Five-Year Review Report

Third Five-Year Review Report
for
Standard Steel & Metals Salvage Yard (USDOT)

Anchorage, Alaska

March 2013

PREPARED BY:

U.S. Army Corps of Engineers, Alaska District
Joint Base Elmendorf-Richardson, AK

FOR:

U.S. Environmental Protection Agency, Region 10
Seattle, WA

Approved by: Date:

Cami Grandinetti 4/11/13

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Program Manager
Remedial Cleanup Program

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Table of Contents

TABLES

FIGURES

PHOTOS

ATTACHMENTS

List of Acronyms

ADEC	Alaska Department of Environmental Conservation
ARAR	Applicable or Relevant and Appropriate Requirement
ARLIS	Alaska Resource Library and Information Services
ARRC	Alaska Railroad Corporation
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
ESD	Explanation of Significant Difference
FRA	Federal Railroad Administration
HVOC	Halogenated Volatile Organic Compounds
IC	Institutional Controls
MCL	Maximum Contaminant Level
mg/kg	Milligrams per kilogram
MW	Monitoring Well
NCP	National Contingency Plan
ND	non-detect
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polyaromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
ppb	parts per billion
PQL	Practical Quantitation Limit
PRP	Potentially Responsible Party
RA	Remedial Action
RA-C	Remedial Action - Construction
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action

RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SDWA	Safe Drinking Water Act
TSCA	Toxic Substances Control Act
ug/L	Micrograms per Liter
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Executive Summary

The remedy selected for the Standard Steel & Metals Salvage Yard Superfund Site (Standard Steel) in Anchorage, Alaska includes: removal and offsite disposal of regulated material stockpiled onsite; offsite disposal of scrap metal and debris; excavation, stabilization and capping of contaminated soils on site; maintenance of the cap and erosion control structures on Ship Creek; institutional controls; and groundwater monitoring. The site consists of one Operable Unit; therefore this five year review covers sitewide conditions. The site achieved Construction Completion with the signing of the Final Close Out Report on June 26, 2002. The site was deleted from the National Priorities List on September 30, 2002. An initial five-year review was triggered by the actual start of construction on April 23, 1998. This third five-year review was triggered by the completion date of the second five-year review on April 11, 2008.

The remedy at Standard Steel is protective of human health and the environment, and exposure pathways that could result in unacceptable risks are being controlled. The remedy is functioning as intended in accordance with the Record of Decision signed on July 16, 1996. The immediate threats have been addressed and the remedy is expected to remain protective of human health and the environment.

The Superfund Program tracks progress at cleanup sites using several indicators, to comply with mandates of the Government Performance and Results Act (GPRA). The sitewide human exposure environmental indicator is designed to document long-term human health protection on a sitewide basis by measuring the incremental progress achieved in controlling unacceptable human exposures at a Superfund site. The ground water environmental indicator demonstrates that all information on known and reasonably expected ground water contamination has been reviewed and that the migration of contaminated ground water is stabilized and there is no unacceptable discharge to surface water. The Sitewide Ready for Anticipated Use (RAU) measure reports that all cleanup goals in the Record of Decision have been achieved for media that may affect current and reasonably anticipated future land uses of the site, so that there are no unacceptable risks; and all institutional or other controls required in the Record of Decision have been put in place.

As of March 31, 2013 for the Standard Steel Site:

- The Human Health Environmental Indicator Status is Long Term Human Health Protected.
- The Ground Water Environmental Indicator Status is Under Control.
- The Cross Program Measure Status is Ready for Anticipated Use (11.12 acres).

As of March 2013, ten groundwater monitoring events were completed between 1999 and 2012, which demonstrate that onsite groundwater is not adversely impacted by the stabilized material and no offsite migration is occurring that could affect Ship Creek. A recommendation to discontinue groundwater monitoring should be considered.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Standard Steel & Metals Salvage Yard (USDOT)		
EPA ID: AKD980978787		
Region: 10	**State:** AK	**City/County:** ANCHORAGE

SITE STATUS	
NPL Status: Deleted	
Multiple OUs? No	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA **If "Other Federal Agency" was selected above, enter Agency name:** Click here to enter text.
Author name (Federal or State Project Manager): Jessequa Parker
Author affiliation: U.S. Army Corps of Engineers, Alaska District
Review period: 12/21/2012 – 04/11/2013
Date of site inspection: 01/16/2013
Type of review: Statutory
Review number: 3
Triggering action date: 04/11/2008
Due date *(five years after triggering action date)*: 04/11/2013

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:
There are no issues that affect the protectiveness of the remedy.

Protectiveness Statement(s)

Include each individual OU protectiveness determination and statement. If you need to add more protectiveness determinations and statements for additional OUs, copy and paste the table below as many times as necessary to complete for each OU evaluated in the FYR report.

Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
Standard Steel & Metals Salvage Yard (USDOT)	Protective	Click here to enter date.

Protectiveness Statement:

Because the remedial actions at Standard Steel are protective, the site is protective of human health and the environment. The remedy is functioning as intended in accordance with the Record of Decision signed on July 16, 1996.

Sitewide Protectiveness Statement (if applicable)

For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.

Protectiveness Determination:	*Addendum Due Date (if applicable):*
Protective	Click here to enter date.

Protectiveness Statement:

Because the remedial actions at Standard Steel are protective, the site is protective of human health and the environment. All exposure pathways that could result in unacceptable risks are being controlled. All threats at the site have been addressed through stabilization and capping of contaminated soils, and the implementation of institutional controls. All monitoring data indicates the landfill containment cell is functioning as required to prevent exposure to the contaminated materials, and prevent offsite migration of contaminants.

Five-Year Review Report

I. Introduction

The purpose of this third five-year review is to determine whether the remedy at the Standard Steel & Metal Salvage Yard (USDOT) is protective of human health and the environment. The methods, findings, and conclusions of Five Year Reviews are documented in the Five Year Review Reports. The five year review report identifies issues found during the review, if any, and identifies recommendations to address them.

