

7.0 TECHNICAL ASSESSMENT

7.1 FUNCTIONALITY OF REMEDY

This section answers the question, “Is the remedy functioning as intended by the decision documents?” The functionality of the remedy components applicable to each site is summarized by OU in the sections that follow.

7.1.1 Functionality of Remedy for Operable Unit A

All of the remedy components (listed by site in Tables 4-2 and 4-4) are functional for most of the OU A sites. The landfill caps and covers have been constructed and are regularly inspected and maintained. The ponds at SWMU 17 have been drained, dredged, and restored. Impacted sediment has been removed from South Sweeper Creek, and limited soil removals have been completed at most of the petroleum sites selected for this remedy component. Interim remedial action product recovery has been performed at the 14 free-product recovery petroleum sites. The final remedy has been implemented at 10 of the 14 sites, and progress has been made toward the final remedies for the four remaining free-product recovery petroleum sites.

An ICMP is in place, and IC inspections occur annually. Deficiencies are identified and corrective action is consistently taken. The 2005 IC inspection report recommended repairs and or upgrades to the Engineering Controls at SWMU 2, 13, and 25 as discussed in Section 6.5. The inspection and associated follow-up is functioning as intended. Long-term monitoring has been initiated and is ongoing. The long-term monitoring goals and requirements are periodically revisited to maintain focus on the endpoint goals. The Navy and U.S. Geological Survey have shown that natural attenuation of petroleum compounds is occurring on Adak, and natural attenuation monitoring is part of the long-term monitoring program.

The remedy components are not fully functional at the following OU A petroleum sites:

- ASR-8 Facility, where soil removal is planned for 2008
- SA 77 Fuels Facility Refueling Dock, Small Drum Storage Area, where soil removal is planned for 2008
- SA 88, P-70 Energy Generator

Although the limited soil removal at site SA 77 is not complete, the IC component of the remedy for this site is functioning to protect human health and the environment. At site ASR-8, the remedy is expected to be functional following the limited soil removal in 2008.

At SA 88, free-product recovery was implemented as the OU A ROD interim remedy, and limited groundwater monitoring was selected as the final remedy. Monitoring results from 2005, however, revealed the presence of significant free-product in several wells at the site. The measured free product thicknesses imply that the selected limited groundwater monitoring final remedy is unlikely to functionally meet the endpoint criteria in a reasonable time frame.

7.1.2 Functionality of Remedy for Operable Unit B-1

Since the transfer of the former Navy complex to the Aleut Corporation and the City of Adak, two incidents of unauthorized access to the remaining access restricted area have occurred. Two other incidents of non-reporting of encounters with munitions related items are also known to have occurred. While none of these incidents have resulted in exposure to an explosive hazard, the Navy has taken steps to improve the effectiveness of its existing program of ordnance education and awareness as well as access barriers and notices (see Section 6.2.3).

- A worker for an on-island fish processor took military munitions scrap into the City of Adak in his pickup truck and delivered them to the local police officer. The likely source of the items was the access restricted area surrounding Lake Andrew. The items were determined to be OE Scrap and were disposed of by EOD Det MU 11 Whidbey by open detonation on Adak. The Navy took immediate action to prevent a reoccurrence by placing boulders and reinforcing existing gates and locks on access roads. Additional warning signs were placed on the property. The Navy wrote a letter to the City of Adak and Adak Seafoods to convey the Navy's concerns regarding the violation of posted access restrictions. There was also an extended discussion of this incident at a RAB meeting.
- In late 2004 Navy learned that an individual employed by Samson Barge & Tug had trespassed onto Parcel 4 and retrieved shell casings. The matter was discovered when he approached the local police chief inquiring about possible restrictions in bringing casings aboard a commercial aircraft. Navy contacted the Chief of Police to obtain information with a view toward referring the matter for criminal prosecution. The Chief of Police asked the Navy not to take any action, as he believed the matter had been sufficiently addressed. The Chief related that the individual was new to Adak and given the number of signs on Adak prohibiting entry into buildings obviously transferred to TAC, the individual did not understand that the signs regarding Parcel 4 were current. Navy agreed and contacted TAC as to signs on buildings, etc. that should be removed.

On two other occasions, proper procedures were not followed in reporting and responding to an encounter with military munitions scrap. In February 2005, Navy was informed that a contractor had discovered expended 90mm cartridge cases while performing dredging operations to improve the small boat harbor at Adak for the City of Adak. The items were expended and did not pose a safety hazard. However, it was determined that the contractor had not received the Adak UXO Awareness Training. The Navy understood after these incidents that steps were needed to improve the effectiveness of the awareness program. The Navy worked with local authorities to set in place new procedures concerning the management of MEC items found (from on-island notification to disposal by Fort Richardson), and an on-island resident with UXO experience was contracted to distribute additional awareness/educational materials. In addition, the Navy continues to work with Adak stakeholders to improve the effectiveness of the ordnance awareness program.

The second instance of improper reporting and response to a potential encounter with military munitions occurred in 2005. In this case, 165 105-mm illumination rounds without cartridge cases were discovered in the vicinity of the White Alice trail head. Navy advised the City of Adak to make contact with EOD, Ft. Richardson, AK to determine the need for response in accordance with procedures previously established. The City of Adak elected not to report the discovery to Ft. Richardson as required under established procedures. In October 2006, pursuant to a request by NAVFAC NW, EOD Det MU 11, Whidbey went to Adak to conduct a sweep of the Lake Andrew Seawall and dispose of other munitions related items. As the initial notification indicated 25-30 items and there were actually 165 smoke pots, 10 MI smoke grenades and 6 propellant charges, EOD did not have sufficient high explosive to consume all of the rounds. Consequently, 65% of all ordnance were consumed and EOD determined that the remaining ordnance items did not pose an immediate safety hazard.

Another incident involving management of MEC items occurred at the end of the 2004 field season. In September 2004 a 20 mm projectile was discovered during the performance of QC efforts by the Navy's contractor in AOC LJ-01. After consultation with NAVFAC NW, EOD Det MU 11 Whidbey Island, and the Navy's contractor, the item was placed in an appropriate container and reburied in the access-restricted area (Parcel 4). In January 2005 the item was moved to another location within the access restricted area located because Navy felt the location was 'too well known' the item might be tampered with or removed. In September of 2005, during a response trip to dispose of the 20mm round, EOD was unable to locate the item and was, therefore, unable to dispose of the item. EOD Det MU 11 Whidbey Island determined that the item could be readily relocated with the aid of a metal detector (which was not available to them during their response trip). EOD Det MU 11 Whidbey Island further determined that the item posed no significant explosive safety hazard at its burial location in the access-restricted area. In October of 2005, NAVFAC NW personnel located the projectile, reburied the item ,and

marked the location to assist EOD Det MU 11 Whidbey Island in finding the item at their next response visit planned for 2006

The Navy has elected not to disclose the location of the item to anyone (including regulatory agencies) that does not have a “need to know” its location to accomplish proper disposal of the item. The Navy has recommended corrective action in terms of planning of future EOD Det responses to Adak to improve the effectiveness of future responses to MEC on Adak Island (see after action report and Endorsement for Sept 2005 EOD response).

While no munitions were involved, Navy is aware of one instance where a group of people employed by USFWS disobeyed the access restrictions to Parcel 4 and went to Lake Andrew for the purpose of collecting sea shells. Navy personnel advised the FWS supervisor of the violation and reiterated that the access restrictions also applied to FWS employees.

The chemical sampling and soil removal component of the selected remedy at specific OU B-1 sites has been completed and has functioned to reduce the potential ordnance-related chemical risk and, thus, prevent future residents and recreational users from being exposed to explosives-related contamination in soils above the cleanup levels.

The selected remedies have been completed at 30 of the 50 action sites during the 2001 and 2002 field seasons (U.S. Navy 2002b and 2003h). Alaska DEC and EPA have not yet concurred with the remedial actions documented in the 2004 after action report (U.S. Navy 2005j), and therefore the remedy cannot be considered complete at the sites addressed during the 2004 field season. Sites addressed during the 2004 field season include sites within and outside of Parcel 4. OU B-1 sites within the boundaries of Parcel 4 are no longer planned for transfer by the Navy to TAC or USFWS, and remedial requirements for OU B-1 sites within the boundaries of Parcel 4, where remedial actions have not yet been completed, are under review by the Navy, EPA, and Alaska DEC. The Navy has recommended no further actions for the OU B-1 sites outside of Parcel 4 addressed during the 2004 field season, and these recommendations are under review by Alaska DEC and EPA. Alaska DEC and EPA have agreed that site C1-02 does not require further action (due to remoteness/impracticability). However, the documented OU B-1 ROD remedy for this site is not complete.

7.1.3 Operation and Maintenance Costs

Operation and maintenance costs generally declined over this 5-year review period, as active free-product recovery efforts were discontinued (with agency concurrence) and passive free-product recovery at many sites met the endpoint criteria.

Monitoring costs began to rise towards the end of this 5-year review period, as remedies were implemented and sites were added to the monitoring program.

The trends in operation, maintenance, and monitoring costs are not indicative of any remedy problems.

7.2 CONTINUED VALIDITY OF ROD ASSUMPTIONS

This section answers the question, “Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of remedy selection still valid?” Therefore, this section reviews any changes to ARARs used to establish remediation goals (RGs) in the RODs and reviews any changes to risk assessment assumptions (exposure and toxicity) to evaluate the protectiveness of the remedy.

The findings documented in this section are that changes in the ARARs, exposure, and toxicity assumptions that have occurred since the RODs were signed do not affect the protectiveness of the remedy. Concentrations of many chemicals in groundwater remain above the RGs within the downtown area of Adak at the majority of locations where long-term monitoring is occurring, resulting in the need for continued ICs to prevent exposure and the need for ongoing monitoring. Although some of the RGs might be lower if selected today, the remedy components continue to protect against exposures, just as they did at the time the ROD was signed. ICs preventing exposure and ongoing monitoring will need to continue until COC concentrations in groundwater are below the RGs. The endpoint criteria being used to evaluate sediment concentrations at SWMU 11 are likely unnecessarily restrictive and should be revised to more closely reflect potential health risks due to sediment exposures at SWMU 11.

