

**Environmental Restoration  
Five-Year Review Report**

**Fourth Five-Year Review Report  
For  
Bonneville Power Administration  
Ross Complex  
Vancouver, Washington**

**March 2014**

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Date:

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# Fourth Five-Year Review Report

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## List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
BPA	Bonneville Power Administration
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DCE (1,1)	Dichloroethylene
DOB	District Office Building
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
FFA	Federal Facility Agreement
HPAH	High Molecular Weight Polynuclear Aromatic Hydrocarbon
MCL	Maximum Contaminant Level
MFS	Minimum Functional Standards
MOA	Memorandum of Agreement
MTCA	Model Toxics Control Act
NCP	National Contingency Plan
NPL	National Priority List
OUA	Operable Unit A
OUB	Operable Unit B
PCBs	Polychlorinated Biphenyls
PCP	Pentachlorophenol
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/ Feasibility Study
ROD	Record of Decision
TCA	Trichloroethane
TSCA	Toxic Substances Control Act
UV	Ultraviolet
VOCs	Volatile Organic Compounds

## **Executive Summary**

The remedy for the BPA Ross Complex Superfund site in Vancouver, Washington included excavation, removal and /or treatment, and capping of contaminated soils, institutional controls and monitored natural attenuation of groundwater. The final Remedial Action Reports for Operable Units A and B (January 1996 and April 1995 respectively) documented the completion of all actions. The site was deleted from the NPL on September 23, 1996.

The first Five-Year Review was completed in September 1999 and recommended: That a long-term strategy to identify and implement specific processes to strengthen institutional controls at the Complex be developed jointly by EPA and BPA and put into place; and that an ESD should be prepared to document facility-wide institutional controls. The review further determined that continued groundwater monitoring was not necessary due to the low levels of groundwater contaminants (nearly at or well below the MCL) and the lack of on-site or nearby off-site users. Groundwater would not be subject to future five-year reviews.

This Five-Year Review focused on the continued adequacy of institutional controls applicable to the Fog Chamber Dump Trench Areas 1 and 2, Cold Creek Fill, Ross Substation/Capacitor Yard and the Wood Pole Storage Area East. The review concludes that the remedies remain protective and institutional controls remain in place.

EPA's Human Exposure Environmental Indicator Status for the Site remains "Long Term Human Health Protection Achieved." On-site exposures that posed unacceptable risk to human health were addressed by the excavation and off-site removal and/or capping of contaminated soils, plus implementation and maintenance of Institutional Controls where necessary.

EPA's Groundwater Migration Environmental Indicator is not applicable for this site because no groundwater required action at this site.

## Five-Year Review Summary Form

SITE IDENTIFICATION		
<b>Site Name:</b> Bonneville Power Administration Ross Complex (USDOE)		
<b>EPA ID:</b> WA 1891406349		
<b>Region:</b> 10	<b>State:</b> WA	<b>City/County:</b> Vancouver/Clark
SITE STATUS		
<b>NPL Status:</b> Deleted		
<b>Multiple OUs?</b> Yes	<b>Has the site achieved construction completion?</b> Yes	
REVIEW STATUS		
<b>Lead agency:</b> Other Federal Agency If "Other Federal Agency" was selected above, enter Agency name: Bonneville Power Administration		
<b>Author name (Federal or State Project Manager):</b> Forest L. Costanzo		
<b>Author affiliation:</b> Bonneville Power Administration		
<b>Review period:</b> January 17, 2014 – March 14, 2014		
<b>Date of site inspection:</b>		
<b>Type of review:</b> Statutory		
<b>Review number:</b> 4		
<b>Triggering action date:</b> 09/08/2009		
<b>Due date (five years after triggering action date):</b> 09/08/2014		

## **Five-Year Review Summary Form, cont'd.**

### **Issues:**

No significant issues were identified during this five-year review.

### **Recommendations and Follow-up Actions:**

None.

Continue to implement institutional controls and conduct quarterly inspection of sites with caps, fences and institutional controls to help ensure continued effectiveness of site remedies.

### **Protectiveness Statement(s):**

The remedies for both OUA and OUB remain protective of human health and the environment. Because the remedial actions at all OUs are protective, the site is protective of human health and the environment. All threats at the site have been addressed through excavation and off-site disposal and/or capping of contaminated soil, the installation of fencing and warning signs, and the implementation of institutional controls.

