

FIVE-YEAR REVIEW REPORT

FIRST FIVE YEAR REVIEW REPORT FOR ARCTIC SURPLUS SALVAGE YARD SUPERFUND SITE FAIRBANKS, ALASKA

December 2008

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12/18/2008

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Acronyms and Abbreviations

ACM	asbestos containing material
ADEC	Alaska Department of Environmental Conservation
AFCEE	Air Force Center for Engineering and the Environment
ARAR	applicable or relevant and appropriate requirement
ASSY	Arctic Surplus Salvage Yard
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COC	contaminant of concern
DDD	dichlorodiphenyl dichloroethane
DDT	dichlorodiphenyl trichloroethane
DLA	Defense Logistics Agency
DOD	Department of Defense
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	feasibility study
GCL	geosynthetic clay liner
HI	Hazard Index
IC	institutional control
LTM	long term monitoring
MCL	maximum contaminant level
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	operations and maintenance
OE	ordnance and explosives
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PPE	personal protective equipment

Acronyms and Abbreviations (continued)

RA	remedial action
RAO	remedial action objective
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RPM	Remedial Project Manager
RPO	Remedial Process Optimization
RSV	RPO Scoping Visit
SARA	Superfund Amendments and Reauthorization Act
SVOC	semivolatile organic compound
TCB	1,2,4-trichlorobenzene
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
TCE	trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
TSP	trisodium phosphate
VOC	volatile organic compound

EXECUTIVE SUMMARY

This document summarizes the first five-year review for the Arctic Surplus Salvage Yard (ASSY) located near Fairbanks, Alaska. The results of the five-year review indicate that the remedies described in the 1995 Record of Decision (ROD) and revised by an Explanation of Significant Differences (ESD) in 2003 are protective of human health and the environment. Overall, the remedial actions (RAs) are functioning as designed, and no deficiencies were identified that impact the protectiveness of the remedies. The protectiveness of the RAs is being verified by the long-term monitoring (LTM) and Operations and Monitoring (O&M) program as described in the site O&M Plan, which monitors groundwater concentrations of selected contaminants of concern (COCs) and maintains the landfill cap surface and slopes.

Based on the LTM and O&M data, interviews, and the observed integrity of the landfill cap structure, the remedies continue to remain protective. The ROD and ESD-prescribed RAs continue to contain contaminants, and there have been no changes in the physical conditions of the site that affect protectiveness.

The review of documents, applicable or relevant and appropriate requirements (ARARs), and exposure assumptions indicates that the remedial actions implemented at ASSY are functioning as intended in the ROD and ESD and meet the intent of the ROD and the ESD. The following five-year review form presents the summary of this five-year review.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name (from WasteLAN): Arctic Surplus Salvage Yard		
EPA ID (from WasteLAN): AKD980988158		
Region: 10	State: AK	City/County: Fairbanks, Fairbanks North Star Borough
SITE STATUS		
NPL status: Final <input checked="" type="checkbox"/> Deleted Other (specify)		
Remediation status (choose all that apply): Under Construction Operating <input checked="" type="checkbox"/> Complete		
Multiple OUs?* YES <input checked="" type="checkbox"/> NO	Construction completion date: April 2005	
Has site been put into reuse? <input checked="" type="checkbox"/> YES NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA State Tribe Other Federal Agency:		
Author name: Environmental Protection Agency		
Review period: 1 July 2008 to 22 December 2008		
Date(s) of site inspection: 18 July 2008		
Type of review:		
	<input checked="" type="checkbox"/> Post-SARA	Pre-SARA
	Non-NPL Remedial Action Site	NPL-Removal only
	Regional Discretion	NPL State/Tribe-lead
Review number: <input checked="" type="checkbox"/> 1 (first) 2 (second) 3 (third) Other (specify)		
Triggering action:		
<input checked="" type="checkbox"/> Actual RA On-site Construction Start Date	Actual RA Start Date	
Construction Completion	Previous Five-Year Review Report	
Other (specify)		
Triggering action date: 22 December 2003		
Due date (five years after triggering action date): 22 December 2008		

FIVE-YEAR REVIEW SUMMARY FORM (continued)

ISSUES	
Future claims on site parcels may not reference conservation easements.	
RECOMMENDATIONS AND FOLLOW-UP ACTIONS	
Issue	Recommendation and Follow-Up Actions
Future claims on site parcels may not reference conservation easements.	Follow-up with the appropriate city and borough agencies and title companies to ensure that future claims reference the conservation easements.
PROTECTIVENESS STATEMENT	
<p>The remedy is protective and is expected to remain protective of human health and the environment. Based upon the review of relevant documents and the site inspection, the remedy is functioning as intended by the ROD and ESD. There have been no changes in the physical condition of the site that would affect the protectiveness of the remedy. Long-term protectiveness of the RAs will be verified by Institutional Controls (ICs), LTM and O&M program, which monitors groundwater COC concentrations and inspects and maintains the integrity of the landfill cap and fences.</p>	
OTHER COMMENTS	
<p>The Superfund Long-Term Human Exposure Environmental Indicator Status for the Arctic Surplus Site remains "Under Control and Protective Remedy In Place" because the site is Construction Complete, the remedy is operating as intended, and the required engineering and institutional controls are in place and effective.</p>	
<p>The Groundwater Migration Environmental Indicator Status for the Arctic Surplus Site remains "Under Control" because since 2005, no COC in any groundwater sample has been detected above the cleanup levels selected in the record of decision to ensure protectiveness and compliance with applicable or relevant and appropriate standards.</p>	
<p>Cross Program Revitalization Measure Status: The Site was designated "Ready for Anticipated Use" in 2006 because all remedial actions are complete, cleanup goals have been met, and all required institutional controls are in place and effective. The site is in reuse for industrial purposes.</p>	