This five year review report is being prepared pursuant to the authority in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA Section 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 that 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 of 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, at 40 Code of Federal Regulations (CFR) Section 300.340(f)(4)(ii) 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 (USEPA), Region 10, is the lead Agency for the Standard Steel & Metal Salvage Yard Superfund site (Standard Steel). This is the third five year review for the site. The triggering action for this review is the date of the second five year review: April 11, 2008. A second five year review was conducted in April 2008. The site consists of only one operable unit (OU); therefore this review covers sitewide conditions. Although the Standard Steel Superfund site was deleted from the National Priorities List (NPL) in September 2002, periodic five year reviews must continue because contaminants remain capped onsite and land use is restricted to industrial use.

At the request of the USEPA, the U.S. Army Corps of Engineers (USACE) prepared the third five year review of the remedy implemented at the site in Anchorage, Alaska. This review was conducted by staff from the Alaska District office on Joint Base Elmendorf-Richardson (JBER) in Anchorage, Alaska, from December 2012 to March 2013. This report documents the results of the review.

II. Site Chronology

Table 1: Chronology of Site Events

Event	Date
Metals recycling and salvaging operations	1955 - 1993
Standard Steel & Metals leases the site	1982
Alaska Railroad Corporation purchases site from Federal Railroad Administration	1985
Initial discovery of problem or contamination	October 28, 1985
Pre-NPL Removal Actions	June 2, 1986 – June 29, 1988
NPL listing	August 30, 1990
Administrative Order on Consent to Conduct Remedial Investigation/Feasibility Study	September 23, 1992
Remedial Investigation/Feasibility Study complete	January 30, 1996
ROD signature	July 16, 1996
Partial Consent Decree for Recovery of Removal Costs	December 11, 1996
CERCLA Remedial Design/Remedial Action (RD/RA) Consent Decree	January 26, 1998
Remedial Design Start	October 4, 1996
Remedial Design Complete	April 23, 1998
Actual Remedial Action Start	April 23, 1998
Explanation of Significant Differences	November 18, 1998
Construction Finish	August 1, 1999
Final Inspection	August 27, 2001
Construction Completion Date	June 26, 2002
Final Close-out Report	June 26, 2002
Deletion from NPL	September 30, 2002
First Five Year Review	April 23, 2003
Second Five Year Review Start	September 27, 2007
Second Five Year Review	April 11, 2008

III. Background

Physical Characteristics

The Standard Steel & Metals Salvage Yard site was an 11 acre metal salvage yard in Anchorage, Alaska. The site is located north of downtown Anchorage near the intersection of Railroad Avenue and Yakutat Street, adjacent to Ship Creek. See Figure 1 for a site location and vicinity map. The site is zoned I-2, which denotes a heavy industrial district, by the Municipality of Anchorage. The property is owned by the Alaska Railroad Corporation (ARRC). The site is located within the Municipality of Anchorage. Anchorage is the largest metropolitan area in the state, with a population of over 260,000 persons. A residential area is located one half mile southeast of the site, across Ship Creek. Joint Base Elmendorf-Richardson (JBER) is located one third mile northeast of the site. Ship Creek is a designated anadramous fish stream by the Alaska Department of Fish and Game.

Land Use & History of Contamination

The Federal Railroad Administration (FRA), part of the U.S. Department of Transportation (USDOT), acquired the land in the 1920s. Metal recycling and salvage businesses operated on the site beginning in 1955 and until 1993. Site activities included reclamation of copper from electrical transformers containing polychlorinated biphenyls (PCBs), salvaging of assorted batteries, and processing of various types of equipment and drums from nearby military bases. Releases of hazardous substances occurred from these activities and the inappropriate handling of transformer oils. In 1982, the land was leased to Standard Steel & Metals. The site contained transformers, bulk tanks, an incinerator, a metal crusher, drums and other containers, and additional items associated with salvage operations. FRA owned and leased the property until 1985, when it was purchased by the State of Alaska and managed by the Alaska Railroad Corporation. The Alaska Railroad Corporation (ARRC) is an independent corporation owned by the State of Alaska. The entire site is within the ARRC's Post Road Industrial Lease Lots. The ARRC currently leases the majority of the site (Lots 53-57) to SAW Jacques, LLC who operates Central Recycling Services, Inc. for construction and demolition waste recycling. The remainder of the site (Lot 58-A) is utilized for storage of trailers and piles of steel by R.J.H. (doing business as (dba) STEELFAB) under a special land use permit with the ARRC. The site is adjacent to Ship Creek, a stream used for sport fishing. A recreational trail runs along the southern bank of the creek. The future land use of the site is expected to remain the same, there are no known changes anticipated at this time. A recent aerial view of the Standard Steel site is shown in Figure 2.

Initial Response

The USEPA conducted a series of removal actions from 1986 through 1988 to address site contamination. The USEPA removed all polychlorinated biphenyls (PCB)-contaminated liquids, eighty-two 55 gallon drums of Resource Conservation and Recovery Act (RCRA) hazardous waste, 10,450 gallons of waste oil, 185 electrical transformers contaminated with PCBs, and 781,000 pounds of lead-acid batteries. Contaminated soils were stockpiled, and a security fence and erosion-control wall was built. USEPA proposed adding the site to the National Priorities List (NPL) of Superfund Sites on July 14, 1989. The Standard Steel site was listed on the NPL on August 30, 1990.

Basis for Taking Action

A Remedial Investigation/Feasibility Study (RI/FS) was completed in January 1996. The study identified PCBs and lead as the primary contaminants of concern at the site. The site posed potential threats to human health and the environment through ingestion, dermal contact, and inhalation of contaminated soils. Offsite groundwater was not impacted. Sampling results from the Feasibility Study detected a maximum of 24,000 mg/kg lead and 2,700 mg/kg PCBs. The excess cancer risks for a long-term worker exceeded the 1E-4 target risk at the site and the hazard index (HI) exceeded a level of exposure which may result in adverse health effects. The risks associated with either residential or industrial exposure to elevated concentrations of lead in site soil were determined to present significant risks to human health.

