

United States Government

Department of Energy  
Richland Operations Office**memorandum**

DATE: JUN 09 2015  
REPLY TO  
ATTN OF: AMRP:ETG\15-AMRP-0217  
SUBJECT: MISCELLANEOUS RESTORATION REPORT FOR 100-F/IU-2/IU-6 AREA –  
SEGMENT 1 AND SEGMENT 2  
TO: Memo to File

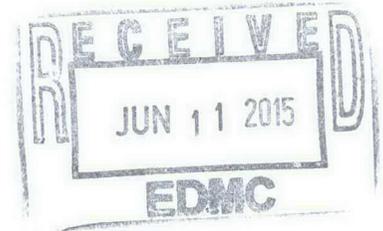
This purpose of this memo is to transmit the subject document to the Administrative Record. If you have any questions, please contact me at (509) 376-5828.



Ellwood T. Glossbrenner, Project Lead  
for the 100 Area Field Remediation

Attachment

cc w/attach:  
Administrative Record, H6-08



# **Miscellaneous Restoration Report for 100-F/IU-2/IU-6 Area - Segment 1 and Segment 2**

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

**June 2011**

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06/14/11 TOR

MRD-2011-0001  
Rev. 0

**STANDARD APPROVAL PAGE**

**Title:** Miscellaneous Restoration Report for 100-F/IU-2/IU-6 Area - Segment 1 and Segment 2

**Author Name:** C. S. Cearlock, Mission Completion

**Approval:** J. A. Lerch, Mission Completion

Signature J. A. Lerch

Date 6/8/2011

*The approval signatures on this page indicate that this document has been authorized for information release to the public through appropriate channels. No other forms or signatures are required to document this information release.*

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## ACRONYMS AND ABBREVIATIONS

CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
DOE	U.S. Department of Energy
ERDF	Environmental Restoration Disposal Facility
LIGO	Laser Interferometer Gravitational-Wave Observatory
MR	miscellaneous restoration
RCCC	River Corridor Closure Contract
RL	U.S. Department of Energy, Richland Operations Office
SIS	Stewardship Information System
WCH	Washington Closure Hanford

## 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-F/IU-2/IU-6 – Segment 1 and 2 Areas (Figure 1). The coverage for the Segment 1 area includes approximately 7,349 ha (18,161 ac). The coverage for the Segment 2 orphan sites evaluation includes an area of approximately 8,126 ha (20,080 ac).

WCH has implemented the miscellaneous restoration scope within the River Corridor Closure Contract (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 nonhazardous surface debris that are identified during orphan sites evaluations and include 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-*Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (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, wood, etc. General trash/garbage and small isolated pieces of debris are scattered throughout the Hanford Site and are not typically recorded.

### 1.2 REGULATORY REQUIREMENTS

Removal and disposal of miscellaneous items to support site completion is identified 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 the work plan, 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 include a description of the work performed; quantity of material removed and disposed, and cost information.

### 1.3 HISTORICAL ACTIVITIES

The Segment 1 and Segment 2 areas are part of the 100-F/IU-2/IU-6 geographical area within the River Corridor. The two segments do not contain any documented historical reactor/operational areas.

Historical activities that typically occurred within the Segment 1 area prior to 1943 (pre-Hanford) were limited to homestead and farming activities, mostly along the Columbia River to west of the 100-B/C Area. Pre-Hanford and Hanford-era railroad lines are also present within Segment 1 along with two military anti-aircraft gun sites that operated as part of the Hanford air defense system from 1950 to early 1958 (DOE/RL-97-1047, *The Hanford Site Historic District – Manhattan Project 1943-1946*). Figure 2 shows an overview map of Segment 1.

Figure 1. 100-F/IU-2/IU-6 Geographical Areas.

