006226

Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
Springdale, Ohio 45246

OCT 24

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0027-07

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF ADDENDUM 1 TO THE CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6 FORMER PRODUCTION AREA AND MAIN DRAINAGE CORRIDOR AREA FOR THE CERTIFICATION OF THE FORMER SOIL PILE-8 AREA

Reference: "Certification Design Letter and Certification Project Specific Plan for Area 6 Former Production Area and Main Drainage Corridor Area," Document 20810-PSP-0010, dated January 2006

Enclosed for your review and approval is Addendum 1 to the Certification Design Letter and Certification Project Specific Plan for Area 6 Former Production Area and Main Drainage Corridor Area for the Certification of the Former Soil Pile-8 Area.

If you have any questions or require additional information, please contact me at (513) 648-3139.

Sincerely,

For J.W. Reising

Johnny W. Reising
Director

Enclosure

cc w/enclosure:
J. Desormeau, DOE-OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosure)
G. Jablonowski, USEPA-V, SRF-5J
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
S. Helmer, ODH
AR Coordinator, Fluor Fernald, Inc./MS6

cc w/o enclosure:
J. Chiou, Fluor Fernald, Inc./MS88
F. Johnston, Fluor Fernald, Inc./MS12
C. Murphy, Fluor Fernald, Inc./MS1
T. Terry, Fluor Fernald, Inc./MS1

ADDENDUM 1 TO THE CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6 FORMER PRODUCTION AREA AND MAIN DRAINAGE CORRIDOR AREA FOR THE CERTIFICATION OF THE FORMER SOIL PILE-8 AREA

FERNALD CLOSURE PROJECT
FERNALD, OHIO

OCTOBER 2006

U.S. DEPARTMENT OF ENERGY

20810-PSP-0010
REVISION 0
ADDENDUM 1

REVISION SUMMARY

Revision	Date	Description of Revision
0	1/18/06	Initial controlled issuance.
Addendum 1	10/23/06	Revised to include certification of the former Soil Pile-8 area.

ADDENDUM 1 TO THE CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6 FORMER PRODUCTION AREA AND MAIN DRAINAGE CORRIDOR AREA FOR THE CERTIFICATION OF THE FORMER SOIL PILE-8 AREA

Document Number 20810-PSP-0010
Revision 0, Addendum 1

October 2006

APPROVAL:

Jyh-Dong Chiou, Project Manager Environmental Closure Project	Date
Rich Abitz, Characterization Manager Environmental Closure Project	Date
Tom Buhrlage, Sampling Manager Environmental Closure Project	Date
Reinhard Friske, Quality Assurance/Quality Control Safety, Health and Quality Division	Date

FERNALD CLOSURE PROJECT

Fluor Fernald, Inc.
P.O. Box 538704
Cincinnati, Ohio 45253-8704

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LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	Area-specific constituent of concern
ASL	Analytical Support Level
BTV	benchmark toxicity value
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CRDL	contract required detection limit
CU	certification unit
CVAA	Cold Vapor Atomic Absorption
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
ECOC	ecological COC
EDD	electronic data deliverable
EPA	U.S. Environmental Protection Agency
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FRL	final remediation level
GC/MS	gas chromatography/mass spectroscopy
ICP/MS	inductively coupled plasma/mass spectroscopy
LSC	liquid scintillation counting
µg/L	micrograms per Liter
MDL	minimum detectable level
mg/kg	milligrams per kilogram
NAD83	North American Datum of 1983
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU	Operable Unit
pCi/g	picoCuries per gram
PAHs	polyaromatic hydrocarbons
PCB	polychlorinated biphenyl
PSP	Project Specific Plan
QA/QC	Quality Assurance/Quality Control
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RTIMP	Real-Time Instrumentation Measurement Program
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SP-8	Soil Pile-8
SPL	Sample Processing Laboratory
SVOC	semi-volatile organic compound
SWL	Solid Waste Landfill
TAL	Target Analyte List

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

TAT	turnaround-time
UCL	Upper Confidence Limit
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
VSL	Validation Support Level
WAC	Waste Acceptance Criteria
WAO	Waste Acceptance Organization

EXECUTIVE SUMMARY

This addendum to the Certification Design Letter (CDL) and Certification Project Specific Plan (PSP) for Area 6 Former Production Area and Main Drainage Corridor Area and is a combination of the CDL and Certification PSP for the former Soil Pile-8 (SP-8) Area into one document. This document describes the certification design, sampling, analysis, and validation for the former SP-8 Area. Certification demonstrates that area-specific constituents of concern (ASCOCs) meet the risk based final remediation levels (FRLs). The following information is included:

- The boundary and a description of the area to be certified under the guidance of this document;
- A discussion of historical data from the areas proposed for certification;
- A discussion of the ASCOC selection process and list of ASCOCs assigned to the former SP-8 Area;
- A presentation of the certification unit boundaries and proposed sampling strategy;
- Details of certification sampling, analysis, and validation that will take place;
- The analytical requirements and the statistical methodology that will be employed; and
- The proposed schedule for the certification activities.

The scope of this addendum is limited to the former SP-8 Area, as shown on Figure 1-1. Remediation of this area was completed in 2006, thus initiating the certification process described herein.

The certification design presented in this document follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (DOE 1998). The subject area has been characterized through previous sampling investigations and FRL scanning with real-time equipment as well as physical sampling for non-radiological constituents.

The selection process for the ASCOCs was accomplished using constituent of concern (COC) lists from the Operable Unit 5 Record of Decision (DOE 1996), previous investigation data, and process knowledge. The former SP-8 Area consists of one certification unit as shown on Figure 4-1. Total uranium, thorium-228, thorium-232, radium-226, and radium-228 (the sitewide primary radiological COCs) are considered ASCOCs for all of the CUs. Additionally, secondary COCs are identified for this CU based on the various source areas. Ecological COCs will be analyzed as needed.

Upon completion of the certification activities described in this document, an addendum to the associated Certification Report will be issued.

1.0 INTRODUCTION

This addendum to the Certification Design Letter (CDL)/Certification Project Specific Plan (PSP) for Area 6 Former Production Area and Main Drainage Corridor Area describes the certification design, sampling, analysis, and validation necessary to demonstrate that soil in the former Soil Pile 8 (SP-8) Area has met the final remediation levels (FRLs) for all area-specific constituents of concern (ASCOCs). Certification demonstrates that ASCOCs meet the risk-based FRLs. The format of this document follows guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998) and SEP Addendum (DOE 2001a). Accordingly, it consists of ten sections:

1.0 Introduction - Presentation of the purpose, objectives, and scope of this CDL addendum

2.0 Historical and Precertification Data - Presentation and discussion of historical soil data and presentation of precertification data from the former SP-8 Area

3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for the former SP-8 Area

4.0 Certification Design and Sampling Program - Presentation of design, surveying, sampling and analytical methodologies

5.0 Schedule

6.0 Quality Assurance/Quality Control Requirements - Presents the field Quality Control (QC), analytical, and data validation requirements

7.0 Health and Safety

8.0 Disposition of Waste

9.0 Data Management

References

1.1 OBJECTIVES

The primary objectives of this document are to:

- Define the boundary of the area to be certified under the guidance of this CDL/Certification PSP addendum;
- Define the ASCOC selection process and list the selected ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Present the details of certification sampling, analysis and validation that will take place;
- Summarize the analytical requirements and the statistical methodology employed;
- Present maps for acquired real-time precertification data; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

The area to be certified is the former SP-8 Area, which is located within Area 6. The scope of this CDL/Certification PSP addendum includes details of certification sampling, analysis and validation that will take place. Figure 1-1 depicts the boundary and location of the area to be certified.

Just as with other areas, certification of Area 6 is being performed in several phases. This document only pertains to the former SP-8 Area. Other portions of Area 6 will be or have been submitted for certification under separate documentation.

Field activities for the area to be certified are consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. The certification sampling program as discussed in Section 4.0 of this document is consistent with Data Quality Objective (DQO) SL-052, Revision 3, which is included as Appendix C.

The former SP-8 Area is bordered to the north by the railyard, the On-Site Disposal Facility (OSDF) to the east, the Former Production Area to the south, and the Railyard Drainage Basin Area to the west. The SP-8 Area was used as a temporary storage area for above-waste acceptance criteria (WAC) soil and debris from various excavations around the site. In addition to temporary storage, the area was also used as a loadout area for off-site disposal via rail as well as a satellite area for the decontamination of smaller pieces of equipment used in contamination areas.

The former SP-8 Area was originally certified under the CDL and Certification PSP for Area 6 Former Production Area and Main Drainage Corridor (DOE 2006a). The results from this certification effort were submitted under the Certification Report for Area 6 Former Production Area and Main Drainage Corridor Area (DOE 2006b). While a geosynthetic liner was placed in the area prior to storage and loadout activities, the soil underneath the liner is being recertified to ensure the storage, loadout, and decontamination activities did not impact the underlying soil.

The ASCOCs for the CUs in the former SP-8 Area are total uranium, thorium-228, thorium-232, radium-226, and radium-228 [the sitewide primary radiological constituents of concern (COCs)]. Secondary COCs are also identified for specific CUs within the area to be certified. Ecological COCs will be analyzed as needed.

1.3 KEY PROJECT PERSONNEL

Key project personnel responsible for performance of the project are listed in Table 1-1.

TABLE 1-1
KEY PROJECT PERSONNEL

Title	Primary	Alternate
Department of Energy (DOE) Contact	Johnny Reising	Jane Powell
Project Manager	Jyh-Dong Chiou	Rich Abitz
Characterization Manager	Rich Abitz	Denise Arico
Former SP-8 Area, and Surrounding Areas Characterization Lead	Denise Arico	Krista Flaugh
RTIMP Manager	Mike Frank	Dale Seiller
Field Sampling Manager	Tom Buhrlage	Mike Frank
Surveying Contact	Bernie Kienow	Andy Clinton
WAO Contact	Christa Walls	None
Laboratory Contact	Paul McSwigan	Amy Meyer
Data Validation Contact	Baohe Chen	Baohe Chen
Field Data Validation Contact	Jim Chambers	TBD
Data Management Lead	Denise Arico	Krista Flaugh
FACTS/SED Database Contact	Mark Turner	Susan Marsh
Quality Assurance Contact	Reinhard Friske	Darren Wessel
Safety and Health Contact	Garner Powell	Jeff Middaugh

FACTS - Fernald Analytical Computerized Tracking
RTIMP - Real-Time Instrumentation Measurement Program
SED - Sitewide Environmental Database
WAO - Waste Acceptance Organization

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STATE PLANAR COORDINATE SYSTEM 1983

23-OCT-2006

FIGURE 1-1. SP-8 AREA FOOTPRINT

2.0 HISTORICAL AND PRECERTIFICATION DATA

In accordance with the SEP, prior to conducting precertification and certification activities, all soil demonstrated to contain contamination above the associated FRLs or other applicable action levels must be evaluated for remedial actions.