The ecological risk assessment determined that the most sensitive ecological habitat in the site vicinity was found in Ship Creek. It further concluded the data indicated that conditions within Ship Creek, within the study area, were not significantly impacted by contamination from the site. The ecological risk assessment observed that the highest contamination concentrations were measured in the area where former site operations were concentrated and because of the gravely fill material and shotcrete cap, little ecological habitat was present in this area. Based on the information presented in the ecological risk assessment, the risk to ecological receptors appeared small, due to the poor habitat of the site.

IV. Remedial Actions

Remedy Selection

Based on the results of the RI/FS and information contained in the Administrative Record, the Regional Administrator for USEPA Region 10 signed a Record of Decision (ROD) on July 16, 1996 selecting remedial actions for the Standard Steel site. The remedial action objectives (RAOs) identified for the site are:

- Prevent exposure by inhalation, ingestion, and dermal contact with contaminated soils that would result in an excess lifetime carcinogenic risk above 1E-4 for industrial use, and off-site non-industrial use;
- Prevent exposure by inhalation, ingestion, and dermal contact with contaminated soils that would result in noncarcinogenic health effect as indicated by an HI greater than 1.0;
- Prevent off-site migration of contaminants caused by mechanical transport, surface water runoff, flood events, and wind erosion;
- Prevent leaching or migration of soil contaminants into groundwater that would result in groundwater contamination in excess of regulatory standards.

According to the 1996 ROD, the key components of the selected remedy include:

- Removal of regulated material stockpiled on-site and investigation derived wastes with subsequent disposal in a RCRA Subtitle C or D landfill, or recycling of materials;

- Off-site disposal of remaining scrap debris by recycling or disposal in a RCRA Subtitle D landfill or, if the debris is a characteristic hazardous waste or contains greater than 0.5 g/kg PCBs or 10 ug/100cm^2 by standard wipe tests, treatment and disposal in a RCRA Subtitle C or TSCA landfill;

- Excavation and consolidation of all soils exceeding cleanup levels (10 mg/kg PCBs or 1,000 mg/kg lead);

- Treatment of all soils at or greater than 1,000 mg/kg lead or 50 mg/kg PCB by stabilization/solidification;

- On-site disposal of stabilized/solidified soils and excavated soils between 10 mg/kg and 50 mg/kg PCBs in TSCA landfill;

- Excavation of soils impacted above 1 mg/kg PCBs and 500 mg/kg lead from the flood plain and consolidation of these soils elsewhere on the site;

- Maintenance and repair of erosion control structure on bank of Ship Creek;

- Maintenance of solidified/stabilized soils and the landfill;

- Institutional controls to limit land uses of the site and, if appropriate, access;

- Monitoring of groundwater at the site to ensure the effectiveness of the remedial action.

Remedy Implementation

On January 26, 1998, the United States District Court for the District of Alaska approved a Remedial Design and Remedial Action Consent Decree for performance of the remedy at the Standard Steel Site. The Consent Decree was entered into by the United States, on behalf of the USEPA, and Chugach Electric Association, Inc., Montgomery Ward and Company, J.C. Penney Company, Inc., Bridgestone/Firestone, Inc., Sears Roebuck and Company, and Westinghouse Electric Corporation (Settling Defendants or PRP Group) and the ARRC as the Owner Settling Defendant. The ARRC signed the Consent Decree exclusively for the purpose of agreeing to provide access and implement institutional controls. The Settling Defendants/PRP Group agreed to perform the remedial design/remedial actions selected in the ROD and other Work required by the Consent Decree.

The remedial design work was conducted in accordance with the approved ROD and statement of work for the Consent Decree. The remedial action was formally initiated in April 1998. The contractor conducted the remedial actions pursuant to the approved remedial design/remedial action work plans. Potential unexploded ordnance was encountered during the implementation of the remedy. However, the work plans anticipated this possibility and the remedial actions proceeded with some changes. All suspected ordnance and explosives, and unexploded ordnance was removed and treated by the U.S. Army's military explosives ordnance detachment from Fort Richardson, Alaska.

A Toxic Substances Control Act (TSCA) disposal cell is located on 2.5 acres along the northeast boundary of the site. The waste consolidation cell measures approximately 320 by 340 feet and extends to a depth of about 15 feet below finished grade. The cell holds approximately 55,000 tons of contaminated material, of which 22,272 tons were stabilized. The contaminated soils are covered with closed cell foam insulation, a 40 mil geomembrane cover, geocomposite drainage layer, and three feet of clean soil. The cell is designed to be utilized for vehicle/equipment storage or a future building area. The cell is surrounded on three sides by a 14,000 ton rip rap barrier wall designed to protect against a 500 year (minimum) flood event. Figure 3 depicts the consolidation cell and drainage ditches.

The selected remedy was enhanced by the following approved design changes, which were implemented in 1998 and 1999:

- Excavating all upland surface soils outside the limits of the TSCA landfill which exceeded 1 mg/kg PCBs or 250 mg/kg lead to a depth of three feet; and disposal in the onsite TSCA landfill (note that per the draft Site Closeout Report, stricter cleanup levels were selected by the PRP group).
- Including a geomembrane cover system consisting of a four-inch foam insulation layer, 40 mil liner, geonet drainage layer, filter fabric, and three feet of clean soil over the landfill.
- Creation of a flood protection barrier on three sides of the landfill.
- Replacement of the rip rap erosion control wall adjacent to Ship Creek with an Alaska Department of Fish and Game requested natural erosion protection system. This system incorporated native vegetation and artificial logs to secure the stream bank and provide habitat.

Based on these changes, an Explanation of Significant Differences (ESD) was signed on November 18, 1998 which waived the requirement of 40 CFR 761.75(B)(9)(i) for a fence around the TSCA landfill.

A Remedial Action Report was signed on August 1, 1999 and a Final Closeout Report was signed on June 26, 2002 which documented that all work at the site has been completed and all cleanup levels established in the ROD have been achieved through the remedial actions.