1 INTRODUCTION

This document presents the first five-year review for the Arctic Surplus Salvage Yard (ASSY) site located near Fairbanks, Alaska. The purpose of a five-year review is to determine whether the remedy at a site remains protective of human health and the environment. The methods, findings, and conclusions of the review are documented in this five-year review report. In addition, this report identifies issues found during the review and provides recommendations to address them. Figure 1 presents the site vicinity map. The site consists of one Operable Unit; therefore, this five-year review covers site-wide conditions.

This five-year review report was prepared pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

CERCLA §121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The NCP in 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) further states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The United States Environmental Protection Agency (EPA), Region 10 is the lead agency for this National Priorities List (NPL) site and has conducted this five-year review in accordance with existing five-year review guidance (EPA, 2001). This is the first five-year review for

ASSY. The Defense Logistics Agency (DLA) and its contractor Earth Tech AECOM assisted EPA in the preparation of report. The triggering action used for this statutory review is the actual remedial action on-site construction start date of 22 December 2003. The five-year review at ASSY is required because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure. At the time of this five-year review, full implementation of the site remedy has been completed. The Institutional Controls (ICs) outlined in the ROD and ESD have been implemented. The final Remedial Action Report was completed during the summer of 2004, and the site was deleted from the NPL in 2006.

All available information pertaining to the site has been reviewed during the performance of this five-year review, including, but not limited to, the Remedial Investigation (RI) (Shannon and Wilson, 1994), the ROD (EPA 1995), the Feasibility Study (FS) (Shannon and Wilson 1995), the ESD (EPA, 2004), the Remedial Action Report (Earth Tech, 2004), the Operations & Monitoring Plan (Earth Tech, 2004), various semi-annual groundwater monitoring reports (Earth Tech), and other correspondence with the various parties involved with the response actions. The principal documents used in preparing this report are referenced in Attachment 1.

2 SITE CHRONOLOGY

Table 2-1 summarizes significant events and documents from the time the property was first transferred to the private sector through 2008. Recurring activities, such as post-RA long term groundwater monitoring and site O&M activities are also presented in Table 2-1. Figure 2 presents the ASSY site map.

Table 2-1: Chronology of Significant Events

Event	Date
Property was sold by the Department of Defense (DOD).	1959
CERCLA Preliminary Assessment Report is completed.	1987
CERCLA Site Inspection is conducted.	1989
Property is proposed for inclusion on the NPL.	1989
Various Interim Remedial Actions are conducted including asbestos removal, pesticide stabilization and removal, poly chlorinated biphenyl (PCB)-contaminated soil removal, lead-contaminated soil removal, and incinerator and associated burn-ash removal.	1989-1991
Property is listed on the NPL.	1990
RI Report is completed.	1994
FS is conducted to evaluate remedial alternatives.	1995
A remedy for the site is selected and a ROD is signed.	1995
Remedial Process Optimization (RPO) site visit is conducted.	2002
Initiation of treatability studies in accordance with RPO recommendations.	2002
United States Department of Health and Human Services Public Health Assessment report is conducted, concluding that the site no longer poses a public health hazard and that contaminants are contained on site.	2002
ESD was submitted to document changes in the site remedial technical basis and specific remedial goals	2003
Remedial Action Work Plan is completed.	2003
Soil remediation activities were initiated. Other activities conducted during construction include scrap metal segregation and removal, ordnance and explosives (OE) related scrap removal, identification and removal of radiological materials, removal of mercury and PCB-related scrap, tires and miscellaneous petroleum products, and removal for off-site disposal of dioxin/pesticide-contaminated soil, and PCB-contaminated soil.	2003
Completion of remediation activities, ordnance and explosives-related scrap removal	2004
Post construction site inspection is conducted.	2004
Site is removed from the NPL.	2006
Groundwater monitoring, landfill cap inspection and O&M are conducted.	2004-2008

3 SITE BACKGROUND AND REMEDIAL ACTION ACTIVITIES

This section presents background information and describes the remedial activities conducted at the ASSY site.

3.1 Site Location and History

The ASSY site consists of five parcels of land totaling about 24.5 acres, located on the northeast corner of Badger Road and the Old Richardson Highway, approximately 5 miles southeast of Fairbanks, Alaska (see Figure 1). The western portion of the site was owned by the Department of Defense (DOD) and from 1944 to 1956 a landfill used by the military was located on this parcel. Following its sale by the DOD in 1959, the site was used as a salvage yard, resulting in the accumulation of a large amount of both salvageable and non-salvageable materials. Specific activities that have impacted the site include:

- Lead battery recycling: batteries were stored and then cracked to collect lead for recycling.
- Oil was drained from transformers, some of which contained PCBs.
- Spent transformer oils were burned to fuel an incinerator used to reclaim copper from transformer coils and lead from batteries.
- Mechanized equipment was salvaged, which may have caused fluids to leak.
- Spent OE-related scrap accumulated.
- Oils, chemicals, containerized gases, and other hazardous materials were stored improperly.