7.2.1 Review of Applicable or Relevant and Appropriate Requirements

In the preamble to the NCP, EPA stated that ARARs are generally “frozen” at the time of ROD signature, unless new or modified requirements call into question the protectiveness of the selected remedy. Five-year review guidance (USEPA 2001) indicates that the question of interest in developing the 5-year review is not whether a standard identified as an ARAR in the ROD has changed in the intervening period, but whether this change to a regulation calls into question the protectiveness of the remedy. If the change in the standard would be more stringent, the next stage is to evaluate and compare the old and the new standards and their associated risk. This comparison is done to assess whether the currently calculated risk associated with the standard identified in the ROD is still below the ROD-specified acceptable excess cancer risk range maximum of 1×10^{-5} . If the old standard is not considered protective, a new cleanup standard may need to be adopted after the 5-year review through CERCLA’s processes for modifying a remedy.

During the first 5-year review for Adak, no substantive changes were found to ARARs that would call into question the protectiveness of the remedy. For this 5-year review, all the ARARs identified in the RODs for OU A and OU B-1 were reviewed for changes that could affect the assessment of whether the remedy is protective.

Some ARARs that were used in the determination of cleanup levels have been amended since publication of one or both of the two RODs. These regulations are the following:

- Alaska 18 AAC 75 cleanup levels (Alaska DEC 2005a)
- Federal and state drinking water regulations (MCLs) (USEPA 2004a)
- Federal national recommended water quality criteria for protection of surface water (USEPA 2004b)

The result of the amendments to the regulations is sometimes the lowering of a numeric ARAR. In these instances, the revised ARAR must be evaluated to determine whether there is a negative effect on the protectiveness of the remedy. In other instances, the ARAR remains unchanged, or has been raised.

Operable Unit A – CERCLA Sites

As discussed in earlier sections, the CERCLA sites were divided into three broad categories: landfills, sites requiring ICs because of excess health risks (either human or ecological), and sites requiring active cleanup. Two landfills, Roberts and White Alice Landfills (SWMUs 25 and 18/19) are included in this discussion, although they are being addressed under the State's solid waste disposal regulations, rather than CERCLA. Numeric RGs were established for groundwater, surface water, marine tissue, and for the sediment removals conducted at SWMU 17. For on-going monitoring of sediments at SWMU 11 (a landfill), no RGs were established in the ROD, but the long-term monitoring program (U.S. Navy 2005c, Appendix F) has established "criteria endpoints" that have been used to evaluate the sediment results. No RGs were established in the ROD for soil at CERCLA sites. Changes to ARARs, RGs, and endpoint criteria due to changes in the regulations are discussed below by media.

Groundwater. For all groundwater that could be used as drinking water, the ROD established RGs as the MCLs. Additionally, for all groundwater, regardless of its potential use as a drinking water source, the ROD established state and federal surface water quality standards as RGs at groundwater monitoring locations between impacted areas and downgradient surface water. Ongoing groundwater monitoring is occurring at SWMUs 14, 15 and 55 and at three of the four landfills with active monitoring (SWMUs 13, 18/19, and 25). The groundwater COCs identified in the OU A ROD because of exceedances above MCLs are the following:

- Benzene
- Bis(2-ethylhexyl)phthalate
- GRO
- Lead
- Methylene chloride
- Tetrachloroethene
- Ethylbenzene
- Thallium
- Toluene
- Trichloroethene

Table 7-1 compares current ARAR values for the groundwater pathway with those presented in Section 10.3 of the OU A ROD (U.S. Navy, USEPA, and Alaska DEC 2000). There have been no changes to the MCLs for the COCs listed in the ROD.

The ongoing long-term groundwater monitoring occurring at the site has evaluated a much longer list of chemicals than the ROD COCs, varying by specific well and SWMU. This longer list of analytes was intended to include all detected chemicals in the analytical program (U.S. Navy 2005c, Appendices A and B). Potential changes in ARARs for these additional chemicals were not evaluated in this 5-year review, because these chemicals are not COCs.

Although there have been no MCL changes to the ROD COCs, in some cases state and federal surface water quality standards for the COCs have changed. Where these standards have changed, the standards are now lower for some chemicals and higher for others. Surface water criteria changes are noted in Table 7-2. Changes to surface water criteria do not affect the protectiveness of the remedy, because (1) all the groundwater monitoring at the CERCLA sites is of water that could be used as a drinking water source, and, thus, concentrations of COCs would have to meet MCLs before monitoring could be discontinued, and (2) with the exception of lead, all surface water ARARs shown on Table 7-2 are at higher concentrations than their respective MCLs.

Surface Water. No specific COCs were provided in the OU A ROD for the surface water monitoring that the ROD required at landfill SWMUs 11, 13, 18/19, and 25. However, the ROD stated that surface water monitoring for SWMUs 11 and 13 should follow the requirements listed for groundwater. Consequently, the CMP established the state water quality standards (18 AAC 70) as the endpoint criteria and developed a list of COCs based on detected chemicals. Federal water quality criteria were used if no state criteria were available. Table 7-2 lists the COCs and endpoint criteria established in the CMP and compares current ARAR values for the surface water COCs and endpoint criteria presented in the long-term monitoring plan in the CMP (U.S. Navy 2005c, Appendix F). The endpoint criteria in the CMP have been used as indicators for

whether surface water at SWMUs 11, 18/19, and 25 requires continued monitoring or whether COCs in surface water can be considered to be without an appreciable human or ecological health risk. For the majority of the surface water COCs, state and federal surface water quality standards have changed. Where these standards have changed, the standards are now lower for some chemicals and higher for others. These ARAR changes do not affect the protectiveness of the remedy, because the COCs are no longer being detected for the majority of these chemicals, or detections are low and relatively infrequent.

Sediment. Cleanup levels for sediment removal at the SWMU 17 waste oil pond were based on 18 AAC 75 soil criteria for the site COCs: PCBs (1 mg/kg), antimony (3 mg/kg), and mercury (1.24 mg/kg). Soil criteria were used to determine when cleanup was complete, because the pond's water and sediment were removed and the remaining material would be soil, not sediment. Sediment that was removed was treated until DRO and RRO concentrations met disposal requirements for Roberts Landfill (100 mg/kg and 2,000 mg/kg, respectively). Neither cleanup levels nor treatment levels have changed since the OU A ROD was signed. PCBs were the only COC in sediments in the retention pond (also at SWMU 17) and the sediments in South Sweeper Creek. The PCB cleanup level used at those locations was also 1 mg/kg, based on state soil criteria. This value has also not changed. Therefore, the sediment removal remedies implemented at SWMU 17 and South Sweeper Creek remain protective.

Both fresh and marine sediments are part of the long-term monitoring at SWMU 11, as required by the ROD. No COCs or RGs were established in the ROD. Therefore, the risk-based levels used to screen sites in the PSE-2 process (U.S. Navy 1996a) were selected as the endpoint criteria for SWMU 11 sediments, and COCs were selected based on historical chemical detections. Table 7-3 presents the endpoint criteria listed in Appendix F of the CMP and indicates whether they were based on human or ecological health. The lower of the two values was selected as the endpoint criteria. The risk basis of the endpoint criteria has changed since the ROD was signed. The differences in risk estimates between the signing of the ROD and today are discussed further in Section 7.2.2. Table 7-3 provides generic (rather than site specific) risk-based values that could be applied to sediments if risk-based values were to be developed today. In all cases for the values based on human health, endpoint criteria would be at least one to three orders of magnitude higher. For ecological health, the PCB value would be three orders of magnitude higher, and the other three ecologically based values would not change. Because the new values are higher, the remedy remains protective.

Marine Tissue. The ROD established risk-based RGs for fish and shellfish in Kuluk Bay and Sweeper Cover. PCBs were the only COC. The PCB RGs of 0.0065 mg/kg and 0.031 mg/kg for fish and shellfish, respectively, would not be different if the risk-based levels were calculated today.

Operable Unit A – Petroleum Sites

Separate RGs were established for the petroleum and CERCLA sites. Table 7-4 lists the ROD RGs for the petroleum COCs in soil and groundwater. The ROD petroleum RGs were all based on Alaska state regulations 18 AAC 75.340, 341, and 345. Table 7-4 also indicates which values have changed since the signing of the ROD. Few chemicals had changes, and none of those changes affects the protectiveness of the remedy. Specific changes are discussed below by media.

Sixty-two petroleum sites were withdrawn from the OU A ROD via the OU A ROD Amendment 1, signed in 2003, and are being administered by State-lead cleanup regulations. Of the 62 sites removed from the OU A ROD, 46 sites were further action sites and 16 were no further actions sites. All OU A ROD cleanup levels for the petroleum sites were based on state regulations. Therefore, for sites that have been previously remediated to the OU A ROD RG levels, the Amendment does not affect cleanup or the protectiveness of the remedy.

Soil. Though some of the soil cleanup levels have changed for some chemicals, only DRO soil petroleum levels were driving factors for petroleum sites. Sites where soil petroleum concentrations exceeded 18 AAC 75 soil criteria for DRO were selected for limited soil removal. The 18AAC 75 soil cleanup level for DRO has not changed.

Groundwater. The ARARs are defined for groundwater as a source of drinking water and as a contributor to surface water. Naphthalene is the only chemical listed in the OU A ROD for which the new ARAR value is lower (more stringent). The 18 AAC 75 groundwater cleanup level for naphthalene for the drinking water pathway is currently 0.7 mg/L, the previous cleanup level was 1.46 mg/L. This value change does not affect the protectiveness of the remedy, as long as ICs remain in place.

Free-Product Petroleum Sites—No Unacceptable Risk Sites

For the 14 free-product sites, site-specific RGs have been calculated based on risk assessments conducted according to Alaska DEC guidance (Alaska DEC 2000). These risk-based cleanup levels are different than the Alaska cleanup levels shown in Table 7-4. The following 10 of the 14 free-product sites were determined to pose no unacceptable risk to human health or the environment under current land use conditions. The remaining four free-product petroleum sites are discussed separately below.

