kg	NO
	A01M23	AM23	58	14	2.2744	µg/kg	NO	
	A01M24	AM24	58	24	9.4825	µg/kg	NO	
	A01M01	AM01	58	45	45.415	µg/kg	YES	
	A01M03	AM03	58	32	11.319	µg/kg	NO	
	A01M06	AM06	58	13	1.556	µg/kg	NO	
	A01M02	AM02 (SWMU 13)	58	41	50.671	µg/kg	YES	
	A01M04	AM04	58	37	17.036	µg/kg	NO	
	A01M05	AM05 (SMWU 11)	58	37	10.013	µg/kg	NO	
	A01M07	AM07	58	16	0.9896	µg/kg	NO	
					2001 Mean Value	16.5	µg/kg	NO
	A02M02	AM02 (SWMU 13)	58	36	16.7581	µg/kg	NO	
	A02M03	AM03	58	22	4.4013	µg/kg	NO	
	A02M04	AM04	58	31	7.6869	µg/kg	NO	
	A02M05	AM05 (SMWU 11)	58	30	4.5863	µg/kg	NO	
	A02M06	AM06	58	23	1.3087	µg/kg	NO	
	A02M07	AM07	58	24	1.2702	µg/kg	NO	
	A02M23	AM23	58	17	1.689	µg/kg	NO	
	A02M24	AM24	58	22	4.8072	µg/kg	NO	
	A02M01	AM01	58	41	30.4294	µg/kg	NO	
					2002 Mean Value	8.10	µg/kg	NO
	63054	KB-103 (SWMU 11)	168	80	9.76173	µg/kg	NO	
	63055	KB-104 (SWMU 13)	170	92	20.98219	µg/kg	NO	
	63056	KB-105 (SWMU 13)	170	81	9.05703	µg/kg	NO	
63052	KB-101	170	87	18.4788	µg/kg	NO		
63053	KB-102	170	64	3.72398	µg/kg	NO		
				2003 Mean Value	12.4	µg/kg	NO	
230730	KB-104 (SWMU 13)	168	112	57.1	µg/kg	YES		
230731	KB-105 (SWMU 13)	168	108	60.3	µg/kg	YES		
230732	AM03	168	96	13.9	µg/kg	NO		
230733	AM04	168	92	17.6	µg/kg	NO		
230734	AM05 (SMWU 11)	168	81	10.9	µg/kg	NO		
				2005 Mean Value	32	µg/kg	YES	
Rock Sole	AD-01	ZETO POINT (AD-01)	56	44	2.5259	µg/kg	NO	
	AD-08	KULUK BAY (AD-08)	56	45	3.2832	µg/kg	NO	
	AD-11	LUCKY POINT (AD-11)	56	45	9.2116	µg/kg	YES	
					2000 Mean Value	5.01	µg/kg	NO

Table A-14. Summary of Adak Rock Sole and Blue Mussel Total PCB Analytical Results for Samples Collected from Kuluk Bay and Sweeper Cove, 2000-2005 (Continued)

Embayment	Company Sample ID ^a	Location Cross-Reference	Number of Analytes Tested	Number of Analytes Detected	Sum of Detected Analytes	Units (wet weight)	Exceed Action Level? ^b
<i>Rock Sole</i> (Continued)	MSL01AK	MSL01AK (KULUK BAY)	58	40	14.5812	µg/kg	YES
	MSL01AZ	MSL01AZ (ZETO POINT)	58	12	0.9281	µg/kg	NO
				2001 Mean Value	7.75	µg/kg	YES
	MSL02AK	MSL02AK (KULUK BAY)	58	29	8.407	µg/kg	YES
	MSL02AZ	MSL02AZ (ZETO POINT)	58	23	1.475	µg/kg	NO
				2002 Mean Value	4.94	µg/kg	NO
	63057	KB-Trawl	170	85	8.88436	µg/kg	YES
	63060	KB-Trawl	170	99	21.04366	µg/kg	YES
	63061	KB-Trawl	170	88	10.75529	µg/kg	YES
	63059	KB-Trawl	170	94	10.43126	µg/kg	YES
	63058	KB-Trawl	170	96	16.48437	µg/kg	YES
				2003 Mean Value	13.5	µg/kg	YES
	230719	KB-Trawl	168	75	4.88	µg/kg	NO
	230720	KB-Trawl	168	86	11	µg/kg	YES
	230721	KB-Trawl	168	81	6.63	µg/kg	YES
	230722	KB-Trawl	168	80	10.4	µg/kg	YES
	230723	KB-Trawl	168	80	5.56	µg/kg	NO
				2005 Mean Value	7.69	µg/kg	YES
	<i>Sweeper Cove</i> <i>Blue Mussel</i>	AM25	AM25	57	35	5.2217	µg/kg
AM31		AM31	58	44	15.3666	µg/kg	NO
AM27		AM27	58	36	8.761	µg/kg	NO
AM28		AM28	58	47	345.475	µg/kg	YES
AM29		AM29	58	46	26.417	µg/kg	NO
AM30		AM30	58	44	14.389	µg/kg	NO
AM26		AM26	58	44	10.371	µg/kg	NO
				2000 Mean Value	60.9	µg/kg	YES
A01M25		AM25	58	24	7.1856	µg/kg	NO
A01M26		AM26	58	28	12.653	µg/kg	NO
A01M27		AM27	58	31	15.856	µg/kg	NO
A01M28		AM28	58	34	57.685	µg/kg	YES
A01M29		AM29	58	35	26.76	µg/kg	NO
A01M30		AM30	58	36	28.5	µg/kg	NO
A01M31		AM31	58	32	22.305	µg/kg	NO
				2001 Mean Value	24.4	µg/kg	NO
A02M28		AM28	58	32	97.9852	µg/kg	YES
A02M29		AM29	58	32	23.7119	µg/kg	NO
A02M30		AM30	58	32	14.1939	µg/kg	NO
A02M31		AM31	58	27	10.1487	µg/kg	NO
A02M25		AM25	58	24	5.5005	µg/kg	NO
A02M26		AM26	58	24	9.025	µg/kg	NO
A02M27		AM27	58	30	19.2058	µg/kg	NO
				2002 Mean Value	25.7	µg/kg	NO
63046		SW-101	170	99	39.29333	µg/kg	YES
63047		SW-102	170	97	45.46991	µg/kg	YES
63051		SW-102	170	98	38.43331	µg/kg	YES
63048		SW-103	170	91	22.74729	µg/kg	NO