Immediately following loadout activities at SP-8, the synthetic liner was removed and disposed of off site. The rail spur under which loadout activities took place was also removed. Final grade excavation monitoring/sampling and real-time scanning/sampling data have been collected pursuant to the Remedial Investigation/Feasibility Study and remedial activities.

Before initiating the certification process, all historical soil data from the former SP-8 Area were pulled from the SED. The data is summarized in Section 2.1.

Based on the results of sampling and scanning activities summarized in Section 2.1, it has been determined that no further remedial actions are necessary to remove above-FRL or above-WAC soil.

2.1 FORMER SOIL PILE-8 AREA

2.1.1 Historical, Predesign and Excavation Control

The historical and predesign data for the SP-8 Area were presented in the Implementation Plan for Area 3A/4A (DOE 2001b) and the Implementation Plan for Area 6 Former Production Area (DOE 2005). As stated in Section 1.2, the SP-8 Area was previously certified, and the certification data are presented in the Certification Report for Area 6 Former Production Area and Main Drainage Corridor Area.

2.1.2 Precertification

Following removal of the synthetic liner at the SP-8 Area, precertification activities were conducted to evaluate residual radiological contamination patterns as specified per guidelines established in Section 3.3.3 of the SEP, as well as the PSP for Excavation Control and Precertification of Area 6 Waste Pits and General Area (Supplement to 20300-PSP-0011) (DOE 2003). During the real-time scanning activities, several instances of above-FRL radium-226 conditions were found to be present. Excavation activities continued as directed by the conditions identified by the real-time scans until passing. Precertification real-time scanning results are provided in Appendix A.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the Operable Unit 5 (OU5) Record of Decision (ROD, DOE 1996), there are 80 soil COCs with established FRLs. These COCs were retained for further investigation based on a screening process that considered the presence of the constituent in site soil and the potential risk to a receptor exposed to soil containing this contaminant. In spite of the conservative nature of this COC retention process, many of the COCs with established FRLs have a limited distribution in site soil or the presence of the COC is based on high contract required detection limits (CRDLs). When FRLs were established for these COCs in the OU5 ROD, the FRLs were initially screened against site data presented on spatial maps to establish a picture of potential remediation areas.

By reviewing existing Remedial Investigation/Feasibility Study data presented on spatial distribution maps and performing a preliminary risk assessment, the sitewide list of soil COCs in the OU5 ROD was reduced from 80 to 30. This reduction was possible because the majority of the COCs with FRLs listed in the OU5 ROD have no detections above their corresponding FRL and there is no significant risk associated with these COCs, thus eliminating them from further consideration. The 30 remaining sitewide COCs account for over 99 percent of the combined risk to a site receptor model, and they comprise the list from which all of the remediation ASCOCs are drawn. When planning certification for a remediation area, additional selection criteria are used to derive a subset of these 30 COCs. This subset of COCs is passed along to the certification process.

3.1 SELECTION CRITERIA

All of the sitewide primary ASCOCs (total uranium, radium-226, radium-228, thorium-232, and thorium-228) will be retained as ASCOCs for certification. The selection process for retaining secondary ASCOCs for a remediation area is driven by applying a set of decision criteria. A soil contaminant will be retained as an ASCOC if:

- It is listed as a soil COC in the OU5 ROD, and it is listed as an ASCOC in Table 2-7 of the SEP for the Remediation Area of interest;
- It is listed as a COC for a hazardous waste management unit or underground storage tank that lie within the certified area boundary;
- Analytical results show that a contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated CRDLs;
- It can be traced to site use, either through process knowledge or known release of the constituent to the environment; or
- Physical characteristics of the contaminant, such as degradation rate and volatility, indicate it is likely to persist in the soil between time of release and remediation.

Using the above process, the ASCOCs were refined to those listed in Table 2-7 of the SEP. The list of ASCOCs for Area 6 are presented in Table 3-1.

3.2 ASCOC SELECTION PROCESS

3.2.1 Soil Pile-8 Area ASCOC Selection

As the SP-8 footprint has been a staging area for all material that either did not meet the OSDF WAC or was excavated following closure of the OSDF, all sitewide ASCOC listed in Table 2-7 of the SEP were evaluated for their relevance to the SP-8 footprint. Additional COCs not identified on Table 2-7 have also been evaluated due to process knowledge of material staged in the SP-7 footprint. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the SP-8 Area CUs. Additional secondary COCs have been retained in this area due to historical above-WAC or above-FRL results as well as former land use. The complete list of COCs that are going to be retained for certification can be found in Table 3-3.

TABLE 3-1
ASCOC LIST FOR REMEDIATION AREA 6

ASCOC	FRL (*BTV*)
Radionuclides	
Total Uranium	82 mg/kg
Radium-226	1.7 pCi/g
Radium-228	1.8 pCi/g
Thorium-228	1.7 pCi/g
Thorium-232	1.5 pCi/g
Cesium-137	1.4 pCi/g
Thorium-230	280 pCi/g
Technetium-99	29.1 pCi/g
Inorganics	
Antimony	96 mg/kg
Arsenic	12 mg/kg
Beryllium	1.5 mg/kg
Cadmium	96 mg/kg
Fluoride	78,000 mg/kg
Silver	29,000 mg/kg
Organics	
Aroclor-1254	0.13 mg/kg
Aroclor-1260	0.13 mg/kg
Benzo(a)anthracene	20 mg/kg (*1.0 mg/kg*)
Benzo(a)pyrene	2 mg/kg (*1.0 mg/kg*)
Benzo(b)fluoranthene	20 mg/kg (*1.0 mg/kg*)
Benzo(g,h,i)perylene	(*1.0 mg/kg*)
Benzo(k)fluoranthene	200 mg/kg (*1.0 mg/kg*)
Bromodichloromethane	4.0 mg/kg
Chrysene	2000 mg/kg (*1.0 mg/kg*)
Dibenzo(a,h)anthracene	2 mg/kg (*0.088 mg/kg*)
1,1-Dichloroethene	0.41 mg/kg
Dieldrin	0.015 mg/kg
Fluoranthene	(*10 mg/kg*)
Heptachloradibenzo-p-dioxins	0.00088 mg/kg
Indeno(1,2,3-cd)pyrene	20 mg/kg (*1.0 mg/kg*)
Octachlorodibenzo-p-dioxin	0.0088 mg/kg
Phenanthrene	(*5 mg/kg*)
Pyrene	(*10 mg/kg*)
Tetrachloroethene	3.6 mg/kg

BTV - benchmark toxicity level
mg/kg - milligrams per kilogram
pCi/g - picoCuries per gram

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TABLE 3-2
ASCOC LIST FOR THE FORMER SP-8 AREA

Area 6 ASCOCs	Retained As ASCOC?	Justification
Radiological		
Radium-226	Yes	Retained as primary ASCOC
Radium-228	Yes	Retained as primary ASCOC
Thorium-228	Yes	Retained as primary ASCOC
Thorium-232	Yes	Retained as primary ASCOC
Total Uranium	Yes	Retained as primary ASCOC
Cesium-137	Yes	Potential contaminant staged at SP-8
Lead-210	Yes	Known contaminant staged at SP-8
Neptunium-237	Yes	Potential contaminant staged at SP-8
Technetium-99	Yes	Known contaminant staged at SP-8
Thorium-230	Yes	Known contaminant staged at SP-8
Dioxins		
Heptachlorodibenzo-p-dioxins	No	No above-FRL results present
Octachlorodibenzo-p-dioxins	No	No above-FRL results present
Inorganics		
Antimony	Yes	Is an ECOC per Appendix C of the SEP
Arsenic	Yes	Above-FRL results in the SWL area
Barium	Yes	Potential contaminant staged at SP-8
Beryllium	Yes	Above-FRL results in the SWL area
Cadmium	Yes	Is an ECOC per Appendix C of the SEP
Chromium	Yes	Potential contaminant staged at SP-8
Lead	Yes	Potential contaminant staged at SP-8
Mercury	Yes	Potential contaminant staged at SP-8
Molybdenum	Yes	Is an ECOC per Appendix C of the SEP
Selenium	Yes	Potential contaminant staged at SP-8
Silver	Yes	Potential contaminant staged at SP-8
Fluoride	No	No above-FRL results present
Pesticides/PCBs		
Aroclor-1254	Yes	Known contaminant staged at SP-8
Aroclor-1260	Yes	Known contaminant staged at SP-8
Dieldrin	Yes	Potential contaminant staged at SP-8
PAHs		
Benzo(a)anthracene	Yes	Potential contaminant staged at SP-8
Benzo(a)pyrene	Yes	Potential contaminant staged at SP-8
Benzo(b)fluoranthene	Yes	Potential contaminant staged at SP-8

TABLE 3-2
ASCOC LIST FOR THE FORMER SP-8 AREA

Area 6 ASCOCs	Retained As ASCOC?	Justification
PAHs (Continued)		
Benzo(g,h,i)perlene	Yes	Potential contaminant staged at SP-8
Benzo(k)fluoreanthene	Yes	Potential contaminant staged at SP-8
Dibenzo(a,h)anthracene	Yes	Potential contaminant staged at SP-8
Fluorenanthene	Yes	Potential contaminant staged at SP-8
Chrysene	Yes	Potential contaminant staged at SP-8
Indeno(1,2,3-cd)pyrene	Yes	Potential contaminant staged at SP-8
Phenanthrene	Yes	Potential contaminant staged at SP-8
Pyrene	Yes	Potential contaminant staged at SP-8
Volatile Organic Compounds		
Bromodichloromethane	Yes	Potential contaminant staged at SP-8
1,1-Dichloroethene	Yes	Potential contaminant staged at SP-8
1,2-Dichloroethene	Yes	Potential contaminant staged at SP-8
Methylene Chloride	Yes	Potential contaminant staged at SP-8
Tetrachloroethene	Yes	Potential contaminant staged at SP-8
Toluene	Yes	Potential contaminant staged at SP-8
1,1,1-Trichloroethane	Yes	Potential contaminant staged at SP-8
Trichloroethene	Yes	Potential contaminant staged at SP-8
Xylenes, total	Yes	Potential contaminant staged at SP-8