### **Long-Term Protectiveness:**

Long-term protectiveness of the remedial action is being ensured by the maintenance of institutional controls addressed in the ESD agreement.

### **Other Comments:**

None.

**ENVIRONMENTAL RESTORATION  
FOURTH FIVE-YEAR REVIEW  
BONNEVILLE POWER ADMINISTRATION  
ROSS COMPLEX, VANCOUVER, WASHINGTON**

**I.0 INTRODUCTION**

**1.1 Purpose.** The purpose of this fourth statutory Five-Year Review is to ensure that remedial actions selected in the Records of Decision (RODs) for Operable Units A (OUA) and B (OUB), at BPA's Ross Complex, Vancouver, Washington remain protective of public health and the environment and are functioning as designed. The BPA/Ross Complex Superfund site was deleted from the National Priority List (NPL) on September 23, 1996. Five-Year Reviews continue to be conducted at BPA/Ross Complex due to the fact that waste has been left in place and there are institutional control requirements. The timing of this review is triggered by the third Five-Year Review completed in 2009. The scope of this review covers selected remedies at both of the Operable Units where hazardous materials have been left in place and, in particular, the adequacy of institutional controls/restrictions which remain on use and/or exposure.

**1.2 Authority Statement.** The Bonneville Power Administration (BPA) has conducted this review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9621(c); the National Contingency Plan (NCP), 40 CFR 300.400(f)(4)(ii); Executive Order 12580 (January 23, 1987); and Section 19.1 of the Federal Facility Agreement (FFA) for BPA's Ross Complex dated May 1, 1990. 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.”*

EPA 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.*

This document is consistent with EPA guidance documents: OSWER Directive No. 9355.7-03B-P (June 2001). The Bonneville Power Administration is the lead agency for remediation of the Ross Complex and has performed extensive remedial action under its own authorities. Under the

Federal Facility Agreement (FFA) between BPA, EPA and the Washington State Department of Ecology (Ecology), BPA must ensure that the corrective actions taken at specific sites are consistent with appropriate environmental standards and are protective of human health and the environment. It is important to note that cleanup and remediation activities performed at the Ross Complex comply not only with the federal requirements of CERCLA but also the state requirements of the Model Toxics Control Act (MTCA).

Consistent with the FFA, the project manager for the EPA has participated in this review. This review was conducted from January 2014 through March 2014 and is hereby documented in this report. This review was limited only to those sites remediated under the RODs where hazardous substances have been left in place, and in particular the institutional controls applicable to those sites.

## II. Site Chronology

**Table 1: Chronology of Site Events**

<b>Event</b>	<b>Date</b>
<b>Site Discovery</b>	<b>06/01/1981</b>
<b>Removal Negotiations</b>	<b>11/15/1984</b>
<b>Preliminary Assessment</b>	<b>04/01/1986</b>
<b>Site Inspection</b>	<b>11/02/1988</b>
<b>HRS Package</b>	<b>06/23/1989</b>
<b>Proposed to NPL</b>	<b>07/14/1989</b>
<b>Final Listing on NPL</b>	<b>11/21/1989</b>
<b>IAG Negotiations</b>	<b>11/20/1989</b>
<b>Federal Facility Agreement</b>	<b>05/01/1990</b>
<b>Ecological Risk Assessment</b>	<b>03/19/1993</b>
<b>Risk Health Assessment</b>	<b>03/19/1993</b>
<b>FF RIFS (OUB)</b>	<b>05/06/1993</b>
<b>Administrative Records</b>	<b>05/06/1993</b>
<b>Record of Decision (OUA)</b>	<b>05/06/1993</b>
<b>FF RIFS (OUA)</b>	<b>09/29/1993</b>
<b>Record of Decision (OUB)</b>	<b>09/29/1993</b>
<b>FF RD (OUB)</b>	<b>05/27/1994</b>
<b>FF RD (OUA)</b>	<b>08/08/1994</b>
<b>FF RA (OUB)</b>	<b>04/27/1995</b>
<b>FF RA (OUA)</b>	<b>01/09/1996</b>
<b>Deletion from NPL</b>	<b>09/23/1996</b>
<b>Five Year Review</b>	<b>09/09/1999</b>
<b>Explanation of Significant Differences</b>	<b>01/18/2001</b>
<b>Second Five Year Review</b>	<b>08/24/2004</b>
<b>Third Five Year Review</b>	<b>09/08/2009</b>



### **III. Background**

#### **Physical Characteristics**

The BPA Ross Complex is a 250-acre site located in the City of Vancouver, Washington, approximately 2.7 miles north of the Columbia River and 1.7 miles east of Vancouver Lake. The site address is 5411 NE Highway 99, Vancouver, Washington, which is located in Clark County.