Table A-14. Summary of Adak Rock Sole and Blue Mussel Total PCB Analytical Results for Samples Collected from Kuluk Bay and Sweeper Cove, 2000-2005 (Continued)

Embayment	Company Sample ID ^a	Location Cross-Reference	Number of Analytes Tested	Number of Analytes Detected	Sum of Detected Analytes	Units (wet weight)	Exceed Action Level? ^b	
	63049	SW-104	170	86	15.15741	µg/kg	NO	
	63050	SW-105	170	97	43.60771	µg/kg	YES	
Sweeper Cove Blue Mussel (Continued)				2003 Mean Value	34.1	µg/kg	YES	
	230724	AM25	168	96	22.5	µg/kg	NO	
	230725	AM26	168	104	57.3	µg/kg	YES	
	230727	AM28	168	132	483	µg/kg	YES	
	230728	AM31	168	99	41.4	µg/kg	YES	
	230729	SW-102	168	106	63.2	µg/kg	YES	
					2005 Mean Value	133	µg/kg	YES
Rock Sole	AD-19	OUTER SWEEPER (AD-19)	56	46	31.083	µg/kg	YES	
	AD-23	INNER SWEEPER (AD-23)	56	48	81.397	µg/kg	YES	
					2000 Mean Value	56.2	µg/kg	YES
	MSL01AI	MSL01AI (INNER SWEEPER)	58	41	79.3739	µg/kg	YES	
	MSL01AO	MSL01AO (OUTER SWEEPER)	58	41	44.6441	µg/kg	YES	
					2001 Mean Value	62.0	µg/kg	YES
	MSL02AI	MSL02AI (INNER SWEEPER)	58	41	119.56	µg/kg	YES	
	MSL02AO	MSL02AO (OUTER SWEEPER)	58	43	55.527	µg/kg	YES	
					2002 Mean Value	87.0	µg/kg	YES
	63062	SW-Trawl	170	112	132.49989	µg/kg	YES	
	63067	SW-Trawl	170	110	78.61105	µg/kg	YES	
	63063	SW-Trawl	170	104	73.35265	µg/kg	YES	
	63064	SW-Trawl	170	110	113.38977	µg/kg	YES	
	63065	SW-Trawl	170	104	79.50977	µg/kg	YES	
	63066	SW-Trawl	170	111	98.82073	µg/kg	YES	
					2003 Mean Value	96.0	µg/kg	YES
	230713	SW-Trawl	168	86	25.9	µg/kg	YES	
	230714	SW-Trawl	168	88	23.9	µg/kg	YES	
	230715	SW-Trawl	168	85	14.8	µg/kg	YES	
	230716	SW-Trawl	168	86	17.1	µg/kg	YES	
	230717	SW-Trawl	168	85	13.1	µg/kg	YES	
	230718	SW-Trawl	168	88	22.1	µg/kg	YES	
					2005 Mean Value	19.5	µg/kg	YES

^aSamples collected prior to 2003 were collected by the United States Geological Service (USGS). USGS sampling locations are not depicted on Figure A-10.

^bA risk-based action level of 6.5 µg/kg for rock sole and 31 µg/kg for blue mussels was used as described in the ROD for OU A.

