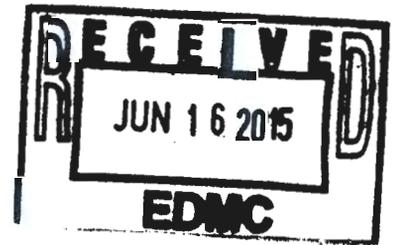


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Miscellaneous Restoration Report: 100-IU-2 and 100-IU-6 Areas Debris Removal

Prepared for the U.S. Department of Energy
by Washington Closure Hanford



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ACRONYMS

CCN	correspondence control number
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
DOE-RL	U.S. Department of Energy, Richland Operations Office
ERDF	Environmental Restoration Disposal Facility
MR	miscellaneous restoration
RCCC	River Corridor Closure Contract
WCH	Washington Closure Hanford
WIDS	Waste Information Data System

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

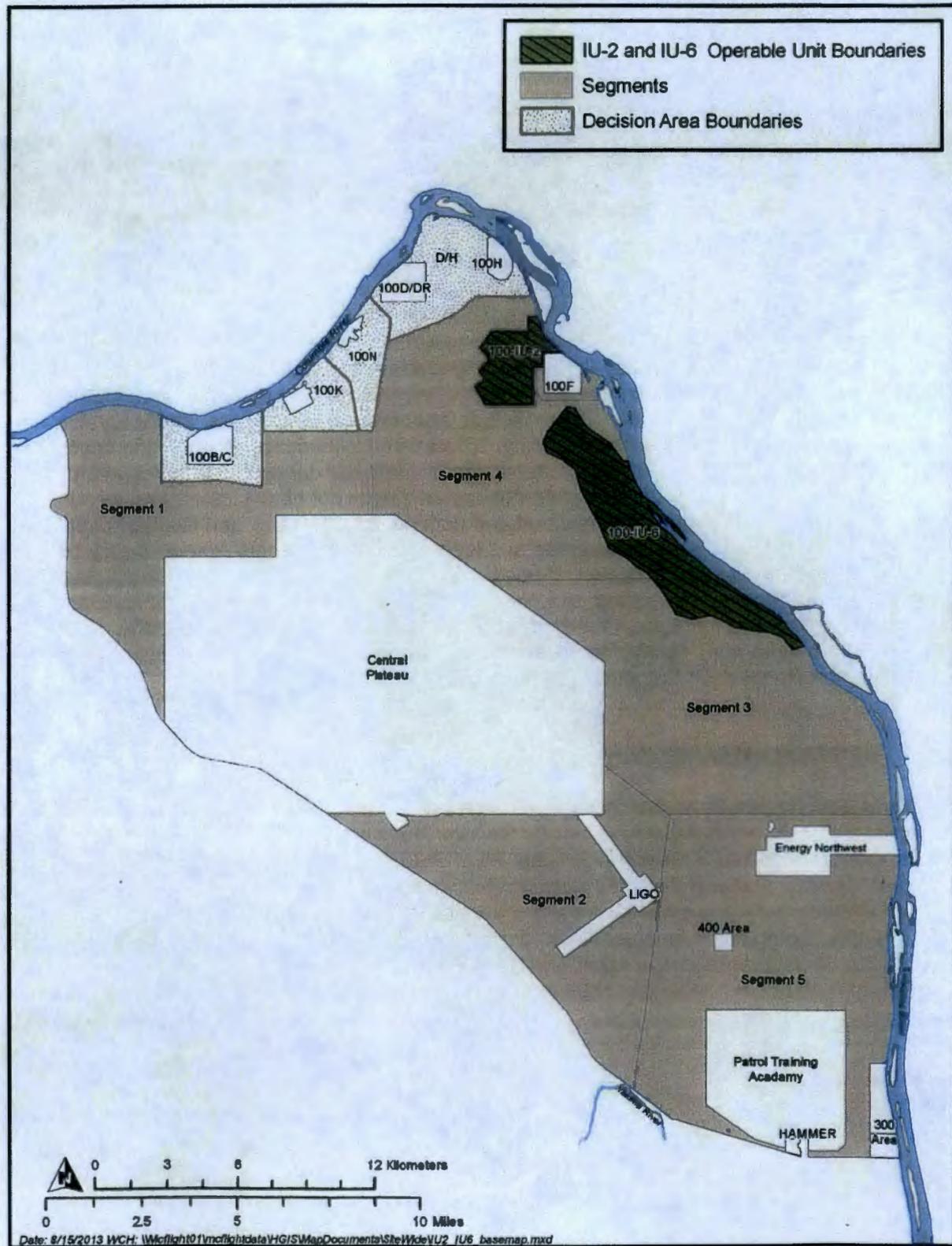
This document summarizes the miscellaneous restoration (MR) activities that were performed by Washington Closure Hanford (WCH) within the 100-IU-2 and 100-IU-6 (100-IU-2/IU-6) areas (Figure 1). The 100-IU-2/IU-6 areas include a combined coverage area of approximately 3,552 ha (8,777 ac). The scope was performed per the River Corridor Closure Contract (RCCC) statement of work, Section C.2.10 Activity 10: Miscellaneous Restoration.