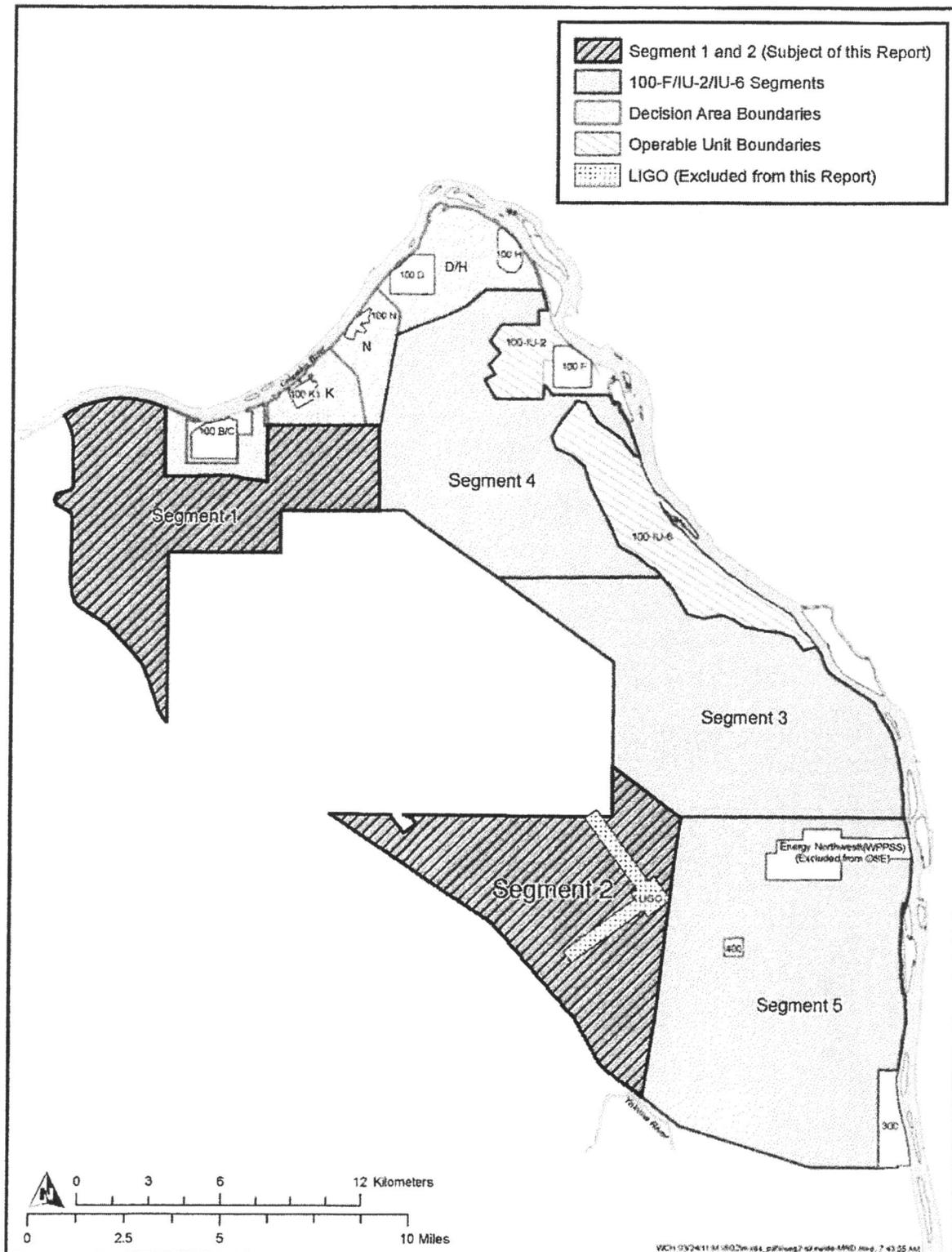