The site is located on an ancient alluvial terrace. Creeks and streams in the area have been cutting into the terrace deposits, creating incised channels. Elevations across the site range from greater than 250 feet above mean sea level to approximately 40 feet above mean sea level. The surface gradient generally slopes to the west across the site, with localized steep slopes descending toward Cold Creek to the north and Burnt Bridge Creek to the southwest. These two streams border the site with Cold Creek forming the northern border of the site and Burnt Bridge Creek bordering the southwestern side of the site. Cold Creek, a tributary to Burnt Bridge Creek, flows into Vancouver Lake.

A perched water table is located in the eastern and central portions of the site ranging from between 10 and 70 feet below ground surface. A deep aquifer has also been identified at or near the top of the Upper Troutdale Formation that underlies the site from 80 to 180 below ground surface. Ground water flow in the deep aquifer is toward the southwest.

#### **Land and Resource Use**

The site is an active facility that has been owned and operated by the BPA since 1939 to coordinate the distribution of hydroelectric power generated by the Federal Columbia Power System to regions throughout the Pacific Northwest. Since its construction, the site has provided research and testing facilities, maintenance and construction operations and waste storage and handling operations for BPA.

#### **History of Contamination**

Maintenance activities at the Ross Complex have routinely involved handling transformer oils containing polychlorinated biphenyls (PCBs), and organic and inorganic compounds associated with the storage of preserved wood transmission poles, paints, solvents and waste oils. Testing and laboratory activities include the use of heavy metals and other organic and inorganic compounds.

The Site was listed on the National Priorities List in November 1989 based on the presence of volatile organic compounds (VOCs) in groundwater and the Site's proximity to the City of Vancouver's drinking water supply. As a result of the listing, and pursuant to a Federal Facility Agreement (FFA) signed by BPA, EPA and Ecology on May 1, 1990, BPA conducted a Remedial Investigation/Feasibility Study (RI/FS) to determine the nature and extent of contamination at the Site and to evaluate alternatives for cleanup of contaminated areas.

## **Initial Response**

The RI field investigation began in the summer of 1991 and was completed in September 1993. It included the collection and chemical analysis of surface and subsurface soil, water, sediment, and groundwater in an effort to characterize the nature and extent of contamination at the Site. Initially, the RI was designed to address the entire Site as one operable unit (OU). However, during the summer of 1991, BPA in conjunction with EPA and Ecology decided that the Site would be divided into two separate OUs (OUA and OUB) to facilitate the Superfund process.

The OUA RI addressed potential surface soil contamination at 21 different waste units on the Ross Complex. The OUB RI focused on characterization of subsurface soils in two waste units and also included characterization of the shallow perched water table, the deep groundwater aquifer beneath the Site, and surface water and sediments in Cold Creek and Burnt Bridge Creek.

## **IV. Operable Units/Contaminants/Remedial Action**

**OPERABLE UNIT A (OUA).** The remedial investigation for OUA evaluated the nature and extent of soil contamination at 21 waste units. Results from the Baseline Risk Assessment indicated that CERCLA remedial action was necessary for contaminated soil at four waste units, the Wood Pole Storage Area East, the Ross Substation and Substation Capacitor Yard, and the Capacitor Testing Laboratory. The ROD for OUA was signed on May 6, 1993.

A more detailed description of OUA is available in the third Five-Year Review (2009) on-line at <http://go.usa.gov/BNnR> or [http://efw.bpa.gov/environmental\\_services/pollution.aspx](http://efw.bpa.gov/environmental_services/pollution.aspx)

**OPERABLE UNIT B (OUB).** The remedial investigation for OUB evaluated the nature and extent of contamination in the subsurface soils at three locations: the Fog Chamber Dump, Trench Area 1& 2 and the Cold Creek Fill. The investigation also included an evaluation of the groundwater and the two surface streams, Cold Creek and Burnt Bridge Creek. The OUB ROD was signed on September 29, 1993.