Miscellaneous restoration activities involve removal and disposal of materials from the River Corridor lands that have the potential for contamination with *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) hazardous substances. Washington Closure Hanford has implemented the MR work scope within the RCCC in two distinct components: (1) large-scale features and (2) small, isolated, scattered debris. The large-scale features typically consist of engineered features that extend into multiple areas of the Hanford Site. These include abandoned railroad lines, abandoned above-grade utilities, and abandoned fencing. The small, isolated, scattered debris typically consist of potentially hazardous surface debris that is identified during orphan sites evaluations and includes items such as large concrete debris that stands out above the natural terrain, empty drums, large stockpile areas of wood and debris, transite piping, and isolated piping. Other non-CERCLA debris is documented and identified as stewardship elements as a part of the orphan sites evaluation processes. Stewardship elements include items such as glass, electrical components, metal, wiring, or wood. General trash/garbage and small, isolated pieces of debris are scattered throughout the Hanford Site and are not typically recorded as either MR or stewardship elements. Debris items subject to cleanup were removed and disposed to the Environmental Restoration Disposal Facility (ERDF).

1.2 REMOVAL REQUIREMENTS

Removal and disposal of miscellaneous items to support site completion was selected in DOE/RL-2010-22, *Action Memorandum for General Hanford Site Decommissioning Activities*, and is further described in Sections 2.5 and 2.6 of DOE/RL-2010-34, *Removal Action Work Plan for River Corridor General Decommissioning Activities*. As specified in DOE/RL-2010-34, debris will be removed from any given area using industry standard methods (e.g., front-end loaders, dump truck). Completion documentation for removal and disposal of miscellaneous debris is required to be documented in a report and to include a description of the work performed, quantity of material removed and disposed, and cost information.

Figure 1. Location of the 100-IU-2/IU-6 Areas Within the River Corridor.



1.3 HISTORICAL ACTIVITIES

The 100-IU-2/IU-6 areas are located in the northeastern portion of the Hanford Site. The 100-IU-2 area is located predominantly west of the 100-F reactor facility and includes the previous White Bluffs community. The eastern portion of the area is bounded by the Columbia River (Figure 1). The 100-IU-6 area is located approximately 1 km (0.62 mi) southeast of the 100-IU-2 and stretches over 14 km (8.7 mi), most of which is along the Columbia River. The Hanford townsite was located within the 100-IU-6 area.

Pre-Manhattan Project activities at these locations predominantly included livestock and agriculture. In 1943, the United States Government acquired the Hanford Site in support of the Manhattan Project's plutonium production mission. The 100-IU-2/IU-6 areas were located outside of the reactor/operations areas, and were used primarily for worker housing and construction support areas.

1.4 KEY TERMS AND DEFINITIONS

Miscellaneous Restoration (MR): An RCCC scope element that includes removing abandoned railroad lines, abandoned above-grade utilities, abandoned fences, and surface debris such as concrete that are not otherwise addressed by the CERCLA decision documents and that are considered contaminated or potentially contaminated with CERCLA hazardous waste. All below-ground debris and structures are excluded from the MR scope. Miscellaneous restoration also excludes de minimis volumes of non-CERCLA debris (small scattered nonhazardous surface debris).

