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ADDENDUM TO THE CERTIFICATION REPORT FOR AREA 1, PHASE II

FERNALD CLOSURE PROJECT
FERNALD, OHIO

MARCH 2005

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

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REVISION 0
ADDENDUM 3

REVISION SUMMARY

Revision	Date	Description of Revision
Revision 0	9-28-00	Initial controlled issuance.
PCN 1	11-7-00	Correction of inaccurate reference to failed CUs in Paragraph 1 of the Executive Summary, an incorrectly reported analytical result unit on Page 3-3 and information on the failed CUs in Section 5.1.5.
Addendum 1	1-22-02	Created to include coverage of the Equipment Wash Facility, associated drainage line, and the immediate surrounding area.
Addendum 2	7-1-04	Revised to include updated statistics for CU A1P2-S3HR-04 due to debris discovered during site preparation excavation activities for the construction of the OSDF Cell 7 and 8 liners.
Addendum 3	3-1-05	Revised to include coverage of the footprint of the Debris Haul Road, which is located north of the former OSDF Equipment Wash Facility.

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LIST OF ACRONYMS AND ABBREVIATIONS

A1PII	Area 1, Phase II
ASCOC	area-specific constituent of concern
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CU	certification unit
DHR	Debris Haul Road
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
EWF	Equipment Wash Facility
FCP	Fernald Closure Project
FRL	final remediation level
mg/kg	milligrams per kilogram
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
pCi/g	picoCuries per gram
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
VSL	validation support level

EXECUTIVE SUMMARY

This addendum to the Area 1, Phase II (A1PII) Certification Report (DOE 2000a) presents the information and data used by the U.S. Department of Energy (DOE) to determine that existing soil concentrations do not exceed the final remediation levels in the footprint of the Debris Haul Road, located just north of the former On-Site Disposal Facility Equipment Wash Facility. On the basis of this reported information and supporting project files, DOE has determined that no additional remedial actions are required in this area of the site. Upon approval from the regulatory agencies, DOE intends to proceed with future land use activities.

A discussion of previous A1PII certification efforts and certification criteria are provided in the main report. This addendum focuses on the former Debris Haul Road, which has been remediated and will be considered certified when the U.S. Environmental Protection Agency (EPA) and the Ohio Environmental Protection Agency (OEPA) agree that the certification criteria have been met.

The certification samples were analyzed at laboratories on the Fernald Closure Project (FCP) Approved Laboratories List per the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ, DOE 1998a). All these samples were analyzed and reported at the required analytical support level. Analytical data packages included sample results with associated quality assurance/quality control data and all applicable raw data. The data were also subjected to the required validation and verification process, which did not identify any significant quality concerns.

DOE has restricted access to certified areas in order to maintain their integrity prior to final land use development. A FCP procedure (EP-0008) has been developed to implement a process to protect certified areas from becoming recontaminated.

1.0 INTRODUCTION

1.1 PURPOSE

This addendum to the Area 1, Phase II (A1PII) Certification Report presents the information and data used by the U.S. Department of Energy (DOE) to determine that existing soil contamination does not exceed the final remediation levels (FRLs) within the footprint of the Debris Haul Road located north of the former On-Site Disposal Facility (OSDF) Equipment Wash Facility (EWF), as shown on Figure 1-1. This addendum presents certification results for the certification unit (CU) identified in the addendum to the A1PII Certified for Reuse Areas, Trap Range, Sector 2C, and Sector 3 Certification Design Letter (CDL, DOE 2004).

1.2 SCOPE AND AREA DESCRIPTION

This Certification Report addendum documents certification activities for the footprint of the Debris Haul Road that was located north of the former OSDF EWF. Certification of this area is necessary prior to construction of the OSDF Cell 4 cap. As shown on Figure 1-1, the area to be certified encompasses the footprint of the Debris Haul Road, located north of the former OSDF EWF.

The Debris Haul Road was used to support placement activities in the OSDF. Certification of this area is being included in the scope of A1PII due to its proximity to the former OSDF EWF, which was certified under A1PII.

1.3 OBJECTIVES

The objectives of this Certification Report addendum are to:

- Describe the certification approach, field activities and data analyses used to support the certification process for the areas covered in this addendum
- Describe access controls implemented to prevent recontamination.

