FIVE-YEAR REVIEW REPORT

First Five-Year Review Report
for
Reynolds Metals Superfund Site
City of Troutdale
Multnomah County, Oregon

July 2008

PREPARED BY:
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Region 10

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7/21/2008

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
CFR	Code of Federal Regulations
DEQ	Oregon Department of Environmental Quality
MCL	Maximum Contaminant Level
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polyaromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PRP	Potentially Responsible Party
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
RI/RA	Remedial Investigation/Risk Assessment
ROD	Record of Decision
SDWA	Safe Drinking Water Act

Executive Summary

The remedy for the Reynolds Metals Superfund Site in Troutdale, Oregon included excavation and off-site disposal of contaminated waste, soil and debris, capping the western portion of the north landfill area and two small areas on the Company Lake shoreline, construction and operation of a focused extraction/production well optimization (FE/PWO) system to remove fluoride from groundwater and provide hydraulic containment to control plume migration, groundwater monitoring, and institutional controls. The interim Record of Decision (ROD) for the source areas was signed on Sept 30, 2002. A final ROD was signed on September 29, 2006. The site achieved construction completion with the signing of the Preliminary Close-Out Report on September 29, 2006. The trigger for this five-year review was the initiation of remedial action in July 2003.

This review included the following components:

- Public notification
- Review of key project documents
- Review of groundwater monitoring data
- Assessment of effectiveness and protectiveness of institutional controls
- On-site inspection
- Five-year Review Report development and review

Based on the results of this five-year review, EPA concludes that the remedy is protective in the short-term because (1) the remedy was constructed and is being completed in accordance with the requirements of the ROD, (2) the remedy is functioning as designed, and (3) the operation, maintenance and monitoring at the Site is being performed in accordance with the Operations and Sitewide Monitoring Plans and protects the integrity of the remedy. The findings of the five-year review indicate that the groundwater remedy has been implemented as designed and is currently being evaluated for its effectiveness. Data indicate that fluoride levels have been reduced in portions of the plume in the Company Lake area and the South Plant Area since the completion of the source control actions and initiation of the FE/PWO system operation. EPA will continue to evaluate system performance and opportunities for optimizing the FE/PWO system. Current land use is consistent with the controls and the ROD and Consent Decree. Institutional Controls are in place on the former plant site to protect those materials that were capped on site and to prevent the use of former plant site groundwater for drinking until such time as the remedy achieves cleanup goals in groundwater. However, in order to remain protective in the long term, the Consent Decree that has been signed and filed with Oregon District Court requires that Institutional Controls be established on adjacent properties that overlie the plume to ensure wells will not be installed and used for drinking water while the groundwater remains above cleanup levels.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Reynolds Metals		
EPA ID *(from WasteLAN)*: ORD009412677		
Region: 10	**State:** OR	**City/County:** Multnomah
SITE STATUS		
NPL status: Active		
Remediation status (choose all that apply): Construction complete; O&M ongoing		
Multiple OUs?* No	**Construction completion date:** 9/29/06	
Has site been put into reuse? No, but re-use planning is underway		
REVIEW STATUS		
Lead agency: EPA		
Author name: Chip Humphrey		
Author title: RPM	**Author affiliation:** US EPA Region 10	
Review period:** 4/30/08 to 7/20/08		
Date(s) of site inspection: 6/9/2008		
Type of review: Post SARA		
Review number: 1 (first)		
Triggering action: RA Start		
Triggering action date *(from WasteLAN)*: 7/22/2003		
Due date *(five years after triggering action date)*: 7/22/08		

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Issues:

The ROD and Consent Decree require that institutional controls be placed to ensure that the remedy remains protective. This requirement has been satisfied for all property that was owned by RMC and recently sold to the Port of Portland. This property represents the majority of the property affected by the ICs. Four additional properties were identified where ICs need to be implemented. Current uses at these properties are compatible with the assumptions in the ROD remedial action. The Consent Decree, which was filed in Oregon District Court in January 2008, requires that RMC and Alcoa implement ICs for these additional properties.

Recommendations and Follow-up Actions:

EPA will ensure compliance by RMC and Alcoa with the requirements of the Consent Decree for property that is owned or controlled by parties other than RMC/Alcoa where access and land and water restrictions are needed. RMC has provided Title searches and is currently negotiating these agreements.

Protectiveness Statement(s):

The remedy at this site currently protects human health and the environment because contaminated soils have been remediated, the groundwater system is operational and functioning as intended, Institutional Controls are in place on the former plant site to protect those materials that were capped on site and to prevent the use of former plant site groundwater for drinking until such time as the remedy achieves cleanup goals in groundwater, and there are no drinking water wells on adjacent properties with access to contaminated groundwater. However, in order to remain protective in the long term, required institutional controls need to be established on adjacent properties that overlie the plume to ensure wells will not be installed and used for drinking water while the groundwater remains above cleanup levels. A Consent Decree was filed with Oregon District Court in January; and will be binding on the parties upon entry by the Court, which requires that RMC and Alcoa implement the institutional controls on the adjacent properties.

Troutdale, OR
Five-Year Review Report

1. INTRODUCTION

The purpose of the Five-Year Review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA §121 and the National 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 Agency interpreted this requirement further in the NCP; 40 CFR §300.430(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 (EPA), Region 10, conducted this statutory five-year review of the remedy implemented at the Reynolds Metals Company Superfund Site ("RMC Site" or "Site") in Portland, Oregon. A statutory review is required because the implemented remedy resulted in hazardous substances, pollutants or contaminants being left at the RMC Site. This review was conducted by the Remedial Project Manager (RPM) for the Site from April 2008 through July 2008. This report documents the results of the review.

This is the first five-year review for the RMC Site and addresses the entire site. The triggering action for this statutory review is the start of remedial action under the Interim ROD in July 2003. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

2. SITE CHRONOLOGY

Table 1. Chronology of Site activities

Event	Date
EPA investigation documenting contamination	1993
NPL listing	Dec 1994
RI/FS Consent Order signed	August 1995
Removal Actions Conducted	1995 - 2000
RI/FS Reports	June 2000
Interim ROD signed	Sept 2002
Unilateral Order issued for Interim Remedial Action – Soil and waste areas	July 2003
Contractor mobilized to start site preparation	July 2003
Cleanup of waste areas	2003 - 2005
Second Unilateral Oder for RD and Remedial Action – Groundwater FE/PWO System Installation	August 2005
Groundwater system start-up	November 2005
Plant Demolition/additional soil cleanup	2003 - 2006
Post-Demolition Remedial Investigation and Baseline Risk Assessment Report	June 2006
Final ROD signed – Continued operation of groundwater system and institutional controls	Sept 2006
Construction Completion/Preliminary Closeout Report	Sept 2006
Consent Decree signed	October 2007
Consent Decree filed with Court	January 2008

3. BACKGROUND

3.1 Physical Characteristics

The Reynolds Metals Company (RMC) Site is located approximately 20 miles east of Portland, Oregon, and just over one mile north of the City of Troutdale. The property is bordered by the Columbia River to the north, the Sandy River to the east, the Troutdale Airport to the south, and Salmon Creek to the west. (Figure 1) RMC operated a primary aluminum reduction plant where aluminum was produced from the raw material alumina. Approximately 108 acres of the 800-acre site were occupied by the former plant area.

3.2 Land and Resource Use

The plant was constructed for the US Government in 1941 to produce aluminum for wartime operations. The Aluminum Company of America (now Alcoa) operated the plant for the federal government from approximately 1941 to 1946. RMC leased the plant from the government in 1946 and purchased it in 1949. RMC operated the plant until 2000. In May 2000, RMC was acquired by a wholly owned subsidiary of Alcoa. That subsidiary (RLM Acquisition Corp.) merged with RMC, with RMC the surviving corporation. Alcoa suspended operations at the Troutdale plant in the fall of 2000, and Alcoa later announced permanent closure of the facility. The plant buildings were subsequently demolished, with demolition taking place from 2003 through January 2006. Alcoa sold the property to the Port of Portland in 2008.