- GCI Compound
- SA 80, Steam Plant 4
- Tanker Shed
- SA 78, Old Transportation Building

- SA 82, P-80/P-81 Buildings
- SA 88, P-70 Energy Generator
- SWMU 58, Heating Plant 6
- SA 73, Heating Plant 6
- Yakutat Hangar
- NORPAC Hill Seep Area

The RGs for these 10 sites were selected and approved by Alaska DEC in the *Final Decision Document for Petroleum Sites with No Unacceptable Risk* (U.S. Navy and Alaska DEC 2005a). It should be noted that although SWMU 58 and SA 73 were established as separate sites, they are both located at Heating Plant 6 and are addressed as a single site. The RGs selected for these 10 sites are discussed below.

Soil. Under the Alaska DEC Method Four cleanup levels for soil, site-specific alternative cleanup levels (ACLs) may be proposed based upon results of the risk assessment conducted for an individual site. Proposed ACLs are submitted to the Alaska DEC for approval. These ACLs are designated for an individual site if the Alaska DEC agrees that they are protective of human health, safety, and welfare and of the environment (18 AAC 75.340[f]). Because the risk assessments for these 10 sites established that the concentrations in soil do not pose a risk to humans or the environment above target health goals at their present contamination level, no separate ACLs were calculated, and, by default, the existing contaminant levels at each site become the site-specific RGs. The risk assessment findings of no unacceptable risk remain valid, providing that the assumed land uses for the site, as per the Adak Reuse Plan, do not change.

Groundwater. RGs specified for groundwater at these 10 free-product petroleum sites are based on the use of groundwater as a drinking water source (18 AAC 75.345[b][1], Table C), or 10 times these levels if the groundwater is not reasonably expected to be a potential future source of drinking water (18 AAC 75.345[b][2]). Groundwater at the GCI Compound, SA 80, and Tanker Shed sites is considered to be a reasonably expected potential future source of drinking water. Groundwater cleanup levels for these sites are those specified in Table C of 18 AAC 75.345(b)(1) (see Table 7-4). Groundwater at the seven remaining sites is not considered to be a reasonably expected potential future source of drinking water. Groundwater cleanup levels for these sites are 10 times the levels specified in Table C of the Alaska regulations (see Table 7-4).

Free-Product Petroleum Sites—Unacceptable Risk Sites

The remaining four free-product petroleum sites were determined to pose unacceptable risk to human health and/or the environment and were evaluated separately from the 10 free-product sites discussed above. The decision document for one of these sites, the NMCB Building Area,

was finalized in January 2006 (U.S. Navy and Alaska DEC 2006). The decision documents for two of these sites (South of Runway 18-36 Area and SWMU 62, New Housing Fuel Leak Site) are in progress. While the decision documents for these two sites have not yet been finalized and approved by Alaska DEC, cleanup decisions have been proposed and discussed with the Agency. The proposed RGs for these sites are discussed below. The SWMU 17, Power Plant 3 site is still in the focused feasibility stage of the process, and no RGs have been proposed as of yet. Therefore, RGs for SWMU 17, Power Plant 3 is not discussed in this 5-year review.

Soil. For South of Runway 18-36 Area, the risk assessment established that the concentrations in soil do not pose a risk to humans or the environment above target health goals at their present contamination level. Therefore, as discussed above for the no-risk sites, no separate ACLs were calculated for the South of Runway 18-36 Area site and, by default, the existing contaminant levels at the site become the site-specific RGs (U.S. Navy and Alaska DEC 2005b). The RGs for the NMCB Building Area and SWMU 62, New Housing Fuel Leak sites are summarized below. For NMCB Building, the RGs are based on the ACLs calculated for DRO and GRO in soil protective of construction worker exposures to soil (U.S. Navy and Alaska DEC 2006). The RGs for the SWMU 62, New Housing Fuel Leak site are based on the ACLs calculated for DRO in soil protective of child residential exposures (U.S. Navy and Alaska DEC 2005c).

- NMCB Building Soil RGs:
 - DRO = 31,000 mg/kg
 - GRO = 1,700 mg/kg
- SWMU 62, New Housing Fuel Leak Soil RGs:
 - DRO = 6,100 mg/kg

Groundwater. RGs specified for groundwater at these three free-product petroleum sites are based on the use of groundwater as a drinking water source (18 AAC 75.345[b][1], Table C), or 10 times these levels if the groundwater is not reasonably expected to be a potential future source of drinking water (18 AAC 75.345[b][2]). Groundwater at the SWMU 62, New Housing Fuel Leak site is considered to be a reasonably expected potential future source of drinking water. Groundwater cleanup levels for this site are those specified in Table C of 18 AAC 75.345(b)(1) (see Table 7-4). Groundwater at NMCB Building Area and the South of Runway 18-36 Area sites is not considered to be a reasonably expected potential future source of drinking water. Groundwater cleanup levels for these sites are 10 times the levels specified in Table C of the Alaska regulations (see Table 7-4).

Surface Water and Sediment. For surface water bodies of the state, Alaska regulation 18 AAC Chapter 70 establishes water quality standards based on water use classes and subclasses. Waters of Sweeper Cove and the lower reach of South Sweeper Creek fall within the marine water class and the following subclasses: water supply aquaculture; secondary recreation; and

growth and propagation of fish, shellfish, other aquatic life, and wildlife. The water quality standards established for this use class (and these subclasses) specify that total aqueous hydrocarbons in the water column may not exceed 15 µg/L and that total aromatic hydrocarbons in the water column may not exceed 10 µg/L. In addition, there may be no concentrations of petroleum hydrocarbons, animal fats, or vegetable oils in shoreline or bottom sediments that cause deleterious effects to aquatic life. Surface waters and adjoining shorelines must be virtually free from floating oil, film, sheen, or discoloration (18 AAC 70.020[b][17][A][i], 18 AAC 70.020[b][17][B][ii], and 18 AAC 70.020[b][18][C]). The canals of the airport ditch system, including the West Canal, fall within the fresh water class and the secondary recreation subclass. The water quality standards established for this use class and subclass specify that petroleum hydrocarbons, oils, and grease may not cause a film, sheen, or discoloration on the surface or floor of the water body or adjoining shorelines, and surface waters must be virtually free from floating oils (18 AAC 70.020[b][5][B][ii]). These water quality standards apply to both the NMCB Building Area and the South of Runway 18-36 Area (U.S. Navy and Alaska DEC 2006 and 2005b).

For the South of Runway 18-36 Area site, because Alaska State Regulations do not establish surface water cleanup levels for individual chemicals, DRO, or GRO, the results of the ecological risk assessment were used to establish additional risk-based cleanup levels for chemicals in surface water that may result in a potential risk to ecological receptors (U.S. Navy and Alaska DEC 2005b). These risk-based cleanup levels summarized below are additional RGs for surface water and do not replace the total aqueous hydrocarbons and total aromatic hydrocarbons criteria specified in 18 AAC Chapter 70:

- DRO = 0.014 µg/L
- GRO = 114 µg/L
- Indeno(1,2,3-cd)pyrene = 0.28 µg/L

Likewise, Alaska State Regulations do not establish chemical-specific cleanup levels for sediment. Therefore, for the South of Runway 18-36 Area, sediment cleanup levels were established based on the results of the ecological risk assessment (U.S. Navy and Alaska DEC 2005b). Risk-based cleanup levels were only established for those chemicals that could potentially pose an unacceptable risk to ecological receptors from exposure to sediment in South Sweeper Creek. The RGs for sediment of the South of Runway 18-36 Area are summarized below:

- DRO = 90.6 mg/kg
- GRO = 12.2 mg/kg
- 2-methylnaphthalene = 0.0202 mg/kg
- Phenanthrene = 0.225 mg/kg

Operable Unit B-1

Soil. Table 7-5 compares current ARARs values for the soil pathway with those presented in Table 8-1 in the OU B-1 ROD (U.S. Navy, USEPA, and Alaska DEC 2001). The current PRG for one chemical, 2,4,6-trinitrotoluene, is lower than the value listed in the ROD. The former Region 9 PRG was 18 mg/kg; the current value is 16 mg/kg. Soil sampling results from 2001 and 2002 were well below the new cleanup level. Therefore, the selected RGs and remedies with respect to chemical contamination remain protective.

7.2.2 Review of Risk Assessment Assumptions

Risk assessment assumptions (both human and ecological) were also reviewed as part of the requirement to assess the protectiveness of the remedy. The 14 petroleum site risk assessments were finalized in recent years, and risk assumptions for these sites are current for this 5-year review. Therefore, the discussions in this section apply mainly to the CERCLA sites for which remediation decisions were based on the results of historical risk assessments from as long ago as 1995. It is these sites where changes in risk assessment assumptions might affect the protectiveness of the remedy. Important risk assessment assumptions can be divided into two broad categories: (1) assumptions regarding chemical toxicity, and (2) assumptions regarding chemical exposure. Also discussed in this section are the risk-based endpoint criteria used to evaluate chemical results in sediment at SWMU 11.

Toxicity Criteria

The toxicity criteria were reviewed for those chemicals where RGs and endpoint criteria are site-specific risk-based concentrations. The only risk-based RGs are those established for fish and shellfish tissue in Kuluk Bay and Sweeper Cove and the sediment endpoint criteria established for SWMU 11. There have been no changes to toxicity criteria used to calculate the risk-based RGs or endpoint criteria. The toxicity criteria for PCBs (used to calculate fish tissue RGs) and the human health risk-based criteria shown on Table 7-3 have not changed since the ROD was signed, based on a review of the latest toxicity criteria presented in EPA's Integrated Risk Information System (IRIS), EPA's on-line data base of toxicity criteria. Therefore, no toxicity criteria changes have occurred. For the ecological risk-based criteria shown on Table 7-3 (PCBs, antimony, chromium, and nickel), toxicity criteria were reviewed and some criteria have new information. The new information for the ecological criteria is discussed in the section below titled "Use of PSE-2 Risk-Based Screening Levels as Endpoint Criteria for SMWU 11 Sediment."