ECOC - ecological COC
PAHs - polyaromatic hydrocarbons
PCBs - polychlorinated biphenyl
SWL - Solid Waste Landfill

TABLE 3-3
FINAL ASCOCs FOR THE SP-8 AREA

Primary COCs	Secondary COCs	
Radium-226	Cesium-137	Bromodichloromethane
Radium-228	Neptunium-237	1,1-Dichloroethene
Thorium-228	Lead-210	1,2-Dichloroethene
Thorium-232	Technetium-99	Methylene Chloride
Total Uranium	Thorium-230	Tetrachloroethene
		Toluene
	Antimony	1,1,1-Trichloroethane
	Arsenic	Trichloroethene
	Barium	Xylenes, total
	Beryllium	
	Cadmium	Benzo(a)anthracene
	Chromium	Benzo(a)pyrene
	Lead	Benzo(b)fluoranthene
	Mercury	Benzo(g,h,i)perlene
	Molybdenum	Benzo(k)fluoreanthene
	Selenium	Dibenzo(a,h)anthracene
	Silver	Fluorenanthene
		Chrysene
	Aroclor-1254	Indeno(1,2,3-cd)pyrene
	Aroclor-1260	Phenanthrene
	Dieldrin	Pyrene

1

4.0 CERTIFICATION DESIGN AND SAMPLING PROGRAM

4.1 CERTIFICATION DESIGN

The intent of this certification effort is to certify the soil within the former SP-8 Area. The certification design for these areas follows the general approach outlined in Section 3.4 of the SEP. The CU design is shown and sample locations are depicted on Figure 4-1. One Group 1 CU was designed to represent the former SP-8 Area. As discussed in Section 3.0 of this document, the five primary ASCOCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained in this CU as well as various other secondary ASCOC as outlined in Table 3-3.

4.1.1 Certification Unit Design

The former SP-8 Area consists of one Group 1 CUs that was designed based on former land use and encompasses the storage area, the rail spur associated with loadout, the satellite decontamination area, and the associated basin that collected runoff from all areas.

4.1.2 Sample Location Design

The selection of certification sampling locations was conducted according to Section 3.4.2 of the SEP. The CU was first divided into 16 approximately equal sub-CUs. Sample locations were then generated by randomly selecting an easting and northing coordinate within the boundaries of each sub-CU, then testing those locations against the minimum distance criteria of the CU. If the minimum distance criteria were not met, an alternative random location was selected for that sub-CU and all the locations were re-tested. This process continued until all 16 random locations met the minimum distance criteria.

The planned sub-CUs and planned certification sampling locations are shown on Figure 4-1. One sample location per CU is designated with a "D", indicating a field duplicate sample collection location. The sample locations and field duplicate sample locations are identified in Appendix B.

Prior to commencement of certification sampling field activities, all certification sample locations will be surveyed and field verified to make sure no surface obstacles would prevent sample collection at the planned location. Locations may be moved if a subsurface obstacle prevents sample collection. Requirements for moving a certification sample location are discussed below in Section 4.2.

4.2 SURVEYING

Before certification sampling activities begin, the North American Datum of 1983 (NAD83) State Planar coordinates for each selected sampling location will be surveyed and identified in the field with a flag. All locations will be field verified to ensure no surface obstacles will prevent collection at the planned location.

The former SP-8 Area CU boundaries and sample locations are shown on Figure 4-1. Appendix B shows the coordinates for the certification sampling locations, all of which meet the minimum distance criterion.

4.3 PHYSICAL SOIL SAMPLE COLLECTION

4.3.1 Sample Collection

Soil samples will be collected according to procedure SMPL-01, Solids Sampling, using 3-inch diameter, 6-inch long, plastic or stainless steel liners. At the discretion of the Field Sampling Lead, samples may be collected using alternative methods specified in SMPL-01, as long as sufficient volume is collected from the appropriate depth to perform the prescribed analyses. If necessary, the soil core shall be divided and placed into the proper sample containers. Samples will be collected from the 16 sample locations in the CU, including one field duplicate sample. Upon completion of sample collection, boreholes will be collapsed and no additional abandonment is necessary.

Quality control sample requirements will include a duplicate field sample, a trip blank, and a container blank and/or rinsate, and will be collected per procedure SMPL-21, Collection of Field Quality Control Samples. For the duplicate field sample, twice the soil volume (a second core) will be collected at one location in the CU, and will not be homogenized with the original sample. The location that requires the collection of a duplicate sample is identified in Appendix B. A trip blank will be collected each day that volatile organic compound (VOC) samples are collected, or one per 20 VOC samples that are collected, or one per cooler that will be shipped, whichever is more frequent. Depending on the sample collection method used, container blanks or rinsates will be collected. A container blank will be collected prior to sample collection and at the conclusion of sample collection for this entire certification project. All samples will be assigned unique sample identification numbers. Additional information regarding quality control requirements can be found in Section 6.1.

If a subsurface obstacle prevents sample collection at the specified location, it can be moved according to the following guidelines:

- The distance moved must be as small as possible (less than 3 feet);
- It must remain within the boundary of the same CU and sub-CU, and must still meet the minimum distance criterion; and
- If the distance moved is greater than 3 feet, the move must be documented in a Variance/Field Change Notice (V/FCN), considered as significant, which will be approved by the agencies prior to collection.
- Anytime a location is moved, the appropriate figure should be used to determine the best direction to move the point to adhere to the above guidelines. The Characterization Manager or designee should be contacted when a sample location is moved. All final sampling locations will be documented in the addendum to the Certification Report for this area.

Customer sample numbers and FACTS identification numbers will be assigned to all samples collected. The sample labels will be completed with sample collection information, and technicians will complete a Field Activity Log (FAL), a Sample Collection Log, and a Chain of Custody/Request for Analysis form in the field prior to submittal of the samples.

All soil samples from the CU with like analyses (including the field duplicate) will be batched and submitted to the Sample Processing Laboratory (SPL) under one set of Chain of Custody/Request for Analysis forms which will represent one analytical release. The container blank and/or rinsate will be listed on a separate Chain of Custody/Request for Analysis form. No alpha/beta screens will be required, as historical information can be used for shipping purposes.

4.3.2 Equipment Decontamination

Decontamination is performed to prevent the introduction of contaminants from sampling equipment to subsequent soil samples. Field Technicians will ensure that sampling equipment (core tubes and caps) has been decontaminated prior to transport to the field. As described in SMPL-01, all sampling equipment will have been decontaminated before it is transported to the field site, and the 6-inch core liners will be decontaminated using the Level II (Section K.11 of the SCQ) procedure upon receipt from the manufacturer. Decontamination is also necessary in the field if sampling equipment is reused. If an alternate sampling method is used, equipment will be decontaminated between collections of sample intervals, and again after the sampling performed under this PSP is completed. Following decontamination, clean disposable wipes may be used to replace air-drying of the equipment.

4.3.3 Physical Sample Identification

Each soil certification sample will be assigned a unique sample identification number as *Remediation Area-CU Number/Identifier-Location^Analysis-QC,* where:

A6	=	Sample collected from Area 6
SP8	=	Soil Pile-8 Area
C01	=	Certification sample representing the 1st certification unit from the area (all subsequent CUs will be consecutively numbered)
Location	=	Sample Location number within each CU (1 through 16)
^	=	Separates Location from Analysis Identifier
Analysis	=	"R" indicates radiological analysis, "L" indicates a volatile analysis, "M" indicates a metals analysis, "P" indicates a PCB/pesticides analysis, and "S" indicates a semi-volatile analysis.

QC = Quality control sample, if applicable. A "D" indicates a field duplicate sample; "Y" indicates a container blank sample; "TB" indicates a trip blank, and "X" indicates a rinsate.

For example, a field duplicate sample taken from the second sample location from CU A6-SP8-C02 for radiological, metals, PCB, and PAH analysis would be identified as A6-SP8-C02-2^RMPS-D. It should be noted that the "^" symbol should not be included in the sample number for container blanks, rinsates, and trip blanks. Additionally, the CU number should be identified for trip blanks, rinsates, or container blanks from which they are collected. For example, a trip blank collected for sampling at CU A6-SP8-C01 shall be identified as A6-SP8-C01-1-L. The sample identifiers are as presented in Appendix B.

4.4 ANALYTICAL METHODOLOGY

All soil samples from the CU with like analyses (including the field duplicate) will be batched and submitted to the SPL under one set of Chain of Custody/Request for Analysis forms which will represent one analytical release. Container blanks will be listed on a separate Chain of Custody/Request for Analysis form but may be batched together in one analytical release.

All samples will be prepared for shipment to off-site laboratories per procedure 9501, Shipping Samples to Off-site Laboratories. Samples will only be shipped to off-site laboratories that are listed on the Fluor Fernald Approved Laboratories List. Historical data from the area will be used to ship the samples off site. The highest post-excavation total uranium result from this certification area is 99.5 mg/kg from boring A6SP7-NWDP-L2-3.

Samples collected for VOC analysis should be shipped to an off-site laboratory within 24 hours of sample collection. As soon as the samples arrive at the laboratory where the analysis will take place, all samples should be prepared for analysis (including homogenization), and radiological samples should be sealed to begin the in-growth period for radium analysis. A 10-day turnaround time (TAT) will be required for all analyses and data reporting. Therefore, a 7-day in-growth for all gamma analyses is required, with the electronic data deliverable being reported 10 days after laboratory receipt and the final data package being reported 14 days after laboratory receipt.

The sampling, analytical, and data reporting requirements are listed in Table 4-1 and the Target Analyte Lists (TAL) are shown in Table 4-2.

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. The CRDL is set to at least 20 percent of the FRL. Analyses will be conducted to either Analytical Support Level (ASL) D or E. All requirements for ASL E are the same as

for ASL D except the minimum detection level for the selected analytical method must be at least 20 percent of FRL.

A minimum of 10 percent of the laboratory data will be validated to Validation Support Level (VSL) D with the remainder validated to VSL B. Additional validation information can be found in Section 6.

4.5 STATISTICAL ANALYSIS

Once data are validated, results will be entered into the SED and a statistical analysis will be performed to evaluate the pass/fail criteria for each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP, and will be the same for this area as it has been for previous certification areas.

Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the first criterion compares the 95 percent upper confidence limit (UCL) on the mean of each primary ASCOC to its FRL, or the 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with the 95 percent UCL above the FRL for primary ASCOCs (or 90 percent UCL above the FRL results for secondary COCs) results in that CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the first criterion; the *a posteriori* test will be performed to determine whether the sample size is sufficient for a meaningful conclusion of this comparison. The second criterion, the hotspot criterion, is related to individual samples. An individual sample cannot be greater than three times the FRL or two times the FRL based on the area size (see Section 3.4.6 and Figure 3-11 of the SEP for further details). When the given UCL on the mean for each ASCOC is less than its FRL, and the hotspot criterion is met, the CU has met both criteria and will be considered certified.

In the event that the CU fails certification, the following scenarios will be evaluated: 1) a high variability in the data set, 2) localized contamination, and 3) widespread contamination. Details on the evaluation and responses to these possible outcomes are provided in Section 3.4.5 of the SEP. When all CUs within the scope of this CDL has passed certification, a Certification Report will be issued. The Certification Report will be submitted to the U.S. Environmental Protection Agency (EPA) and the Ohio Environmental Protection Agency (OEPA) to receive acknowledgement that the pertinent operable unit remedial actions were completed and the individual CUs are certified and ready to be released for interim or final land use. Section 7.4 of the SEP provides additional details and describes the required content of the Certification Report.

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TABLE 4-1
SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method	ASL	Matrix	Preserve	TAT	Container[a]	Minimum Mass/Volume
Rads/Metals/PCBs/SVOCs (TALs B / A1 /W)	Gamma Spec, Alpha Spec, and LSC	D/E	Solid	Cool, 4° C	EDD Gamma 10 days[b] Final Gamma 14 days Final Tc99 10 days Final Th230 10 days	Glass with Teflon-lined Lid	250 g
	ICP or ICP/MS and CVAA				10 days		
(TALs A2 / S)	GC				10 days		250 g
VOCs (TAL A3)	GC/MS	D	Solid	Cool, 4° C	10 days	3 x 1-Encore Sampler plus 1 x 2-oz jar for % moisture	Each full Encore Sampler will hold approx. 5 g
VOCs (TAL A3)	GC/MS	D	Liquid (trip blank only)	H_2SO_4 pH<2 Cool, 4° C	10 days	3 x 40-ml glass with teflon-lined septa	120 ml (no headspace)

[a] Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.

[b] The in-growth for radium-226 shall be 7 days, and should be denoted as "7DAY" in the suffix of the EDD.

[c] One sample location from each pit shall have triple sample mass collected for laboratory QC. The sample location is at the discretion of the Field Sampling Lead. The sample shall be noted on the Chain of Custody/Request for Analysis shall be identified "as laboratory QC sample".

CVAA - cold vapor atomic absorption
GC/MS - gas chromatography/mass spectroscopy
ICP/MS - inductively coupled plasma/mass spectroscopy
LSC - liquid scintillation counting
SVOC - semi-volatile organic compound

Field QC samples required: Yes, trip blank samples are required for the VOC samples
Analytical data validation required: Yes, VSL D
Data package requirements: ASL D (E)
Historical Data for shipping: 3510 mg/kg total uranium from boring A6WP-B-61

TABLE 4-1
SAMPLING AND ANALYTICAL REQUIREMENTS
(Continued)

Additional data that may be needed for shipping is below:

Boring	FACTS_ID	Parameter	Result	VQ	Units
A7-SWRBC-S-3	200505173	Radium-228	3.53	-	pCi/g
A7-SWRBC-S-4	200505174	Radium-226	1230	-	pCi/g
A7-SWRBC-S-4	200505174	Thorium-230	118	-	pCi/g
A7-SWRBC-S-4	200505174	Thorium-232	4.49	-	pCi/g

TABLE 4-2
TARGET ANALYTE LIST

20810-PSP-0010-B
(17 soil analysis)

Analyte	FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
Radium-226	1.7 pCi/g	0.3 pCi/g
Radium-228	1.8 pCi/g	0.3 pCi/g
Thorium-228	1.7 pCi/g	0.3 pCi/g
Thorium-232	1.5 pCi/g	0.3 pCi/g
Technetium-99	30.0 pCi/g	2.9 pCi/g

20810-PSP-0010-A1
(17 soil analysis)

Analyte	FRL	MDL
Neptunium-237	3.2 pCi/g	0.32 pCi/g
Pb-210	38 pCi/g	10 pCi/g
Thorium-230	280 pCi/g	28 pCi/g
Cesium-137	1.4 pCi/g	0.14 pCi/g

20810-PSP-0010-W
(17 soil analysis)

Analyte	FRL	MDL
Antimony	96 mg/kg	9.6 mg/kg
Arsenic	12 mg/kg	1.2 mg/kg
Barium	68000 mg/kg	200 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	82 mg/kg	8.2 mg/kg
Chromium	300 mg/kg	30 mg/kg
Lead	400 mg/kg	40 mg/kg
Mercury	7.5 mg/kg	0.75 mg/kg
Molybdenum	2900 mg/kg	290 mg/kg
Selenium	5400 mg/kg	10 mg/kg
Silver	29000 mg/kg	40 mg/kg

TABLE 4-2
TARGET ANALYTE LIST

20810-PSP-0010-A2
(17 soil analysis)

Component	FRL	MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg
Dieldrin	0.015 mg/kg	0.0015 mg/kg

20810-PSP-0010-A3
(17 soil analysis)

Component	FRL	MDL (soil)	MDL (water)
Bromodichloromethane	4 mg/kg	0.4 mg/kg	10 µg/L
1,1-Dichloroethene	0.41 mg/kg	0.041 mg/kg	10 µg/L
1,2-Dichloroethene	0.16 mg/kg	0.016 mg/kg	10 µg/L
Methylene Chloride	37 mg/kg	3.7 mg/kg	10 µg/L
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg	10 µg/L
Toluene	100000 mg/kg	10000 mg/kg	10 µg/L
1,1,1-Trichloroethane	4.3 mg/kg	0.43 mg/kg	10 µg/L
Trichloroethene	25 mg/kg	2.5 mg/kg	10 µg/L
Total Xylenes	920000 mg/kg	92000 mg/kg	10 µg/L

20600-PSP-0016-S
(17 soil analysis)

Analyte	On-Property FRL/*BTV*[2]	MDL
Benzo(a)anthracene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(b)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(g,h,i)perylene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(k)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Chrysene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene	*0.088 mg/kg*	*0.0088 mg/kg*
Fluoranthene	*10.0 mg/kg*	*1.0 mg/kg*
Indeno(1,2,3-cd)pyrene	*1.0 mg/kg*	*0.10 mg/kg*
Phenanthrene	*5.0 mg/kg*	*0.5 mg/kg*
Pyrene	*10.0 mg/kg*	*1.0 mg/kg*

µg/L - micrograms per liter

TABLE 4-2
TARGET ANALYTE LIST

[1] Analytical requirements will meet ASL D but the minimum detectable level (MDL) may cause some analyses to be considered ASL E.

[2] Where the analyte does not have an FRL, the MDL is set at 10 percent of the BTV.

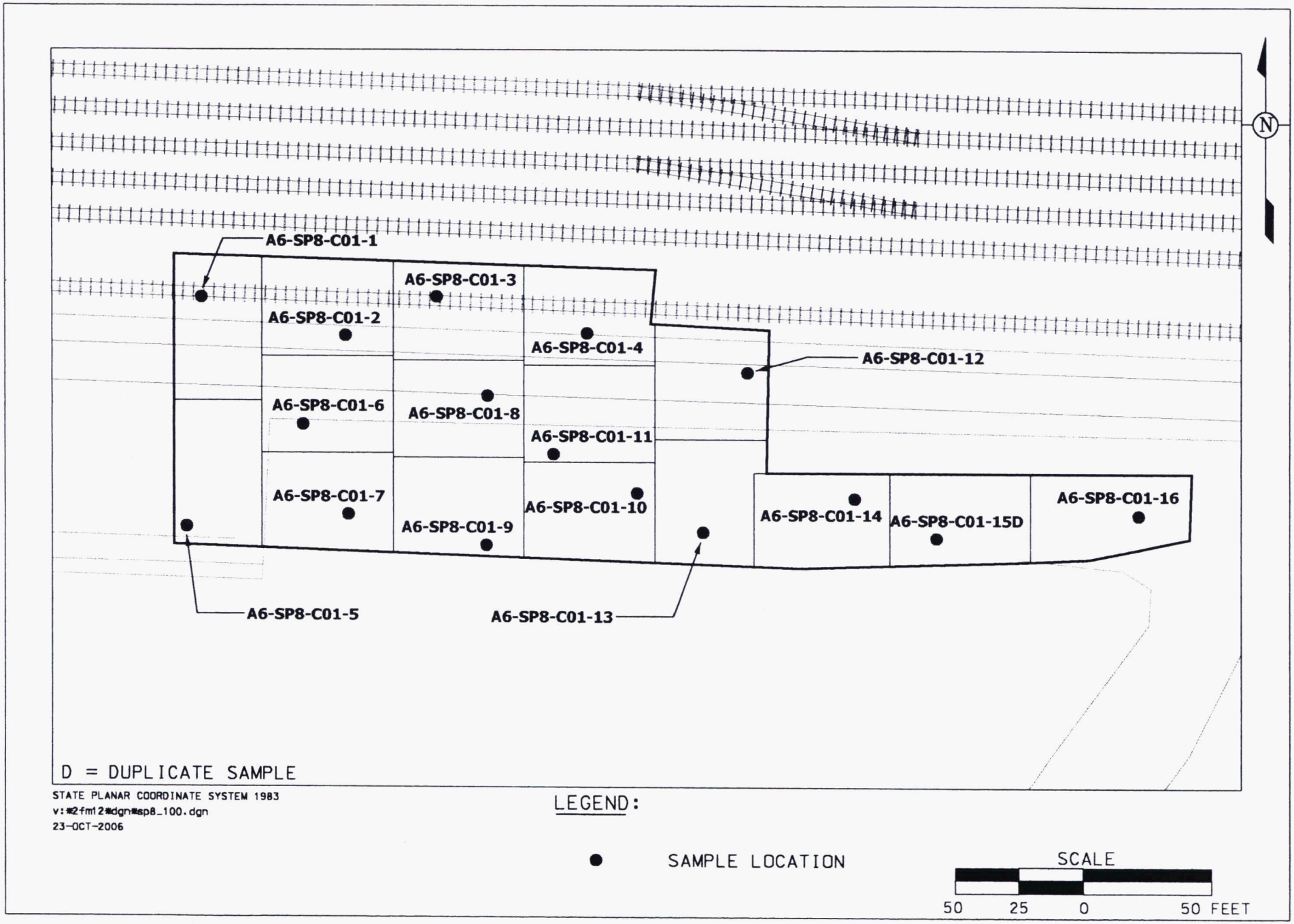

FIGURE 4-1. SP-8 AREA SUB CU BOUNDARY AND CERTIFICATION SAMPLING LOCATIONS

5.0 SCHEDULE

The following draft schedule shows key activities for the completion of the work within the scope of this CDL and Certification PSP. Implementation of this schedule is pending funding availability. If necessary, an extension will be requested.