A US Army Corps of Engineers (COE) dike runs approximately east-west through the northern portion of the property, then turns south at the eastern property boundary. Site areas north and east of the dike are located within the 100 year floodplain. These areas are currently undeveloped and characterized by cottonwood-ash riparian forest and areas vegetated with blackberries and Scot's broom thickets.

Seasonal wetlands at the Site contain hydric soils and characteristic hydrophytic plants that are capable of withstanding periods of summer drying. The primary locations of seasonal wetlands are the south wetlands area south of the main plant, low areas in Fairview Farms, low areas northeast of the former scrap yard area, low areas adjacent to Company Lake, and in the forest outside the COE dike.

The Site is mostly level, with less than 20 to 30 feet of variation in elevation. Geologically, the RMC Site is located in the eastern portion of the "Portland Basin," a term describing a 20 mile-wide by 45 mile-long northwest-southeast trending structural depression. The basin is filled with a complex system of unconsolidated and consolidated alluvial sediments containing important water-bearing zones.

3.3 Investigation Areas

Soil and Debris Areas

The RMC site was divided into four areas for the post-demolition investigation and evaluation of site soil conditions. These key site reference areas are shown in Figure 2.

- Outside the Dike
- Fairview Farms
- South Wetlands area
- East (former plant) area

The area Outside the Dike refers to the portion of the RMC site that is to the north and east outside of the US Army Corps of Engineers dike. This area is within the flood plain of the Columbia River, and includes Company Lake, East Lake and the western portion of the north landfill.

The Fairview Farms area is 227 acres located west of Sundial Road. This area was used for cultivated crops and cattle grazing. Although this area was not used for historical plant operations, there were some stormwater overflows from the plant to an adjacent ditch.

The South Wetlands area is 28 acres located south of the former plant. This area was used as a settling pond for wastewater discharges during the early years of plant operations. It is a low-lying area with thick vegetation and some standing water.

The East Area (Figure 3) is 254 acres and includes the area where the former RMC plant was located. The area is generally flat, and currently has no structures or aboveground improvements except for groundwater monitoring and extraction wellheads, and a small building that houses equipment for the groundwater system. The south landfill, scrap yard, and east potliner areas were located within the East Area.

Groundwater

Groundwater generally discharges to the Columbia River in the northern portion of the Site and to the Sandy River in the eastern portion of the site. Two regional aquifer systems exist under the Site. The Sand and Gravel Aquifer (SGA) is the deeper unit. The Unconsolidated Sedimentary Aquifer (USA) - is the uppermost aquifer and the focus of investigation and cleanup of this site. The unconsolidated sediments in this aquifer have been subdivided into four water-bearing zones for purposes of investigation:

- silt unit (generally 0-30 feet deep, and present mainly in the East Area)
- upper grey sand (up to 50 feet deep)
- intermediate sand (up to 100 feet deep)
- deep sand/gravel (greater than 100 feet deep)

3.4 History of Contamination/NPL Listing

EPA conducted site investigations at RMC in 1994 that documented contamination is several former waste disposal areas at the site. Contaminants included fluoride, PAHs, cyanide, metals and PCBs. EPA placed the Site on the Superfund National Priorities List (NPL) in 1994. On September 29, 1995, EPA and RMC signed an Administrative Order on Consent (AOC) for RMC to prepare a RI/FS and perform early actions at the Site under EPA's oversight. RMC completed the early cleanup actions as well as the RI/FS, which presents the results of the site investigation and analysis of cleanup alternatives.

3.5 Removal Actions

RMC conducted several early cleanup actions on the Site between 1995 and 2002 to remove contaminated soil and waste material. These actions targeted various waste disposal and spill areas and areas that were sources of groundwater contamination. The early actions were completed as time-critical removal actions under EPA oversight. The following summarizes the cleanup actions undertaken at specific sources of contamination at the Site.

The Bakehouse Sumps - A network of 21 dewatering sumps that were located around the bakehouse to keep shallow groundwater out of the subsurface bake pits contained fluoride, cyanide, and PAHs. RMC cleaned out the contaminated sumps and disposed of 283 tons of the waste at a permitted off-site disposal facility. Surface water runoff was redirected to prevent recontamination from surface sources.

Casthouse PCB Spill Area - Soil adjacent to the casthouse building was contaminated with PCBs. The concrete and siding outside the building were also contaminated by PCBs, and the casthouse contained PCB contaminated dust. RMC conducted a cleanup inside and outside the building, including excavation of contaminated soil adjacent to the building. The cleanup included excavation and off-site disposal of 515 tons of PCB contaminated soil and debris in a permitted off-site disposal facility.

Cryolite Ponds - Three settling ponds south of the main production facility were used for storage and disposal of cryolite, a waste material containing high levels of fluoride and other metals. RMC excavated and disposed of approximately 13,900 tons of cryolite at a permitted off-site disposal facility.

Diesel Spill Area - Two acres east of the main facility were heavily contaminated with diesel fuel and oil. RMC excavated and disposed of 2,650 tons of contaminated soil from this area at a permitted off-site disposal facility.

East Potliner - An area located east of the main facility was formerly used to store spent potliner, a production waste containing high levels of fluoride, cyanide, and polyaromatic hydrocarbons (PAHs). More than 11,542 tons of spent potliner and contaminated soil were excavated from this area and transported to a permitted off-site disposal facility.

ESP Containment Area – Excavation and off-site disposal of 1,193 tons of contaminated material in permitted disposal facility.

Fairview Farms - Excavation and off-site disposal of 150 tons of debris from four piles in a permitted off-site disposal facility.

Production Well Abandonments - Nine wells located at the plant site that were no longer in use were decommissioned to prevent them from acting as conduits for the spread of contamination in shallow groundwater.

Company Lake Process Residue - an estimated 3,300 cubic yards of contaminated process residue was excavated from a portion of Company Lake and transported to a permitted off-site disposal facility in October, 2001. This partial removal of process residue provided information about the feasibility of dewatering Company Lake and removing the waste using conventional mechanical equipment.

Scrap Yard – This 5.7-acre area was located in the East Area and was used as a storage area for the plant. Soil in the scrap yard was contaminated with fluoride, cyanide, PAHs, PCBs, and metals. Fluoride levels averaged over 30,000 mg/kg in the soils, with the concentrations decreasing with depth. The scrap yard was the source of fluoride and metals contamination in the intermediate sand and sand/gravel water bearing zones, located between the scrap yard and the production wells. This area was cleaned up primarily through early removal actions. Additional waste removal was completed as part of plant demolition activities. Following cleanup from removal actions, mean total fluoride was 489 mg/kg and PAHs were 1.0 mg/kg.

South Wetlands - Excavation and off-site disposal of 90 tons of PCB-contaminated process residue and soil.

West South Ditch - Excavation and off-site disposal of 8,775 tons of process residue, soil and sediment (includes the hot spot portion of east south ditch).

3.6 Remedial Investigation and Feasibility Study

RMC conducted an RI/FS under EPA and DEQ oversight from 1996 through 2000. The findings of the RI/FS, including the results of the baseline risk assessment, were the basis for the Interim ROD that was signed on September 30, 2002.