Operations and Maintenance (O&M)

Pursuant to the Consent Decree, Chugach Electric Association, Inc., J.C. Penney Company, Inc., Bridgestone/Firestone, Inc., Sears Roebuck and Company, and Westinghouse Electric Corporation (CBS Corporation is its successor) are responsible for operation and maintenance procedures. The remedy requires maintenance of the landfill to ensure it retains its structural integrity and prevents the release of PCBs and lead through erosion, leaching or excavation. The remedy includes groundwater monitoring for PCBs and lead and analysis for pH, specific conductance, and chlorinated organics to ensure the landfill is not contributing to contamination of groundwater, nor altering groundwater conditions.

The Operations and Maintenance Plan (revised) (ALTA Geosciences, July 2000) contains the detailed requirements for ongoing O&M activities, as well as recommended operating limitations for site activities or future building construction. O&M activities include verification that the construction components of the remedy are intact and operating properly, groundwater monitoring, and periodic maintenance of the landfill cap and surface drainage systems.

The O&M Plan (Revised) required site inspections of the consolidation landfill cell twice per year for the first 3 years after implementation (1998-2001) followed by annual inspections thereafter. Inspections should also be made following floods, earthquakes, or other events with the potential to damage the landfill cell. The O&M Plan (Revised) states groundwater monitoring will continue for a minimum of 5 years following implementation of the remedy. Groundwater monitoring occurred twice yearly (semiannual) for the first 2 years after construction completion (1999, 2000), once yearly (annual) during 2001-2002, and was reduced to once every 2 years (biennial) beginning in 2004, with the approval of the USEPA. The Groundwater Monitoring Plan (ALTA Geosciences, 1998) specified sampling and analysis of groundwater from one upgradient (MW22) and four downgradient wells (MW13, MW14, MW15, and MW24). See Figure 3 for monitoring well locations.

The ROD required twice yearly groundwater monitoring for PCBs and lead during the first two years of operation of the remedy. The ROD states that after ten years an assessment of the groundwater data will be conducted to determine whether groundwater monitoring is still required or whether the frequency will be altered. The groundwater standards to be achieved are 0.5 micrograms per liter (ug/L) for PCBs and 15 ug/L for lead. The federal and state drinking water standards for PCBs and lead have not changed since the ROD was signed.

Operation and maintenance activities have been occurring as required by the PRP Group with the exception of the 2010 groundwater monitoring event and a site inspection after a minor flood event in September 2012. Inspections are performed by PRP Group's consultant, Alta Geosciences. The groundwater monitoring event was not performed in 2010. During the July 2012 groundwater monitoring event, MW-14 could not be sampled. It was suspected the monitoring well was either full of sediment or its casing was damaged. Site inspections have occurred annually since 2001. A site inspection to assess the structural integrity of the consolidation cell was not performed after the September 2012 flood event.

The ARRC also performs random observations and inspections of the site when it deems appropriate. The current site operator, Central Recycling Services (CRS), also observes and inspects the site as necessary to ensure its business operations are compatible with site restrictions. The ARRC and CRS inspected the site after the September 2012 flood event and reported the flood waters did not appear to affect the integrity of the consolidation cell.

Institutional Controls

The objectives and restrictions on use required by the ROD are:

- Ensure that site use continues to be industrial or commercial and prevent use of the site for commercial developments that involve potential chronic exposures of children to soil (e.g., use of the site for a day care center).

- Restrict activities at the site that could potentially impair the integrity of the TSCA landfill.
- Prevent movement of soil containing greater that 1,000 mg/kg lead or 10 mg/kg PCBs to the surface or within the top foot of soil where chronic long-term worker exposure could occur.
- Groundwater use restrictions which prevent the installation of groundwater supply wells at the site and restrict use of groundwater underlying the site for any purpose. Property owner will provide written notification of restrictions and site conditions to local, regional, and state agencies, departments, and utilities.

Institutional Controls required by the ROD have been implemented at the Standard Steel Site. As stated above, the ARRC agreed in the Consent Decree to implement required access and land use restrictions. The Consent Decree set forth specifically what the access and use restrictions would be. The ARRC executed and filed equitable servitudes on the title of the property comprising the Superfund site restricting uses of the property. The equitable servitudes are titled "Declaration of Restrictive Covenants and Notice of Remedial Action" and were filed with the local land recording district office in Anchorage, per the requirements of the Consent Decree so as to run with the land and be enforceable against future landowners, lessees, or other interest holders. The USEPA is designated as third-party beneficiary in the Declaration. Likewise, the Consent Decree requires that the ARRC require any user of the site or transferee of any interest in the site, including lessees, to comply with the access and use restrictions.

The ARRC currently leases a portion of the property to SAW Jacques, LLC for commercial purposes. The lease was reassigned from K&T Enterprises Inc. to SAW Jacques, LLC in the Amendment to Lease and Assignment to Lease (with Consent) dated 9 October 2009. SAW Jacques, LLC operates Central Recycling Services, Inc. for construction and demolition debris recycling. The ground lease between ARRC and SAW Jacques, LLC contains the required access and land use restrictions and also includes the requirement that SAW Jacques, LLC impose all such restrictions on any subtenant or assignee. The ground lease also stipulates that SAW Jacques, LLC must provide the ARRC advance notice of any sublease or assignment and review copy of the sublease before execution, which is another safety net by which the ARRC can assure current users of the site comply with the required restrictions.

A notice of the remedy and Declaration of Restrictive Covenants was also provided to applicable state and local government agencies and all local utility companies.

The long-term Institutional Controls required by the ROD are being implemented through commitments made in the RD/RA Consent Decree, the recording of the Declaration of Restrictive Covenants which runs with the land, and through contractual requirements imposed by leases or assignments. The Institutional Controls cover the entire site.

Table 2 below shows the estimated annual O&M costs for the Standard Steel site. These costs reflect maintenance and monitoring expenses after the completion of the onsite remedial action construction in August 1999. The reported cost of the onsite remedial action construction, according to the August 1999 Completion Report is $5.25 million.