Orphan Sites Evaluation: A systematic approach involving historical review and field investigation activities to identify new source unit waste sites within the River Corridor that are not identified for characterization or cleanup within the existing CERCLA decision documents (records of decision). Results of each orphan sites evaluation are presented in a summary report including a description of the process and a listing of identified orphan sites. Listings of MR items and stewardship elements that are captured during the course of the evaluation are also included in the summary report. Orphan sites evaluations are performed for the reactor/operational areas and for the inter-areas of the River Corridor.

Reactor/Operational Areas: The primary activity areas within the River Corridor that supported the Hanford Manhattan Project and subsequent Hanford Cold War Era. An orphan sites evaluation is conducted for each identified reactor/operational area including the 100-B/C, 100-D, 100-F, 100-H, 100-K, 100-N, 100-IU-2, 100-IU-6, 300, and 400 Areas. Collectively, the reactor/operational areas consist of approximately 6,880 ha (17,000 ac).

River Corridor: A portion of the Hanford Site that is defined by the RCCC. The River Corridor is more than 56,296 ha (139,000 ac) in size and is bounded on one side by the Columbia River.

Stewardship Elements: Manmade features, items, or activity areas within the River Corridor that (1) do not meet the Tri-Party Agreement TPA-MP-14 criteria for waste site identification (RL-TPA-90-0001), (2) are not part of MR scope, and (3) are anticipated to remain after completion of the RCCC. Examples may include, but are not limited to, groundwater wells, building foundations, and physical hazards. Stewardship elements also include unsubstantiated historical research artifacts that were investigated.

Stewardship Information System: A WCH relational database consisting of four components: waste sites, facilities, MR items, and stewardship elements. The Stewardship Information System is a primary WCH resource for capturing information in support of closure for River Corridor waste sites, facilities, reactors, miscellaneous debris items, and stewardship elements.

2.0 MISCELLANEOUS RESTORATION ACTIVITIES

The following section describes the debris removal activities performed in the 100-IU2/IU6 areas. Specific summary reports regarding individual MR debris item removal, including photographs, are accessible from the WCH Stewardship Information System database.