3.7 Basis for Remedial Actions

The RI/FS showed there were high levels of contamination in soil, waste and debris and in the eastern portion north landfill, south landfill, scrap yard area and high levels of contamination in the process residue that was located at the bottom of Company Lake. It also showed that there

was a significant plume of fluoride in groundwater beneath the RMC facility. Exposures to waste, soils and debris and Company Lake sediments were associated with significant human health risks. The contaminated materials in the waste areas previously described were determined to be the primary sources of groundwater contamination.

4. REMEDIAL ACTIONS

4.1 Interim Remedial Action

Selected Remedy

In September 2002, EPA issued a ROD for Interim Remedial Action (Interim ROD). The selected remedy included the following:

- Removing contaminated process residue from Company Lake
- Excavating contaminated waste and soil from the south landfill area
- Excavating contaminated waste material from the eastern portion of the north landfill area, and installing a riprap (soil and rocks) cover over the western portion of the landfill
- Off-site disposal of excavated waste material at a permitted disposal facility
- Installing extraction wells in the east potliner and scrap yard areas to remove and contain groundwater contaminated with high levels of fluoride
- Modifying the operation of existing production wells to limit the further spread of fluoride in the groundwater
- Discharging groundwater from the combined production wells/focused extraction (FE/PWO) system to the Columbia River
- Monitoring groundwater to evaluate the effectiveness of source removal and focused extraction
- Limiting future use (through the use of engineering and institutional controls) of shallow groundwater and portions of the property to ensure the remedy remains protective.

Cleanup levels for soils and waste that were established in the Interim ROD for the individual waste areas are described below. The cleanup level for fluoride contaminated-groundwater established in the Interim ROD was 4 mg/l, the drinking water MCL.

The standard for fluoride established in the Interim ROD for discharge of groundwater from the FE/PWO system to the Columbia River was 5mg/l.

4.2 Remedy Implementation – Interim ROD

Remedial Construction Activities – Soils

Cleanup of the waste areas required by the Interim ROD was carried out under a Unilateral Order

(UAO) issued by EPA in 2003.

North Landfill – An estimated 10,509 tons of contaminated waste and soil from eastern portion was excavated and disposed off-site in a permitted landfill. The western portion was capped to prevent direct contact and to provide flood protection. Confirmation sampling was conducted to verify that cleanup levels for the eastern portion established in the ROD (4,000 mg/kg for fluoride, 36 mg/kg for carcinogenic PAHs) were met, with mean post-cleanup levels of 437 mg/kg for fluoride and less than 1 mg/kg for carcinogenic PAHs.

Company Lake - The lake was drained in 2003 and 2004 and an estimated 90,850 tons of the process residue and underlying sediment was excavated and disposed of at an off-site disposal facility. Small quantities of process residue could not be removed because of concerns over slope stability at portions of the west and southeastern ends of the lake, and these areas were capped. Cleanup goals established in the Interim ROD for Company Lake were 1,000 mg/kg for fluoride and 36 mg/kg for PAHs. Following cleanup, mean total fluoride was 481 mg/kg, and PAHs were 1.35 mg/kg.

South Landfill - Excavation and off-site disposal of 66,038 tons of waste and soil was completed for this area. Cleanup goals established in the Interim ROD for the south landfill were 4,000 mg/kg for fluoride and 36 mg/kg for carcinogenic PAHs. Following cleanup mean levels of fluoride were 427 mg/kg and carcinogenic PAHs were 1.9 mg/kg.

Remedial Construction Activities - Groundwater

Construction and start-up operation of the groundwater was completed under a second UAO issued by EPA in August 2005.

Construction of the FE/PWO system was completed in October 2005. The system is designed to provide hydraulic containment of contaminated groundwater and restore groundwater quality. Two extraction wells, FE02 and FE03, were installed in the scrap yard and east potliner areas. Production wells include PW07 and PW08, with backup capacity provided by wells PW03 and 05. Startup performance monitoring began in early November, 2005, followed by 5 months of operation and performance evaluation. EPA reviewed the results of the startup performance evaluation, which is documented in the *Focused Extraction/Production Well Optimization System Startup Performance Monitoring Results and Conclusions Technical Memorandum (CH2M Hill June 2006),* and determined that the system is operating as designed. The ongoing monitoring program will include evaluation of changes in the fluoride plume over time and of plume containment. Selected monitoring wells will also be sampled periodically for VOCs and total cyanide analysis. Groundwater monitoring as described in *Addendum 1 - Site-wide Groundwater Monitoring Plan (2006-2010)* is underway.

4.3. Plant Demolition

The RMC facility was demolished from 2003 through January 2006. All of the plant structures

and most of the foundations were removed as part of the demolition. The decision to demolish the plant was made by Alcoa based on its own business consideration and was not part of the cleanup activities under CERCLA. Alcoa chose to conduct the demolition, cleanup activities and dispose of contaminated materials that it removed consistent with the soil cleanup levels that were used in the Interim ROD and State soil cleanup levels and disposal requirements. The demolition activities provided the opportunity to complete additional investigation and cleanup of the area next to and beneath the plant. EPA and DEQ provided oversight of the sampling, cleanup and disposal activities during site demolition.

4.4 Post Demolition RI/RA

A post-demolition Remedial Investigation (RI) was conducted during plant demolition and completed after post-demolition sampling of the plant area. The Risk Assessment (RA) for the RMC site was updated in June 2006 to reflect post-demolition site conditions.

The post-demolition RI was a comprehensive data gathering and analysis program that evaluated Site conditions following the plant demolition. Soil investigations, including surface and subsurface sampling, were conducted at 56 assessment areas. In addition, geophysical techniques, such as electromagnetic and resistivity surveys, were completed to identify buried material. Soil samples were analyzed for fluoride, PAHs, cyanide, PCBs, pesticides, metals, VOCs, and semivolatile organic compounds (SVOCs). The assessment areas were combined into four general areas for investigation and evaluation: outside the dike, Fairview Farms, the south wetlands and the East (former plant) area.

The Post-Demolition RA concluded that noncarcinogenic health impacts did not exceed 1.0 for the Fairview Farms Area, Outside the Dike Area, East Area, or the South Wetland Area. The results of the Human Health Risk Assessment confirmed that the soils at the site are within EPA's acceptable risk range, and within DEQ's acceptable risk range for all contaminants except for a minor exceedance for one chemical, benzo(a)pyrene, in the East Area.

4.5. Final ROD

<u>Selected Remedy</u>

The final ROD for the RMC Site was signed on September 27, 2006 and selected the following remedial actions:

- Use institutional controls (IC) to ensure protection of future users of the Site and that future uses of the Site, including groundwater use, are compatible with the cleanup levels achieved. ICs are necessary to restrict residential use of the Site, restrict the use of groundwater that exceeds MCLs as a drinking water source, and protect the integrity of the cap. The ICs will include:

- A legal description of the property with a corresponding map will be prepared to clearly identify the property where the ICs will be implemented.
- A restrictive easement or covenant that runs with the land to prohibit residential use of the property, and identify conditions (i.e., additional protective measures, such as capping or special soil handling requirements) under which non-industrial site uses would be considered. For groundwater, the restrictions will include a prohibition on use of Site groundwater that exceeds MCLs for drinking water, prohibition of other groundwater uses that would interfere with the successful operation of the groundwater FE/PWO system, and access for inspection and continued operation of the system.
- Use restrictions on the capped areas to protect the integrity of the existing cap or require suitable capping to allow for intended use of the area.

- Continued operation of the groundwater focused extraction/production well optimization (FE/PWO) system until groundwater cleanup levels are achieved or EPA approves modification, reduction or suspension of the operation of the system. Groundwater from the FE/PWO system will continue to be discharged pursuant to the fluoride standard established in the Interim ROD and the existing Oregon DEQ NPDES permit # 100757 or as modified by DEQ.