A Preliminary Assessment was conducted at the site in June 1987 and a Site Inspection in September 1989. The site was proposed for inclusion on the NPL on 26 October 1989 and was listed on 30 August 1990. Since its identification as a CERCLA site in 1989, numerous investigations and removal actions have been performed to characterize the site and address potential site risks.

3.2 Summary of Site Contamination

A number of previous environmental investigations were completed at the site, culminating in the RI Report (Shannon & Wilson 1994). As discussed in the RI Report, several potential source areas were identified, including:

- Battery cracking areas;
- Buried materials, including the old military landfill;
- Drum storage areas;
- Incinerator areas;
- Transformer processing areas; and
- Salvage and debris piles.

These site investigations resulted in the identification of a wide range of contaminants at ASSY including inorganic compounds, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs, pesticides, dioxins, and furans. Most of these contaminants were detected locally or in low concentrations at the site. However, some contaminants appeared to have a significantly greater potential as health risks because of their greater toxicity or carcinogenicity, widespread distribution, elevated concentrations, or mobility via transport mechanisms. The two primary COCs identified were lead and PCBs. These contaminants had impacted surface soils and near surface soils over relatively wide areas, particularly within the western portion of the site.

High lead concentrations were identified in surface soils where battery processing (cracking) was known to have been conducted, and where battery processing debris was found. Highly contaminated soils were excavated and transported off-site during the 1990 removal actions. Lead was subsequently identified at concentrations greater than 500 mg/kg in surface soils over much of the western portion of the site.

PCB transformer oils were found in old transformers and drums, and oil-stained soils were detected in several areas of the site. During the 1990 removal actions, most of the oil was removed, and heavily contaminated soils were excavated and removed from the site. Subsequent analyses of surface soils throughout much of the western part of the site detected elevated concentrations of PCBs in surface soils, locally in excess of 100 mg/kg. PCB-impacted off-site soils located immediately west of the property boundary were evaluated and remediated during the Badger Road expansion project conducted in 1994.

Additional localized soils impacted with dioxins and the chlorinated pesticides dichlorodiphenyl dichloroethane (DDD) and dichlorodiphenyl trichloroethane (DDT) were identified during the RI.

3.3 Site Risks

An evaluation of the potential risks to human health and the environment from site contaminants was conducted and is discussed in the ROD. The objectives of the risk assessment were to:

- Identify COCs for human health and ecological risk,
- Provide a basis for determining residual chemical levels that are adequately protective of human health and the environment,
- Help determine if response actions are necessary at the site, and
- Provide a basis for comparing the various remedial alternatives and potential effects on human health.

Table 3-1 presents the site risks. The risk assessment concluded that hazardous substances were present on the site and that the actual or threatened release of these substances may present an imminent substantial endangerment to public health, welfare or the environment if a response action is not taken.

Table 3-1: Summary of Cancer Risks and Hazard Indices for Soil at ASSY

Exposure Scenario	Cancer Risks		Hazard Indices	
	RME	Average	RME	Average
Current Off-Site Resident	6×10^{-4}	4×10^{-5}	3	0.2
Future On-Site Resident – Western Portion	8×10^{-3}	7×10^{-4}	4	0.0003
Future On-Site Resident – Eastern Portion	4×10^{-4}	3×10^{-5}	4	0.4
Future On-Site Worker – Western Portion	1×10^{-3}	--	0.07	--
Future On-Site Worker – Eastern Portion	5×10^{-5}	--	0.08	--

Notes: RME = Reasonable Maximum Exposure

-- = Cancer risks were not calculated for this scenario

A qualitative ecological risk assessment was done to assess the ecological effects of the contaminants present at ASSY. The ecological risk assessment indicated that it did not appear that there was a measurable impact on the ecology of the site or near-site areas, and that the levels of contamination present at the site were not likely to cause adverse effects to plants and animals in the site vicinity.

3.4 Historical Removal Action Activities

Interim removal action activities were completed during 1989, 1990, and 1991 by the EPA and by the DLA in 1990 and 1996. During 1989, the site was fenced, approximately 22,000 pounds of asbestos were removed, and approximately 75 gallons of chlordane were stabilized and removed. During 1990, a more extensive removal action included:

- Dismantling of one incinerator and removal and disposal of the associated ash and soil,
- Removing and disposing approximately 13 cubic yards of PCB-contaminated soil,
- Removing and disposing approximately 315 cubic yards of lead-contaminated soil from "battery-cracking" areas, and
- Removing and disposing approximately 160 cubic yards of chlordane-contaminated soil.

The interim removal action activities also included bulking and removing of containerized waste, removing intact and broken battery casings, draining and properly disposing of transformer oils, and capping specific areas of contaminated soils. In 1991, another interim removal action was completed to investigate alleged buried hazardous wastes and delineate the extent of soil contamination. To facilitate the investigation, approximately 300 non-PCB transformers were moved and staged in the center of the site.

In 1996, approximately 3,100 empty drums and 21 transformers were drained, cleaned, and removed from the site for disposal.