APPENDIX B

List of Sites Included in 2003 SAERA Amendment

Petroleum Release Sites Per OU A ROD

Site Name	Remedy Per OU A ROD
Amulet Housing, Well AMW 706 Area	Monitored natural attenuation
Amulet Housing, Well AMW 709 Area	Monitored natural attenuation
Antenna Field (USTs ANT 1, ANT 2, ANT 3 and ANT 4)	Monitored natural attenuation
ASR 8 Facility (UST 42007 B)	Limited soil removal
Boy Scout Camp, West Haven Lake (UST BS 1)	Limited groundwater monitoring
Contractors Camp Burn Pad	Limited soil removal
Finger Bay Quonset Hut	Limited soil removal
Former Power Plan Building (T 1451)	Monitored natural attenuation
GCI Compound (UST GCI 1)	Product recovery
Girl Scout Camp (UST GS 1)	Limited soil removal
Housing Area (Arctic Acres)	Monitored natural attenuation
MAUW Compound (UST 24000 A)	Limited groundwater monitoring
Mount Moffett Power Plant No. 5 (USTs 10574 through 10577)	Limited soil removal
NAVFAC Compound (USTs 20052 and 20053)	Limited groundwater monitoring
Navy Exchange Building (UST 30027 A)	Limited soil removal
New Roberts Housing (UST HST 7C)	Limited groundwater monitoring
NMCB Building Area (UST T-1416-A)	Located within a larger remedial action site
NMCB Building Area, T 1416 Expanded Area	Product recovery
NORPAC Hill Seep Area	Product recovery
Officer Hill and Amulet Housing (UST 31047 A)	Limited soil removal
Officer Hill and Amulet Housing (UST 31049 A)	Limited soil removal
Officer Hill and Amulet Housing (UST 31052 A)	Limited soil removal
Quarters A	Limited soil removal
ROICC Contractor's Area (UST ROICC 7)	Limited groundwater monitoring
ROICC Contractor's Area (UST ROICC 8)	Monitored natural attenuation
ROICC Warehouse (UST ROICC 2)	Limited groundwater monitoring
ROICC Warehouse (UST ROICC 3)	Limited groundwater monitoring
Runway 5-23 Avgas Valve Pit	Monitored natural attenuation
SA 73, Heating Plant No. 6 (Original SAERA site)	Product recovery
SA 77, Fuels Facility Refueling Dock, Small Drum Storage Area	Limited soil removal
SA 78, Old Transportation Building (USTs 10583, 10584, and ASTs) (Original SAERA site)	Product recovery
SA 79, Main Road Pipeline (Original SAERA site)	Limited groundwater monitoring
SA 80, Stream Plant No. 4 (USTs 27089 and 27090) (Original SAERA site)	Product recovery

Petroleum Release Sites Per OU A ROD (Continued)

Site Name	Remedy Per OU A ROD
SA 81, Gun Turret Hill (USTs 10593 and 10595) (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria
SA 82, P 80/P 81 Buildings (UST 10579) (Original SAERA site)	Product recovery
SA 84, Sand Shed (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria
SA 85, New Baler Building (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria
SA 86, Old Happy Valley Child Care Center (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria
SA 87, Old Zeto Point Wizard Station (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria
SA 88, P 70 Energy Generator (UST 10578) (Original SAERA site)	Product recovery
SA 89, Tank Farm C (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria
South of Runway 18-36 Area	Product recovery
SWMU 14, Old Pesticide Storage and Disposal Area	Monitored natural attenuation
SWMU 15, Future Jobs/Defense Reutilization Marketing Office (Non-Petroleum Chemicals)	Monitored natural attenuation
SWMU 17, Power Plant No. 3	Product recovery
SWMU 22, Avgas Drum Storage Area South of Tank Farm A (Original SAERA site)	Original NFA site listed in SAERA agreement
SWMU 31, Runway 18-36 Avgas Drum Disposal Area (Original SAERA site)	Original NFA site listed in SAERA agreement
SWMU 34, Steam Plant #44, Used Oil AST (Original SAERA site)	Original NFA site listed in SAERA agreement
SWMU 35 Ground Support Equipment (GSE) Used Oil AST (Original SAERA site)	Original NFA site listed in SAERA agreement
SWMU 41, Ground Support Equipment (GSE) Used-Oil Storage Area (Original SAERA site)	Original NFA site listed in SAERA agreement
SWMU 44, AIMD Used Oil Storage Area (Original SAERA site)	Original NFA site listed in SAERA agreement
SWMU 45, Sewage Treatment Plant Petroleum Contamination (Original SAERA site)	Original NFA site listed in SAERA agreement
SWMU 56, Public Works Transportation Department (UST T 1441 A) (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria
SWMU 57, Fuels Facility Refueling Dock (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria
SWMU 58, Heating Plant No. 6 (Original SAERA site)	Product recovery
SWMU 60, Tank Farm A (Original SAERA site)	Monitored natural attenuation
SWMU 61, Tank Farm B (Original SAERA site)	Monitored natural attenuation
SWMU 62, New Housing Fuel Leak (Original SAERA site)	Product recovery
SWMU 64, Tank Farm D, Northern Area (Original SAERA site)	NFA based upon AAC 75 Method Four Criteria

Petroleum Release Sites Per OU A ROD (Continued)

Site Name	Remedy Per OU A ROD
Tank Shed (UST 42494)	Product recovery
Yakutat Hangar, UST T-2039 A	Product recovery
Yakutat Hangar, USTs T-2039 B and T-2039 C	Limited soil removal

Notes:

AAC - Alaska Administrative Code

NFA - no further action

ROD - Record of Decision

SAERA - State-Adak Environmental Restoration Agreement