- Maintenance and monitoring of capped areas to ensure protection of human health and the environment, including inspections of the capped areas to verify cap integrity and making repairs when problems are observed. A cap inspection and maintenance plan will be required to be submitted to EPA for approval and implementation, and will be implemented in accordance with the approved plan.
- Monitoring groundwater to evaluate the effectiveness of the completed and ongoing cleanup actions. Monitoring and reporting for the first five years is expected to be carried out in accordance with the Site-wide Groundwater Monitoring Plan (2006-2010). An addendum to the Site-wide Groundwater Monitoring Plan will be developed and submitted for approval by EPA and DEQ, following completion of the February 2007 groundwater monitoring event, that provides criteria for evaluating performance of the focused extraction system and scrap yard soil source removal on long-term decline in fluoride concentrations in the silt unit and protectiveness for the underlying drinking water. A second addendum to the Site-wide Groundwater Monitoring Plan will be developed and submitted for approval by the EPA and DEQ at the completion of the five-year monitoring period defining long-term monitoring and reporting for the site.

The ROD further concluded that the shallow silt zone in the South Plant area is not a usable source of drinking water because of low yields in this portion of the aquifer, and attainment of groundwater cleanup levels is not required for this area. The completed source control actions and the focused extraction system are expected to reduce and control the migration of fluoride from the silt zone to the underlying portions of the aquifer.

4.6 Remedy Implementation

EPA and RM/Alcoa signed a Consent Decree on October 1, 2007 that requires RMC to implement the remedy that was selected in the final ROD. The Consent Decree was filed in Oregon District Court in January 2008. In the meantime, the second Unilateral Order is still in effect which requires RMC to operate and maintain the FE/PWO and conduct groundwater monitoring at the site and RMC has proceeded with implementation of the institutional controls and the cap maintenance and monitoring program.

4.7 Operation and Maintenance

Cap Maintenance and Monitoring – inspections and necessary repairs. The purpose of the inspection established in the final O&M Plan was to evaluate land use, vegetation, cap integrity and previous repairs. The inspection schedule is annually for 5 years during the dry season with repairs to be implemented as soon as practical.

RMC has been conducting groundwater remediation and long-term monitoring and maintenance activities according to the approved Operations Plan to protect the integrity of the remedy. The Port of Portland, under an agreement with RMC, assumed operations and maintenance of the FE/PWO system in January, 2008.

4.8 Attainment of Groundwater Cleanup Levels

The purpose of completed source control actions and the groundwater FE/PWO extraction is to expedite the attainment of site-wide groundwater cleanup levels. The cleanup level is the drinking water MCL for fluoride 4mg.l. RMC will continue groundwater extraction until cleanup levels are achieved. The projected time frame for extraction is an estimated 10 to 15 years beginning with the implementation of FE/PWO system in November 2005. In effort to achieve this timeframe RMC has completed several modifications to FE/PWO system including installation of two new extraction wells. FE04 and FE05 to provide pumping capacity that was limited by iron bacteria fouling in extraction well FE02 and FE03. The ability of FE/PWO system to achieve RAOs and cleanup levels within the projected time frame cannot be fully determined until the system has been operated, implemented and modified as necessary, and the plume response monitored over time. Progress towards attainment of groundwater cleanup levels was evaluated as part of the *2007 Annual Groundwater Monitoring and FE/PWO System Operation Report (CH2M Hill December 2007)* and *Addendum 1 to the Sitewide Groundwater Monitoring Report (2006-2010).*

4.9 Groundwater Extraction System Monitoring

Groundwater extraction system monitoring is conducted through periodic sampling and analysis of groundwater samples from extraction wells, selected monitoring wells, and the discharge to confirm that the system performance objectives are being achieved. Performance is evaluated with respect to the following:

Performance is evaluated with respect to the following:

- Hydraulic response to pumping
- Water quality and concentration trends
- Water levels
- Total contaminant mass removed and mass removal rate

Results from these evaluations are presented in annual reports and activities are summarized in monthly progress reports in accordance with the requirements of the Sitewide Groundwater Monitoring Plan. Groundwater quality data are compared to Safe Drinking Water Act MCLs which were established as the cleanup levels for the UGS, intermediate and deep groundwater zones. Discharge data is compared to NPDES permitted discharge levels.

The groundwater monitoring network is composed of 41 monitoring wells. Evaluation of the groundwater monitoring results is organized by areas/zones as described below. The wells and fluoride plumes for the silt, UGS and intermediate zones are shown in Figures 3, 5 and 6.

North Plant Area

Monitoring wells in this area provide data for assessment of groundwater conditions north of the Corps of Engineers dike. Company Lake and north landfill were the sources of groundwater contamination in this area. Water quality data from wells MW23-025, MW27-045, MW57-025, MW27-081, and MW29-090 are being used to evaluate the effectiveness of the source control actions in Company Lake and north landfill and progress towards achieving the groundwater RAOs.

South Plant Area

The south plant area is east of the former location of the main plant. Removal actions were completed in the east potliner area in 1996 and the scrap yard areas in 2004 to address sources of fluoride that was leaching into the underlying groundwater. The FE/PWO system, including extraction wells FE02 and FE03 with target pumping rates of 20 gallons per minute (gpm) each, were installed in this area and began operation in November 2005 to further decrease fluoride concentrations and prevent downward migration of fluoride contamination into the intermediate and deep zones.

Eleven wells provide information that is used to assess groundwater quality in the south plant area: two wells in the silt unit, MW11-017 and MW13-022 (silt) and 9 wells in the UGS unit, MW34-038, MW35-038, MW58-042, FE03-045, MW02-034, MW55-046, MW56-046, FE01-046, and FE02-046.

South Landfill Area

Three wells are used to monitor compliance with water quality criteria. MW19-013, MW26-012 (silt), and MW26-050 (UGS). Soil contaminated with fluoride was removed from this former landfill area, and fluoride does not exceed the MCL in the UGS zone groundwater.

Intermediate and Deep Groundwater Zones
The intermediate and deep groundwater zones include areas of groundwater contamination in the central portion of the site. The migration of fluoride to these zones is believed to be a result of historical production well pumping. The focused extraction wells are designed to cut off the downward migration of fluoride to these zones. The following wells are used for performance and water quality monitoring: MW10-90, MW10-165, MW29-090, MW29-179, MW32-040, MW32-165, MW33-033, MW33-095, MW 33-165, MW48-165, PW3, PW5, PW7, and PW8.

4.10 Discharge of Extracted Groundwater

Effluent water from the FE/PWO system is discharged directly to the Columbia River under NPDES permit. The NPDES permit for the discharge from the groundwater system limits cyanide levels in the discharge to 0.025 mg/l monthly average and 0.05 mg/l daily maximum. There is no permit limit for PAHs, as this constituent was dropped from the list of parameters based on data that showed that PAHs were not being detected in the discharge. The NPDES permit limits fluoride levels to 5 mg/l.

5. PROGRESS SINCE THE LAST FIVE-YEAR REIVEW

This is the first five year review for the RMC Site.

6. FIVE-YEAR REVIEW PROCESS

6.1 Administrative Components

EPA notified representatives of the RMC, DEQ and the natural resource trustees of the initiation of the five-year review in May, 2007. Chip Humphrey, the EPA remedial project manager, conducted the RMC five-year review.

6.2 Community Notification

Activities to involve the community in the five-year review process were initiated in May 2008. A notice announcing initiation of the five-year review process and soliciting information about the Site was published in the Oregonian newspaper on May 19, 2007.

EPA will be issuing another notice to announce the availability of this five-year review. The results of the review and the report will be available to the public at the EPA Oregon Operations Office and the EPA Region 10 website.