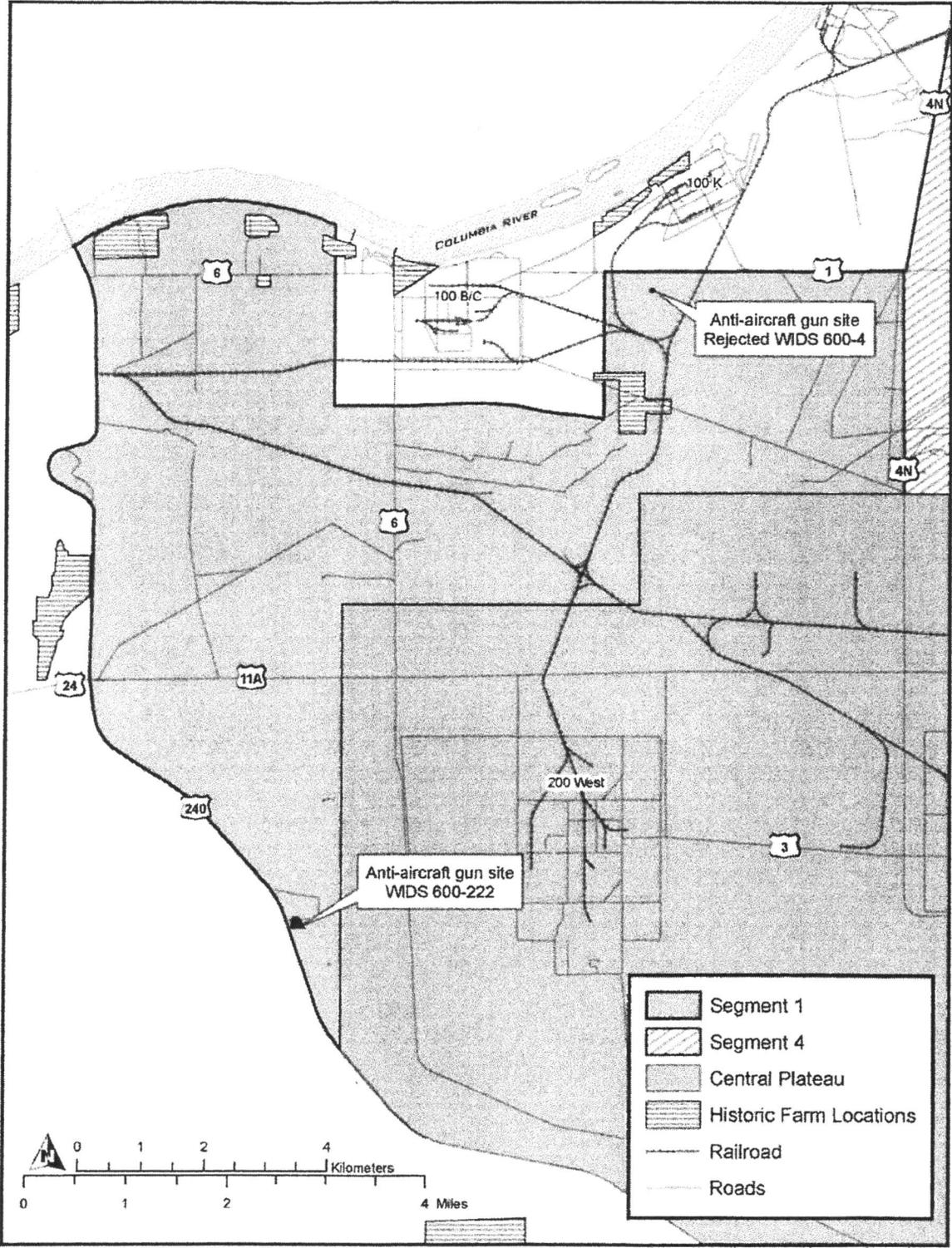