Activity	Target Date
Submittal of Certification Design Letter	October 23, 2006
Start of Certification Sampling	Completed
Complete Field Work	Completed
Complete Analytical Work	Completed
Complete Data Validation and Statistical Analysis	October 26, 2006
Submit Certification Report	October 28, 2006[a]

[a] The date for submittal of the Certification Report is a commitment to EPA and OEPA. Other dates are internal target completion dates.

6.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

6.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

Per requirements of the SEP and Data Quality Objectives SL-052, Revision 3 (Appendix C), the field quality control, analytical and data validation requirements are as follows:

- Field QC requirements include one field duplicate for the CU, as noted in Section 4.3 and identified in Appendix B. The field duplicate sample will be analyzed for the same COCs as the other samples in the CU from which the field duplicate has been collected.

  If "push tubes" are used for sample collection, one container blank will be collected before sample collection begins and one will be collected at the conclusion of sample collection for the entire former SP-8 Area. The container blank sample will be analyzed for all of the metal COCs required for the former SP-8 Area. If an alternate sample collection method is used, one rinsate will be collected and analyzed for all of the metal COCs required for the former SP-8 Area at a minimum frequency of one per 20 pieces of equipment reused in the field.

  A trip blank is required if VOC samples are being collected. The trip blanks will be analyzed for all of the VOC COCs required for the former SP-8 Area. The frequency for a trip blank is one per day, or one per batch of 20 VOC samples collected, or one per cooler to be shipped, whichever is more frequent.

- All analyses will be performed at ASL D or E, where E meets the MDL of at least 20 percent of the FRL and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for all of the data.

- All field data will be validated. A minimum of 10 percent of the laboratory data will be validated to VSL D with the remainder validated to VSL B. CU A6-SP8-C02 will be validated to VSL D. If any result is rejected during validation, the sample will be re-analyzed or an additional location will be sampled and analyzed in its place. If necessary, this change will be documented in a V/FCN.

Once all data are validated as required, results will be entered into the SED and a statistical analysis will be performed to evaluate the pass/fail criteria for each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP.

If any sample collection or analytical methods are used that are not in accordance with the SCQ, the Project Manager and Characterization Manager must determine if the qualitative data from the samples will be beneficial to certification decision making. If the data will be beneficial, the Project Manager and Characterization Manager will ensure that:

- A variance will be written to document references confirming that the new method supports data needs,
- variations from the SCQ methodology are documented in a variance, or
- data validation of the affected samples is requested or qualifier codes of J (estimated) and R (rejected) be attached to detected and non-detected results, respectively.

6.2 PROJECT SPECIFIC PROCEDURES, MANUALS AND DOCUMENTS

Programs supporting this work are responsible for ensuring team members work to and are trained to applicable documents. Additionally, programs supporting this work are responsible for ensuring team members in their organizations are qualified and maintain qualification for site access requirements. The Project Manager will be responsible for ensuring any project-specific training required to perform work per this CDL and Certification PSP is conducted.

To ensure consistency and data integrity, field activities in support of the PSP will follow the requirements and responsibilities outlined in the procedures and guidance documents referenced below.

- 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan
- Sitewide Excavation Plan (SEP)
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- SH-1006, Event Investigation and Reporting
- ADM-02, Field Project Prerequisites
- EQT-06, Geoprobe® Model 5400 and Model 6600
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9501, Shipping Samples to Off-site Laboratories
- Trimble Pathfinder Pro-XL Global Positioning System Operation Manual

6.3 INDEPENDENT ASSESSMENT

An independent assessment may be performed by the Fernald Closure Project (FCP) Quality Assurance (QA)/QC organization by conducting a surveillance, consisting of monitoring/observing on-going project activities and work areas to verify conformance to specified requirements. The surveillance will be planned and documented in accordance with Section 12.3 of the SCQ.

6.4 IMPLEMENTATION OF CHANGES

Before the implementation of changes, the Field Sampling Lead will be informed of the proposed changes. Once the Field Sampling Lead has obtained written or verbal approval (electronic mail is acceptable) from the Characterization Manager and QA/QC for the changes to the PSP, the changes may be implemented. Changes to the PSP will be noted in the applicable FALs and on a V/FCN. QA/QC must receive the completed V/FCN, which includes the signatures of the Characterization and Sampling Managers, Project Manager, and QA/QC within seven days of implementation of the change. The EPA and OEPA will be given a 15-day review period prior to implementing the change(s) for any V/FCNs identified as "significant" per project guidelines.

7.0 HEALTH AND SAFETY

Coordinate with representatives of the Health and Safety and Industrial Hygiene and Construction for requirements to enter this area. Any hazards identified during the project walk-down must be corrected/controlled prior to the start of work. Weekly walk-downs will be conducted throughout the course of the project in accordance with SPR 1-10, Safety Walk-Throughs. All work performed on this project will be performed in accordance with applicable Environmental Services procedures, RM-0020, (Radiological Control Requirements Manual), RM-0021 (Safety Performance Requirements Manual), Fluor Fernald work permits, Radiological Work Permit, penetration permits, Construction Traveler, and other applicable permits as determined by project management. Concurrence with applicable safety permits is required for each technician in the performance of their assigned duties.

A safety briefing will be conducted prior to the initiation of field activities. Fluor Fernald managers and supervisors are responsible for ensuring that all field activities comply with the Safety and Health requirements and ensuring compliance with the Work Plan. These briefings will be documented. Personnel who are not documented as having completed these briefings will not participate in the execution of field activities.

Personnel will also be briefed on any health and safety documents (such as Travelers) that may apply to the project work scope. During the course of this project, operators shall maintain a 50-foot buffer zone between equipment and sampling personnel where field conditions and working space permit. When this buffer zone cannot be maintained, sampling personnel must communicate their intentions to move around or near the equipment with the operators through eye contact and verbal communication or hand signals. At no time shall the sampling activities be within 25 feet of operating heavy equipment without approval of both the project health and safety representative and construction management. Additionally, the sampling team will utilize traffic cones or other equipment to designate a safe buffer zone for their needs when the 50-foot boundary is not practical. Additional safety information can be found in 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan. All personnel have stop-work authority for imminent safety hazards or other hazards resulting from noncompliance with the applicable safety and health practices.

All personnel entering the Construction Area will obtain a pre-entry briefing on current activities or hazards that may affect their work from construction management. Additionally, prior to entry into an excavation area, the Competent Person for Excavation shall be contacted to assure that the daily inspection has been completed and the excavation is safe to enter.

Sampling Leads will be provided with cellular phones for all sampling activities, and **all emergencies will be reported by dialing 911 and 648-6511**. Announcements for severe weather will be provided to select company issued cellular phones. Cellular phones are provided to the Technicians by the Fernald Closure Project as needed. As soon as possible, field personnel are to contact their supervisor and Health and Safety Representative after any unplanned event or injury.

8.0 DISPOSITION OF WASTE

During sampling activities, field personnel may generate small amounts of soil, water, and contact waste. Excess soil generated during sample collection will be replaced in the borehole. Contact waste generation will be minimized by limiting contact with sample media, and by only using disposable materials that are necessary. Contact waste will be bagged and brought back to site for disposal in an uncontrolled area dumpster. Generation of decontamination waters will be minimized in the field. Decontamination water that is generated will be contained in a plastic bucket with a lid and returned to site for disposal. A wastewater discharge form must be completed for disposal. On-site decontamination of equipment will take place at a facility which discharges to the Converted Advanced Wastewater Treatment Facility, either directly or indirectly, through the storm water collection system.

Following analysis, any remaining soil and/or sample residuals will remain at the off-site laboratories for a specified period of time as defined in their contracts with Fluor Fernald. Prior authorization must be obtained from the Characterization Manager, or designee, to disposition samples collected under this CDL and Certification PSP.

9.0 DATA MANAGEMENT

A data management process will be implemented so information collected during the investigation will be properly managed to satisfy data end use requirements after completion of field activities. As specified in Section 5.1 of the SCQ, sampling teams will describe daily activities on a FAL, which should be sufficiently detailed for accurate reconstruction of the events without reliance on memory. Sample Collection Logs will be completed according to protocols specified in Appendix B of the SCQ and in applicable procedures. These forms will be maintained in loose-leaf form and uniquely numbered following the sampling event.

All field measurements, observations, and sample collection information associated with physical sample collection will be recorded, as applicable, on the Sample Collection Log, the FAL, the Chain of Custody/Request for Analysis form, Lithologic Log, and Borehole Abandonment Record. The PSP number will be on all documentation associated with these sampling activities.

Samples will be assigned a unique sample number as explained in Section 4.3 and listed in Appendix B. This unique sample identifier will appear on the Sample Collection Log and Chain of Custody/Request for Analysis form and will be used to identify the samples during analysis, data entry, and data management.

Technicians will review all field data for completeness and accuracy then forward the field data package to the Field Data Validation Contact for final QA/QC review. Sample Data Management personnel will enter analytical data into the SED. Analytical data that is designated for data validation will be forwarded to the Data Validation Group. The PSP requirements for analytical data validation are outlined in Section 4.1. The Data Management Lead will review analytical data upon receipt from the off-site laboratories.

Following field and analytical data validation, the Sample Data Management organization will perform data entry into the SED. The original field data packages, original analytical data packages, and original documents generated during the validation process will be maintained as project records by the Sample Data Management organization.

To ensure that correct coordinates and survey information are tied to the final sample locations in the database, the following process will take place. Upon surveying all locations identified in the PSP, the Surveying Manager will provide the Data Management Lead (i.e., Characterization) with an electronic file of all surveyed coordinates and surface elevations. The Sampling Manager will provide the Data Management Lead with a list of any locations that must be moved during penetration permitting or sample collection, and the Data Management Lead will update the electronic file with this information.