6.3 Standards Review

The remedies selected in the 2002 and 2006 RODs are intended to be protective of human health and the environment and to comply with ARARs. The ARARs have been reviewed to identify any new or updated state or federal regulatory standards that might affect the protectiveness of the remedy. No new or updated ARARs were identified in the course of this five-year review.

6.4 Document Review

This five-year review consisted of a review of relevant documents including the ROD, O&M plan, groundwater monitoring and FE/PWO system operations reports, and the easements and protective covenants for the individual properties. Attachment 1 shows a complete listing of the documents reviewed.

6.5 Data Review

RMC has conducted groundwater monitoring at the Site since the late 1980s. RMC has provided a semi-annual reports in the past and currently provides an annual report of groundwater monitoring activities and results. A summary of groundwater results is included in the December 2007 Groundwater Monitoring and FE/PWO System Operation Report. It includes a summary of groundwater monitoring through August 2007, including water levels and analytical results. The report also provides NPDES monitoring results for March through October 2007. EPA also reviewed results for activities that have been conducted since the December 2007 report, including the groundwater monitoring results for the February 2008 monitoring event and NPDES permit discharge monitoring reports through April 2008.

Groundwater Quality

A summary of average fluoride concentrations for August 2005 through August 2007 is presented in Table 2 below.

Table 2. Average Fluoride Concentration by Groundwater Zone

Monitoring Area	Zone	August 2005 Avg fluoride (mg/l)	August 2007 Avg fluoride (mg/l)	Fluoride MCL
North Plant (company Lake/north landfill)	UGS	13.0	14.6	5
North Plant	Intermediate	16.5	14.8	5
North Plant	Deep	7.2	7.9	5
South Plant	Silt	193	108	N/A

South Plant	**UGS**	**45.2**	**42.2**	**5**
South Landfill	**Silt**	**85.2**	**59.3**	**N/A**
South Landfill	**UGS**	**1.2**	**0.9**	**5**
Plant Interior	**Intermediate**	**48.4**	**11.8**	**5**
Plant Interior	**Deep**	**18.3**	**21.1**	**5**

Note: Drinking water MCL applies to UGS, intermediate and deep zones only per 2006 ROD.

The report provided a statistical evaluation of the monitoring results indicating trends, (increasing, decreasing, stable). While EPA does not disagree with this evaluation, EPA considers this to be a preliminary evaluation based on the limited time that the FE/PWO system has been in operation. In addition, although the groundwater report indicates that levels are generally decreasing EPA believes that it is premature to evaluate the effect of these reductions on cleanup time.

Mass Removal

As of May 27, 2008 the FE/PWO system has removed 40,467 lbs of fluoride from groundwater at the Site. Figure 4 displays a time series plot for total fluoride mass removed at extraction wells. For April 2008, FE04 operated at an average of 51.1 gpm at a concentration of 2.0 milligrams per liter (mg/l) of fluoride and FE05 operated at an average of 51.3 gpm at a concentration of 28.6 mg/l of fluoride. These recent results indicate that while the combined results of wells FE04 and FE05 are meeting pumping goals, the majority of the fluoride mass is being removed is by well FE05. EPA will continue to assess the trends for these wells to determine if modifications are necessary to improve the performance of well FE04 in removing fluoride.

FE/PWO Hydraulic Containment and Capture

Groundwater contour maps, comparison of data to groundwater flow models prepared for the Feasibility Study, and sampling results from selected monitoring wells are presented in the report *Addendum 1 – Sitewide Groundwater Monitoring Plan (2006 through 2010) at RMC Troutdale.* Based on the evaluation for the period since the FE/PWO system was placed into operation in November 2005, it appears that the FE/PWO system is providing hydraulic containment of the fluoride plume in the South Plant area as required by the ROD. EPA will continue to evaluate the annual groundwater monitoring reports to determine if any modifications to the system are needed in the future to ensure that the degree of control groundwater movement is consistent with the cleanup objectives.

6.6 Site Inspection

Inspection at the Site was conducted on June 9, 2008 by Chip Humphrey, the EPA RPM. Representatives of DEQ (Mavis Kent) RMC (Steve Shaw) and the Port of Portland (David Breen) participated in the on-site inspection. The purpose of the inspection was to assess the protectiveness of the remedy, including the condition of the capped areas, operation of the

groundwater focused extraction/production well optimization system, groundwater monitoring, and current and planned uses of the site.

No significant issues were identified during the inspection. The following observations were noted:

- The Port of Portland, the current owner of the Site, is conducting operation and maintenance at the Site under an agreement with RMC. Contractors for the Port were onsite the day of the inspection performing routine preventative maintenance on wells FE04 and FE05. This included mixing and injecting a chlorine/surfactant mixture to protect the pumps and intake screens from biofouling/scaling from iron bacteria.
- The institutional controls that are in place include prohibitions on the use or disturbance of capped areas (North landfill and the two small areas adjacent to Company Lake), and any other activities or actions that might interfere with the implemented remedy. No activities were observed that would have violated the institutional controls, and the controls were determined to be effective in preventing unacceptable exposures. The former plant property and the surrounding area uses were consistent with land use assumptions and restrictions identified in the 2006 ROD, and no new uses of groundwater were observed.
- RMC provided the results of their August 2007 cap maintenance inspection. Items noted in the inspection (burrow holes in the capped areas and minor settlement) have been repaired.

6.7 Institutional Controls Review

RMC/Port of Portland Property

The ROD and Consent Decree (CD) require institutional controls (Easement and Equitable Servitudes) that implement environmental restrictions which run with the land on the property that the Port of Portland recently purchased from Reynolds. The Consent Decree does not require that the Easement and Equitable Servitudes be recorded until after the date of the lodging of the Consent Decree. However, Reynolds provided to EPA advance notice of the sale of the property to the Port of Portland on December 11, 2007 and provided documentation to EPA that the Easement and Equitable Servitudes were recorded with Multnomah County on December 21, 2007.

The restrictions on the disturbance of capped areas and prohibition on residential use of the property and drinking water use of contaminated groundwater are described in the Consent Decree Appendix B, Exhibit 4. The Port's deed contains explicit prohibitions on disturbing the capped contaminated areas, and restricts residential development and drinking water use of fluoride-contaminated groundwater. According to the Special Warranty Deed [Multnomah County recording number 2007-216745] provided by the Port of Portland, the property was conveyed to the Port subject to the special exceptions shown in Exhibit B of the document ("Permitted Encumbrances"), including the Notice to Successors in Title, Easement and

Equitable Servitudes.

The Easements and Equitable Servitudes were reviewed by EPA and are consistent with the requirements of the ROD and Consent Decree. As part of the interviews with RMC's environmental manager, the overall status of the institutional controls were also assessed. The ICs for the plant site appear to be functioning as intended in the ROD. The Consent Decree also requires that IC's for specific adjacent properties (see third party properties below) be established.

Third Party Properties

Three properties surrounded by the RMC Site have groundwater beneath their property that exceeds the MCL for fluoride. Groundwater is not currently used for drinking water at these properties. Institutional controls to prohibit the use of groundwater for drinking water are required under the Consent Decree to ensure that the remedy remains protective. The three properties are: Bonneville Power Administration, Pacific Power, and Fort James Corporation. In addition, property currently owned by Morse Brothers Inc. to the northwest of the RMC property has groundwater under the site that contains fluoride above the MCL. It also has subsurface soil that contains low-level contamination from a portion of the former Company Lake that was filled prior to the site investigation (approximately 8 to 20 feet below the ground surface). Although levels in the subsurface soil did not warrant cleanup, EPA has determined, and the Consent Decree requires, that institutional controls are needed to protect workers and the public if this material were excavated in the future. RMC is currently negotiating easements to implement institutional controls for these properties.