1.4 REPORT FORMAT

A summary of pertinent information from the three previous certification reports and previous CDLs is provided in the main CDL (DOE 2000b), along with supporting data. This addendum focuses on information pertaining to the former Debris Haul Road; refer to the main document for additional A1PII certification details (DOE 2000a).

1.5 FCP CERTIFICATION MASTER MAP

In order to track certification and characterization for reuse areas at the Fernald Closure Project (FCP), DOE has included a controlled map (Figure 1-2) showing the status of the soil remediation areas and phased areas with all Certification Reports and CDLs. Note that this figure has been revised to show the certification status of the CU that encompasses the former Debris Haul Road.

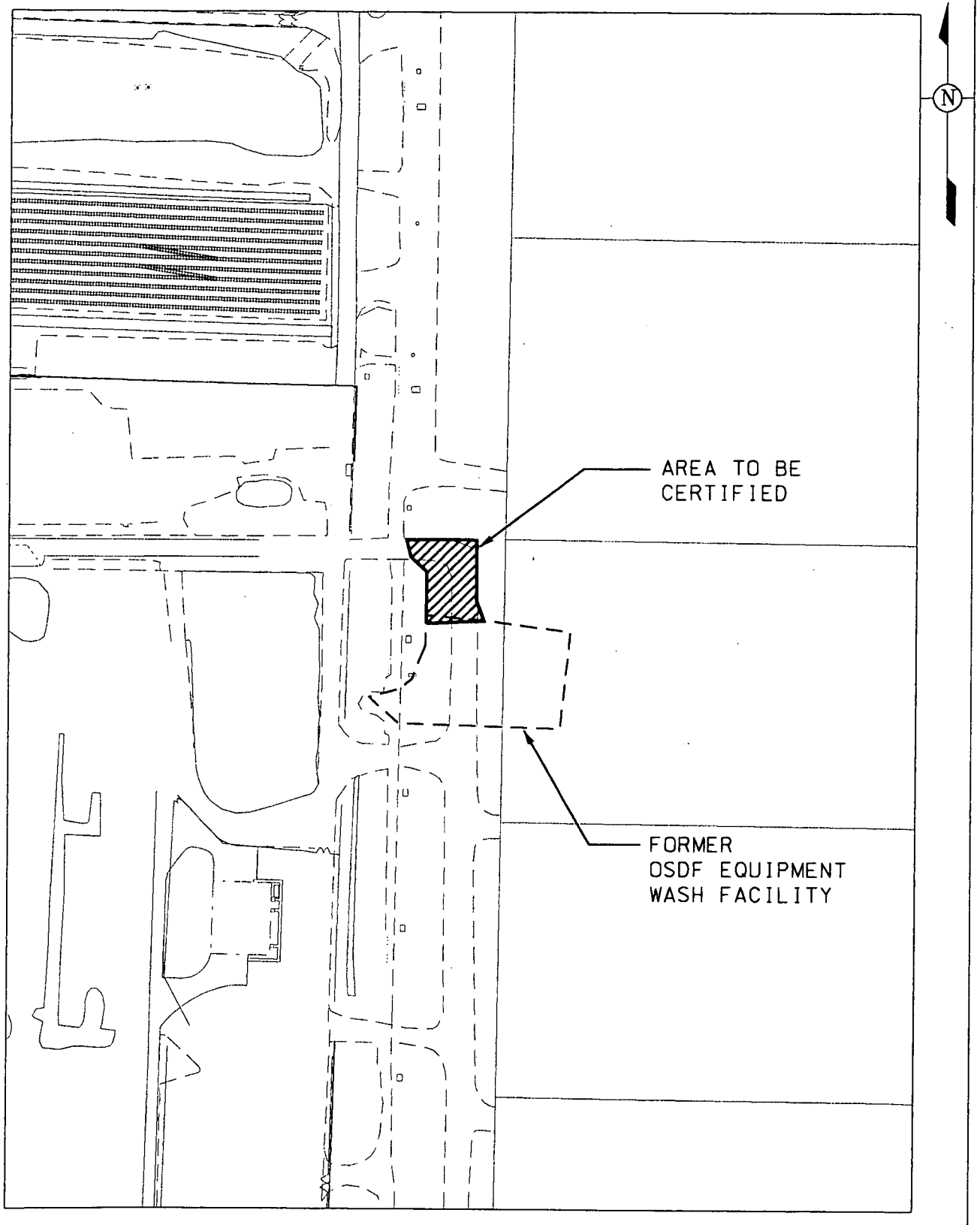

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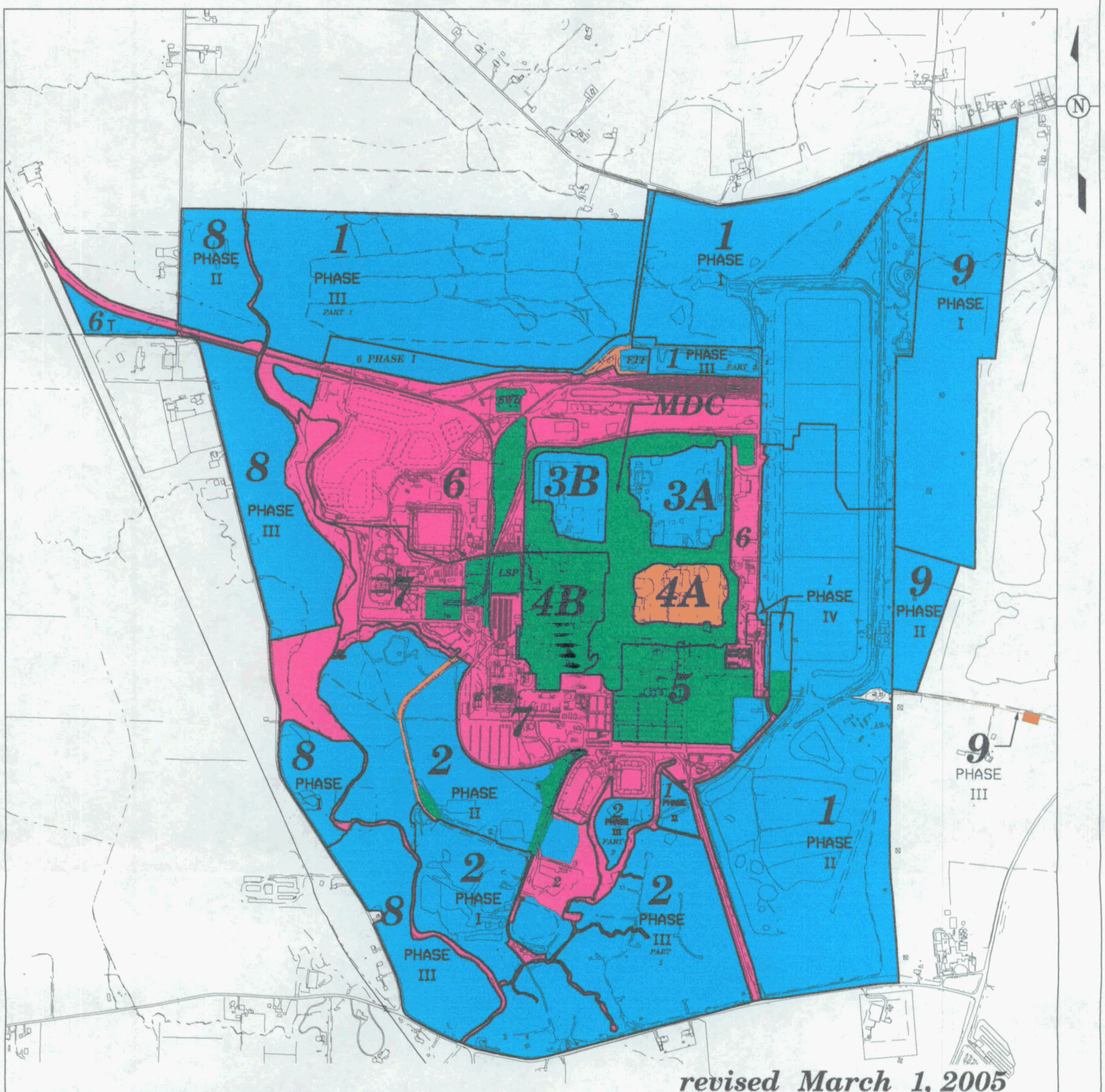
FIGURE 1-1. FORMER DEBRIS HAUL ROAD LOCATION