Table 2. Annual Operations & Maintenance Costs

Dates	Total Costs (rounded)	Description
YEAR 1 1999	$12,000	Two GW monitoring events
YEAR 2 2000	$12,000	Two GW monitoring events, MW22 replaced with flush mounting
YEAR 3 2001	$12,000	One GW monitoring event
YEAR 4 2002	$10,000	One GW monitoring event
YEAR 5 2003	$3,000	Site inspection, no GW monitoring
YEAR 6 2004	$10,000	One GW monitoring event, repaired MW14
YEAR 7 2005	$2,000	Site inspection, no GW monitoring
YEAR 8 2006	$8,000	One GW monitoring event
YEAR 9 2007	$5,000	Site inspection, brush removal from ditches and riprap, no GW monitoring
YEAR 10 2008	$8,000	One GW monitoring event
YEAR 11 2009	$3,943*	Site inspection, no GW monitoring
YEAR 12 2010	$3,943*	Site inspection, no GW monitoring
YEAR 13 2011	$3,943*	Site inspection, no GW monitoring
YEAR 14 2012	$3,943*	Site inspection, one GW monitoring event

*Average cost per year from 2009-2012. Total O&M cost was $15,770.00 from 2009-2012.

V. Progress Since the Last Review

The initial five-year review for the Standard Steel Site was completed in April 2003. No issues were identified from the First Five-Year Review (2003). The second five-year review was completed in April 2008. No significant issues were identified from the Second Five-Year Review (2008). Follow-up actions for the next five-year review included verifying PCBs detected above cleanup level (1 mg/kg) in surface soils of a former drainage ditch adjacent to the southwest corner of the Standard Steel site were addressed through a separate action between the ARRC and the USEPA. It also recommended evaluation of the need for groundwater monitoring if groundwater data continued to demonstrate no adverse impacts. The second five-year review concluded the remedy was functioning as intended and protective of human health and the environment. As of March 2013, groundwater monitoring results continue to demonstrate onsite groundwater is not adversely affected by the encapsulated material and no offsite migration is occurring that could impact Ship Creek. Remedial actions have not been implemented by the ARRC to address the PCB-contaminated soils in the former drainage ditch area.

VI. Five-Year Review Process

Administrative Components

Members of the Standard Steel and Metal Salvage Yard Potentially Responsible Party (PRP) Group, the site owner, project managers from the ADEC, natural resource trustees, and other interested parties or individuals were notified of the initiation of the third five year review in December 2012. The five year review team was led by Christopher Cora of the USEPA Region 10. Louis Howard of the ADEC assisted in the review as the representative of the support agency. Alex Tula of ALTA Geosciences representing the PRP Group assisted in the review to ensure technical accuracy. Lisa Geist and Jessequa Parker of the USACE, Alaska District coordinated and prepared the review documentation.

Community Notification and Involvement

The USEPA published notification of the third five year review in the Anchorage Daily News on January 4, 6, and 9, 2013 (see Attachment 15). In addition, approximately seventy three letters were mailed on December 21, 2012 to inform interested parties (see Attachments 2 and 6) of the third five year review. The USEPA sent interview questionnaires via electronic mail to key officials (see Attachment 3) on December 21, 2012 and requested the forms be returned by January 25, 2013. Completed interview questionnaires are in Attachment 5. The USEPA received no responses from the general public or other local stakeholders. Input received from regulatory agencies and the PRP group or site owners and operators was positive. The US Fish & Wildlife Service, one of the natural resources trustees, had no comments on the site.

The USEPA will issue a public notice and fact sheet to announce the availability of the third five year review. The results of the review will be made available to the public at the Alaska Resources Library and Information Services (ARLIS) located at the University of Alaska Anchorage Consortium Library, 3211 Providence Drive, Anchorage, Alaska, and on the USEPA Region 10 website at http://www.epa.gov/region10.

Document Review

This five year review consisted of a review of relevant documents including the ROD (July 1996), Consent Decrees (December 1996, January 1998), Explanation of Significant Differences (November 1998), O&M Plan (Revised) (July 2000), 2008 Bi-Annual Groundwater Monitoring Report (July 2010), 2012 Biennial Groundwater Monitoring Report (February 2013), Title Search (January 2013), ARRC Lease Agreements, Municipality of Anchorage land use status, 1995 and 2012 aerial photographs, the ADEC Contaminated Sites Database Report for Standard Steel, and Interview Questionnaire responses. A complete list of documents that were reviewed is provided in Attachment 1.

Data Review

Groundwater monitoring has been conducted at the Standard Steel site since the 1980's. During the remedial investigation (1993), three sets of groundwater data were obtained from twenty wells over approximately a one year period. Sampling was conducted at high and low groundwater events. Data from Rounds 2 and 3 were used for evaluating metals and PCBs.

Lead was detected at 3 of 9 downgradient groundwater monitoring locations in Round 2 at concentrations of 1.6 to 3.1 ug/L. Lead was not detected at any of 8 downgradient locations in Round 3. Lead concentrations in Rounds 2 and 3 were low relative to the EPA promulgated action level of 15.0 ug/L. PCBs were detected in none of 12 well locations during Round 2. During Round 3, PCBs were detected at 2 of 9 well locations ranging from 0.023 ug/L to 0.032 ug/L. The concentrations were about 20 times lower than the maximum contaminant level (MCL) of 0.5 ug/L.

Considering the low frequency of detection and the low concentrations detected relative to action levels, the ROD did not retain any contaminants of concern for groundwater. However, the ROD did require groundwater monitoring to assess the effectiveness of the remedy for protecting groundwater, as well as ensuring the landfill is not contributing contamination to groundwater, nor altering groundwater conditions. The ROD required monitoring for lead, PCBs, chlorinated organics, pH, and specific conductance.

Groundwater monitoring was required for a minimum of 10 years following implementation of the remedy (1998). One upgradient and four downgradient wells were designated for sampling and analysis in the Groundwater Monitoring Plan (November 1998). See Figure 3 for monitoring well locations. Groundwater monitoring occurred twice yearly (semiannual) for the first 2 years (1999, 2000) after construction completion, once yearly (annual) during 2001 and 2002, and was reduced to once every 2 years (biennial) beginning in 2004, with the approval of the EPA. After ten years, an assessment of the groundwater data was recommended to determine whether groundwater monitoring is still required or whether the frequency will be altered. The groundwater standards to be achieved are 0.5 micrograms per liter (ug/L) for PCBs and 15 ug/L for lead. The federal and state drinking water standards for PCBs and lead have not changed since the ROD was signed.