Exposure Parameters for Human Health

Risk assessments were conducted for the sites within OU A (the CERCLA sites). This section focuses on human health exposure parameters because the land use changes discussed here would not affect ecological receptors. Ecological exposures have not significantly changed since the ROD was signed. At the time the risk assessments were completed, Adak was an active military facility. Therefore, the risk calculations for human health assumed that the maximum length of time for exposures on Adak was 15 years for civilians and 5 years for military personnel. Therefore, the residential exposure calculations included a 15-year exposure duration (6 years as a child and 9 years as an adult), and the occupational and recreational exposures were assumed to be 5 years in duration. EPA's default exposure duration for residential and occupational exposures is 30 years and 25 years, respectively. Because the land use on Adak has changed from an active military installation to regular civilian use, EPA default exposure durations are more appropriate for evaluating health risks. Because risk and hazard calculations are linear, a doubling of the exposure duration (from 15 to 30 years) would result in a doubling of the estimated health risks and hazards. Estimated risks for occupational and recreational exposures would thus increase by a factor of five (from 5 years to 25 years). An increase in risks and hazards by factors of two to five would affect the protectiveness of the remedy if under the following circumstances:

- Sites were inappropriately selected for NFA based on risks below target health goals, and risks would be above target health goals if risks were doubled or increased by a factor of five
- Sites with ICs that allow commercial use but not residential would be unsafe for commercial use if commercial risks were increased by a factor of five
- Sites were remediated using risk-based cleanup levels that were based on a 15-year or 5-year exposure duration and, thus, contamination may have been left in place that would exceed a 30-year or 25-year risk-based cleanup level

These three bullets and the potential for increased risks and hazards pertaining to CERCLA sites are discussed further in the following paragraphs.

Sites Selected for NFA. The process by which sites were selected for NFA during the PSEs, 1 and 2 (U.S. Navy 1996a, 1996b, 1995i, and 1995j) was sufficiently health protective, such that even a five-fold increase in exposure would not result in a health risk at a site that was selected as NFA. The first step in the process involved screening maximum concentrations against EPA Region 10 residential RBSCs. The Region 10 RBSCs assumed a 30-year exposure duration with a target cancer goal of 1×10^{-7} and a hazard quotient of 0.1. The target cancer goals in the ROD were 1×10^{-5} and the target hazards were 1.0. Therefore, because the risk equations are linear as

noted above, an RBSC calculated assuming a target cancer goal of 1×10^{-7} would be 100 times lower than an RBSC calculated assuming a goal of 1×10^{-5} (i.e., the larger the target risk goal, the larger the acceptable concentration), and the exposure duration matches current land uses. Consequently, any sites that were selected as NFA because no chemicals exceeded Region 10 RBSCs would not represent a health risk under current conditions and were appropriately designated as NFA.

For sites where maximum chemical concentrations exceeded a Region 10 screening value, a 95 percent upper confidence limit was calculated (or the maximum concentration was used if the data set was small). The value was compared first to Adak-specific residential values and then, if there were exceedances and the site was not residential, to recreational or occupational RBSCs (U.S. Navy 1996a). All risks and hazards were considered additive and a site was only eliminated as a concern if the total risk was less than 1×10^{-6} or the total hazard was less than 1.0. As with the EPA region 10 RBSCs, the Adak-specific RBSCs were also derived assuming a target cancer goal of 1×10^{-7} and a target hazard goal of 0.1. The use of a lower target risk goal than the ROD requires provided an adequate margin of safety to select sites, even though the exposure time may have been underestimated. Thus, sites were appropriately selected as NFA during the PSE process.

For the sites that “failed” the PSE process and underwent further investigation, the majority were selected as requiring a remedy and have been appropriately addressed in the ROD. For the remaining sites, either the minimal risks were addressed through an interim action, or concentrations are too low to be a health concern (these sites are discussed in Section 4 of the ROD).

Sites Selected for Instructional Controls. Thirteen sites were selected in the ROD for ICs, because risk assessment findings showing residential risks in excess of target health goals (Table 7-2 in the ROD). Two of the 13 had only ecological risks, which would not be affected by changes in human land use assumptions. One site (SWMU 55) is included only because of groundwater risks, assuming use of the water as a drinking source. The conclusions regarding this site are not affected by changes in land use, because chemicals in groundwater would be required to meet MCLs before ICs would be removed. The remaining 10 sites were found to have human health risks based on residential land use due to soil only (6 sites) or a combination of soil and groundwater exposures (4 sites). Soils at these sites were deemed to represent an acceptable risk for industrial/commercial exposures, but not for residential. All of the residential soil risks were between 7×10^{-6} and 6×10^{-5} and either do not exceed a 1×10^{-5} , or only slightly exceed a 1×10^{-5} target goal for residential exposures. Thus, they are very unlikely to represent a health risk for commercial/industrial workers under current land use conditions, and the remedies remain protective.

Active Remediation Sites. Risk-based values were selected as cleanup goals only for Kuluk Bay and Sweeper Cove. These cleanup goals in fish and shellfish tissue were calculated assuming a 30-year exposure, and none of the other exposure parameters in the equation has changed. Thus, the cleanup goals are appropriate and the remedies in place are protective.

Use of PSE-2 Risk-Based Screening Levels as Endpoint Criteria for SWMU 11 Sediment

As shown on Table 7-3, all the sediment endpoint criteria being used at SWMU 11 would be much higher if selected today. For PCBs in sediment at SWMU 11, the endpoint criteria based on ecological health was 0.005 mg/kg and was derived using a lowest effect concentration selected as a screening level during the PSE-2 process (U.S. Navy 1996a). Screening concentrations are typically more conservative than cleanup levels and are used only to assess whether a site requires further investigation, not to establish whether a health risk is actually present. Thus, the ROD established 1 mg/kg for PCBs in sediment at South Sweeper Creek as an “action level” that was sufficiently protective of ecological health. The 1 mg/kg action level for freshwater sediment was determined an appropriate risk-based remedial goal for freshwater sediments during the feasibility study (U.S. Navy 1997a). The feasibility study evaluated every site with an ecological HI greater than 1.0 to determine if there were ecologically significant risks, and only benthic invertebrates were identified as being affected by PCBs. No higher food chain effects were observed (see discussion on pages 6-23 to 6-24 of the ROD [U.S. Navy, USEPA, and Alaska DEC 2000]). Continuing to monitor freshwater sediment until a PCB concentration of 0.005 mg/kg is reached is unnecessary to protect ecological health.

The PCB value of 0.005 mg/kg is also unnecessarily protective of marine sediment. The most commonly accepted sediment benchmarks for marine environments are those used by the National Oceanographic and Atmospheric Administration and reported in Long et al. (1995). An “effects range low” (ERL) benchmark is defined by Long et al. (1995) as the concentration of a chemical in sediment below which adverse effects were rarely observed among sensitive species. An “effects range medium” (ERM) benchmark is defined as the concentration of a chemical in sediment above which effects are frequently or always observed among most species. The range between the ERL and ERM is assumed to represent the range in which effects are occasionally observed (MacDonald 1994). ERMs, rather than ERLs, should be used to predict toxicity of samples because of the lower Type I error (i.e., false positives) associated with them (Ingersoll et al. 1996). However, ERLs can be used to efficiently identify concentrations below which toxicity is rarely observed. Therefore, both the ERL (0.023 mg/kg dry weight) and the ERM (0.018 mg/kg dry weight) for total PCBs are commonly used criteria in ecological risk assessments. The ERL of 0.023 mg/kg dry weight is likely sufficiently protective as an endpoint criterion for PCBs in marine sediments at SWMU 11.

For the remaining three metals (antimony, chromium, and nickel), with endpoint criteria in sediment based on ecological health, the criteria were all lowest effect concentrations from the literature and were used for screening during the initial evaluation of sites on Adak to determine whether further work was required at a particular site. As such, exceedances of these endpoint criteria are unlikely to represent a health risk. However, the criteria are protective, and no changes are necessary to ensure the protectiveness of the remedy.

Similar arguments to those discussed above for ecological criteria could be made for the cPAHs, where the RBSC values were the EPA Region 10 values, assuming a 1×10^{-7} target cancer risk goal. Table 7-3 indicates how much higher current EPA Region 9 PRG values would be for the PAHs assuming a 1×10^{-6} target risk goal (Region 10 is no longer publishing their own RBSCs, but mandates the use of the Region 9 values for screening purposes). Alaska soil cleanup levels are even higher. Therefore, long-term monitoring of sediment at SWMU 11 should be reviewed to assess whether there are any exceedances under current cleanup levels and whether the monitoring program needs to be continued for this media.

7.3 NEW INFORMATION

This section is in response to the question “Has any other information come to light that could call into question the protectiveness of the remedy?” No other information reviewed during this 5-year review, apart from what is included previously in this document, affects the protectiveness of the remedy.

7.4 TECHNICAL ASSESSMENT SUMMARY

The OU A ROD remedy components are functional at all OU A sites except the following:

- ASR-8 Facility, where soil removal is planned for 2008
- SA 77, Fuels Facility Refueling Dock, Small Drum Storage Area, where soil removal is planned for 2008
- SA 88, P-70 Energy Generator

The remedy is not fully functional at these sites, because limited soil removals are not yet complete (ASR-8 Facility and SA 77), or site conditions have been found that do not match the assumptions used in the remedy selection (free product found at SA 88). Final remedies are not yet executed for four OU A sites. However, progress towards the final remedies has been made.

For OU B, MEC awareness programs and other MEC ICs are functional with regard to informing the public. However, they cannot be concluded to be 100 percent functional in protecting human health from MEC, because members of the public are not always responsive to the message.

The chemical sampling and soil removal component of the selected remedy at specific OU B-1 sites has been completed and has functioned to reduce the potential ordnance-related chemical risk and, thus, prevent future residents and recreational users from being exposed to explosives-related contamination in soils above the cleanup levels. MEC clearance has not been completed at all of the OU B-1 sites (see Figure 3-2).

Changes in the ARARs, exposure, and toxicity assumptions that have occurred since the RODs were signed do not affect the protectiveness of the remedy. Concentrations of many chemicals in groundwater remain above the RGs within the downtown area of Adak at the majority of locations where long-term monitoring is occurring, resulting in the need for continued ICs to prevent exposure and the need for ongoing monitoring. Although some of the RGs might be lower if selected today, the remedy components continue to protect against exposures, just as they did at the time the ROD was signed. ICs to prevent exposure and ongoing monitoring will need to continue until COC concentrations in groundwater are below the RGs. The endpoint criteria being used to evaluate sediment concentrations at SWMU 11 are likely unnecessarily restrictive and should be revised to more closely reflect potential health risks from sediment exposures at SWMU 11.