revised March 1, 2005

AREAS	TOTAL ACRES	APPROVED CERT. ACRES	CERT. ACRES IN PROGRESS	REMEDIATION ACRES IN PROGRESS	PREDESIGN ACRES IN PROGRESS	REMAINING ACRES
AREA 1	395.0	393.3	0	1.7	0	0
AREA 2	175.0	160.4	1.7	3.9	8.9	0
AREA 3A/4A	26.9	16.4	10.6	0	0	0
AREA 3B/4B	31.0	11.1	0	19.9	0	0
AREA 5	26.9	3.2	0	23.8	0	0
AREA 6	142.0	18.8	1.4	7.7	114.1	0
AREA 7	84.2	0	0	7.2	77.0	0
AREA 8	98.9	98.9	0	0	0	0
AREA 9	0.75	0	0	0	0	0.75•
MDC	36.5	0	0	36.5	0	0
PR/SSOD/PPDD	32.3	0	0	0	32.3	0
TOTAL ON SITE	1049.5	702.0	13.7	100.7	232.3	0.75
AREA 9	85.6	84.5	1.1	0	0	0
TOTAL OFF SITE	85.6	84.5	1.1	0	0	0

• ONSITE AREA9 REMAINING ACRES INCLUDE THE DISSOLVED OXYGEN FACILITY AREA. THE INTERIM LEACHATE LINE CORRIDOR IS INCLUDED IN AREA 6.

AIPI ROADS EXCLUDED FROM CERTIFICATION IDENTIFIED AS: .

AREA 10 INCLUDES PIPELINES RELATED TO GROUNDWATER REMEDIATION AND OTHER UTILITIES NOT SPECIFICALLY LISTED.

SCALE

1100 550 0 1100 FEET

FIGURE 1-2. FCP CONTROLLED CERTIFICATION MAP

2.0 CERTIFICATION APPROACH

2.1 CERTIFICATION DESIGN

The certification design for the CDL, the area-specific constituent of concern (ASCOC) selection process, and statistical analyses are summarized in the main Certification Report. The general certification strategy is described in Section 3.4 of the Sitewide Excavation Plan (SEP, DOE 1998b).

2.1.1 Certification Design for the Debris Haul Road CU

The certification design followed the general approach outlined in Section 3.4 of the SEP. CU A1P2-DHR is a group1 CU that is being certified for construction of the OSDF Cell 4 cap. The CU design and sample locations are shown on Figure 2-1.

2.2 ASCOCs

The ASCOC selection process for this CU is described in the addendum to the CDL. The ASCOCs are listed in Table 2-1.

2.3 STATISTICAL ANALYSIS

The statistical analysis of certification samples is discussed in Appendix G of the SEP, and specific statistical analyses pertinent to A1PII are provided in the main Certification Report.

TABLE 2-1
ASCOC LIST FOR THE DEBRIS HAUL ROAD CU

ASCOC	FRL	Reason Retained
Total Uranium	82 mg/kg	Retained as primary ASCOC
Radium-226	1.7 pCi/g	Retained as primary ASCOC
Radium-228	1.8 pCi/g	Retained as primary ASCOC
Thorium-228	1.7 pCi/g	Retained as primary ASCOC
Thorium-232	1.5 pCi/g	Retained as primary ASCOC
Arsenic	12 mg/kg	Retained as a secondary ASCOC
Beryllium	1.5 mg/kg	Retained as a secondary ASCOC
Lead	400 mg/kg	Retained as a secondary ASCOC