Figure 2. Segment 1 Coverage Area.



Historical activities that occurred within the Segment 2 area prior to 1943 (pre-Hanford) were limited to homestead activity in the northeast corner of Segment 2. No apparent farming (i.e., row crops and orchards) occurred in this area probably due to the soil conditions, which are primarily dune formations that are prevalent in Segment 2. The only significant activity is adjacent to the Segment 2 area and associated with the anti-aircraft gun site H-42 that operated as part of the Hanford air defense system from 1950 to early 1958 (DOE/RL-97-1047 and Drawing 18-02-36). Several waste sites are located in this area which is part of the Central Plateau's Outer Areas and are being addressed by other Hanford Site contractors. Figure 3 shows an overview map of Segment 2.

The Segment 2 area also includes a portion of land that contains the Laser Interferometer Gravitational-Wave Observatory (LIGO). The LIGO area was not included as part of the MR activities.

#### 1.4 KEY TERMS AND DEFINITIONS

**100-F/IU-2/IU-6 Area Segments:** The portion of the 100-F/IU-2/IU-6 geographical area that excludes the **reactor/operational areas**. The five segments consist of more than 49,410 ha (122,000 ac).

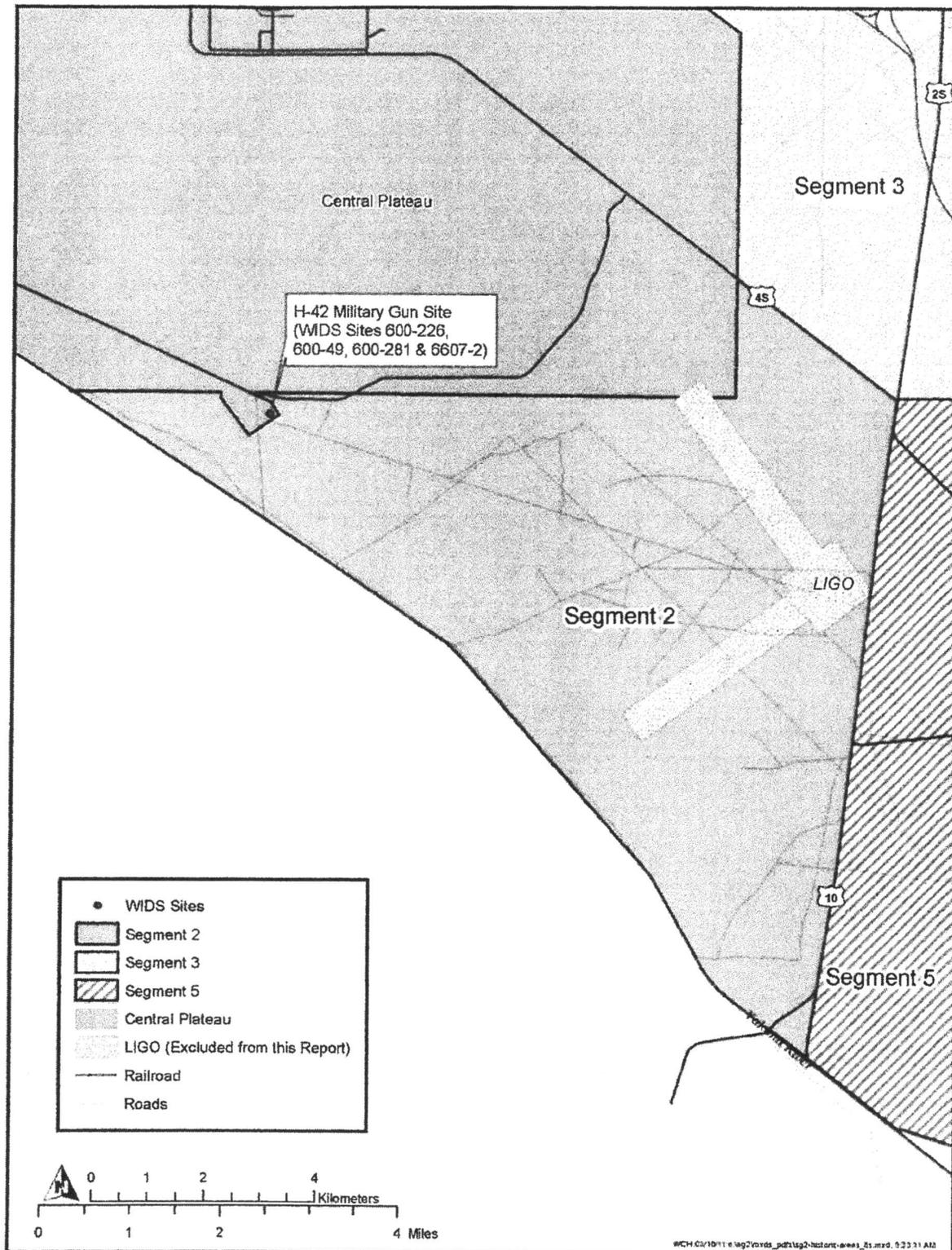
**Miscellaneous Restoration (MR):** An RCCC scope element that includes removing abandoned railroad lines, abandoned above-grade utilities, abandoned fences, and surface debris such as concrete that are not otherwise addressed by the CERCLA decision documents and which are considered contaminated or potentially contaminated with CERCLA hazardous waste. All below-ground debris and structures are excluded from the miscellaneous restoration scope. Miscellaneous restoration also excludes de minimus 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. 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 **miscellaneous restoration** 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 **100-F/IU-2/IU-6 Area segments** 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. For the purpose of conducting **orphan sites evaluations**, the **River Corridor** is subdivided into **reactor/operational areas** and **100-F/IU-2/IU-6 Area segments**.

Figure 3. Segment 2 Coverage Area.



**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 **miscellaneous restoration** 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 (SIS):** A Washington Closure Hanford (WCH) relational database consisting of three components: waste sites, facilities, and **orphan sites evaluations**. The SIS is a primary resource to capture information gathered through the **orphan sites evaluations**, demolition and removal of facilities, and cleanup of waste sites.