7. Technical Assessment

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

Yes. The results of the Site inspection and review of documents, ARARs, and risk assumptions, indicate that the remedy is functioning as intended by the Final ROD. The excavation and off-site disposal of contaminated waste, soils and debris from the Site has achieved the remedial objectives to prevent direct contact with or ingestion of contaminants. The groundwater FE/PWO system has been installed and has been operational since November 2005, and initial indications are that it is functioning as intended by the decision documents.

The Remedial Action Objectives (RAOs) for the final Remedial Action at this Site as stated in the Final ROD are:

Soils/Direct Contact RAOs

- *Reduce human exposure through direct contact (ingestion, inhalation, and dermal contact) with contaminated soil and debris that would result in unacceptable excess*

lifetime cancer risk or above a Hazard Index of 1.0 for the reasonably anticipated (non-residential) future land uses.

Soil and debris removals were conducted to meet this objective. Based on the results of the post-demolition RI and RA, the Final ROD concluded that reduction of human exposure through direct contact with contaminated soil and debris has been achieved. The Site no longer poses an unacceptable risk based on the exposure scenarios evaluated. However, future Site use will need to be restricted to non-residential uses to meet this objective, and the north landfill cap and the two small capped areas in Company Lake will need to be maintained.

The capped areas provide protection from direct contact exposures. Institutional controls limit future use of the Site to uses compatible with the industrial cleanup levels selected and achieved for this Site. Observed uses of the Site during the five-year review were compatible with the cleanup levels selected and achieved.

Access is provided and future use of the property is limited to industrial or other uses compatible with the cleanup under the terms of the Easement and Equitable Servitudes that were granted by property owners. The Easements and Equitable Servitudes were finalized and recorded with Multnomah County for the RMC property, which was subsequently sold to the Port of Portland. The Easements and Equitable Servitudes are in effect for the Port of Portland property. Current land use is consistent with the assumptions used and restrictions required by the Amended ROD.

Groundwater RAOs

- *Restore and maintain use of the groundwater (except the shallow silt zone) as a drinking water source. The restoration goal is the federal and state safe drinking water standard (MCL).*

- *Minimize the migration of contaminants from waste and soils to groundwater at concentrations that are protective for underlying drinking water, reduce the fluoride mass in shallow and intermediate groundwater, and control migration of fluoride and other constituents of concern in groundwater.*

- *Reduce and control the migration of fluoride in groundwater to the Sandy River.*

Sources of potential groundwater contamination were addressed through the removal and remedial actions that were completed prior to and as a part of the 2002 Interim Action ROD. The groundwater FE/PWO system is operational and is providing hydraulic containment of the fluoride plume. Operation and maintenance of the groundwater system and groundwater monitoring appears to be effective, in the short term, in reducing fluoride levels and containing the spread of the fluoride plume in Site groundwater.

RMC is maintaining the remedy in accordance with the final ROD, the Operations Plan, and the

Sitewide Groundwater Monitoring Plan. The ROD estimated annual operation and maintenance costs of $231,000 for 10 years, and $88,000 for monitoring only costs for an additional 5 years. Costs for groundwater monitoring were based on sampling and analysis of the monitoring wells as described in the Site-wide Groundwater Monitoring Plan (2006-2010). An additional $50,000 in the first year costs was included as a contingency for modifications to the monitoring well network and institutional controls.

Total O&M cost for the first 26 months of operation from November 2005 through January 2008 was $856,546. In this total, $252,082 was spent on design and installation of the two relocated focused extraction wells. O&M costs include; power, NPDES monitoring, groundwater monitoring, & FE/PWO system maintenance.

O&M annual costs are slightly higher than the original estimates and were affected by the iron bacteria fouling problem that affected the capacity of the original focused extraction wells, FE02 and FE03. This ultimately required installation of two new wells, FE04 and FE05 and new preventative measures to protect the wells and pumps.

There were no additional opportunities for system optimization observed during this review. However, EPA noted that fluoride concentrations in groundwater extraction well FE04 are below projected levels and evaluation of this trend will continue to be assessed as part of the annual groundwater reporting requirements. EPA will continue to assess the adequacy of the FE/PWO system and the monitoring well network to ensure that it provides sufficient data to evaluate the effectiveness of the remedy.

The institutional controls that are in place include prohibitions on the disturbance of the capped areas, and any other activities or actions that might interfere with the implemented remedy and are adequately meeting the RAOs. The ICs were implemented by means of an Easement and Equitable Servitudes that were recorded for the property. A title search report was completed in August 2007 for RMC. A title search report for the Port of Portland was completed to confirm that the covenants and easements are in effect and have no compromising encumbrances that would make them ineffective. No activities were observed that would have violated the institutional controls or result in unacceptable exposures.

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

Yes. The exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection are still valid. No significant changes to the remedial action objectives or cleanup levels are necessary based on the results of the five-year review.

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. As required by the remedy, groundwater monitoring is being conducted to evaluate groundwater quality relative to the Safe Drinking Water maximum

contaminant level of 4 mg/l of fluoride. EPA will review monitoring data and annual reports evaluate progress towards meeting the groundwater cleanup goal.

Discharge monitoring data was reviewed for the period from March 2007 through April 2008. The results showed that fluoride levels in the discharge ranged from 0.2 mg/l to 2.4 mg/l, which were within the permitted discharge limit of 5 mg/l established by the 2006 ROD. Cyanide levels ranged from non-detect to 0.01 mg/l (permit limit is 0.025 mg/l monthly average, 0.05 daily maximum), and aluminum was not detected in any samples (detection limit 0.05 mg/l). PAHs were not detected in the discharge and this parameter has been dropped from the NPDES permit.

There have been no significant changes in ARARs and no new standards affecting the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics
There have been no significant changes to the standardized risk assessment methodology since the completion of the Post-Demolition Residual Risk Assessment Report in June 2006. No significant changes in the exposure pathways or toxicity that could affect the protectiveness of the remedy were identified during the five-year review.

The remedial action objectives described in A above are still valid for this Site.

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

No other information that calls into question the protectiveness of the remedy was identified during the five-year review.

Technical Assessment Summary

According to the Site inspection and documents and data reviewed, the remedy for site soils has been completed and the groundwater remedy is operational and is functioning as intended by the ROD. Although there have been a number of changes in the physical conditions of the Site, the changes have not affected the protectiveness of the remedy. ICs are in place and are expected to effectively prevent exposure to residual contamination remaining on Site. ICs for the property that was not owned by RMC are being negotiated and expected to be implemented in accordance with the Consent Decree. ARARs for groundwater will be achieved through continued operation of the groundwater FE/PWO system as required by the 2006 ROD. No changes in the toxicity factors for the contaminants of concern were identified since the ROD was issued. No other information was identified during the five-year review that calls into question the protectiveness of the remedy.

8. Issues

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
The ROD and Consent Decree require that institutional controls be placed to ensure that the remedy remains protective. This requirement has been satisfied for all property that was owned by RMC and recently sold to the Port of Portland. This property represents the majority of the property affected by the ICs. Additional properties were identified for which ICs need to be implemented. Current uses at these properties are compatible with the assumptions in the ROD remedial action. Implementation of the ICs is needed to ensure that the remedy remains protective.	**N**	**Y**

9. Recommendations and Follow-Up Actions

Issue	Recommendations Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Implement IC's for third party easements	EPA will ensure compliance by RMC and Alcoa with the requirements of the Consent Decree for property that is owned or controlled by parties other than RMC/Alcoa where access and land and water restrictions are needed. RMC has provided title searches and is currently negotiating these agreements.	PRPs	EPA/DEQ	12/1/08	N	Y

10. Protectiveness Statement

The remedy at this site currently protects human health and the environment because contaminated soils have been remediated, and the groundwater treatment system is operational and functioning as intended. Institutional Controls are in place on the former plant site to protect those materials that were capped on site and to prevent use of former plant site groundwater for drinking until such time as the remedy achieves cleanup goals in groundwater, and there are no drinking water wells on adjacent properties with access to contaminated groundwater. However, in order for the remedy to remain protective in the long term, the Consent Decree requires that Institutional Controls be established on adjacent properties that overlie the plume to ensure wells will not be installed and used for drinking water consumption while groundwater remains above cleanup levels

11. Next Review

The next five-year review for the Reynolds Metals Superfund Site is required by the end of July 2013, five years from the date of this review.