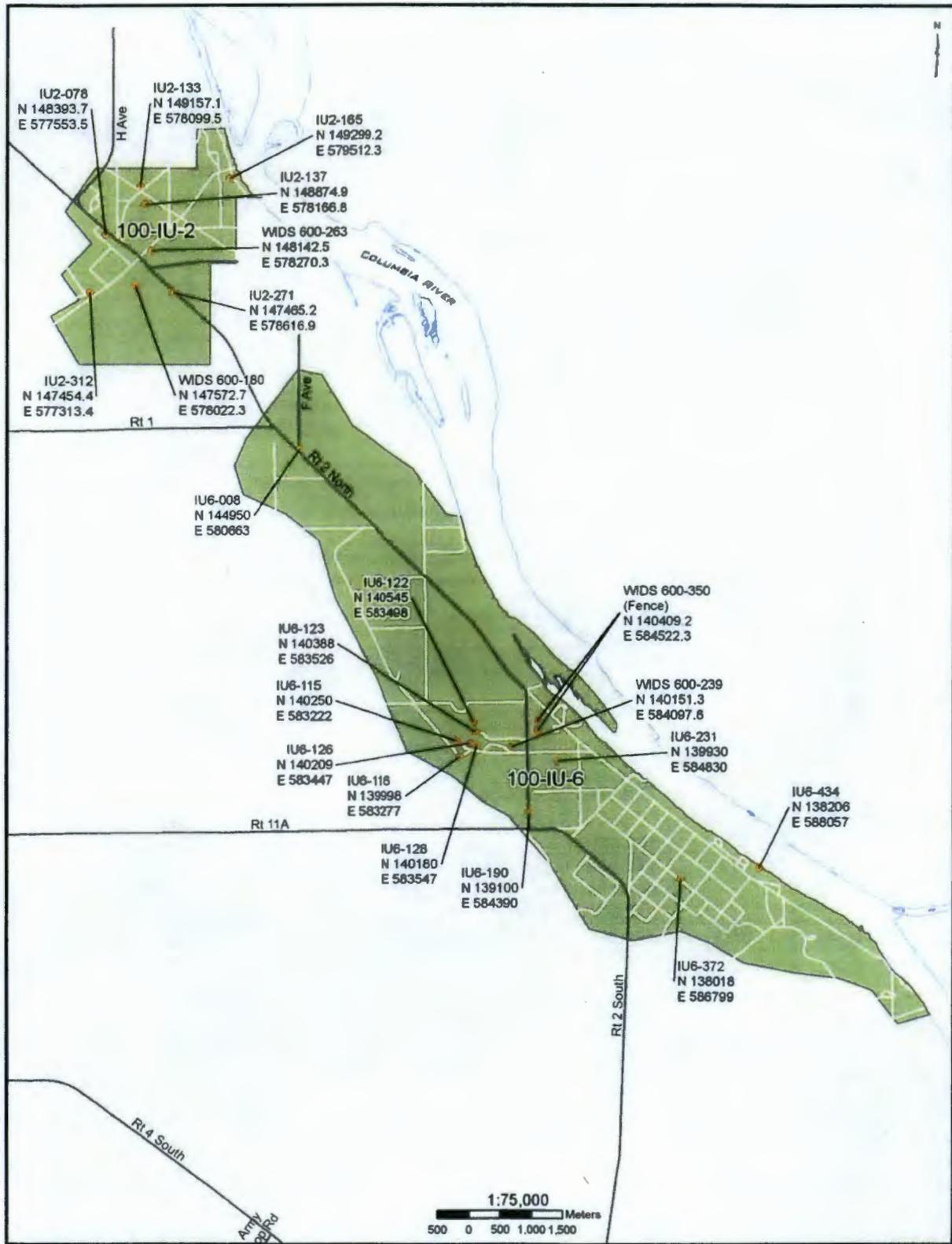
2.1 MISCELLANEOUS DEBRIS REMOVAL

The 100-IU-2/IU-6 surface debris items were identified based on a review of the features recorded during the orphan sites evaluation process that was conducted in 2008 and documented in OSR-2008-0001, *100-IU-2 and 100-IU-6 Areas Orphan Sites Evaluation Report*. A final list of the MR debris items identified for removal in these areas was provided in correspondence from WCH to the U.S. Department of Energy, Richland Operations Office (DOE-RL) in Letter 166371, "Identification of Miscellaneous Restoration Items for IU2 and IU6 Including Segment 4 and 5." The letter also identified the removal of MR debris associated with three "No Action" or "Rejected" Waste Information Data Systems (WIDS) sites (600-180, 600-239, and 600-263) located within the 100-IU-2/IU-6 areas. Table 1 describes the 20 MR debris item locations that were removed within 100-IU-2/IU-6 areas. Locations of debris items are shown in Figure 2.

Small MR debris items, which could be removed by hand, were picked up and transported to a disposal container as shown in Figure 3. Debris items which were larger than transport containers were mechanically size reduced prior to loadout (Figure 4). Other materials were removed using front-end loaders, back-hoe or track-hoe, and loaded directly into roll-off containers as shown in Figure 5.

No large-scale features such as above ground utilities or railroads were identified for removal, with the exception of fencing associated with the 600-350 WIDS site (see Section 2.4).

Figure 2. 100-IU-2/IU-6 Miscellaneous Debris Locations.



Date: 8/15/2013 Path: I:\mflight01\mflightdata\HGIS\MapDocuments\SiteWide\IU2_IU6_MR.mxd

Table 1. 100-IU-2/IU-6 Miscellaneous Restoration Debris Items. (2 Pages)