## 2.0 MISCELLANEOUS RESTORATION ACTIVITIES

The following section will describe the activities performed for each of the two segments. Specific summary reports regarding individual miscellaneous restoration debris item removal including photographs are also captured in the WCH SIS database.

### 2.1 SEGMENT 1 MISCELLANEOUS RESTORATION

A total of 12 MR surface debris items were removed in October and November 2010 within the Segment 1 area as identified in Table 1. These 12 items were initially identified as part of the orphan sites evaluation process and documented in OSR-2009-0002, *100-F/IU-2/IU-6 - Segment 1 Orphan Sites Evaluation Summary Report* and are shown in Figure 4. The final list of MR debris items identified for removal were provided in a correspondence from WCH to U.S. Department of Energy, Richland Operations Office (RL) (Letter 149233, "Identification of Inter-Areas Segment 1 Miscellaneous Restoration Items"). A total of 1 US ton of debris was removed from various locations within Segment 1 and disposed of at the Environmental Restoration Disposal Facility (ERDF) in November 2010. Note that for MR item SG-135 (debris associated with rejected waste site 600-4), only the metal debris was removed. The remaining large pile of wood timber debris was determined to be habitat during the ecological review and was not identified for removal. Because of the deminimus volumes of debris removed from the 12 MR locations, the sites did not require backfilling/regrading or revegetation.

In addition to the MR surface debris items, approximately 5.8 km (3.6 mi) of railroad track and ties were removed between the western boundary of Segment 1 (State Route 240) and the western boundary of the 100-B/C decision area as shown in Figure 4 and identified in Table 2. The specific sections of railroad identified for removal were provided in a correspondence from RL to WCH (Letter 139790, "Contract No. DE-AC06-05RL14655 - Hanford Rail System"). The railroad removal work in the Segment 1 area was performed from October to December 2010. The work included performing radiological scanning of the rail and substrate, removing the rail and associated railroad ties, salvaging of the rail offsite, and staging of the railroad ties at a location within the 100-B/C Area for future disposal at ERDF. The former railroad line was recontoured to restore positive drainage in December 2010 to complete the removal activity. Only a small portion (0.97 km [0.6 mi]) of the former railroad line was revegetated with seed and sagebrush tublings at the request of the Hanford Fire Department who wanted the remaining portion left as-is to serve as a fire break (CCN 155045, "Old Railroad Line Beds").

No other large-scale features or utilities were identified for removal. The railroad removal activities including debris quantities and costs will be documented in a separate MR summary report that will be developed after the completion of all railroad removal activities within the RCCC.