mg/kg – milligrams per kilogram
pCi/g – picoCuries per gram

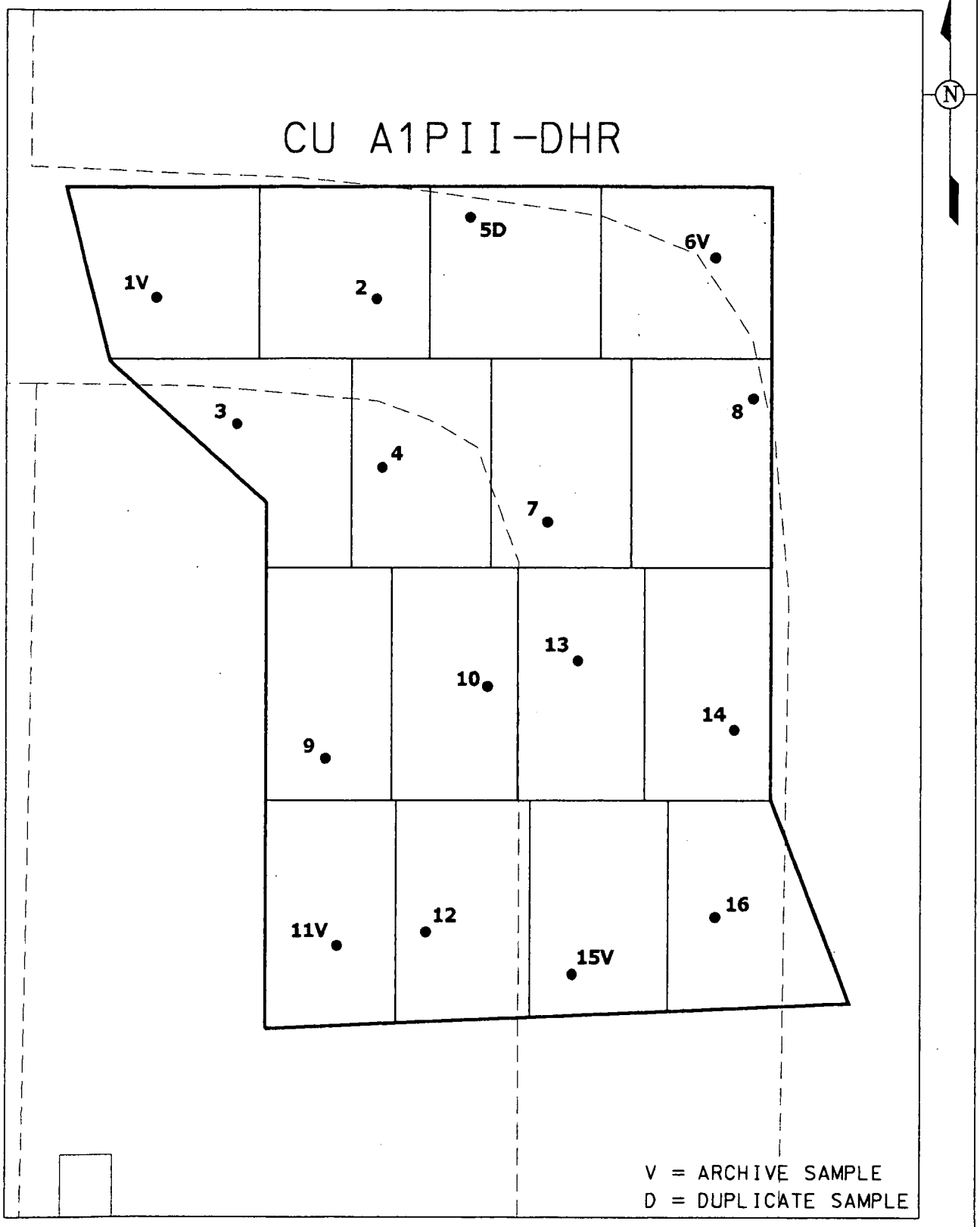


FIGURE 2-1. A1PII-DHR CU BOUNDARY AND CERTIFICATION SAMPLE LOCATIONS

3.0 OVERVIEW OF FIELD ACTIVITIES

This section is limited to information not presented in previous certification reports. The section specifically presents information related to the Debris Haul Road, as discussed in the addendum to the CDL for A1PII Certified for Reuse Areas, Trap Range, Sector 2C, and Sector 3.

3.1 PRECERTIFICATION ACTIVITIES

Phase 1 and Phase 2 real-time scans were conducted in November 2004. For the precertification real-time data collected, results showed all total uranium, radium-226, and thorium-232 were below the target levels [three times (3x) FRL for total uranium and thorium-232; seven times (7x) FRL for radium-226]. Based upon results of the real-time scans, it was determined that certification of the soil could be completed.