Orphan Site Evaluation Identification	Date Removed (mo/yr)	Description	Debris Quantity (US tons)
IU2-078 ^a	11/11	The identified feature is non-friable transite pipe 3 m in length and 25 cm (10 in.) in diameter.	474.1 ^b
IU2-133 ^a	10/11	This site consists of approximately nine concrete piles scattered over a 30 x 60 m (100 x 200 ft) area. They appear to be cleanout dumps from concrete trucks.	b
IU2-137 ^a	11/11	This site consists of concrete cylinders for testing compression strength of concrete and terracotta blocks dumped in a pile. The affected area is approximately 2 m (6 ft) in diameter and approximately 0.5 m ³ (17 ft ³) in volume.	b
IU2-165 ^a	11/11	This site consists of approximately six concrete blocks partially buried. Each block is approximately 0.5 m ³ (17 ft ³).	b
IU2-271 ^a	11/11	The site consists of excavated concrete blocks (3) between railroad and Route 2 in an area 2 x 5 m (6 x 15 ft).	b
IU2-312 ^a	05/12	The site consists of a large chunk of concrete.	b
IU6-008 ^a	11/11	The site consists of utility pole segments in a 2 x 10 m (6 x 33 ft) area.	b
IU6-115 ^a	11/11	The site consists of fence posts, railroad ties, rails, and components in an area approximately 5 x 15 m (16 x 50 ft).	b
IU6-116 ^a	11/11	The site consists of an area approximately 6 x 20 m (20 x 65 ft) that includes railroad signs and components.	b
IU6-122 ^a	8/11	The site consists of wooden utility debris in a 5 m (16 ft) diameter area.	b
IU6-123 ^a	8/11	The site consists of asphalt, concrete blocks, and wood debris on the ground surface in a 15 m (50 ft) diameter area.	b
IU6-126 ^a	11/11	The site consists of an area approximately 5 x 15 m (16 x 50 ft) that contains railroad components including stockpiled ties, rails, and spikes.	b
IU6-128 ^a	11/11	The site consists of railroad components. There are approximately 150 rails stockpiled in an area 15 x 80 m (50 x 260 ft).	b
IU6-190 ^a	8/11	The identified feature is a concrete posthole support of approximately 0.5 m ³ (0.6 yd ³) in volume. It is located approximately 9 m (30 ft) east of Route 2.	b
IU6-231 ^a	8/11	The site consists of an area approximately 15 m (50 ft) in diameter with approximately 10 m ³ (13 yd ³) of concrete debris. It appears to be from a farmstead.	b
IU6-372 ^a	8/11	The site consists of railroad rails. There are approximately 10 to 12 rails of varying lengths in an area 3 x 10 m (10 x 33 ft).	b
IU6-434 ^a	8/11	The identified feature is a 209 L (55 gal) drum with an open top. It is located near the river and it appears to be full of soil.	b
600-180 ^c	5/13	Debris associated with the suspected White Bluffs Automotive Repair Shop.	b
600-239 ^c	4/12	Debris in Pit 16	b

Table 1. 100-IU-2/IU-6 Miscellaneous Restoration Debris Items. (2 Pages)

Orphan Site Evaluation Identification	Date Removed (mo/yr)	Description	Debris Quantity (US tons)
600-263 ^c	5/13	Piles of cans of white powder.	^b

^a Source from OSR-2008-0001, *100-IU-2 and 100-IU-6 Areas Orphan Sites Evaluation Report*.

^b All quantities combined from the 100-IU-2/IU-6 areas are estimated to equal 474.1 US tons.

^c Source from Letter 166371, "Identification of Miscellaneous Restoration Items for IU2 and IU6 Including Segment 4 and 5."

Figure 3. Removal of Small Debris by Hand.



Figure 4. Size Reduction of Larger Debris.



Figure 5. Loadout of Miscellaneous Debris.



2.2 100-IU-2 AREA

Debris from six sites located in the 100-IU-2 area was removed between October and November 2011, using methods previously described. Examples of debris (transite and concrete) removed from the 100-IU-2 area are shown in Figures 6 and 7.

Figure 6. IU2-078 Miscellaneous Transite Debris.



Figure 7. IU2-271 Miscellaneous Concrete Debris.



In addition, debris from two WIDS sites with a reclassification status of rejected was also removed. The 600-180 "White Bluffs Suspect Automotive Repair Shop" contained scattered metal, glass, and wood debris; and the 600-263 "Pile of Cans and White Powder" site contained seven cans of calcium hydride used to produce hydrogen for weather balloons (Figures 8 and 9).

Figure 8. 600-180 White Bluffs Suspect Automotive Repair Shop Debris.



Figure 9. 600-263 Pile of Cans and White Powder Debris.



2.3 100-IU-6 AREA

Debris from 11 MR debris items located in the 100-IU-6 area was removed in August and November 2011, using methods as described above. Examples of 100-IU-6 removed debris (concrete and wood) are shown in Figures 10 and 11.

Figure 10. IU6-231 Miscellaneous Concrete Debris.



Figure 11. IU6-122 Miscellaneous Wood Debris.