3.5 Record of Decision Summary

Following completion of the RI, a FS was conducted to evaluate and recommend remedial alternatives for the site (Shannon and Wilson 1995). Based on the alternative evaluations included in the FS, a remedy was selected and formally documented in the ROD, which was signed in 1995. The Remedial Action Objectives (RAOs) identified for site soils were to:

- Prevent exposure by ingestion, inhalation, and dermal contact with contaminated soils and dust that would result in an excess lifetime carcinogenic risk above 10^{-5} .
- Prevent exposure by ingestion, inhalation, and dermal contact with contaminated soils and dust that would result in a noncarcinogenic health effects as indicated by a Hazard Index (HI) greater than 1.0.

- Prevent offsite migration of contaminants caused by mechanical transport, runoff, or wind erosion.
- Prevent infiltration/migration of contaminants that would result in groundwater contamination in excess of regulatory standards.

The RAOs identified for site groundwater were to:

- Prevent inhalation of volatiles released from, or ingestion of, groundwater containing contaminants at levels above regulatory standards (i.e., maximum contaminant levels (MCLs)).

If there were no regulatory standards for certain chemicals in groundwater, the RAOs were to:

- Prevent inhalation of volatiles released from, or ingestion of, groundwater contaminants that could result in an excess lifetime carcinogenic risk above the 10^{-5} level.
- Prevent ingestion of groundwater containing contaminants that could result in noncarcinogenic health effects as indicated by an HI in excess of 1.0.

The main components of the selected remedy identified in the 1995 ROD were:

- Relocation and sorting of salvage material and debris, to provide access to the contaminated soil;
- Excavation and stockpiling of soil exceeding cleanup standards for treatment or disposal;
- On-site treatment of soil with concentrations of PCBs exceeding 50 mg/kg by solvent extraction;
- On-site treatment of on-site soil exceeding the lead industrial cleanup standard of 1,000 mg/kg and of off-site soil exceeding the lead residential cleanup standard of 400 mg/kg by stabilization/solidification;
- Off-site disposal of soil exceeding cleanup standards of 21,000 micrograms per kilogram ($\mu\text{g}/\text{kg}$) 4,4-DDD, 15,000 $\mu\text{g}/\text{kg}$ 4,4'-DDT, and 0.44 $\mu\text{g}/\text{kg}$ for 2,3,7,8-TCDD Equivalence for dioxin/furans;
- Consolidation of treated soils into a containment area over the old closed military landfill;
- Capping of the containment area and the existing landfill with a Toxic Substances Control Act (TSCA) chemical waste landfill cap; and
- Implementation of ICs, including long-term groundwater monitoring, and O&M of fences and the cap. In addition, deed restrictions were put in place to prevent use of the groundwater, maintain an industrial site use designation, and prevent any unauthorized access or use of the capped area.

The ROD stated that the selected remedy will comply with land disposal restrictions for halogenated organic carbon (i.e., PCBs) through a treatability variance for the contaminated soil. The selected remedy will be protective of human health and the environment, comply with EPA guidance on long term management controls of PCBs, and will not present an unreasonable risk of injury to health or the environment. The ROD stated that this remedy will comply with TSCA landfill requirements (bottom liner, depth to groundwater, leachate collection system, and surface water monitoring) through a TSCA waiver.

Since arsenic, manganese, and trichloroethene (TCE) were detected occasionally in several on-site monitoring wells above their MCLs, groundwater monitoring and ICs (prevention of the use of on-site groundwater for drinking) is part of the selected remedy. The ROD identified cleanup levels for Antimony (25 µg/L) and Manganese (2,900 µg/L) based on regional aquifer background levels.

3.6 RPO Activities

In June 2002, an RPO Scoping Visit (RSV) was conducted at the site by representatives from the DLA, Air Force Center for Engineering and Environment (AFCEE), EPA, Alaska Department of Environmental Conservation (ADEC), Earth Tech, Parsons and Mitretek Systems. The purpose of the RSV was to identify and recommend improvements to the ROD proposed remedy. The RSV recommendations included collecting and analyzing additional soil samples to refine quantities of soil requiring remediation, performing treatability testing to evaluate the feasibility of soil stabilization as a remedy for the lead and PCB contaminated soils, collecting groundwater samples, and evaluating options for placing the stabilized soils on site. These recommendations were implemented during Fall 2002 to Summer 2003 period. Based on the results of these activities, specific changes to the ROD proposed remedy were recommended which included on-site stabilization of PCB and lead contaminated soils, a revised cap design and off-site disposal of soils with PCB concentrations greater than 50 mg/kg. In addition, several other site restoration issues not specifically addressed in the ROD were identified during the RPO activities, including the presence of large quantities of OE scrap that had not been properly demilitarized, several caches of compressed gas cylinders, potential radiological waste items, and multiple drums containing soil cuttings, purge water and personal and protective equipment from previous investigations.

3.7 Explanation of Significant Differences Summary

The changes to the ROD proposed remedy were formally documented and approved in the ESD issued in June 2003. The primary technical changes to the remedy included in the ESD were:

- Treatment of soil with PCB concentrations between 10 and 50 mg/kg by solidification/stabilization,
- Off-site treatment and disposal of soil with PCBs greater than 50 mg/kg,
- Capping stabilized soils with a geosynthetic clay liner (GCL) instead of compacted silt, and
- Flattening the cap profile to allow for reuse of the land.