3.2 CERTIFICATION ACTIVITIES

Certification sampling of CU A1P2-DHR was completed in November 2004. The sample locations were generated by dividing each CU into 16 approximately equal sub-CUs, then randomly selecting northing and easting coordinates within each sub-CU boundary. Four of the 16 sub-CUs were designated as archive sample locations but samples were collected from all 16 sample locations. The samples were collected from the top 0 to 0.5-foot interval of soil.

4.0 ANALYTICAL METHODOLOGIES, DATA VALIDATION PROCESSES AND DATA REDUCTION

4.1 ANALYTICAL METHODOLOGIES

The analytical methodologies used for A1PII samples are described in the main Certification Report.

4.2 DATA VERIFICATION AND VALIDATION

For this project, all of the data were reviewed and validated for all criteria noted in the main Certification Report. Per project requirements, a minimum of 10 percent of the certification data were validated to Validation Support Level (VSL) D. This validation included the same review process as for VSL B, but included a systematic review of the raw data and recalculations.

4.3 DATA REDUCTION

Each sample used to support the certification decision was entered in the FCP Sitewide Environmental Database (SED) with field, laboratory and validation information as described in the main Certification Report. Based on this information, the following actions were taken for data reduction of the CU data set.

1. All the data for each CU were queried from the SED. All the data were used even if the CU had more than the minimum required data points
2. The data from the validation fields were used for statistical calculations
3. Data with a qualifier of R or Z was not used in the statistical calculations
4. The highest of the two duplicate results was used in the statistical calculations
5. One half of the non-detect (U or UJ) values were used in the statistical calculations.

5.0 CERTIFICATION EVALUATION AND CONCLUSIONS

5.1 CERTIFICATION RESULTS, ISSUES AND EVALUATIONS

The validated results from CU A1P2-DHR were subjected to statistical analysis as described in the SEP. All initial results were below the FRL except for a single arsenic result. At sample location A1P2-DHR-5, the result for arsenic was elevated at 98.8 mg/kg, while the field duplicate at the same location was below the FRL with a result of 8.7 mg/kg. Table 5-1 presents the statistical analysis of the original data and shows the result that is greater than two times the FRL. A request was made to have the sample re-prepped and reanalyzed in triplicate, which produced results of 6.8 mg/kg, 7.9 mg/kg, and 8.9 mg/kg. The reanalyzed results are inline with the field duplicate as well as the entire arsenic data set for the CU. The offsite laboratory indicated that for the original analysis, a non-homogenous small aliquot of sample was likely the reason for the anomalous result.

Because the initial elevated arsenic result could not be reproduced, it was considered to be non-representative of the sample and therefore discounted. The three replicate samples were substituted in the statistical analysis and were treated as "duplicates" for the purposes of statistical protocols. Therefore, the highest of the three results was used in the calculations just as is done with true field duplicates. The resulting statistical analysis demonstrates that this CU passes all certification requirements with no above-FRL conditions. Table 5-2 presents this secondary statistical analysis for arsenic.

5.2 CERTIFICATION CONCLUSIONS

DOE has determined that the remedial objectives in the Operable Unit 5 Record of Decision (DOE 1996) have been achieved for the A1PII CU addressed in this addendum, and no further remedial actions are required. Upon EPA and OEPA concurrence, this area will be released for final land use.