Post-ROD groundwater monitoring results indicate no adverse impacts from lead, PCBs, or VOCs. The most recent groundwater monitoring event reports (September 2008 and July 2012) are found in Attachments 10 and 11. A summary of the results by year is presented in Table 3.

Table 3. Summary of Groundwater Monitoring Data 1999-2012

Chemical	Action Levels [a] ug/L (ppb)	Concentration in ug/L (ppb)									
		MAY 1999	OCT 1999	MAY 2000	SEP 2000	AUG 2001	AUG 2002	JUN 2004	SEP 2006	SEP 2008	SEP 2012
PCBs	0.5	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.5)	ND (0.099)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1-0.5)
Lead	15	ND (5.6)	0.88 – 1.1	ND (5.6)	ND (13.9-14.2)	ND (2)	2.28	ND (2)	ND (1)	ND (1)	ND (0.2)
VOCs	Varies	ND (1-8)	ND [b]	ND (1)	ND [c] (1)	ND [d]	ND [e]	ND (0.4-10)	ND [f] (0.4-10)	ND (0.4-10)	ND (0.4-10)

Maximum detected concentration shown from the 5 monitoring wells.

[a] PCBs and lead action levels are the Maximum Contaminant Levels for drinking water, as specified in the ROD.

[b] Methylene chloride detected in one MW at a concentration of 2.6 ppb, but below screening levels.

[c] Two VOCs (chloromethane and methylene chloride) were detected at 1.2 to 1.5 ppb, but considered lab contaminants.
[d] Tetrachloroethane was detected in one MW at an estimated concentration of 0.37 ppb.
[e] Several VOCs (naphthalene, tetrachloroethane, tetrachloroethylene, trichlorobenzene, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, and trichloroflouromethane) also detected in either MW14, MW15 or MW24 at estimated concentrations, ranging from 0.33 to 1.29 ppb, but below screening levels.
[f] Chloroform also detected in MW22 at a concentration of 2.31 ppb, but considered anomalous because also detected in the equipment blank at 2.33 ppb. Toluene also detected in MW14 at 7.9 ppb, but well below screening levels.
ND () non detect (detection limit); ppb parts per billion; ug/L micrograms per Liter; VOCs volatile organic compounds

Site Inspection

A site visit was conducted by the USACE on January 16, 2013. A representative of the USEPA was present during the January site visit. Two representatives of the ARRC and of CRS were also present during the site visit. The purpose of the site inspection was to assess the protectiveness of the remedy, including the integrity of the onsite landfill cell, the condition of the cover, and runoff and drainage systems. Attachment 7 contains the Site Visit Report; photos of site conditions are included at the end of the report.

No significant issues were identified during the site visit other than the minor flood event in September 2012. The ARRC and CRS inspected the condition of the landfill consolidation cell after flood waters receded and reported the integrity of the cell was not compromised. The condition of the landfill cover appears satisfactory. The drainage ditches and runoff systems were not visually assessed due to snow cover. The ARRC and CRS reported the drainage ditches and runoff systems were clear of debris and functioning well. The erosion control riprap appeared to be in good condition. Vegetative growth has increased since the last five year review and may require maintenance at the next scheduled O&M site visit in 2013.

The institutional controls that are in place include prohibitions on: residential use or activities, commercial uses that would involve exposure of children to the soil, impairing the integrity of the landfill cover, disturbing or excavating other soils onsite, and groundwater use. No activities were observed that would have violated the institutional controls. The cap and the surrounding area were undisturbed. No new groundwater monitoring wells were observed. Vehicle storage is allowed. Various trucks, trailers, and other equipment were observed on the capped area. Stockpiles of recycled construction and demolition debris were observed on the capped area. No cracks, sloughing, erosion, or other impacts to the cap were noted during the inspection.

Institutional controls were further evaluated by reviewing zoning maps of the Municipality of Anchorage and a title search for the property dated 29 January 2013. There are no municipal ordinances (http://www.muni.org/assembly2/resolutions_ordinances.cfm) which affect the site. The property remains zoned I-2, heavy industrial use district. The Municipality of Anchorage Code, Chapter 21.40.210, (http://www.municode.com/resources/gateway.asp?pid=12717&sid=2) defines prohibited uses and structures for I-2 heavy industrial use zones as the following: dwellings; hotels, motels, rooming houses, mobile home parks; camper parks; correctional institutions; child care centers; hospitals and nursing facilities; adult care facilities; and residential care facilities. Any change to site zoning requires approval by the Planning and Zoning Commission, as well as the Anchorage Assembly. Zoning variance requests are heard by the Zoning Board of Examiners and Appeals. The Anchorage Municipal Code also requires land use permits, right-of-way permits (utility and driveway construction), building permits, and land clearing and grading permits. The Project Management and Engineering department must

approve final design plans for any work in a municipal right-of-way. Any work within flood plains, as identified by the Federal Emergency Management Agency (FEMA) maps, requires project review and approval to ensure potential impacts on floodways are adequately considered. A small area of floodplain soils is present at the south and southwest portions of the site, adjacent to Ship Creek. The onsite landfill is constructed entirely outside the limits of the 100-year floodplain.

The Municipality of Anchorage regulates the installation of private water wells for domestic purposes and requires a permit prior to any drilling. Anchorage Municipal Code Chapter 15.55.010 ensures that sources utilized for potable water within the Municipality of Anchorage are constructed and maintained in such a manner as to provide a safe supply of water for domestic use. This chapter applies to all sources of potable water used by single family residences within the municipality that are not licensed and/or regulated by the State of Alaska.

The Alaska Department of Natural Resources, Division of Mining, Land and Water, controls water rights in the state. A water right is a legal right to use surface or ground water under the Alaska Water Use Act (AS 46.15). A water right allows a specific amount of water from a specific water source to be diverted, impounded, or withdrawn for a specific use. An online review of Current Water Rights & Reservations of Water indicates the Municipality of Anchorage Water and Wastewater Utility has a permit for surface water rights in the vicinity of the site. (http://www.dnr.state.ak.us/mlw/mapguide/water/wr_start_tok.cfm)

The Alaska Department of Environmental Conservation maintains an online database of contaminated sites, including conditional closure details for sites with ongoing restrictions. The database indicates the Standard Steel site is subject to a deed notice, industrial land use restriction, maintenance of inspection/engineering controls, groundwater restrictions, and excavation/soil movement restrictions. (http://www.dec.state.ak.us/spar/csp/db_search.htm) See Attachment 8.