The ESD also stated that DLA and ADEC were evaluating options for permanent ICs to be attached to the property that will transfer with the land should it be sold. The ESD also updated the ARARs by eliminating the land disposal restrictions and updating the Arsenic MCL from 50 µg/L to 10 µg/L or natural background (whichever is less stringent).

3.8 Final Remedial Action

Upon finalization of the ESD, a detailed work plan for implementation of the RA was developed by the DLA and its contractor (Earth Tech). Procedures were also developed to identify, segregate and remove other site hazards such as OE materials, radiological contamination and scrap piles. The final RA Work Plan was issued in May 2003, and soil remediation activities began in June 2003. Remedial activities completed by Earth Tech for this project included:

- Relocation, sorting, and decontamination of salvage material, ancillary scrap (transformers, compressed gas cylinders, etc.), and debris;
- Excavation and stockpiling of contaminated soils with concentrations greater than 1,000 mg/kg lead or 10 mg/kg PCBs and off-site soils with concentrations greater than 400 mg/kg lead and/or 1 mg/kg PCBs for treatment;
- Excavation of soil with dioxin concentrations greater than 0.44 µg/kg;
- Excavation of soil with DDD concentrations greater than 21 mg/kg or DDT concentrations greater than 15 mg/kg;
- Shipment of dioxin-, DDT-, and DDD-contaminated soil and soil with PCB concentrations greater than 50 mg/kg off-site for disposal;

- Solidification/stabilization of contaminated soil containing lead at concentrations greater than 1,000 mg/kg and soil with PCB concentrations greater than 10 mg/kg but less than 50 mg/kg. The soil was mixed with approximately 0.5% trisodium phosphate (TSP) and 10% Portland cement by weight;
- Placement of stabilized soils into a consolidation cell, which also encompassed the old military landfill located in the southwestern section of the site;
- Collection of confirmation samples to verify that the cleanup goals were met. Over 400 confirmation samples were collected in the excavation areas for lead and PCBs analyses;
- Collection of stabilized soil samples for toxicity characteristic leaching procedure (TCLP) analysis for lead;
- Placement and compaction of stabilized soil in the consolidation cell and the existing landfill, placement of a GCL liner over the compacted soil, and placement of an 18" thick cover of clean fill over the GCL liner;
- Placement of 4" (thickness) of compacted road base and 4" (thickness) of asphalt over the GCL cover to allow reuse of the cap as a parking lot, construction of perimeter runoff ditches and an infiltration basin to control surface water runoff from the cap and surrounding area. In addition to the infiltration basin, a ramp was constructed on the north side of the consolidation cell to allow vehicular traffic.
- Removal of the following materials:
 - 72,210 OE-related items (including 335 live items)
 - 12 55-gallon drums and one 8-gallon drum of radioactive waste (including more than 300 dials and gauges)
 - 50,000 cubic yards of scrap metal
 - 344 PCB-containing fluorescent light ballasts
 - 688 fluorescent light bulbs (mercury vapor)
 - 760 pounds of asbestos containing material (ACM)
 - 8 Freon cylinders
 - 16 chlorine cylinders
 - 264 tons of tires
 - 6,985 gallons of non-hazardous oil

- 50 drums of personal protective equipment (PPE)
- Site restoration activities including hydroseeding the site, rehabilitation of monitoring wells, installation of a new site fence and a new consolidation cell/parking lot fence and gate.

Figure 3 shows the excavation areas at the site. Approximately 9,500 cubic yards of contaminated soil was stabilized and placed in the consolidation cell. Approximately 10 metric tons of non-hazardous dioxin contaminated soil, 6 tons of non-hazardous pesticide contaminated soil and 195 metric tons of PCB (above 50 mg/kg) contaminated soil was transported for off-site disposal. Figure 4 presents an aerial view of the site after completion of the remedial action activities. The Remedial Action Report was finalized in Summer 2004, and O&M activities were initiated in Fall 2004. The site was deleted from the NPL in 2006.

3.9 Present and Anticipated Future Site Use

The site is currently used primarily for equipment storage. The asphalt covered cap has been leased for use as a parking lot for vehicles and trailers since 2005. The anticipated future use of the site is similar to the current use.

4 PROGRESS SINCE COMPLETION OF REMEDIAL ACTION

This section summarizes the activities conducted since completion of the remedial action. As mentioned in the ROD, after completion of the remedial action, ICs, groundwater monitoring and O&M activities were initiated to manage exposure pathways that could result in unacceptable risks. An O&M plan was developed (Earth Tech, 2004) which outlined the site activities to be performed after completion of the RA. The O&M activities were conducted by Earth Tech.

4.1 Institutional Controls

Institutional controls for the site include both physical and administrative controls. As described in section 3, chain-link fencing was installed around the consolidation cell and site boundary to restrict site access. Signs showing contact numbers for EPA and ADEC and prohibiting unauthorized access, were posted on the fence surrounding the cell.