TABLE 5-1
STATISTICAL ANALYSIS FOR CU A1P2-DHR

SAMPLE_ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Arsenic	Beryllium	Lead
A1P2-DHR-10	0.990 -	0.794 -	0.795 -	0.794 -	3.48 -	6.6 J	0.73 -	10.6 J
A1P2-DHR-12	1.100 -	0.822 -	0.815 -	0.822 -	4.43 -	8.8 J	0.91 -	14.1 J
A1P2-DHR-13	0.948 -	0.707 -	0.715 -	0.707 -	4.75 -	7.0 J	0.76 -	11.8 J
A1P2-DHR-14	0.941 -	0.893 -	0.902 -	0.893 -	4.50 -	7.6 J	0.76 -	12.1 J
A1P2-DHR-16	0.811 -	0.644 -	0.656 -	0.644 -	2.07 J	9.5 J	1.10 -	15.5 J
A1P2-DHR-2	0.646 -	0.512 -	0.502 -	0.512 -	4.55 J	12.0 J	0.35 -	8.5 J
A1P2-DHR-3	0.870 -	0.671 -	0.686 -	0.671 -	4.83 -	6.6 J	0.61 -	10.3 J
A1P2-DHR-4	0.932 -	0.672 -	0.682 -	0.672 -	0.0909 U	9.9 J	1.10 -	16.9 J
A1P2-DHR-5	0.764 -	0.712 -	0.704 -	0.712 -	12.7 -	98.8 J	0.40 -	42.2 J
A1P2-DHR-5-D	0.875 -	0.650 -	0.661 -	0.650 -	13.8 -	8.7 J	0.63 -	17.7 J
A1P2-DHR-7	0.893 -	0.569 -	0.556 -	0.569 -	4.63 -	7.5 J	0.59 -	11.6 J
A1P2-DHR-8	1.15 -	0.995 -	0.990 -	0.995 -	4.95 -	8.5 J	0.72 -	13.4 J
A1P2-DHR-9	0.838 -	0.738 -	0.750 -	0.738 -	3.02 J	4.5 J	0.75 -	9.6 J
Limit	1.7	1.8	1.7	1.5	82.0	12.0	1.5	400.0
Units	mg/kg	pCi/g	pCi/g	pCi/g	ug/g	mg/kg	mg/kg	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.15	0.995	0.99	0.995	13.8	98.8	1.1	42.2
Max. >= Limit	Yes	No	No	No	No	Yes	No	No
W-statistic Prob. #	--	--	--	--	--	< 0.01% (LN)	--	--
Test Procedure	--	--	--	--	--	Median (Sign)	--	--
Sample Size	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	1	0	0	0
% Nondetects	0.0%	0.0%	0.0%	0.0%	8.3%	0.0%	0.0%	0.0%
Est. Mean*	--	--	--	--	--	8.05	--	--
UCL	--	--	--	--	--	9.50	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	Pass	--	--

a posteriori Sample	--	--	--	--	--	9	--	--
Size calculation	--	--	--	--	--	Pass	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption. The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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TABLE 5-2
SECONDARY STATISTICAL ANALYSIS FOR ARSENIC IN CU A1P2-DHR

SAMPLE_ID	Arsenic
A1P2-DHR-10	6.6 J
A1P2-DHR-12	8.8 J
A1P2-DHR-13	7.0 J
A1P2-DHR-14	7.6 J
A1P2-DHR-16	9.5 J
A1P2-DHR-2	12.0 J
A1P2-DHR-3	6.6 J
A1P2-DHR-4	9.9 J
A1P2-DHR-5 (RE)	6.8 -
A1P2-DHR-5 (RE)	7.9 -
A1P2-DHR-5 (RE)	8.9 -
A1P2-DHR-7	7.5 J
A1P2-DHR-8	8.5 J
A1P2-DHR-9	4.5 J
Limit	12.0
Units	mg/kg
Conf. Level	90%
Max. Result	12.0
Max. >= Limit	Yes
W-statistic Prob. #	94.7% (N)
Test Procedure	Normal
Sample Size	12
Nondetects	0
% Nondetects	0.0%
Est. Mean*	8.12
UCL	8.88
Prob. > Limit	- -
Pass / Fail	pass

a posteriori Sample Size calculation	2 Pass

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption. The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

6.0 PROTECTION OF CERTIFIED AREAS

DOE has restricted access to certified areas in order to maintain their integrity prior to transferal for final land use. FCP procedure EP-0008 has been developed to implement a process to protect certified areas from becoming recontaminated.

The procedure is summarized as follows:

- At the initiation of certification sampling activities for a remediation area, temporary fencing will be installed to delineate the perimeter of the "certified" area
- Signs will be posted upon the temporary perimeter fencing to require access approval for entry into the "certified" area
- To gain access to the "certified" area, the individual(s) or project desiring admittance will submit a written request to the responsible project manager
- Any equipment to be used within the "certified" area must have been clean in accordance with FCP certified area access procedure subsequent to any use in a uncertified areas; or for any work, before entry into a "certified" area
- FCP management team representatives must instruct general employees/operators on the entry and exit requirements for a "certified" area.

After DOE, EPA, and OEPA agree that an area is certified, the area will be transferred for final land use. At that time, best management practices and administrative controls will be used to protect the area from contamination, and other controls will be implemented as needed.

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