In addition, debris from one WIDS site with a reclassification status of "No Action" was also removed. The 600-239 waste site is associated with the former Hanford Aggregate Pit 16 and included miscellaneous debris from the 615 Road Materials Batch Plant and other wood/steel construction materials. Documentation of the 600-239 debris removal is described in Interoffice Memorandum 168979, *Debris Removal from 600-239 WIDS Site*. Figures 12 and 13 are examples of 600-239 MR debris items identified for removal. Removal activities included use of front loaders and size reduction equipment. Figure 14 is a typical view of the area after removal activities.

Figure 12. 600-239 WIDS Site Miscellaneous Debris.



Figure 13. 600-239 WIDS Site Miscellaneous Debris.



Figure 14. 600-239 WIDS Site Post-Removal Photograph.



2.4 FENCING

Within the boundary of the 100-IU-6 area is the 600-350 WIDS site (Figure 15). This site was used to perform rain harvesting experiments conducted by the Pacific Northwest Laboratory. Fencing surrounding this waste site was identified for removal in correspondence from WCH to the DOE-RL in Letter 157277, "Identification of Miscellaneous Restoration Fence Removal Scope." Remedial action at the 600-350 waste site was performed in March and April 2011, which included removal of waste site debris and several hundred feet of perimeter fencing. Costs associated with the removal of the fence were incorporated into the remedial action of the waste site and are not included in this report.

Figure 15. 600-350 Waste Site Perimeter Fencing.



2.5 MISCELLANEOUS DEBRIS DISPOSAL

A total weight of 474.1 US tons of debris was collected from within the 100-IU-2/IU-6 areas. The debris was collected into Green (nonrad) ERDF roll-off containers using front-end loaders, back-hoes or track-hoes (Figure 5). All material was removed and transported to ERDF for final disposal from August through November 2011, with one exception. The debris associated with the 600-239 site was removed and disposed to ERDF in April 2012.

2.6 VERIFICATION OF REMOVAL

Upon completion of the removal and disposal of the miscellaneous debris items, as identified in Table 1, field walkdowns were performed to verify removal of the surface debris items. The DOE-RL area representative accompanied the WCH project manager into the field and observed locations where the debris items had been removed. The walkdowns were performed in January 2012 and November 2013 and documented in Correspondence Control Number (CCN) 168982 and 0651186, respectively.

3.0 PROJECT COST SUMMARY

This section presents a summary of the project costs associated with the removal and disposal of the 100-IU-2/6 MR debris items. The total combined cost of work performed for these MR activities was approximately \$120,600. As shown in Table 2, the average unit rate for work performed was approximately \$254/US ton. Removal costs include an estimated \$3,500 for revegetation activities.

Table 2. Cost Summary for Removal and Disposal of Miscellaneous Restoration Debris Items.

Debris Area	Waste Quantity (US tons)	Removal (\$K)	Disposal (\$K)	Total (\$K)	Average Cost (\$/US ton)
100-IU-2/6	474.1	114.5	6.1	120.6	254.4

The removal cost data represent the fully-burdened labor, equipment, and materials cost for the work performed. Data presented in this summary include project costs for removal and loadout, revegetation, waste transportation, and disposal at ERDF. The cost data does not include costs associated with removal action work plan document development or other work control documentation.

Details for the ERDF disposal costs (provided in Table 2) are based on an average unit rate of \$12.89/US ton (fiscal year 2012 disposal rate). Transportation costs to ERDF are included in the removal costs.

4.0 REFERENCES

- 0651186, 2013, "Management Walkthrough Observation Sheet, IU2/IU6 Miscellaneous Restoration Site Completion Walkdown", Washington Closure Hanford, Richland Washington, November 05.
- CCN 168979, 2012, "Debris removal from 600-239 WIDS site", Interoffice Memorandum to J. Fancher from J. Gale, Washington Closure Hanford, Richland Washington, December 11.
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- Letter 157277, 2011, "Identification of Miscellaneous Restoration Fence Removal Scope," external letter to J. J. Short, U.S. Department of Energy, Richland Operations Office, from S. L. Feaster, Washington Closure Hanford, Richland Washington, March 22.
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- OSR-2008-0001, 2010, *100-IU-2 and 100-IU-6 Areas Orphan Sites Evaluation Report*, Rev. 0, Washington Closure Hanford, Richland Washington.
- RL-TPA-90-0001, 2011, *Tri-Party Agreement Handbook Management Procedures*, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)," Rev. 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

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