In accordance with the ESD, conservation easements were also executed by current property owners to provide legal access to the site (5 parcels) for future operations, maintenance, and sampling activities. Additionally, the executed agreements include legally enforceable restrictions that prohibit current and future property owners from activities that may adversely affect the implementation, integrity, or protectiveness of the remedial measures (ICs). Specific provisions of the agreements include the prohibition of:

- Digging, drilling, or other activities that might penetrate, damage, or interfere with the consolidation cover system, fencing, or drainage systems;
- Damaging or interfering with the groundwater monitoring network;
- Installing wells and using groundwater, unless approved in writing;
- Digging or moving soil that may create additional exposure to contaminants, or an environmental or health and safety risk, unless approved in writing;
- Transporting soil off-site, unless approved in writing; and
- Using the land for residential or agricultural use or similar uses causing exposure to contaminants.

Copies of the executed agreements are included in Attachment 2. To ensure that current and future property owners are subject to the same restrictions and are required to provide the same

access, an equitable servitude was recorded with the Recording District of Fairbanks, State of Alaska.

Since 2006, the consolidation cell/asphalt cap area has been leased by the property owner (Mr. Pederson) to Mr. Harry Sanders for use as a parking lot. Inspections conducted at the site since 2004 indicate that the long-term ICs required by the ROD and ESD have been implemented.

4.2 Long Term Monitoring Activities

A groundwater monitoring well network consisting of seven monitoring wells was sampled in August 2003 to provide a baseline to assess the long-term performance of the remedial action (see Figures 2 and 4). Since August 2003 to September 2007, groundwater monitoring and monitoring well maintenance activities have been conducted semiannually. The long term monitoring program proposed the following:

- Groundwater monitoring for a minimum of five years from the completion of the consolidation cell;
- Groundwater samples to be analyzed for PCBs, pesticides, VOCs, and metals and the results be compared to MCLs (and 2,900 µg/L for Manganese – in accordance with the ROD); and
- Groundwater monitoring to be conducted utilizing low-flow/micro-purge sampling techniques in accordance with AFCEE protocols and EPA guidance.

Groundwater monitoring will be conducted for a period of 30 years (2003 to 2033). Historically, 8 contaminants had been detected occasionally in the on-site groundwater. These included antimony, arsenic, manganese, tetrachloroethene (PCE), trichloroethene (TCE), 1,2,4-trichlorobenzene (TCB), DDT, and PCBs. The groundwater monitoring protocol included sampling and laboratory analyses of these contaminants and lead (since it is a soil COC).

In 2004, PCE (in MW5627-R), antimony and lead (in MW-D) were detected in groundwater samples above the respective maximum contaminant levels (MCLs) or action levels. The detections of lead and antimony in MW-D (September 2004) were considered anomalous since they were more than three orders of magnitude greater than both the reported concentrations from the two previous monitoring events, and the field duplicate collected from this well. These results were most probably due to inadequate purging or a laboratory error. PCE was detected in MW-5627-R (May 2004) above its MCL, however, PCE has not been detected in this well since

May 2005. In August 2003, Aroclor-1260 was detected in downgradient well MW-5625-R. However, Aroclor-1260 has not been detected in any of the samples collected from this well since then.

Since 2005, no COC in any groundwater sample has been detected above the drinking water standards (MCLs or ROD mandated cleanup levels). Historical groundwater analytical results are included in Attachment 3 (2004 to 2007).

The long term monitoring data was reviewed by DLA, ADEC, EPA and Earth Tech in September 2007. The team agreed that future monitoring of wells MW-5626 and MW-D is not warranted given their location with respect to the consolidation cell (see Figure 2) and the historical lack of concentrations of any COC in these wells since 2004. The team agreed to modify future long term monitoring activities as follows:

- Reduce groundwater monitoring frequency to an annual basis;
- Replace monitoring well MW-5627-R. The new location for this well will be within the consolidation cell fenced area to prevent unauthorized access.
- Eliminate groundwater monitoring in wells MW-5626 and MW-D and decommission these wells in accordance with ADEC guidelines.
- Eliminate pesticide analyses from the groundwater monitoring protocol.

Based on the above recommendations, only one sampling (and well maintenance) event was conducted in 2008 (July). During this event, groundwater monitoring wells MW-5626 and MW-D were decommissioned and MW56-27-R was replaced.

4.3 Other O&M Activities

During each site visit, the perimeter security fence and consolidation cell cap and slopes were inspected and maintenance activities were conducted as required in accordance with the O&M Plan. The consolidation cell was inspected to:

- Assure continued protection of human health and the environment,
- Verify that no conditions exist that would result in an imminent hazard to human health or the environment from the consolidated/treated soil that has been placed in the cell,
- Verify that construction components of the cell are intact and operating properly, and

- Verify that no excessive erosion is occurring that could endanger the security of the consolidation cell and/or that might result in exposure or release of the consolidated/treated soil in the cell.
- Verify that the asphalt cover over the cell was in good condition.

Biannual inspections conducted from 2004 to 2007 indicated that the asphalt cap and subgrade remained intact with no visible breaches or suspect areas, and all inspection criteria were satisfied.

The consolidation cell cap slopes were also inspected for damage/degradation. Small erosion channels were occasionally generated from surface water runoff. These channels were filled with gravel and soil, and the repaired areas were covered with grass seed. Subsequent inspections indicated that the repairs to the small erosional channels have been successful. To minimize potential disruption of the consolidation cell and liner, vegetation on the cap slopes were cleared once every year.