The Ground Lease (amended and assigned with consent, dated October 27, 2009) between the Alaska Railroad Corporation and SAW Jacques LLC, New Contract No. 9417, Supplement No. 4 to ARRC Contract No. 7085, was reviewed. The lease transfers all rights, interest, liabilities and obligations in the lease from K&T Enterprises to SAW Jacques LLC. The lease conditions include provisions for environmental restrictions related to the Standard Steel Superfund Site (Article 1, Section 1.07). As described above, the lease complies with ARRC's commitments in the Consent Decree. The Special Use Permit ARRC Contract No. 9222 (supplement dated March 18, 2011) issued to R.J.H. was also reviewed. The permit conditions include notification of the environmental restrictions contained in the Declaration of Restrictive Covenants and Notice of Remedial Action. See Attachment 12. A renewal of the special use permit to authorize continued usage by R.J.H. is currently pending signature.

To review and evaluate the effectiveness of the Declaration of Restrictive Covenants, EPA requested the ARRC to conduct a title search on the property comprising the Superfund site in order to: (1) confirm the Declaration of Restrictive Covenants was properly recorded; (2) see that the Declaration appeared in a commercially-prepared title search; and (3) determine if there were any prior recorded interests that were not subject to the restrictions. The ARRC provided a title

search, dated January 29, 2013, conducted for the Standard Steel PRP Group and the Alaska Railroad by Fidelity Title Agency, Anchorage, AK. The report confirms the Declaration of Restrictive Covenants is properly recorded on the title. See Attachment 9. The report reflects that there are no prior recorded interests that may eliminate the Declaration in the future.

The ARRC represents that they inform prospective tenants of the limitations on use and other impacts of the Consent Decree whenever inquiries are made to lease the site. The ARRC has a comprehensive Lease Application Packet and Long-Term Lease Policy which is available on their website (http://www.akrr.com/arrc100.html) and contains detailed information regarding lease procedures. In addition, according to the 1998 Consent Decree, the ARRC is required to notify USEPA and ADEC prior to the conveyance of any interest in the property, including changes to leaseholders.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Yes. The review of the Consent Decrees, O&M Plan, Groundwater Monitoring Plan, O&M reports, Groundwater Monitoring reports, site inspections, and interview questionnaires, etc. indicates that the remedy is functioning as intended by the ROD and modified by the ESD. The stabilization and capping of contaminated soils in a TSCA landfill cell has achieved the remedial action objectives to minimize the migration of contaminants to groundwater, and to prevent exposure of onsite workers to contaminants in soils. Institutional Control requirements have been implemented and maintained. The Institutional Control requirements are functioning as intended, and are effectively meeting remedial objectives.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Yes. The remedy selection was based on an industrial use scenario and evaluation of risks for short-term workers, long-term workers, and future adult residents. The industrial exposure assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions or the cleanup levels developed from them is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy.

Toxicity data has not changed for the primary contaminants of concern, PCBs and lead. After completion of the Baseline Risk Assessment, EPA lowered the screening level for lead to 400 mg/kg in soils (residential use). This change does not affect the conclusions of the risk assessment at the Standard Steel site. The TSCA landfill requirements are unchanged. The remedial action objectives to be achieved through groundwater monitoring are 0.5 micrograms per liter (ug/L) for PCBs and 15 ug/L for lead. The federal and state drinking water standards for PCBs and lead have not changed since the ROD was signed.

The ROD specified a range of soil cleanup levels for the site.

- No action was required for soils with PCBs < 1 mg/kg and lead < 500 mg/kg.
- Excavation and consolidation of soils elsewhere onsite was required for flood plain soils only with PCBs between 1 and 9.9 mg/kg and lead between 500 and 999 mg/kg.

- Excavation and consolidation of soils containing between 10 and 49 mg/kg PCBs in the onsite landfill.
- Excavation of soils containing 50 mg/kg or greater PCBs and 1,000 mg/kg or greater lead; treat by solidification/ stabilization and dispose in onsite landfill.

The implemented remedy actually achieved a stricter cleanup level and all soils (upland and floodplain) across the site that exceeded 1 mg/kg PCBs or 250 mg/kg lead were excavated and consolidated in the onsite TSCA landfill cell.

Since the remedy was implemented, the residential cleanup level for unrestricted access to soil has been modified to 400 mg/kg lead. The industrial cleanup level for sites remains 1,000 mg/kg lead. Thus, the 250 mg/kg lead level is still protective of the designated land use at the site. The soil cleanup level of 1 mg/kg PCBs for unrestricted land use under TSCA has not changed since remedy completion.

After the ROD was signed, as documented in the ESD (1998), the approved design was enhanced by excavating and consolidating all upland surface soils outside the limits of the TSCA landfill which exceed 1 mg/Kg PCBs or 500 mg/Kg lead and adding a Geomembrane cover system, consisting of a four inch foam layer, 40-mil Geomembrane impermeable liner, geonet drainage layer, geonet filter fabric and three feet of clean soil. The addition of the Geomembrane cover system and three feet of soil exceeds the design requirements of the ROD and satisfies the intent of 40 CFR 761.75(b)(9)(i).