After sample collection is complete, the Data Management Lead will provide this electronic file to the Database Contact for uploading to SED.

REFERENCES

U.S. Department of Energy, 1996, "Record of Decision for Remedial Action at Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

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U.S. Department of Energy, 2001b, "Implementation Plan for Area 3A/4A," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2003, "Project Specific Plan for Excavation Control and Precertification of Area 6 Waste Pits and General Area (Supplement to 20300-PSP-0011)," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005, "Implementation Plan for Area 6 Former Production Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2006a, "Certification Design Letter and Certification Project Specific Plan for Area 6 Former Production Area and Main Drainage Corridor Area," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

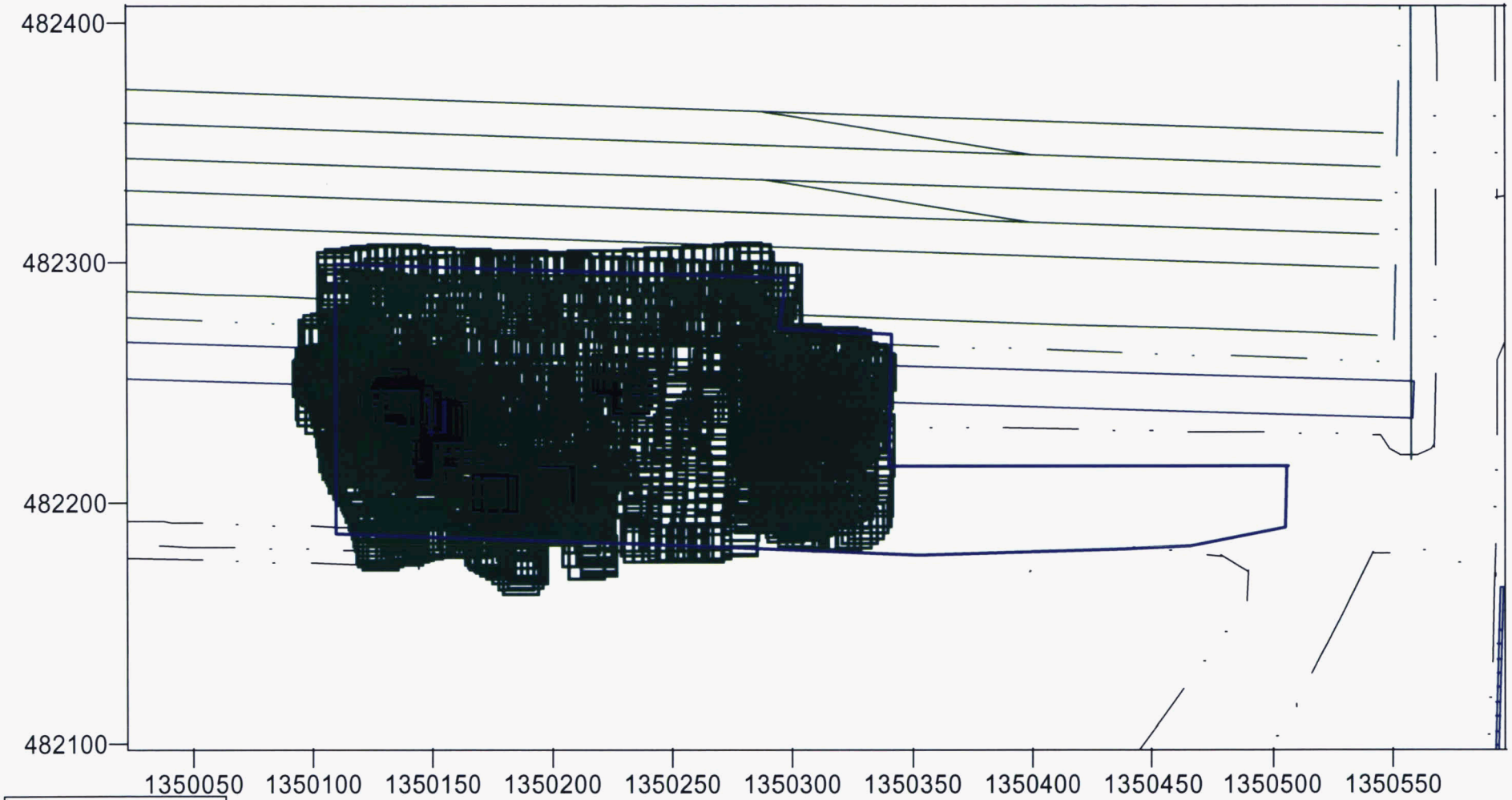
U.S. Department of Energy, 2006b, "Certification Report for Area 6 Former Production Area and Main Drainage Corridor Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

APPENDIX A

REAL-TIME DATA MAPS FOR THE FORMER SOIL PILE-8 AREA

Figure A- 1 Soil Pile 8 Area - Phase 1 Total Gross Counts per Second

Data Groups: EMS_0871_10-19-2006,0875_10-20-2006,876_10-20-2006
RSS1_2963_10-16-2006,2973_10-20-2006,2976_10-21-2006
RSS3_1771_10-22-2006
Measurement Period: 10-16-2006 thru 10-22-2006



NaI Tcps
- 0 to 3000
- 3000 to 5000
- 5000 to 15000
- 15000 to 18000
- 18000 to 99999

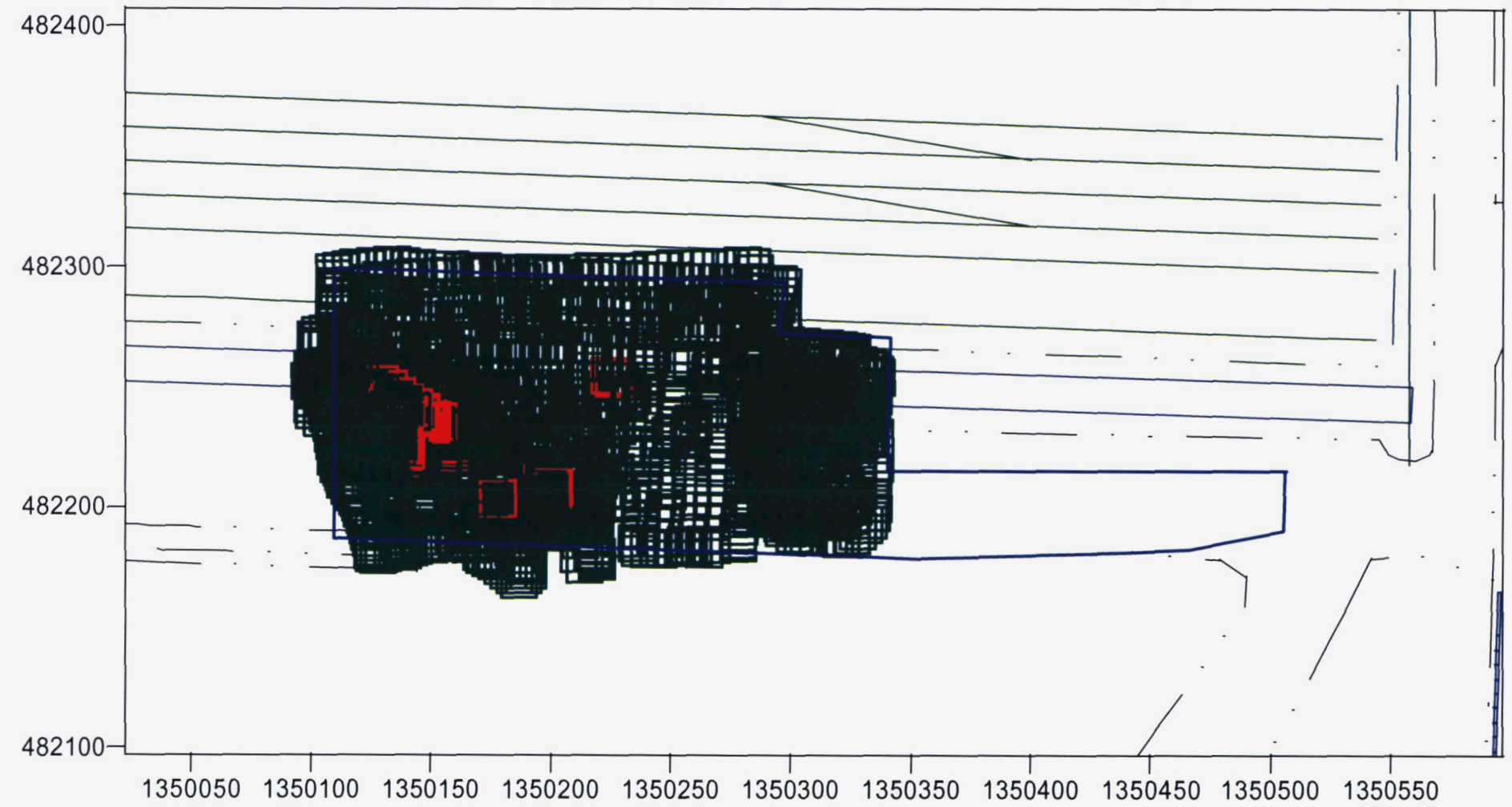
CDL Boundary

RTIMP DWG ID: SP8_P1_TC.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P1.xls

006226

Figure A- 2 Soil Pile 8 Area - Phase 1 Moisture Corrected Radium-226

Data Groups: EMS_0871_10-19-2006,0875_10-20-2006,876_10-20-2006
RSS1_2963_10-16-2006,2973_10-20-2006,2976_10-21-2006
RSS3_1771_10-22-2006
Measurement Period: 10-16-2006 thru 10-22-2006