Routine inspections of the perimeter (site) fence showed infrequent minor damage. Holes in the fence were repaired, and other repairs such as gate replacement were implemented to maintain the integrity of the fence. The fence provides sufficient perimeter security. In addition, the maintenance activities included placement of wood pads below trailers parked on the cap to prevent damage to the asphalt cap.

Similar to the groundwater monitoring, the ASSY team agreed to continue the O&M activities on an annual basis starting in 2008. The 2008 O&M activities were conducted in July.

The annual O&M costs (including biannual groundwater monitoring, reporting, meetings, etc) for ASSY from 2004 to 2007 have ranged from \$40,000 to \$75,000 per year.

5 FIVE-YEAR REVIEW PROCESS

The five-year review process for ASSY was initiated in July 2008. The ASSY five-year review team was led by USEPA Remedial Project Manager (RPM) for ASSY (Mr. Jacques Gusmano) and included support from the DLA representative (Mr. Bruce Noble) and Earth Tech AECOM (Mr. Manish Joshi). The ADEC RPM for ASSY is Mr. Colin Craven. The following activities were conducted during the five-year review:

- The land owners were contacted in July 2008 and notified of the upcoming review. Comments from the site owners regarding the remedial actions and follow-on monitoring were collected in July 2008. A notice requesting public comments on the five-year review was printed in the local Fairbanks paper on 26 November 2008. No comments were received from the public. After completion of the five-year review, copies of the report will be made available via the administrative record. A public notice to announce the availability of the report will be issued.
- A site inspection of the ASSY site was performed on 18 July 2008, by USEPA, ADEC, DLA and the DLA contractor. The purpose of the inspection was to assess the protectiveness of the remedy, including the access restrictions at the site. The site inspection checklist is included in Attachment 4.
- Interviews were conducted with USEPA, DLA, ADEC, one site owner, and the renter. The interview forms are presented in Attachment 5.
- The five-year review team conducted a technical assessment of ASSY site and the findings and recommendations are provided in this report.

5.1 Document and Data Review

This five-year review consisted of a review of relevant documents which included, but were not limited to RI reports, remedial action and construction completion reports, and O&M reports. The applicable groundwater cleanup levels specified in the ROD were also reviewed. A complete list of the documents reviewed is shown in Attachment 1. The five-year review team also conducted a review of the LTM and O&M data collected from 2004 to 2007. Since 2005, no COCs at ASSY have exceeded their respective groundwater cleanup levels. The groundwater monitoring data are presented in Attachment 2.

A Title Search was done in December, 2007 by DPRA (Attachment 6) for USEPA, and evaluation of the Title Report by DPRA and USEPA confirmed that Institutional Controls were recorded on all the parcels with contamination above levels deemed safe for unlimited use and

unrestricted exposure and were not compromised by any prior encumbrances. However, there may be an issue with Parcel 2101, which was recently conveyed with a Quit Claim deed that did not mention the conservation easement. Follow-up actions should be conducted to ensure that future claims reference the conservation easement.

5.2 Site Inspection

The site inspection was conducted by the five-year review team on 18 July 2008. The inspection team members were as listed above. The consolidation cell cap, perimeter fence, and cap side slopes were inspected. No significant issues affecting the protectiveness of the remedy were noted. The site inspection results are included in Attachment 4. The ADEC representative stated that the deed restrictions imposed at ASSY are effective, since he gets periodic calls from potential buyers regarding site conditions and restrictions.

In addition, ADEC maintains an online database of contaminated sites. This database indicates that the ASSY site is subject to a deed notice, industrial land use restrictions, maintenance of inspections/engineering controls, groundwater restrictions and excavation restrictions.

The five-year team agreed that deed restrictions, continued annual groundwater monitoring and annual site inspection/O&M activities are adequately addressing exposure issues at the site.

5.3 Interviews

Interviews were held with parties familiar with the ASSY at the site. Overall, there were no significant problems identified in the interviews. The interviewees included representatives from EPA, ADEC and Earth Tech AECOM. One landowner (Mr. McPeak) and a renter (Mr. Sanders who leases the consolidation cell parking lot from the other landowner - Mr. Pederson) were also interviewed and did not express any concerns regarding the integrity of the consolidation cell or the perimeter fence. Mr. Pederson could not be interviewed since he was in poor health. The landowner and renter visit the site routinely. The interview forms are presented in Attachment 5.

6 TECHNICAL ASSESSMENT

In accordance with current USEPA guidance (EPA, 2001), a five-year review should determine whether the remedy at the site is protective of human health and the environment. The technical assessment of a remedy examines three questions which provide a framework for organizing and evaluating data and information and ensures that all relevant issues are considered when determining the protectiveness of the remedy. These questions are presented in the following sections.

6.1 Question A:

Is the remedy functioning as intended by the decision document?

Yes. The review of documents (Attachment 1) indicates that the remedies are functioning as intended in the ROD and ESD have met the intent of the ROD and ESD.

The selected remedy for the site included excavation and off-site disposal of the most contaminated materials (dioxins-, pesticide-, and PCB-contaminated soils) and stabilization and on-site placement (in the consolidation cell) of the remaining PCB and lead contaminated soils above the ROD mandated cleanup levels. The O&M program includes routine groundwater monitoring for the site COCs, vegetation clearing, inspection and maintenance of the cap and surrounding drainage areas, and inspection and maintenance of the site fence and monitoring wells. Since 2005, no COCs have been detected in the groundwater monitoring wells above their respective cleanup levels. This indicates that groundwater at the site has not been adversely impacted.