7.5 ISSUES

Table 7-6 lists the issues identified as a result of the 5-year review technical assessment of the remedies at Adak.

**Table 7-1
 Endpoint Criteria for Groundwater at CERCLA Sites**

Analyte	Alaska Cleanup Levels 18 AAC 75.345 (µg/L) ^a	Federal MCLs (µg/L)	Protection of Surface Water			
			State		Federal	
			Chronic	HH (Organisms Only) (µg/L)	Chronic	HH (Organisms Only) (µg/L)
Benzene	5	5	--	--	--	710
Bis(2-ethylhexyl)phthalate	6	--	--	--	--	22 (59)
Ethylbenzene	700	700	--	29,000 (3,280)	--	--
Lead	15	15	3.2 TR at 100 mg/L hardness	--	--	--
Methylene chloride	5	--	--	--	--	59,000
Tetrachloroethene	5	5	--	--	--	33
Thallium	2	2	--	6.3 (48)	--	4.7
Toluene	1,000	1,000	--	200,000 (424,000)	--	150,000
GRO	1,300	--	--	--	--	--
Trichloroethene	5	5	--	--	--	300 (810)

^aCleanup levels shown are applicable if groundwater is a source of drinking water at the site. A concentration equal to 10 times the concentration shown may be used if Alaska Department of Environmental Conservation determines groundwater is not a current source of drinking water.

Notes:

Bolded values are the revised numbers, and the numbers in parentheses are the endpoint criteria listed in the CMP.

AAC - Alaska Administrative Code

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

HH - human health

MCLs - maximum contaminant level

µg/L - microgram per liter

mg/L - milligram per liter

TR - total recoverable

**Table 7-2
 Endpoint Criteria for Fresh Surface Water at SWMUs 11, 18/19, and 25**

Analyte	Alaska Water Quality Standards, 18 AAC 70 ^a	
	Aquatic Life - Chronic (µg/L)	Human Health - Organisms Only (µg/L)
Semivolatile Organic Compounds		
Benzo(a)pyrene	None	0.18^c (0.31 ^b)
Benzo(b)fluoranthene	None	0.18^c (0.31 ^b)
Benzo(g,h,i)perylene	None	None
Benzo(k)fluoranthene	None	0.18^c (0.31 ^b)
Bis(2-ethylhexyl)phthalate	None	22^c (59 ^b)
Pesticides/Aroclors		
PCBs	0.014	0.00064^c (0.0045 ^b)
Volatile Organic Compounds		
1,1-Dichloroethene	None	None (320)
Benzene	None	None (710 ^b)
Cis-1,2-dichloroethene	None	None
Toluene	None	200,000 (424,000)
Trans-1,2-dichloroethene	None	140,000 (None)
Trichloroethene	None	300^c (810)
Ethylbenzene	None	29,000 (3,280)
Total xylenes	None	None
Inorganics		
Antimony	None	4,300 (45,000)
Arsenic	150 (190 [As III]) dis	1.4 ^b
Beryllium	None (190)	None (1.4)
Cadmium	0.3 TR (1.1 TR) at 100 mg/L hardness	None
Chromium III	86 TR (210 TR) at 100 mg/L hardness	None
Chromium VI	11 TR	None
Copper	9.3 TR (12 TR) at 100 mg/L hardness	None
Lead	3.2 TR at 100 mg/L hardness	None
Mercury	0.77 dis (0.012 TR)	0.051 (0.15)
Nickel	52 TR (160 TR) at 100 mg/L hardness	4,600 (100)
Selenium	5 TR	11,000 (None)
Silver	None	None
Thallium	None	6.3 (48)
Zinc	120 TR (110 TR) at 100 mg/L hardness	69,000 (None)

^aCriteria existing in 18 AAC 70 when Record of Decision for Operable Unit 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.)

^bHuman 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

Table 7-2 (Continued)
Endpoint Criteria for Fresh Surface Water at SWMUs 11, 18/19, and 25

Department of Environmental Conservation guidance at
<www.state.ak.us/dec/dawq/wqs/documents/carcinogens.htm>, accessed April 10, 2003.
°Human health criteria came from EPA National Recommended Water Quality Criteria and are based on a carcinogenicity of 10^{-5} risk.

Notes:

Bold values are the revised numbers and the numbers in parentheses are the endpoint criteria listed in the CMP.

EPA - U.S. Environmental Protection Agency

dis - dissolved

µg/L - microgram per liter

mg/L - milligram per liter

PCBs - polychlorinated biphenyls

TR - total recoverable

Table 7-3
Endpoint Criteria for Freshwater/Marine Sediments for SWMU 11

Analyte	CMP Endpoint Criteria (mg/kg) ^a	Basis	Current Alaska Soil Cleanup (Ingestion of Soil) (mg/kg)	Current Region 9 PRG Residential Soil (mg/kg)	Background From RI/FS 1997 (mg/kg)
Semivolatile Organic Compounds					
Benzo(a)anthracene	0.0875	HH RBSC ^c	9	0.62	--
Benzo(a)pyrene	0.00875	HH RBSC ^c	0.9	0.062	--
Benzo(b)fluoranthene	0.0875	HH RBSC ^c	9	0.62	--
Benzo(g,h,i)perylene	821	HH RBSC ^c	2,500 ^d	--	--
Benzo(k)fluoranthene	0.875	HH RBSC ^c	93	6.2	--
Bis(2-ethylhexyl)phthalate	4.56	HH RBSC ^c	490	35	--
Indeno(1,2,3-cd)pyrene	0.0875	HH RBSC ^c	9	0.62	--
Pesticides/Aroclors					
Aroclor 1260	0.005	Eco RBSC ^c	1	--	--
Total Inorganics					
Antimony	2	Eco RBSC ^c	--	--	10 (1.5) ^b
Arsenic	0.0365	HH RBSC ^c	4.5	0.39	5.46 (7.5) ^b
Chromium	80 (260) ^b	Eco RBSC ^c	--	--	12.91 (6.04) ^b
Nickel	30	Eco RBSC ^c	--	--	10.05 (5.01) ^b

^aUnits are in mg/kg total organic carbon (normalized concentration). To normalize to a total organic carbon (TOC) concentration, the dry-weight concentration of each parameter is divided by the decimal fraction representing the percent TOC content of the sediment. For the purposes of ecological risk assessment and comparison to certain regulations, it is necessary to carbon normalize certain chemicals. If the TOC content of the environmental sample is less than 0.5 percent, then the dry-weight concentration of the chemical parameter is used. For a TOC content greater than 0.5 percent, the carbon normalized value is used. In the absence of organic carbon data, a default value of 1 percent is used.

^bThe value listed is for freshwater sediment and the value in parenthesis is for marine sediment.

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

^dNo soil cleanup level is available for this compound. The value for pyrene is used as a surrogate.

Notes:

CMP - Comprehensive Monitoring Plan (U.S. Navy 2005c)

Eco - ecological

HH - human health

mg/kg - milligram per kilogram

PRG - preliminary remediation goal

RBSC - risk-based screening concentration

RI/FS - remedial investigation/feasibility study (U.S. Navy 1997d)

**Table 7-4
 Soil and Groundwater Remediation Goals for Petroleum Sites**

Chemical	Soil RGs ^a			Groundwater RGs ^a	
	Ingestion (mg/kg)	Inhalation (mg/kg)	Migration to Groundwater (mg/kg)	Groundwater Cleanup Level (mg/L)	10 Times Groundwater Cleanup Level (mg/L)
Acenaphthene	5,000	NA	190	2.2	22
Anthracene	24,900	NA	3,900	11	110
Antimony	33	NA	3	0.006	0.06
Aroclor 1254	1	1	1	0.0005	0.005
Aroclor 1260	1	1	1	0.0005	0.005
Benzene	230 (120)	6.4	0.02	0.005	0.05
Benzo(a)anthracene	9	NA	5.5	0.001	0.01
Benzo(b)fluoranthene	9	NA	17	0.001	0.01
Benzo(k)fluoranthene	93	NA	170	0.01	0.1
Benzo(a)pyrene	0.9	NA	2.4	0.0002	0.002
Bis(2-ethylhexyl)phthalate	490	NA	1,100	0.006	0.06
Chrysene	930	NA	550	0.1	1
Dibenzo(a,h)anthracene	0.9	NA	5	0.0001	0.001
DRO	8,250	12,500	230	1.5	15
Ethylbenzene	8,300	89	5	0.7	7
Fluorene	3,300	NA	240	1.46	14.6
GRO	1,400	1,400	260	1.3	13
Indeno(1,2,3-c,d)pyrene	9	NA	50	0.001	0.01
Lead	NA (400)	NA (400)	NA	0.015	0.15
Mercury	NA	13	1.24	0.002	0.02
Naphthalene	3,300 (1700)	NA (92)	38 (19)	1.46 (0.7)	14.6
Phenathrene	NA	NA	NA	NA	NA
Pyrene	2,500	NA	1,400	1.1	11
RRO	8,300	22,000	9,700	1.1	11
Toluene	17,000	180	4.8	1	10
Xylenes (total)	166,000	81	69	10	100

^aBased on 18 AAC 75.340, 341, and 345.

Notes:

Bolded chemicals have new soil or groundwater cleanup levels, which are in parentheses.

DRO - diesel-range organics (per Method AK 102)

GRO - gasoline-range organics (per Method AK 101)

mg/kg – milligrams per kilogram

mg/L - milligram per liter

NA - not available

RGs - remediation goals

RRO - residual-range organics (per Method AK 103)

Table 7-5
Soil Cleanup Level for Ordnance Compounds, OU B-1 ROD

Chemical	ROD-specified Cleanup Level (mg/kg)	Current Cleanup Level (mg/kg)
Dinitrotoluene (mixture)	0.72	0.72
2,4,6-Trinitrotoluene	18	16
Nitroglycerin	35	35
Nitroguanidine	6100	6100
Tetryl (trinitrophenylmethylnitramine)	610	610
RDX (cyclonite)	4.4	4.4

Notes:

Bold values have changed.