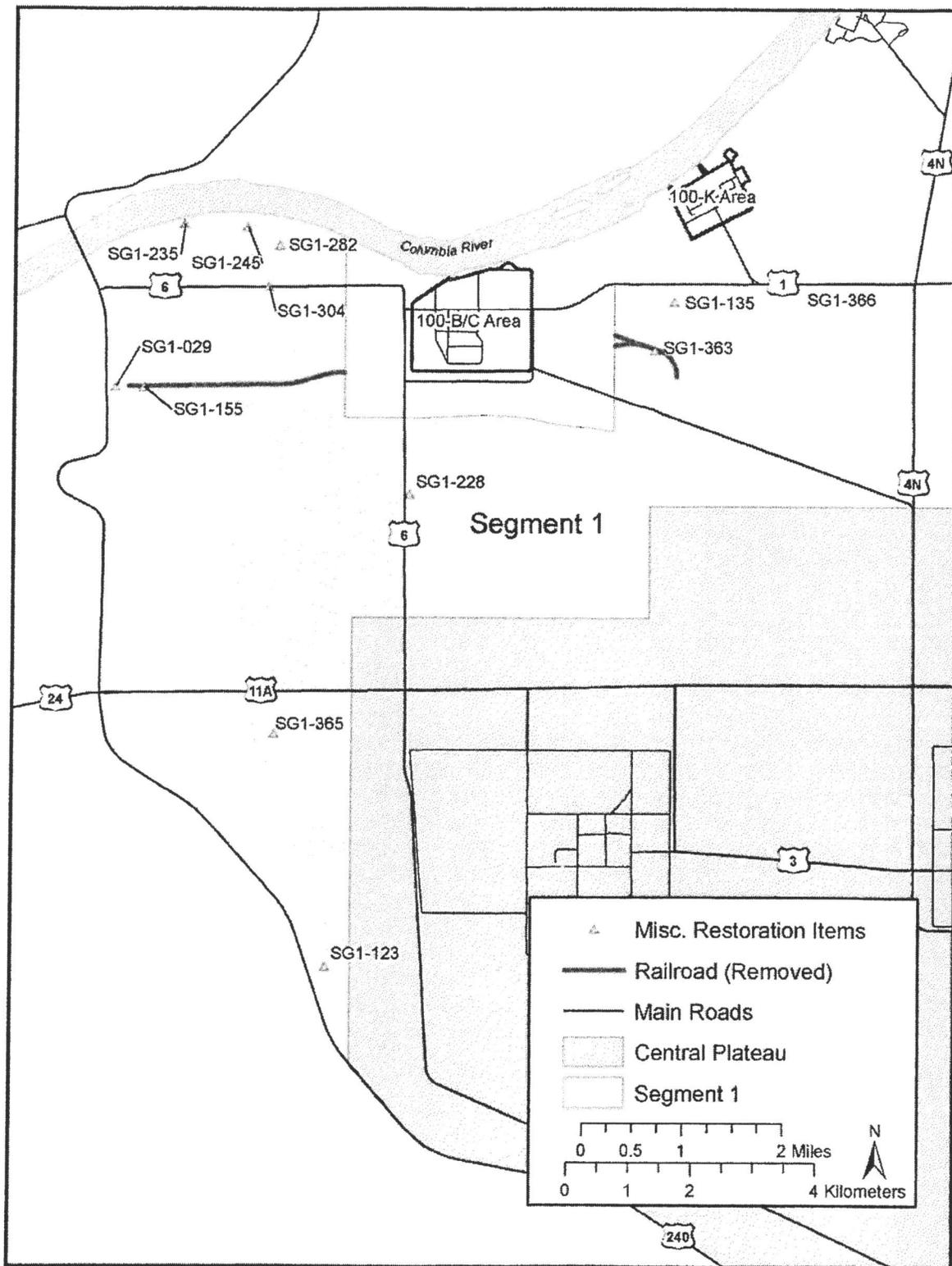
**Table 1. Segment 1 Miscellaneous Restoration Debris Items.**

Orphan Site Evaluation Identification <sup>a</sup>	Date Removed (month/year)	Description	Debris Quantity (US tons)
SG_1-029	October 2010	208-L (55-gal) drum	1.0 <sup>b</sup>
SG_1-123	November 2010	30-m area of scattered debris	b
SG_1-135	November 2010	75-m-diameter area of wood and metal debris at rejected waste site 600-4; only the metal debris was identified for removal	b
SG_1-155	October 2010	208-L (55-gal) drum in sagebrush	b
SG_1-228	October 2010	208-L (55-gal) drum	b
SG_1-235	October 2010	Empty 114-L (30-gal) drum	b
SG_1-245	October 2010	Empty 114-L (30-gal) drum	b
SG_1-282	October 2010	Scattered drums, buckets, and bare ground in a 50-m-diameter area	b
SG_1-304	October 2010	Empty 208-L (50-gal) drum cut down	b
SG_1-363	October 2010	208-L (55-gal) empty drum	b
SG_1-365	October 2010	Utility pole south of Route 11A	b
SG_1-366	October 2010	Utility pole south of Route 1	b

<sup>a</sup> Source from OSR-2009-002, *100-F/U-2/U-6 Area – Segment 1 Orphan Sites Evaluation Summary Report*.

<sup>b</sup> All quantities combined equaled 1 US ton.

Figure 4. Location of Miscellaneous Restoration Activities in Segment 1.