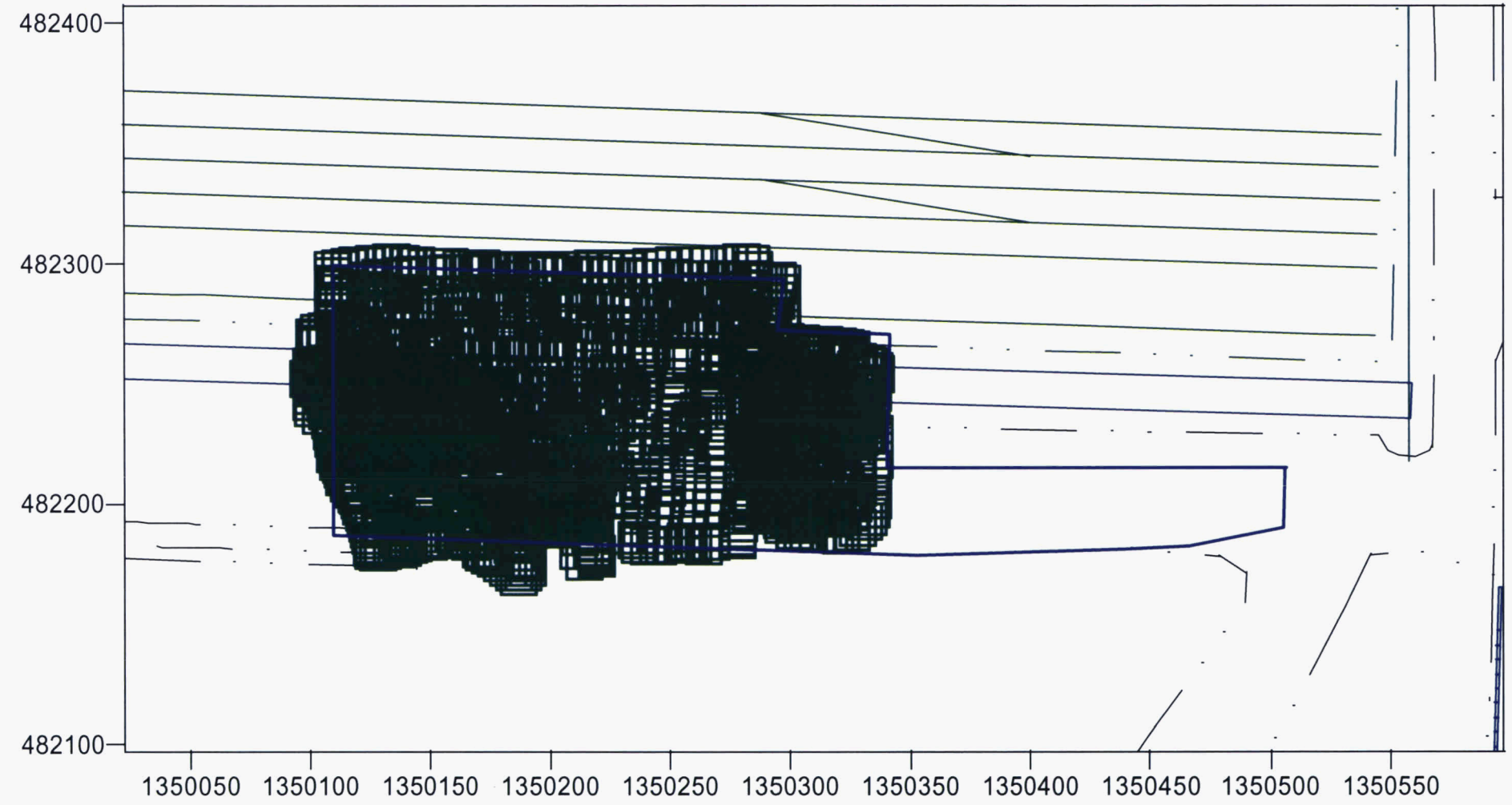
NaI Ra-226 pCi/g
-9999 to 5.1
5.1 to 9999

RTIMP DWG ID: SP8_P1_RA.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P1.xls

006226

Figure A- 3 Soil Pile 8 Area - Phase 1 Moisture Corrected Thorium-232

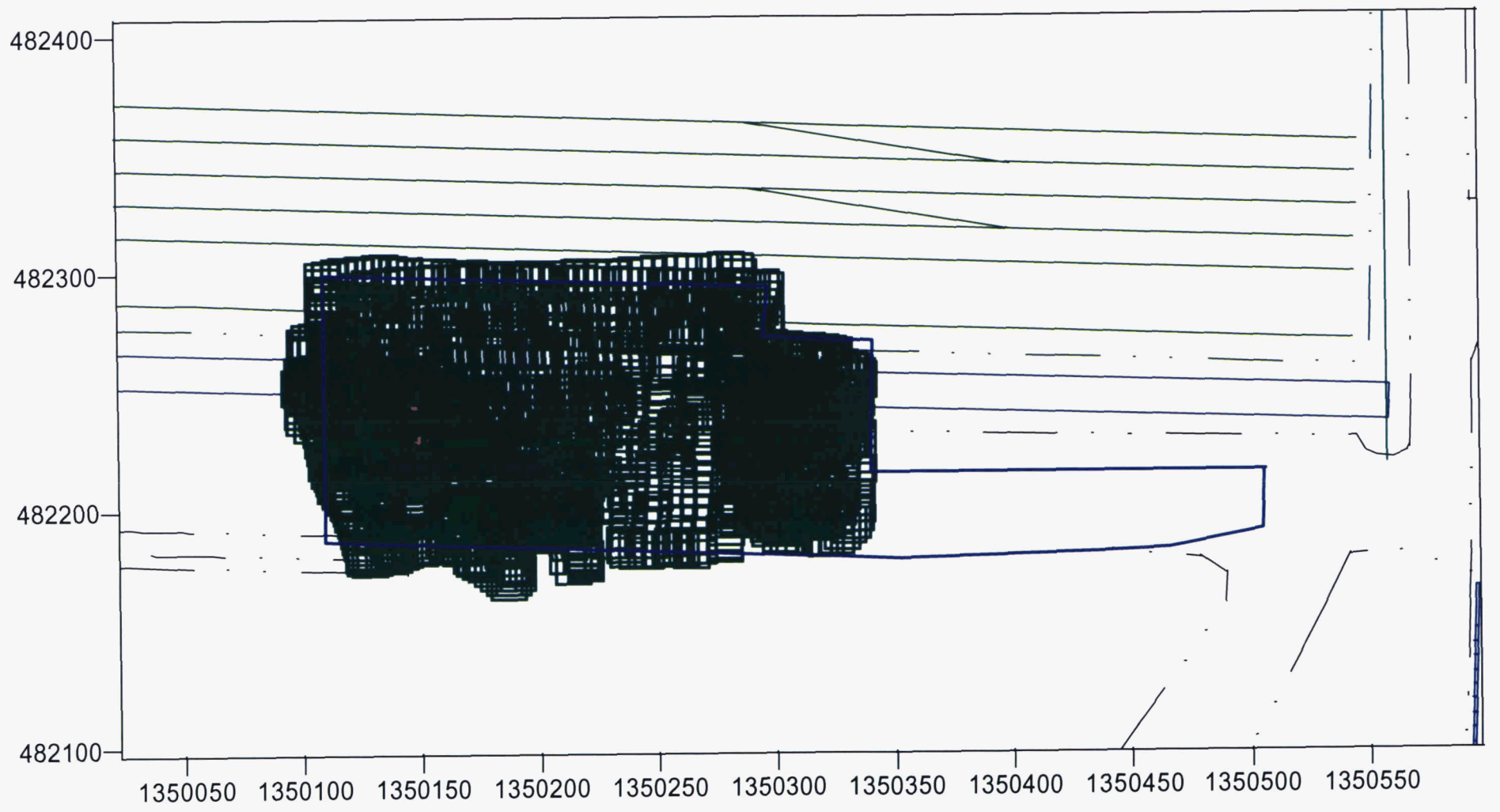
Data Groups: EMS_0871_10-19-2006,0875_10-20-2006,876_10-20-2006
RSS1_2963_10-16-2006,2973_10-20-2006,2976_10-21-2006
RSS3_1771_10-22-2006
Measurement Period: 10-16-2006 thru 10-22-2006



RTIMP DWG ID: SP8_P1_TH.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P1.xls

Figure A- 4 Soil Pile 8 Area - Phase 1 Moisture Corrected Total Uranium

Data Groups: EMS_0871_10-19-2006,0875_10-20-2006,876_10-20-2006
RSS1_2963_10-16-2006,2973_10-20-2006,2976_10-21-2006
RSS3_1771_10-22-2006
Measurement Period: 10-16-2006 thru 10-22-2006