A more detailed description of OUB is available in the third Five-Year Review (2009) on-line at [http://efw.bpa.gov/environmental\\_services/pollution.aspx](http://efw.bpa.gov/environmental_services/pollution.aspx) or <http://go.usa.gov/BNnR>.

## **V. Progress Since the Last Five-Year Review**

Quarterly inspections and annual monitoring reports to EPA on the maintenance of institutional controls have continued during this five-year period.

No significant issues have been identified at any time during this five-year period regarding the cap, fencing or signage at those sites inspected. No incidents of trespass or vandalism were noted. The dig permit system is working as intended.

## **VI. Five-Year Review Process**

### **Administrative Components**

Preparation for the Five-Year Review began on January 17, 2014. Target schedule was established to complete all review activities by March 15, 2014.

### **Community Involvement**

Ever since this site was deleted from the NPL, there has not been much community interest and no need for community involvement activities. During previous Five-Year Reviews, BPA reached out to members of the community living nearest the Ross Complex facility and never received any comments or concerns from local residents. Therefore, no interviews were specifically scheduled for this review. BPA published a notice in The Columbian newspaper on February 26, 2014 to inform the public that a Five-Year Review at the BPA/Ross Complex Superfund site was underway. This notice informs the public that there is an opportunity to contact BPA with information or questions. Previous Five-Year Reviews can be found at the EPA Web site: <http://go.usa.gov/BNnR>

### **Document Review**

This Five-Year Review consisted of a review of relevant documents listed in Attachment 2.

### **Site Inspection**

Inspections at the site are conducted on a regular (quarterly) basis by BPA staff. The inspection conducted during this fourth Five-Year Review period was completed on March 7, 2014. The Ross Complex Environmental Coordinator conducts these inspections. The purpose of the inspections is to assess the protectiveness of the remedy, including the presence of fencing to restrict access, signage, and the integrity of the cap for Fog Chamber Dump, Trench Area 1 and the Wood Pole Storage Yard East. Institutional controls were reviewed, including the annual progress reports submitted to EPA since the previous Five-Year Review.

The institutional controls implemented in accordance with the ESD included: delineation, mapping and posting of waste units containing residual contamination; development/implementation of a dig permit system, coordinated by Facilities Management, for any excavation on the complex; permanent placarding of all areas subject to institutional controls; quarterly inspection of sites and annual reporting to EPA by the Environmental Coordinator. No activities were observed that would have violated the institutional controls. All areas subject to institutional controls are identified and maintained on a Ross Complex I/C Units Map (see Attachment #1) which is available on an electronic database. The dig permit system continues to work well.

**The following areas continue to be subject to the Five-Year Review as well as institutional controls:**

**Wood Pole Storage Yard East:** Wood poles are no longer stored in this area. With a clean gravel cap in place there are no restrictions on surface use anywhere in the yard. Institutional controls have been established and are maintained only for the southwest corner of the yard to ensure that there is no occupational exposure to residual soil contaminants. Institutional controls

are limited to restrictions on digging. Site inspections indicate no unauthorized disturbance of the gravel cap and signs remain posted. A review of pertinent information and results of site inspections indicate that the remedy is functioning as intended in this area and remains protective of human health and the environment.

BPA conducted maintenance on a small area of the Wood Pole Storage Yard cap in 2013. Shallow pot holes observed during a quarterly inspection were filled in. There have been no other changes in this area since the last Five-Year Review.

**Fog Chamber Dump, Trench Area 1:** This area remains a closed landfill. The area is fenced and posted with “Hazardous Waste Landfill – No Unauthorized Entry” signs. Inspections conducted during the last Five Year Review period have indicated no disturbance of the cap or perimeter fencing. Signs remain intact and site drainage is functioning. A review of pertinent information and site inspections indicates that the remedy is functioning as intended for this area.

In August 2013 a portion of the fencing between Fog Chamber Dump, Trench Area 1 and the Fog Chamber was determined to pose an induction shock electrical hazard. To eliminate this employee hazard, a grounding wire was proposed to be installed inside Trench Area 1 parallel to the fence and 5.5 feet from the landfill cap. A Dig Permit for the project was issued after consultation with EPA that concluded the proposed grounding wire location did not interfere with the integrity of the engineered cap or violate an institutional control.