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**Table 2. Segment 1 Miscellaneous Restoration Large-Scale Features.**

Type	Dates Removed (month/year)	Estimated Quantity of Rail Removed (mi)	Poles (ea)	Wire with Equipment (linear ft)
Railroad	October 2010 – December 2010	3.6	-	-
Utilities	-	-	0	0

## 2.2 SEGMENT 2 MISCELLANEOUS RESTORATION

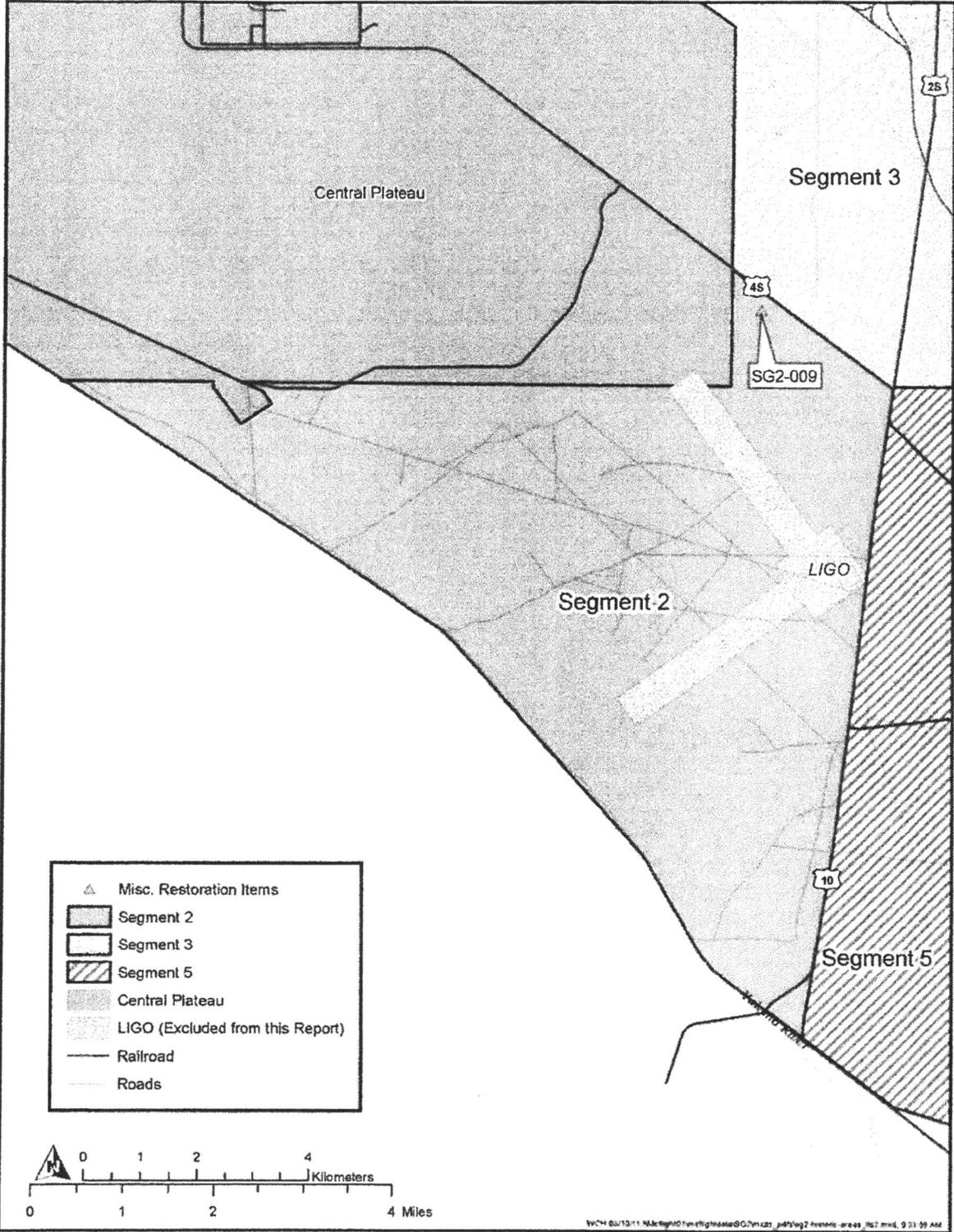
No large-scale features were identified for removal in the Segment 2 area. Only one MR debris item was removed in October 2010 within the Segment 2 area as identified in Table 3. The single item was identified as part of the orphan sites evaluation process and documented in OSR-2010-001, *100-F/IU-2/IU-6 Area - Segment 2 Orphan Sites Evaluation Summary Report*, and is shown in Figure 5. The final list of MR debris items identified for removal was provided in a correspondence from WCH to RL (Letter 154161, "Identification of Segment 2 Miscellaneous Restoration Items"). A total of 8.4 US tons of debris was removed and disposed of at ERDF in November 2010.