Values are Region 9 Preliminary Remediation Goals.

mg/kg - milligram per kilogram

**Table 7-6
 Issues**

Issue	Affects Protectiveness?	
	Current	Future
The endpoint criteria being used to evaluate sediment concentrations at SWMU 11, Palisades Landfill, are likely unnecessarily restrictive and should be revised to more closely reflect potential health risks from sediment exposures at SWMU 11.	No	No
The OU A ROD remedy is not complete at the ASR-8 Facility and SA-77 Fuels Facility Refueling Dock, Small Drum Storage Area sites.	Yes	Yes
The OU B-1 ROD remedy is not complete at sites in the Mount Moffett area, and the regulatory agencies have not concurred with the remedial actions implemented during 2004.	Yes	Yes
The ordnance awareness training program is not fully functioning as intended by the ROD.	Yes	Yes
Land use controls are not fully functioning at the OU B sites.	Yes	Yes
Issues related to communication with stakeholders were raised by the interviewees during this 5-year review and by interviewees during the 2005 institutional controls inspections.	No	No
Alaska Department of Transportation and Public Facilities noted a need for written excavation procedures for the airport.	Yes	Yes
Free product found in one surface water protection well at the NORPAC Hill Seep Area site in 2005 could indicate a threat to surface water.	No	Yes
The final remedy for site SA 88, P-70 Energy Generator is unlikely to function as anticipated, based on the free-product thicknesses measured in wells at the site during 2005.	No	Yes
Gasoline-range organics and benzene levels in groundwater samples from surface water protection wells at SWMU 61, Tank Farm B, could indicate a threat to surface water.	No	Yes

Notes:

OU - operable unit

ROD - record of decision

SA - source area

SAERA - State-Adak Environmental Restoration Agreement

SWMU - solid waste management unit

UST - underground storage tank

8.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

This section presents the recommendations and follow-up actions identified as a result of the 5-year review process. Table 8-1 summarizes the recommendations. In general, the recommendations focus on completing the remedies for the remaining OU A and OU B-1 sites and continuing to improve ordnance awareness training materials and communication with the public and other stakeholders. A specific recommendation is made to revise endpoint criteria used to evaluate sediment concentrations at SWMU 11, Palisades Landfill, to more closely reflect potential health risks from sediment exposures at SWMU 11. Specific recommendations are also made regarding sites where free product was found after selection of the final remedy, when the remedy did not anticipate the presence of free product.

**Table 8-1
 Recommendations and Follow-Up Actions**

Recommendation/ Follow-Up Action	Oversight Agency	Milestone Date	Follow-Up Action: Affects Protectiveness	
			Current	Future
Revise endpoint criteria used to evaluate sediment concentrations at SWMU 11, Palisades Landfill, to more closely reflect potential health risks from sediment exposures at SWMU 11.	EPA, Alaska DEC	May 2007	No	No
Implement recommendations and/or required repairs indicated in the 2005 IC inspection Report for SWMUs 2, 4, 13, 25, and 29.	EPA, Alaska DEC	December 2006	Yes	Yes
Complete limited soil removal component of OU A remedy at the ASR-8 Facility and SA 77.	Alaska DEC	December 2008	Yes	Yes
Evaluate, select, and implement additional land use controls to protect human health at OU B-1 and OU B-2 sites, where the selected remedy is not complete, while a remedy is selected (OU B-2) and a revised remedy is evaluated (OU B-1). Incorporate the selected land use controls in the next revision of the Institutional Control Management Plan.	EPA, Alaska DEC	March 2008	Yes	No
Resolve with regulators the MEC clearance approach for Mount Moffett sites and the issues related to the 2004 after action report for OU B-1 remedy implementation.	EPA, Alaska DEC	December 2007	Yes	Yes
Continue to improve the ordnance awareness training program.	EPA, Alaska DEC	Ongoing	Yes	Yes
Provide a sufficient supply of ordnance awareness hiking maps at the Refuge	EPA, Alaska DEC	Ongoing	Yes	Yes
Address communication issues raised by stakeholders: <ul style="list-style-type: none"> • Ensure that ordnance discoveries and disposition are fully communicated to regulators. • Ensure that key project documents are distributed to all stakeholders. • Strive for improved dissemination of information to the public. See public interview responses for specific suggestions, such as report summaries presented in lay terms. • Increase information provided to the public regarding issues raised during the interview process (such as the Palisades and Metals Landfills). 				

**Table 8-1 (Continued)
 Recommendations and Follow-Up Actions**

Recommendation/ Follow-Up Action	Oversight Agency	Milestone Date	Follow-Up Action: Affects Protectiveness	
			Current	Future
<ul style="list-style-type: none"> Increase public awareness of the fishing advisory through improved dissemination of information. 	EPA, Alaska DEC	Ongoing	No	No
Work with Alaska Department of Transportation and Public Facilities to resolve their concern regarding written excavation procedures for the airport.	EPA, Alaska DEC	December 2007	Yes	Yes
Because of the free product measured in the surface water protection well at the NORPAC Hill Seep Area site in 2005, add visual inspections for seeps and sheens to the annual monitoring protocol starting in 2006.	Alaska DEC	September 2006	No	Yes
Re-evaluate the selected final remedy for site SA 88, P-70 Energy Generator, considering the free product measured in wells at this site in 2005.	Alaska DEC	December 2007	No	Yes
Conduct visual monitoring of shoreline and surface water for petroleum seeps and sheens at SWMU 61 in the vicinity of wells 14-113 and 14-210.	Alaska DEC	October 2007	No	No
Implement future monitoring recommendations detailed in Section 6.4.	Alaska DEC	October 2007	No	No

¹NAVFAC NW is the party responsible for implementing the recommendations/follow-up actions.

Notes:

- CMP - Comprehensive Monitoring Plan
- DEC - Department of Environmental Conservation
- EPA - U.S. Environmental Protection Agency
- MEC - munitions and explosives of concern
- NAVFAC NW - Naval Facilities Engineering Command Northwest
- OU - operable unit
- SA - source area
- SAERA - State-Adak Environmental Restoration Agreement
- SWMU - solid waste management unit
- UST - underground storage tank

9.0 CERTIFICATION OF PROTECTIVENESS

9.1 PROTECTIVENESS OF OU A REMEDIES

The OU A sites are grouped in the sections below for the purposes of discussing protectiveness.

9.1.1 OU A Sites Where the Remedy Is Complete and Protective

The OU A remedy remains protective for the sites selected for NFA or NFRAP, and sites where the remedy is complete, but an NFA/NFRAP designation has not been made (such as South Sweeper Creek) (Table 9-1). At these sites, the NFA status selected in the ROD, the NFA/NFRAP status selected in later documents, or the completeness of the remedy are not called into question by new information, including changes in ARARs or risk assessment assumptions. ICs still apply to some of these sites because of their location within the downtown area, where area-wide land use controls apply. The 19 sites that achieved NFA or NFRAP status during this 5-year review period will not be discussed in detail in the next 5-year review. These 19 sites are:

- Amulet Housing, Well AMW-706 Area
- Amulet Housing, Well AMW-709 Area
- Boy Scout Camp, West Haven Lake (UST BS-1)
- Contractor's Camp Burn Pad
- Finger Bay Quonset Hut, UST FBQH-1
- Girl Scout Camp (UST GS-1)
- MAUW Compound (UST 24000-A)
- Mount Moffett Power Plant 5 (USTs 10574 through 10577)
- NAVFAC Compound (USTs 20052 and 20053)
- Navy Exchange Building (UST 30027-A)
- New Roberts Housing, UST HST-7C
- Officer Hill and Amulet Housing, UST 31047-A
- Officer Hill and Amulet Housing (UST 31049-A)
- Officer Hill and Amulet Housing (UST 31052-A)
- Quarters A (UST 42200)
- ROICC Contractor's Area, UST ROICC-8
- ROICC Warehouse, UST ROICC-2
- ROICC Warehouse, UST ROICC-3
- Yakutat Hangar, USTs T-2039-B and T-2039-C

9.1.2 OU A Sites Where the Remedy Is Not Complete, but Expected to Be Protective

At the ASR-8 Facility and SA 77, Fuels Facility Refueling Dock, Small Drum Storage Area sites, the limited soil removal component of the selected remedy is not complete. The remedy at these two sites is expected to be protective when this remedy component is complete. In the interim, exposure pathways that could result in unacceptable risks are being controlled. For SA 77, exposure pathways are controlled through the implementation of the ICMP.

At the sites listed below, the remedy is expected to be protective when the final remedy is complete. In the interim, exposure pathways that could result in unacceptable risks are being controlled through the implementation of the ICMP.

- NMCB Building T-1416 Expanded Area
- South of Runway 18-36 Area
- SWMU 17, Power Plant 3
- SWMU 62, New Housing Fuel Leak

9.1.3 OU A Sites Where the Remedy Is Operating and Expected to Be Protective

The OU A remedy for the sites listed in Table 9-2 is expected to be protective when the operating OU A remedy (monitored natural attenuation in many cases) is complete. In the interim, exposure pathways that could result in unacceptable risks are being controlled through implementation of the ICMP. Potential changes in site conditions that could affect protectiveness at these sites are also being monitored and evaluated through the annual groundwater monitoring program. Through this program, the ongoing natural attenuation of COCs is documented, and surface water protection wells are monitored to allow evaluation of COC migration and thereby ensure the protection of surface water. Free-product thickness is monitored at sites where free-product has been or could be a concern, and the monitoring protocols include free product removal when sufficient product thickness is measured.

For certain sites, such as those with landfill caps, ICs are an integral component of the remedy in perpetuity (e.g., excavation through a landfill cap is not expected to ever be permissible). For these sites, the IC component of the remedy is protective and is expected to remain so as long as the ICs are maintained, with documentation via annual inspections.