ATTACHMENTS

Site Location Map
Site Plan
List of Documents Reviewed

ATTACHMENT 1

List of Documents Reviewed

Interim Action Record of Decision, Reynolds Metals Superfund Site (US Environmental Protection Agency, September 2002)

Final Record of Decision, Reynolds Metals Superfund Site (US Environmental Protection Agency, September 2006).

Operations Plan-Focused Extraction Production Well Optimization System for the RMC-Troutdale Facility (CH2M Hill, August 2005).

Contaminated Media Management Plan for the Former Reynolds Metals Company Facility in Troutdale, Oregon (CH2M Hill, October 2007)

Cap Maintenance and Monitoring Plan at RMC-Troutdale (CH2M Hill, May 2007)

Addendum 1 - Sitewide Groundwater Monitoring Plan (2006 through 2010) at RMC-Troutdale (CH2M Hill, May 2007)

2007 Groundwater Monitoring and FE/PWO System Operation Report (CH2M Hill, December 2007)

Consent Decree for Settlement Between the United States and Reynolds Metals Company and Alcoa, Inc., regarding the Reynolds Metals Superfund Site, Troutdale Oregon (October 2007)

Environmental Protection Easements and Declaration of Restrictive Covenants, Multnomah County Recording Number 2007-216745, December 21, 2007.

Title Insurance Policy No. 262059 for Port of Portland, Chicago Title Insurance Company

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
OREGON OPERATIONS OFFICE
805 SW Broadway, Suite 500
Portland, Oregon 97205

July 18, 2008

Reply to: OOO

MEMORANDUM

SUBJECT: Reynolds Metals Five-Year Review

FROM: Chip Humphrey
Remedial Project Manager

TO: Daniel D. Opalski, Director
Office of Environmental Cleanup

THRU: Deb Yamamoto, Unit Manager
Site Cleanup Unit#2

Attached for your signature is the Five-Year Review for the Reynolds Metals Superfund Site. The Five-Year Review due date is July 22, 2008. This final report incorporates all comments on the draft report from Tim Brincefield, Emily Johnson (HQ) and Joan Shirley (ORC).

The review findings are that the Site is protective in the short-term. The soils cleanup is complete and the groundwater system has been installed and is functioning as required by the final ROD and Consent Decree. Groundwater cleanup is projected to take between 10 to 15 years. Institutional Controls, including the Easements and Equitable Servitudes recorded in Multnomah County, are in place for all of the property formerly owned by Reynolds/Alcoa and now owned by the Port of Portland. There are four smaller properties with underlying contaminated groundwater from the Reynolds Site where the IC's (easements restricting groundwater use) still need to be completed. Reynolds is currently negotiating easements with the property owners. The Consent Decree, which was filed with the Court in January 2008 and is expected to be entered in the next few weeks, requires Reynolds to provide draft easements within 45 days of the effective date of the Decree.

The property sale of a portion of the property to Fed Ex still appears to be moving forward, pending entry of the Decree and agreement by the Port on infrastructure improvements.

Please let me know if you would like a briefing on the review or status of the Site.