**Table 3. Segment 2 Miscellaneous Restoration Debris Items.**

Orphan Site Evaluation Identification <sup>a</sup>	Date Removed (month/year)	Description	Debris Quantity (US tons)
SG2-009	October 2010	Large former water storage tank and concrete foundation approximately 4,540 L (1,200 gal) and a 4-m-diameter concrete pad	8.4

<sup>a</sup> Source from OSR-2010-0001, *100-F/IU-2/IU-6 Area – Segment 2 Orphan Sites Evaluation Summary Report*.

Figure 5. Location of Miscellaneous Restoration Activities in Segment 2.



### 3.0 PROJECT COST SUMMARY

This section presents a summary of the project costs associated with the miscellaneous restoration removal activities performed in the Segment 1 and Segment 2 areas. The total cost of work performed for both the Segment 1 and Segment 2 MR activities was approximately \$16,700. As shown in Table 4, the unit rates for work performed ranged from approximately \$790/US ton to approximately \$10,000/US ton. The cost average differs significantly from Segment 1 and Segment 2 primarily due to the respective size of the MR items and the geographic distance between debris items. The Segment 1 items were smaller and more dispersed throughout the entire area, whereas the single Segment 2 item was of large size and in a single location.

The cost data are intended to represent the fully burdened cost for the work performed, including all applicable direct and indirect overhead charges. Data presented in this summary include project costs for removal and loadout, waste transportation and disposal at the ERDF, and backfill and revegetation costs (where applicable). Costs include fully burdened labor, equipment and materials, and subcontract services. The cost data do not include costs associated with removal action work plan document development, detailed designs, or subcontract package development.

Details for the ERDF transportation and disposal costs provided in Table 4 are based on an average unit rate of \$22.51/US ton. Debris quantities are based on quantities obtained from the WCH Waste Management Information System.

**Table 4. Summary of Miscellaneous Restoration Debris Removal and Disposal Costs for Segment 1 and Segment 2.**

Debris Area	Waste Quantity (US tons)	Removal (\$K)	Waste Disposal (\$K)	Total (\$K)	Average Cost (\$/US ton)
Segment 1 <sup>a</sup>	1.0	10	0.02	10.02	10,022
Segment 2	8.4	6.46	0.19	6.65	790

<sup>a</sup> The railroad removal activities including debris quantities and costs will be documented in a separate miscellaneous restoration summary report that will be developed after the completion of all railroad removal activities within the River Corridor Closure Contract.

#### 4.0 REFERENCES

- CCN 155045, 2010, "Old Railroad Line Beds," email to S. L. Feaster, Washington Closure Hanford, and M. S. French, U.S. Department of Energy from J. Short, U.S. Department of Energy, Richland Operations Office, Richland, Washington, December 1.
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 U.S.C. 9601, et seq.
- DOE/RL-97-1047, 2002, *The Hanford Site Historic District—Manhattan Project 1943-1946*, Rev. 0, U.S. Department of Energy, Richland, Operations Office, Richland, Washington.
- DOE/RL-2010-34, 2010, *Removal Action Work Plan for River Corridor General Decommissioning Activities*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- Letter 139790, 2008, "Contract No. DE-AC06-05RL14655 – Hanford Rail System," external letter to C. G. Spencer, Washington Closure Hanford, from R. A. Stimmel, U.S. Department of Energy, Richland Operations Office, Richland, Washington, June 5.
- Letter 149233, 2010, "Identification of Inter-Areas Segment 1 Miscellaneous Restoration Items," external letter to J. J. Short, U.S. Department of Energy, Richland Operations Office, from S. L. Feaster, Washington Closure Hanford, Richland, Washington, February 24.
- Letter 154161, 2010, "Identification of Segment 2 Miscellaneous Restoration Items," external letter to J. J. Short, U.S. Department of Energy, Richland Operations Office, from S. L. Feaster, Washington Closure Hanford, Richland, Washington, November 3.
- OSR-2009-0002, 2009, *100-F/IU-2/IU-6 Area - Segment 1 Orphan Sites Evaluation Report*, Draft A, Washington Closure Hanford, Richland, Washington.
- OSR-2010-0001, 2010, *100-F/IU-2/IU-6 Area - Segment 2 Orphan Sites Evaluation Report*, Rev. 0, Washington Closure Hanford, Richland, Washington.
- RL-TPA-90-0001, 2007, *Tri-Party Agreement Handbook Management Procedures*, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)," Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

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