**Fog Chamber Dump, Trench Area 2:** The remedy for this area was institutional controls consisting of restrictions on land use activities that might disturb subsurface contamination. The perimeter of this area has been posted and inspections indicate there has been no unauthorized disturbance of soils. A review of pertinent information and site inspections indicates that the remedy continues to function as intended for this area.

After consultation with EPA (July 6, 2010), a Dig Permit (#10-11) was issued July 7, 2010 for replacement of a wood pole structure and anchors in the northwest corner of Fog Chamber Dump Area 2. The work was completed on July 18, 2010. All excavated soil remained onsite as backfill. Soil samples were collected and results submitted to EPA. Soil sample results found no contaminants above Operable Unit B cleanup levels.

During the quarterly Institutional Control Area inspection conducted on September 28, 2010, a small sinkhole was observed in the borrow pit adjacent to the north edge of the Fog Chamber Dump Area 2. An investigation found no evidence of buried debris. The sinkhole was backfilled at the time of the next quarterly inspection.

There have been no other changes in this area since the last Five-Year Review.

**Ross Capacitor Yard:** There are no changes in this area since the last Five-Year Review. Land use in this area continues as industrial. The area is an active high voltage capacitor yard. The area remains fenced and posted with high voltage signs. No access is allowed without an electrical outage. There has been no disturbance of soils in this area. A review of pertinent information and site inspections indicates that the remedy is functioning as intended for this area.

**Cold Creek Fill Area:** There have been no changes in this area since the last Five-Year Review. “No Digging” signs remain posted on as well as inside the access gate to this area. The signs remain legible and intact based on quarterly inspections. A review of pertinent information and site inspections indicates that, in general, the remedy continues to function as intended for this area.

## **VII. Technical Assessment**

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

**Yes.**

The review of documents, ARARs, and results of site inspections and interviews indicates that the remedy is functioning as intended by the RODs for both OUA and OUB, as modified by the ESD. The stabilization and capping of contaminated soils has achieved the remedial objectives to minimize the migration of contaminants to groundwater and surface water and prevent direct contact with, or ingestion of contaminants in soil.

Operation and maintenance of the caps has been effective. The caps appear to be in good condition, with no signs of erosion, cracks or disturbance. Annual costs have been minimal and essentially consist of staff time for inspections and minor maintenance. There is no indication of any difficulties with the remedy.

The institutional controls in place appear to be effective in preventing disturbance of the caps and other activities that would interfere with the remedy. Fencing and signage appear to be in good repair. Inspections and use of dig permits under provisions of the ESD appear to be functioning well.

### **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.**

There have been no changes in the physical conditions of the site during the past five-year period that would affect the protectiveness of the remedy.

#### Changes in ARARs and TBCs

There have been no changes in ARARs, any new standards or TBCs affecting the protectiveness of the remedy.

#### Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

There have been no changes in the exposure pathways, toxicity factors or other contaminant characteristics 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.**

There is no other information that calls into question the protectiveness of the remedy.

**VIII. Issues**

No significant issues were identified during this Five-Year Review.

**IX. Recommendations and Follow-Up Actions**

**None.**

Continued implementation of institutional controls and quarterly inspection of sites with caps, fences and institutional controls in accordance with the provisions of the ESD and ROD should help ensure the continued effectiveness of site remedies.

**X. Protectiveness Statement**

The remedial actions at OUA and OUB are complete and protective of human health and the environment. Because the remedial actions at all OUs are protective, the site is protective of human health and the environment. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedies. All threats at the site have been addressed through capping of contaminated soil, thereby eliminating exposure pathways, the installation of fencing and warning signs, and the implementation of institutional controls.

Long-term protectiveness is being maintained by implementation of the ESD and the associated institutional controls; quarterly inspections, annual reporting and use of dig permits.

**XI. Next Review**

The next Five-Year Review for the BPA Ross Complex Site is required by March 2019, five years from the date of this review.

## ATTACHMENTS

**Attachment 1**  
**Map of Ross Complex I/C sites**



ROSS ICA.PDF



## **Attachment 2**

### **List of Documents Reviewed**

Bonneville Power Administration/Ross Complex – Third Five Year Review

Bonneville Power Administration/Ross Complex – 2010, 2011, 2012, 2013 Annual Progress Reports