Printed on Recycled Paper

Figure 1 - Vicinity Map

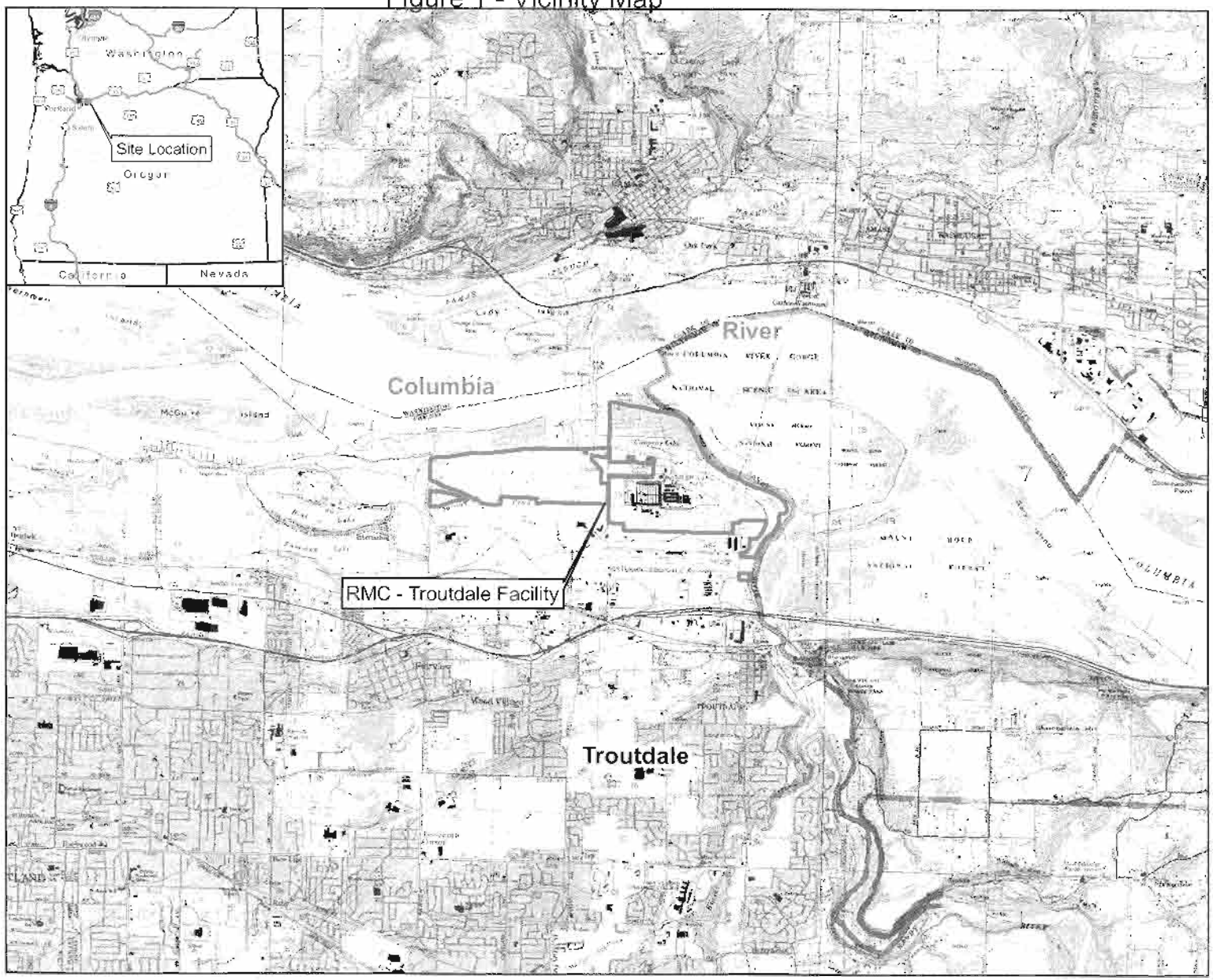

Figure 2 - Site Features and Evaluation Area

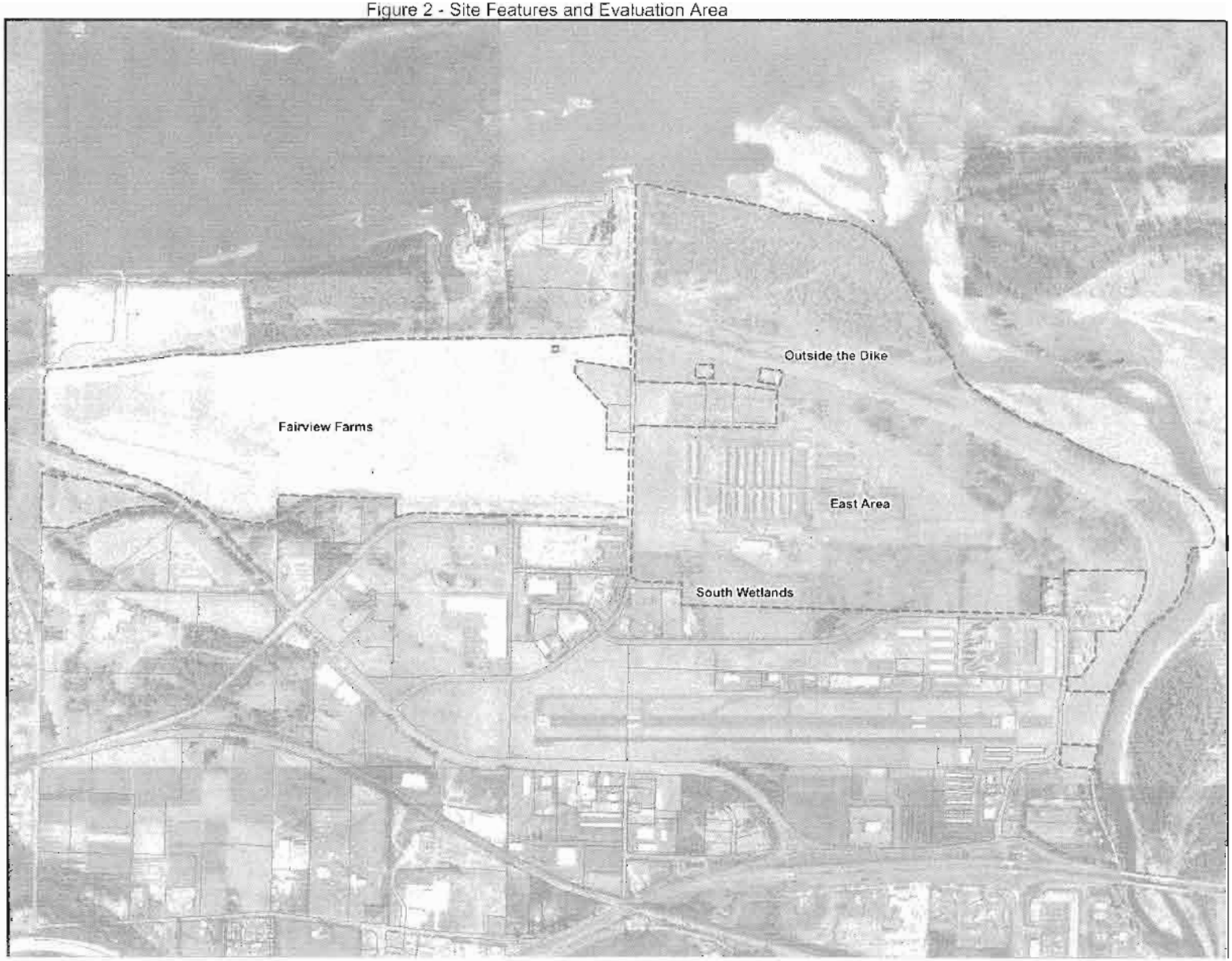
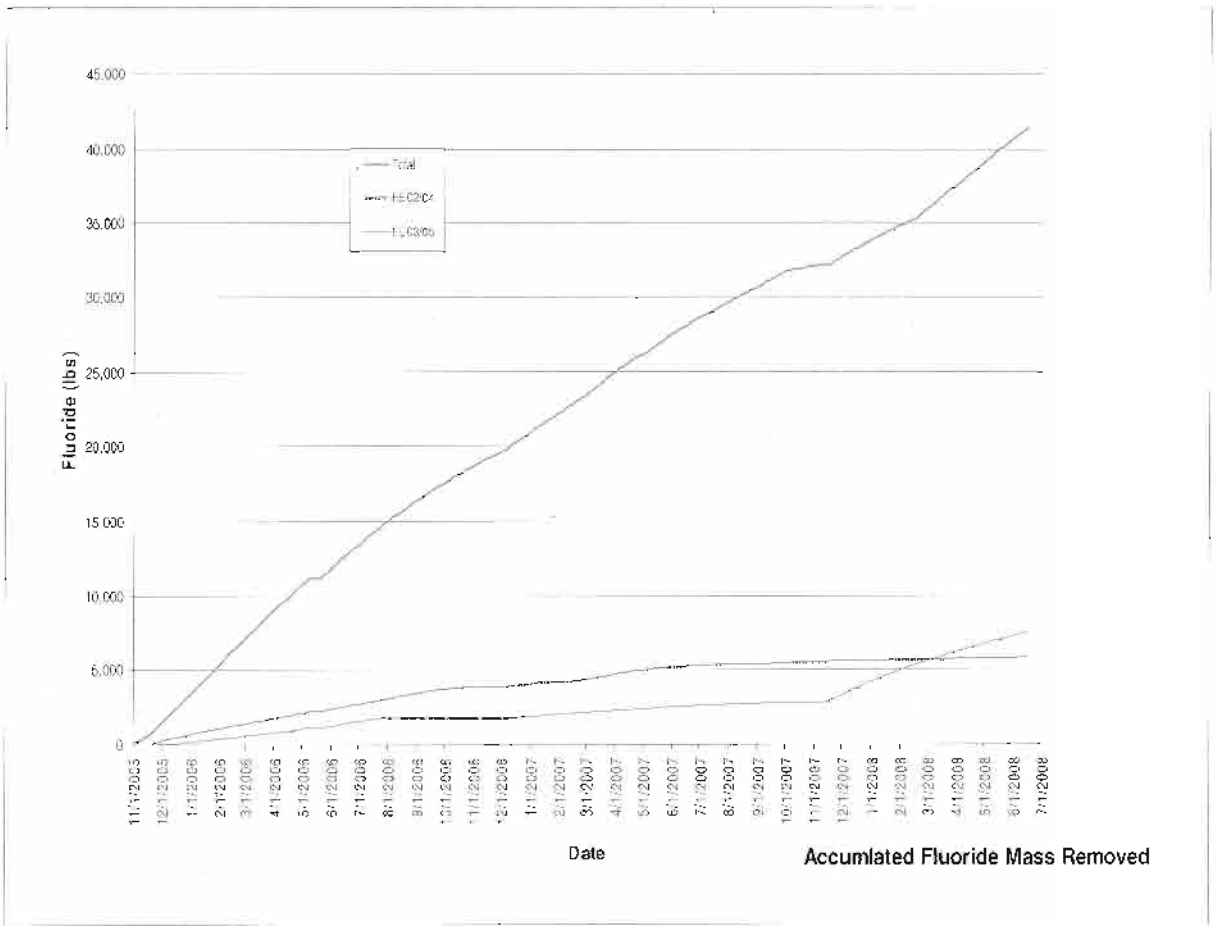
Figure 3 Fluoride Mass Removed – FE/PWO System