9.1.4 OU A Sites Requiring Follow-Up Actions to Ensure Future Protectiveness

At three of the sites where the final remedy consists of either limited groundwater monitoring or monitored natural attenuation, the discovery of free product during the 2005 monitoring event or the detection of dissolved petroleum concentrations above cleanup levels call into question the

future protectiveness of the remedy. Follow-up actions are needed at the three sites listed below for the final remedy to be protective in the long term.

- NORPAC Hill Seep Area
- SA 88, P-70 Energy Generator, UST 10578
- SWMU 61, Tank Farm B

The recommended follow-up actions include re-evaluating the appropriateness of the limited groundwater remedy at SA 88 in light of the most recent data and adding visual inspection for seeps and sheens to the NORPAC Hill Seep Area and the SWMU 61 annual monitoring protocol for protection of surface water.

9.2 PROTECTIVENESS OF OU B-1 REMEDY

The remedy for OU B-1 is expected to be protective of human health and the environment upon completion. In the interim, additional measures are needed to control exposure pathways that could result in unacceptable risks. As recommended in Section 8, the Navy should maintain an ongoing improvement effort for the ordnance awareness training program. The Navy should also evaluate, select, and implement additional land use controls to protect human health at OU B-1 sites where the selected remedy is not complete. The Navy should incorporate the selected land use controls in the next revision of the ICMP.

Completion of the OU B-1 remedy is pending stakeholder concurrence on a revised remedial approach for the Mount Moffett sites and resolution of issues regarding the 2004 after action report. The remedy, once completed, is expected to be protective.

9.3 PROTECTIVENESS OF OU B-2 REMEDY

The remedy for OU B-2, when selected in the future ROD, is expected to be protective. In the interim, additional measures are needed to control exposure pathways that could result in unacceptable risks. As recommended in Section 8, the Navy should maintain an ongoing improvement effort for the ordnance awareness training program. The Navy should also evaluate, select, and implement additional land use controls to protect human health at OU B-2 sites. The Navy should incorporate the selected land use controls in the next revision of the ICMP.

Table 9-1
OU A Sites Where the Remedy Is Complete

Site	Regulatory Authority	Regulatory Designation	Timing of Regulatory Designation
CERCLA Sites			
South Sweeper Creek	CERCLA	Remedy complete	Post First Five-Year Review
SWMU 3, Clam Lagoon Landfill	CERCLA	NFA	OU A ROD
SWMU 5, North Davis Road Landfill	CERCLA	NFA	OU A ROD
SWMU 6, Andrew Lake Drum Disposal Area 1	CERCLA	NFA	OU A ROD
SWMU 7, Andrew Lake Drum Disposal Area 2	CERCLA	NFA	OU A ROD
SWMU 9, Black Power Club	CERCLA	NFA	OU A ROD
SWMU 21B, White Alice Lower Quarry	CERCLA	NFA	OU A ROD
SWMU 21C, White Alice East Disposal Area	CERCLA	NFA	OU A ROD
SWMU 24, Hazardous Waste Storage Facility — RCRA Closure under FFCA	RCRA	NFA	OU A ROD
SWMU 26, Mitt Lake Drum Disposal Area	CERCLA	NFA	OU A ROD
SWMU 27, Lake Leone Drum Disposal Area	CERCLA	NFA	OU A ROD
SWMU 28, Lake Betty Drum Disposal Area	CERCLA	NFA	OU A ROD
SWMU 30, Magazine 4 Landfill	CERCLA	NFA	OU A ROD
SWMU 42, GSE Steam Clean Oil/Water Separator	CERCLA	NFA	OU A ROD
SWMU 43, AIMD Acid Battery Storage Area	CERCLA	NFA	OU A ROD
SWMU 51, NSGA Transportation Bldg. 10354 Waste Storage Area	CERCLA	NFA	OU A ROD
SWMU 54, NMCB Battery Storage	CERCLA	NFA	OU A ROD
SWMU 65, Contractor's Camp Fire/Demolition Site	CERCLA	NFA	OU A ROD
SWMU 66, Palisades Lake PCB Spill	CERCLA	NFA	OU A ROD
SWMU 68, New Pesticide Storage Area	CERCLA	NFA	OU A ROD
SWMU 69, Ski Lodge Waste Pile	CERCLA	NFA	OU A ROD
SWMU 70, Davis Road Asphalt Drums	CERCLA	NFA	OU A ROD
SWMU 71, NSGA Fueling Facility	CERCLA	NFA	OU A ROD
SWMU 72, NSGA Transportation Building 10354	CERCLA	NFA	OU A ROD
SWMU 74, Old Batch Facility*	CERCLA	NFA	OU A ROD
SA 75, Asphalt Storage Area	CERCLA	NFA	OU A ROD
SA 77, Fuels Facility Refueling Dock, Small Drum Storage Area	RCRA	NFA	OU A ROD
SA 83, Former Chiefs Club Station	CERCLA	NFA	OU A ROD
SA 90, Husky Road Landfill	CERCLA	NFA	OU A ROD
SA 91, Airplane Crash Sites	CERCLA	NFA	OU A ROD
SA 92, Waste Ordnance Pile (Fin Field)	CERCLA	NFA	OU A ROD
SA 94, Chemical Weapons Disposal Area	CERCLA	NFA	OU A ROD
SA 95, Transformer Disposal Area	CERCLA	NFA	OU A ROD
Clam Lagoon	CERCLA	NFA	OU A ROD

Table 9-1 (Continued)
OU A Sites Where the Remedy Is Complete

Site	Regulatory Authority	Regulatory Designation	Timing of Regulatory Designation
Andrew Lake	CERCLA	NFA	OU A ROD
Petroleum Sites			
Administration Building (UST 30004-A)	SAERA	NFA	OU A ROD
Amulet Housing, Well AMW-706 Area	SAERA	NFRAP	Post First Five-Year Review
Amulet Housing, Well AMW-709 Area	SAERA	NFRAP	Post First Five-Year Review
Armory (UST 10311-A)	SAERA	NFA	OU A ROD
Artillery Battalion (USTs ART-1 and ART-2)	SAERA	NFA	OU A ROD
Bering Chapel (UST 42090-A)	SAERA	NFA	OU A ROD
Boy Scout Camp, West Haven Lake (UST BS-1)	SAERA	NFRAP	Post First Five-Year Review
Boy Scout Camp, South Haven Lake (UST BS-2)	SAERA	NFA	OU A ROD
CDAA Complex (USTs 10580 and 10654)	SAERA	NFA	OU A ROD
Clam Road Truck Fill Stand	SAERA	NFA	OU A ROD
Cold Storage Facility (AST T-1440)	SAERA	NFA	OU A ROD
Contractor's Camp Burn Pad	SAERA	NFRAP	Post First Five-Year Review
Contractor's Pad UST T-1706 (Navy Pad)	SAERA	NFA	OU A ROD
Drum Disposal Area at Tank Farm D	SAERA	NFA	OU A ROD
Elementary School (UST 42017-A)	SAERA	NFA	OU A ROD
Finger Bay Quonset Hut, UST FBQH-1	SAERA	NFRAP	Post First Five-Year Review
Girl Scout Camp (UST GS-1)	SAERA	NFA	Post First Five-Year Review
Housing Outfall Area (Sandy Cove)	SAERA	NFA	OU A ROD
Kuluk Housing (UST HST-6C)	SAERA	NFA	OU A ROD
Kuluk Recreation Center (UST 30034)	SAERA	NFA	OU A ROD
Line Crew Building (USTs 2776, 2776-B, and 2776-C)	SAERA	NFA	OU A ROD
Loran Station (USTs V149A, V149B, and V149C)	SAERA	NFA	OU A ROD
MAUW Compound (UST 24000-A)	SAERA	NFRAP	Post First Five-Year Review
MAUW Compound (UST 24032-B)	SAERA	NFA	OU A ROD
McDonald's UST	SAERA	NFA	OU A ROD
Medical Center (UST 27088)	SAERA	NFA	OU A ROD
Mount Moffett Power Plant 5 (Used Oil AST)	SAERA	NFA	OU A ROD
Mount Moffett Power Plant 5 (Used Oil Pit)	SAERA	NFA	OU A ROD
Mount Moffett Power Plant 5 (USTs 10574 through 10577)	SAERA	NFRAP	Post First Five-Year Review
Mount Moffett Tower (Mogas AST and Used Oil AST)	SAERA	NFA	OU A ROD
NAVFAC Compound (USTs 20052 and 20053)	SAERA	NFRAP	Post First Five-Year Review
Navy Exchange Building (UST 30026)	SAERA	NFA	OU A ROD
Navy Exchange Building (UST 30027-A)	SAERA	NFRAP	Post First Five-Year Review
Navy Exchange Building (UST 30033)	SAERA	NFA	OU A ROD
New Roberts Housing, UST HST-7C	SAERA	NFRAP	Post First Five-Year Review