Institutional Controls contained in the ROD and agreed to by the Alaska Railroad Corporation in the Consent Decree provided notice of the TSCA landfill, land and water use restrictions to the state of Alaska, the Municipality of Anchorage, local utilities, and all lessees, and will prevent excavation, construction, or other incompatible uses at the Site. A title search for the property, effective January 29, 2013, confirmed the Declaration of Restrictive Covenants and Notice of Remedial Action appears in the property records and land use restrictions are still in place to prevent exposure to the consolidated landfill cell contents. A search of Municipality of Anchorage Code, confirmed that Chapter 15.55 Water Wells (as amended effective Jan 1, 2006 by Anchorage Ordinance AO No. 2005-130 and No. 2005-172) prohibits the installation of unpermitted water wells for domestic purposes, and requires a minimum non-perforated casing length of 40 feet in unconsolidated materials and bedrock. The Municipality of Anchorage code Title 21 Land Use Planning requires approval by ordinance of the Assembly for any zoning map amendments for a property. The Municipality of Anchorage also requires acquiring permits for building construction, excavations, and other related activities.

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

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

No. However, fall storms in September 2012 caused Ship Creek to overflow its banks, inundating the floodplain. A portion of the north bank nearest to the consolidation cell eroded during the flood, and flood waters reached the toe of the landfill cap. The landfill was inspected

by the ARRC and CRS personnel after flood waters receded. Inspection demonstrated the landfill cap remained intact and was not adversely compromised by the flooding event. The remedy remains protective of human health and the environment.

In addition, during the site inspection the impact of increased vegetative growth observed in the drainage swales could not be evaluated due to snow cover. The PRP group should inspect the site and perform any required maintenance at the next scheduled O&M site visit in 2013.

Aerial photographs from August 1995 (Figure 5) and October 2012 (Figure 6) were reviewed to determine if significant stream channel erosion has caused the stream to migrate towards the landfill consolidation cell since it was constructed. The 1995 aerial photograph depicts the stream channel prior to the construction of the consolidation cell; the 2012 aerial is the most current photograph of the stream channel. Although the stream channel morphology has naturally changed since 1995, a comparison of the two aerial photographs (Figure 7) appears to demonstrate the stream channel has not significantly migrated towards the landfill consolidation cell.

Technical Assessment Summary

According to the site inspection, documents, and data reviewed, the remedy is functioning as intended by the ROD. The achievement of more stringent soil cleanup levels beyond the flood plain soils to include all upland soils enhances the protectiveness of the remedy. Institutional controls remain effective for the Standard Steel Superfund site. The site operators are aware of activity restrictions and the PRP Group continues to conduct site inspections and periodic groundwater monitoring. However, the PRP Group has not provided timely submittals of the site inspections or groundwater monitoring to USEPA as required by the Consent Decree. Land use remains industrial and no changes are anticipated which could affect site operations.

VIII. Issues

There are no issues which effect short or long term protectiveness of the remedy during this review. The following issues are identified for follow up but are not significant to effect protectiveness of the remedy.

As of March 2013 no remedial action has been implemented to address the PCB contamination in surface soils detected in a former drainage ditch adjacent to southwest corner of the Standard Steel site during a 2007 investigation by the ARRC. Concentrations ranged from 0.05 to 2.13 mg/kg. The ARRC conducted the investigation under a separate Administrative Order on Consent with the USEPA. A Feasibility Study completed by the ARRC in December 2010 indicates they intend to remove the PCBs above 1 mg/kg in the former drainage ditch and treat the soil by incineration. The sampled area is not an active drainage pathway for the landfill cell, site land use is still industrial, thus the remedy remains protective. The data does not suggest the remedy is failing.

The PRP Group has not submitted documentation of required O&M monitoring of the remedy or provided timely submittals of required reports to USEPA. The PRP Group is the responsible party for demonstrating the remedy remains protective by performing and reporting O&M

activities such as the annual site inspections and groundwater monitoring. Documentation of O&M activities and associated data must be provided to the USEPA as required by the Consent Decree, including prompt inspections after any unusual events that may have the potential to adversely affect the protective remedy such as the 2012 September flood event.

IX. Recommendations and Follow-Up Actions

There are no issues that affect the protectiveness of the remedy. The following are recommendations and follow-up actions for issues that do not affect current or future protectiveness of the remedy:

1. The ROD requires a minimum of ten years of groundwater monitoring to ensure there are no adverse impacts to site groundwater or offsite migration of contaminants. The groundwater monitoring program to date has demonstrated the effectiveness of the landfill containment cell; no significant detections of contaminants of concern have been observed. As of March 2013, ten groundwater monitoring events have been performed over the course of fourteen years. A recommendation to discontinue groundwater monitoring should be considered.

2. Yearly site inspections of the landfill cap, drainage swales, and runoff systems are required in accordance with the Consent Decree to ensure site activities, tenant operations, and extreme weather or other unusual events do not result in adverse impacts to the integrity of the protective remedy. Adequate funding must be provided and made available by the PRP Group to perform the O&M activities and submit reports in a timely, consistent manner to the USEPA, as required by the Consent Decree. The PRP Group should examine its current funding mechanism and address any issues to ensure proper funding and the release of funds is provided to perform O&M activities at the required frequencies and submit all documentation in a timely, consistent manner to the USEPA, including prompt site inspection after any unusual events that may compromise the protective remedy such as the 2012 September flood event.

3. The next 5 year review should also verify that the PCBs detected above 1 mg/kg in a former drainage ditch adjacent to and southwest of the landfill consolidation cell were addressed through a separate action between the Alaska Railroad and the US EPA.

X. Protectiveness Statement(s)

Because the remedial actions completed at the Standard Steel & Metal Salvage Yard site are protective, the site is protective of human health and the environment. All exposure pathways that could result in unacceptable risks are being controlled. All threats at the site have been addressed through stabilization and capping of contaminated soils, and the implementation of institutional controls. All monitoring data indicates the landfill containment cell is functioning as required to prevent exposure to the contaminated materials, and prevent offsite migration of contaminants.

XI. Next Review

The next five year review for the Standard Steel & Metals Salvage Yard site is required by April 2018, five years from the date of this review. The integrity of the landfill cap, monitoring wells, storm drainage ditches, and erosion control measures should be evaluated to determine the remedy remains protective of human health and the environment. Institutional controls should be reviewed to ensure the land use and groundwater restrictions are still in place. The next 5 year review should also verify that the PCBs detected above 1 mg/kg in a former drainage ditch adjacent to and southwest of the landfill consolidation cell were addressed through a separate action between the ARRC and the USEPA.

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FIGURES

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