ICs were implemented consistent with the selected remedy and address all areas of site-related contamination that are above levels that allow for unrestricted use and unlimited exposure. The ICs, including deed restrictions, fencing/signage and routine inspections have been effective in preventing unauthorized access to or unauthorized development of the site. Since the deed restrictions were not included with the Quit Claim deed for Parcel 2101, part of the ICs did not function as planned. However, EPA and DLA will correct this portion of the ICs to ensure future protectiveness. Based on this review, the existing ICs are appropriate and are expected to remain adequate and effective.

6.2 Question B:

Are the exposure assumptions regarding toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection still valid?

The toxicity data, cleanup levels, and RAOs used at the time of the remedy selection (ROD and ESD) are still valid. The ADEC groundwater cleanup goal for arsenic of 0.05 milligram per liter (mg/L) established in 18 Alaska Administrative Code 75.345 is now used at this site. Since 2004, arsenic concentrations in all of the wells remain below the level of regulatory concern. There have been no changes in the potential exposure pathways at the site. The exposure assumptions used to develop the human health risk assessments remain valid. There has been no change in the toxicity factors for the primary COCs (PCBs and lead).

ADEC and EPA are considering revising the industrial cleanup level for lead from 1,000 mg/kg to 800 mg/kg. A review of the ASSY confirmation sampling results for lead indicate that 13 samples (out of over 400 collected) showed residual lead levels of over 800 mg/kg. Seven of these sampling locations are underneath the consolidated cap and were treated with TSP and Portland cement prior to placing stabilized soil over these locations. Four sampling locations are underneath the drainage canals and the sampling results around these locations showed lead levels well below 800 mg/kg. The remaining two locations are in the southeastern portion of the site, and similar to the drainage canal locations, the sampling results adjacent to these locations showed lead levels well below 800 mg/kg. Therefore a revision of the industrial cleanup level for lead will not affect the protectiveness of the remedy implemented at ASSY.

The ROD-mandated PCB cleanup level of 10 mg/kg is consistent with current EPA and ADEC cleanup levels for industrial exposures.

Institutional controls specified in the ROD and ESD will continue to prevent excavation, construction, groundwater use as drinking water, or other incompatible uses at the site. A title search of the 5 properties at the site confirmed that the land use restrictions are still in place. Land use at the site remains consistent with the ICs and selected remedy, and the only minor change, leasing of the area above the containment cell for use of a parking lot, is consistent with and will not compromise the ICs.

There have been no changes in the physical conditions of the site that would affect the protectiveness of this remedy.

6.3 Question C:

Has any other information come to light that could call into question the protectiveness of the remedy?

No. There is no new information that would question the protectiveness of the remedy. The groundwater monitoring data indicate that groundwater contaminant concentrations have not exceeded standards (since 2005). The review of O&M and performance monitoring data indicates that the ICs and O&M activities at the site continue to be protective.

6.4 Technical Assessment Summary

Based on a review of the historical site (remedial investigation, remedial action and LTM) data, the remedy is functioning as intended by the ROD and ESD and remains protective. The physical conditions of the site have not changed, and the cleanup goals cited in the ROD for and groundwater are being met.

7 ISSUES

Table 7-1 lists the issue identified in this five-year review for ASSY.

Table 7-1: ASSY Issues

Issue	Affects Current Protectiveness?	Affects Future Protectiveness?
Future claims on site parcels may not reference conservation easements.	No	Yes

8 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 8-1 lists recommendation to address the issue identified in this review. The EPA and DLA will be the parties responsible for implementing the recommendations.

Table 8-1: ASSY Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-up Actions
Future claims on site parcels may not reference conservation easements.	Follow-up with the appropriate city and borough agencies and title companies to ensure that future claims reference the conservation easements.

9 PROTECTIVENESS STATEMENT

The remedy is protective and is expected to remain protective of human health and the environment. Based upon the review of relevant documents and the site inspection, the remedy is functioning as intended by the ROD and ESD. There have been no changes in the physical condition of the site that would affect the protectiveness of the remedy. Long-term protectiveness of the RAs will be verified by Institutional Controls (ICs), LTM and O&M program, which monitors groundwater COC concentrations and inspects and maintains the integrity of the landfill cap and fences.

10 NEXT REVIEW

The next five-year review for ASSY will be completed by December 2013. The integrity of the consolidation cell cap, groundwater monitoring data and ICs should be reviewed to ensure that the land use and groundwater restrictions are still in place and continue to be protective.

FIGURES

Figure 1: Site Vicinity Map

Figure 2: Generalized Groundwater Elevation Map

Figure 3: Site Excavation Areas

Figure 4: Oblique Aerial Photo (View to East)

Attachment 1: LIST OF DOCUMENTS REVIEWED

Attachment 2: CONSERVATION EASEMENTS

Attachment 3: HISTORICAL ANALYTICAL RESULTS FOR COCs

Attachment 4: SITE INSPECTION FORM

Attachment 5: ASSY INTERVIEW FORMS

Attachment 6: TITLE SEACH MEMO