Table 9-1 (Continued)
OU A Sites Where the Remedy Is Complete

Site	Regulatory Authority	Regulatory Designation	Timing of Regulatory Designation
New Transportation Building (O/W 10644)	SAERA	NFA	OU A ROD
Petroleum Sites (Continued)			
New Transportation Building (UST 10590)	SAERA	NFA	OU A ROD
New Transportation Building (UST 10591)	SAERA	NFA	OU A ROD
NSGA Filling Station, Mogas and JP-5 ASTs	SAERA	NFA	OU A ROD
Officer Hill and Amulet Housing, UST 31047-A	SAERA	NFRAP	Post First Five-Year Review
Officer Hill and Amulet Housing (UST 31049-A)	SAERA	NFA	Post First Five-Year Review
Officer Hill and Amulet Housing (UST 31050-A)	SAERA	NFA	OU A ROD
Officer Hill and Amulet Housing (UST 31051-A)	SAERA	NFA	OU A ROD
Officer Hill and Amulet Housing (UST 31052-A)	SAERA	NFRAP	Post First Five-Year Review
Officer Hill and Amulet Housing (UST 31053-A)	SAERA	NFA	OU A ROD
Old Fuel Truck Shop (UST 10520-A)	SAERA	NFA	OU A ROD
Old Fuel Truck Shop (UST 10520-B)	SAERA	NFA	OU A ROD
Pantograph Pad (UST RT-1)	SAERA	NFA	OU A ROD
Pumphouse 5 Area	SAERA	NFA	OU A ROD
Quarters A (UST 42200)	SAERA	NFA	Post First Five-Year Review
ROICC Contractor's Area (UST ROICC-5)	SAERA	NFA	OU A ROD
ROICC Contractor's Area (UST ROICC-6)	SAERA	NFA	OU A ROD
ROICC Contractor's Area, UST ROICC-8	SAERA	NFA	Post First Five-Year Review
ROICC Warehouse (UST ROICC-1)	SAERA	NFA	OU A ROD
ROICC Warehouse, UST ROICC-2	SAERA	NFA	Post First Five-Year Review
ROICC Warehouse, UST ROICC-3	SAERA	NFA	Post First Five-Year Review
ROICC Warehouse (UST ROICC-4)	SAERA	NFA	OU A ROD
SA 81, Gun Turret Hill	SAERA	NFA	OU A ROD
SA 84, Sand Shed	SAERA	NFA	OU A ROD
SA 85, New Baler Building	SAERA	NFA	OU A ROD
SA 86, Old Happy Valley Child Care Center	SAERA	NFA	OU A ROD
SA 87, Old Zeto Point Wizard Station	SAERA	NFA	OU A ROD
SA 89, Tank Farm C	SAERA	NFA	OU A ROD
SA 96, NORPAC Hill Debris Site	SAERA	NFA	OU A ROD
SA 97, Generator Debris Site	SAERA	NFA	OU A ROD
Sewage Life Station 10 (UST 42483-A)	SAERA	NFA	OU A ROD
Sewage Lift Station 11 (UST 42484-A)	SAERA	NFA	OU A ROD
Shack O-52 (UST O-52)	SAERA	NFA	OU A ROD
Shack O-69 (UST B)	SAERA	NFA	OU A ROD
South Avgas Pipeline at North Sweeper Creek	SAERA	NFA	OU A ROD
SWMU 1, Andrew Lake OB/OD and Range	SAERA	NFA	OU A ROD
SWMU 12, Quartermaster Road Debris Disposal Area	SAERA	NFA	OU A ROD
SWMU 22, Avgas Drum Storage Area South of	SAERA	NFA	OU A ROD

Table 9-1 (Continued)
OU A Sites Where the Remedy Is Complete

Site	Regulatory Authority	Regulatory Designation	Timing of Regulatory Designation
Tank Farm 1			
Petroleum Sites (Continued)			
SWMU 24, Hazardous Waste Storage Facility	SAERA	NFA	OU A ROD
SWMU 31, Runway 18-36 Aviation Gas Drum Disposal	SAERA	NFA	OU A ROD
SWMU 34, Steam Plant 4 Used Oil AST	SAERA	NFA	OU A ROD
SWMU 35, Ground Support Equipment Building	SAERA	NFA	OU A ROD
SWMU 41, GSE Used Oil Storage Area	SAERA	NFA	OU A ROD
SWMU 44, AIMD Used Oil Storage Area	SAERA	NFA	OU A ROD
SWMU 45, Sewage Treatment Plan Petroleum Contamination (including SWMUs 46 through 50)	SAERA	NFA	OU A ROD
SWMU 55, Public Works Transportation Department Waste Storage Area	SAERA	NFA	OU A ROD
SWMU 56, Public Works Transportation Department Storage Tank	SAERA	NFA	OU A ROD
SWMU 57, Fuels Facility Refueling Dock	SAERA	NFA	OU A ROD
SWMU 64, Tank Farm D	SAERA	NFA	OU A ROD
SWMU 74, Old Batch Facility*	SAERA	NFA	OU A ROD
Telephone Exchange Building (UST 10324-A)	SAERA	NFA	OU A ROD
Telephone Substation T-100 (UST T-100-B)	SAERA	NFA	OU A ROD
TFB to TFC Pipeline—Area A	SAERA	NFA	OU A ROD
TFB to TFC Pipeline—Area B	SAERA	NFA	OU A ROD
TFB to TFC Pipeline—Area C	SAERA	NFA	OU A ROD
TFB to TFC Pipeline—Area D	SAERA	NFA	OU A ROD
TFB to TFC Pipeline—Area E (Truck Fill Stand)	SAERA	NFA	OU A ROD
TFB to TFC Pipeline—Area F	SAERA	NFA	OU A ROD
TFB to TFC Pipeline—Area G	SAERA	NFA	OU A ROD
TFC to NSGA Pipeline—Area A	SAERA	NFA	OU A ROD
TFC to NSGA Pipeline—Area B	SAERA	NFA	OU A ROD
TFC to NSGA Pipeline—Area C	SAERA	NFA	OU A ROD
TFC to NSGA Pipeline—Area D	SAERA	NFA	OU A ROD
TFC to NSGA Pipeline—Area E	SAERA	NFA	OU A ROD
USGS (NOAA) Building (USTs NOAA-A, -C, and -D)	SAERA	NFA	OU A ROD
Yakutat Hangar, USTs T-2039-B and T-2039-C	SAERA	NFA	OU A ROD

Notes:

*SWMU 74, Old Batch Facility is included as a no further action site for both CERCLA and petroleum.

AIMD - Aircraft Intermediate Maintenance Detachment

AST - aboveground storage tank

avgas - aviation gasoline

Table 9-1 (Continued)
OU A Sites Where the Remedy Is Complete

CDAA - circular disposed antenna array
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
FFCA – Federal Facilities Compliance Agreement
GSE - ground support equipment
JP-5 - jet petroleum No. 5
loran - long-range navigation
MAUW - modified advanced underwater weapons
mogas - motor vehicle gasoline
NFA - no further action
NFRAP - no further remedial action planned
NMCB - Naval Mobile Construction Battalion
NOAA - National Oceanic and Atmospheric Administration
NORPAC - North Pacific
NSGA - Naval Security Group Activity
OU - operable unit
RCRA – Resource Conservation and Recovery Act
ROICC - resident officer in charge of construction
SA - source area
SAERA - State-Adak Environmental Restoration Agreement
SWMU - solid waste management unit
TFB - Tank Farm B
TFC - Tank Farm C
USGS - U.S. Geological Survey
UST - underground storage tank

Table 9-2
OU A Sites Where the Remedy Is Operating and Expected to Be Protective

Site Name	Regulatory Authority	Monitoring Type
Antenna Field, USTs ANT-1, ANT-2, ANT-3, and ANT-4	SAERA	MNA/IC
Former Power Plant, Building T-1451	SAERA	MNA/BKGD/ IC
GCI Compound, UST GCI-1	SAERA	MNA/IC/FP
Housing Area (Arctic Acres)	SAERA	MNA/IC
Kuluk Bay	CERCLA	MTM/IC
ROICC Contractor's Area, UST ROICC-7	SAERA	NAE
Runway 5-23 Avgas Valve Pit	SAERA	MNA/IC
SA 76, Old Line Shed Building	CERCLA	IC
SA 78, Old Transportation Building, USTs 10583, 10584, and ASTs	SAERA	MNA/SWP/BKGD/IC/FP
SA 79, Main Road Pipeline	CERCLA, SAERA	NAE/SWP
SA 80, Steam Plant 4, USTs 27089 and 27090	SAERA	MNA/IC/FP
SA 82, P-80/P-81 Buildings	SAERA	LM/SWP/IC/FP
Sweeper Cove	CERCLA	MTM/IC
SWMU 2, Causeway Landfill	CERCLA	IC
SWMU 4, South Davis Road Landfill	CERCLA	IC
SWMU 10, Old Baler Building	CERCLA	IC
SWMU 11, Palisades Landfill	CERCLA	PCM/IC
SWMU 13, Metals Landfill	CERCLA	PCM/IC
SWMU 14, Old Pesticide Disposal Area	CERCLA, SAERA	MNA/CGWM/IC
SWMU 15, Future Jobs/DRMO	CERCLA, SAERA	MNA/CGWM/IC
SWMU 16, Former Firefighting Training Area	CERCLA	IC
SWMUs 18/19, White Alice Landfill	Alaska DEC solid waste regulations	PCM/IC
SWMU 20, White Alice/Trout Creek Disposal Area	CERCLA	IC
SWMU 21A, White Alice Upper Quarry	CERCLA	IC
SWMU 23, Heart Lake Drum Disposal Area	CERCLA	IC
SWMU 24, Hazardous Waste Storage Facility	RCRA	IC
SWMU 25, Roberts Landfill	Alaska DEC solid waste regulations	PCM/IC
SWMU 29, Finger Bay Landfill	CERCLA	IC
SWMUs 52, 53, and 59, Former Loran Station	CERCLA	IC
SWMU 55, Public Works Transportation Department Waste Storage Area	CERCLA	CGWM/IC
SWMU 58 and SA 73, Heating Plant 6	SAERA	MNA/SWP/IC/FP
SWMU 60, Tank Farm A	SAERA	MNA/IC
SWMU 67, White Alice PCB Spill Site	CERCLA	IC

Table 9-2 (Continued)
OU A Sites Where the Remedy is Operating and Expected to Be Protective

Site Name	Regulatory Authority	Monitoring Type
Tanker Shed, UST 42494	SAERA	MNA/SWP/IC/FP
Yakutat Hangar, UST T-2039-A	SAERA	LM/SWP/IC/FP

Notes:

- AST - aboveground storage tank
- avgas - aviation gasoline
- BKGD - background data
- CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
- CGWM - compliance groundwater monitoring
- DEC - Department of Environmental Conservation
- DRMO - Defense Reutilization and Marketing Office
- FP - free product
- IC - institutional control
- LM - limited groundwater monitoring
- MNA - monitored natural attenuation
- MTM - marine tissue monitoring
- NAE - natural attenuation evaluation
- PCB - polychlorinated biphenyl
- PCM - post-closure monitoring
- RCRA - Resource Conservation and Recovery Act
- ROICC - resident officer in charge of construction
- SA - source area
- SAERA - State-Adak Environmental Restoration Agreement
- SWP - surface water protection monitoring
- SWMU - solid waste management unit
- UST - underground storage tank

10.0 NEXT REVIEW

The next 5-year review is scheduled for 2011.

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