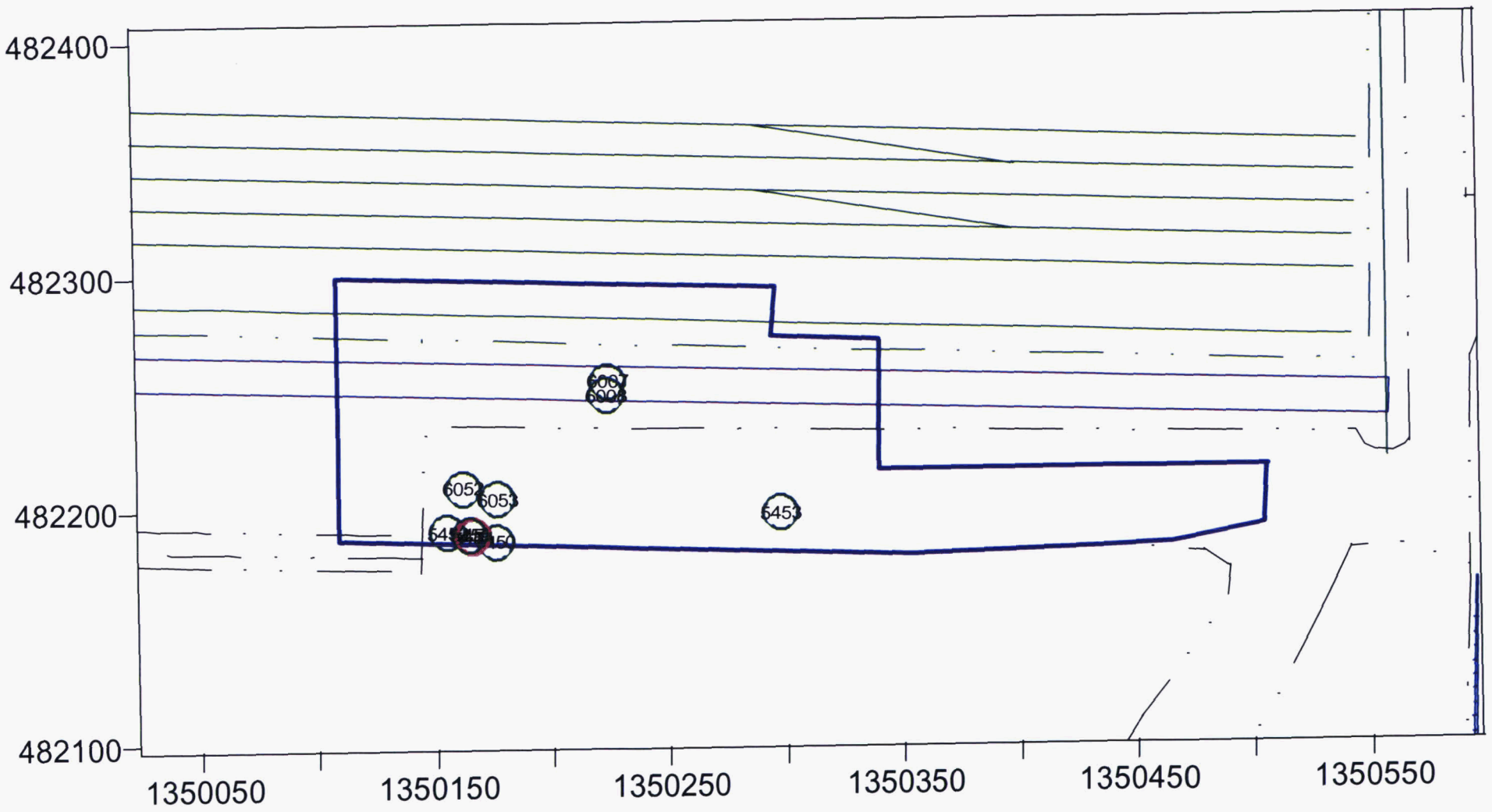


RTIMP DWG ID: SP8_P1_TU.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P1.xls

Figure A-5 Soil Pile 8 Area - Phase 2 Moisture Corrected Radium-226

Data Groups:40293_10-20-2006,10-21-2006,10-22-2006

Measurement Period:10-20-2006 thru 10-22-2006



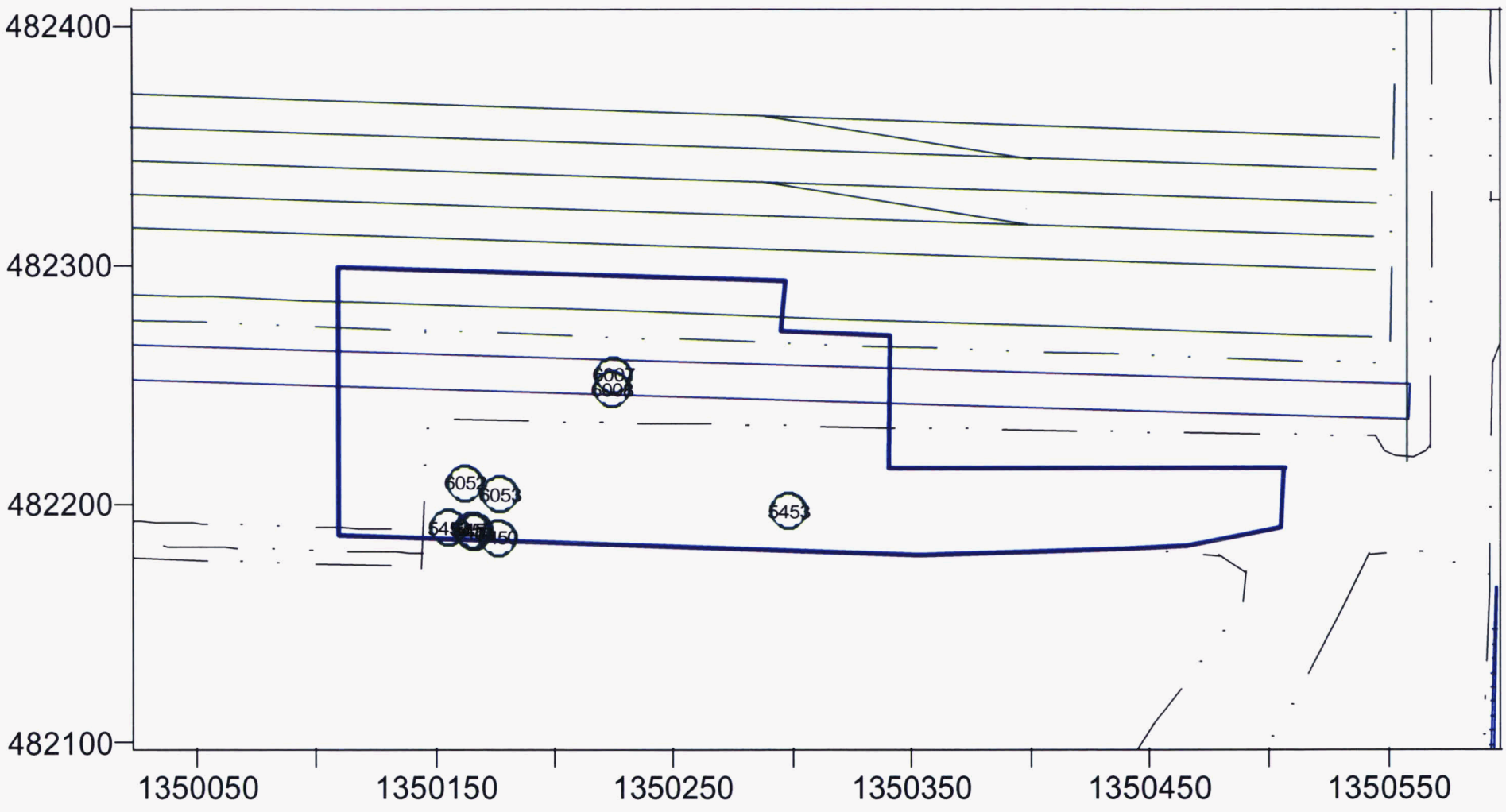
HPGe Ra-226 pCi/g
-999 to 5.1
5.1 to 999

RTIMP DWG ID: SP8_P2_RA.srf
Project ID: Gen Char For Site Soil Remed - 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P2.xls

Figure A-6 Soil Pile 8 Area - Phase 2 Moisture Corrected Thorium-232

Data Groups:40293_10-20-2006,10-21-2006,10-22-2006

Measurement Period:10-20-2006 thru 10-22-2006



HPGe Th-232 pCi/g
-999 to 4.5
4.5 to 999

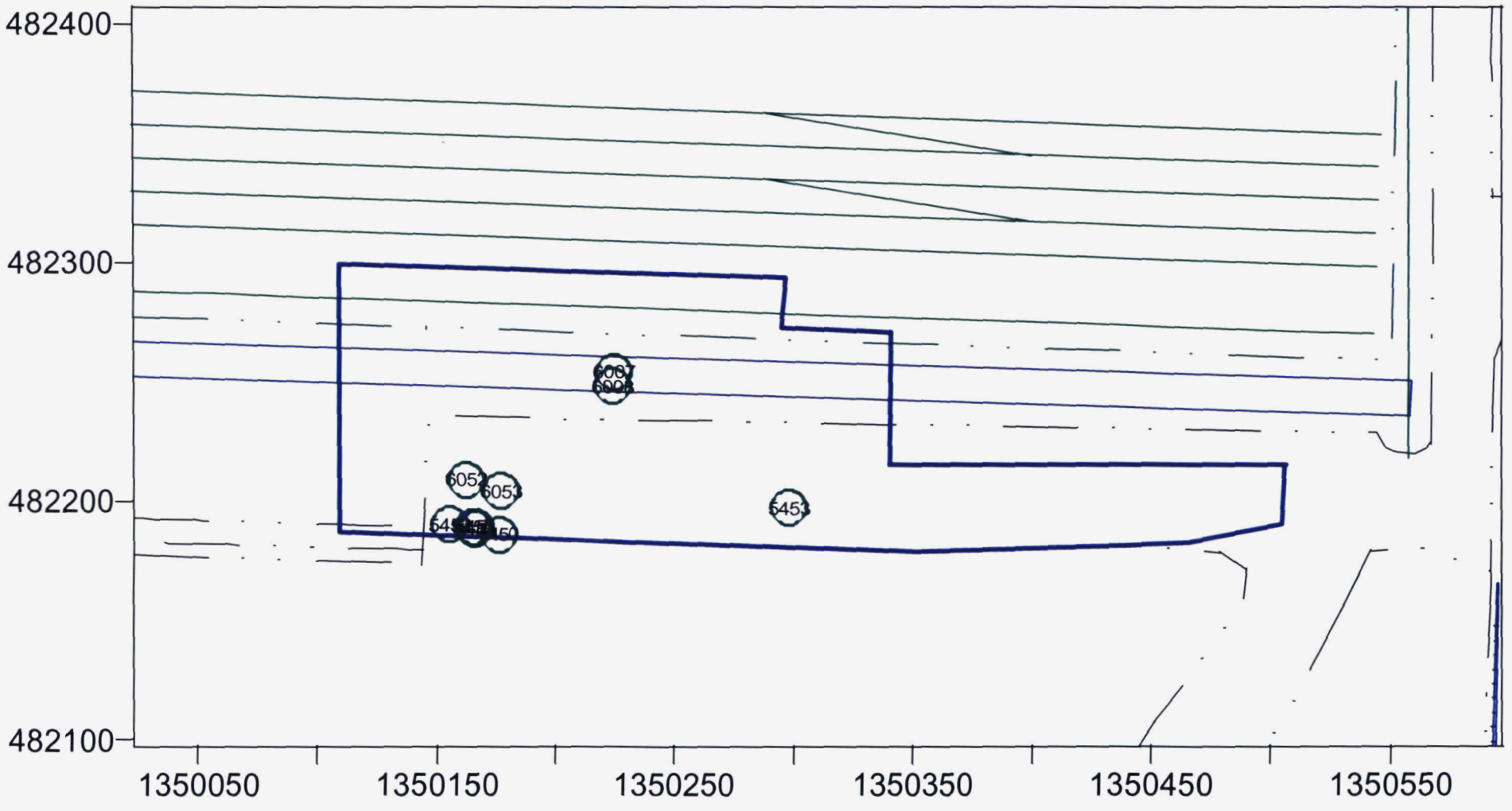
RTIMP DWG ID: SP8_P2_TH.srf
Project ID: Gen Char For Site Soil Remed - 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P2.xls

922900

Figure A-7 Soil Pile 8 Area - Phase 2 Moisture Corrected Total Uranium

Data Groups:40293_10-20-2006,10-21-2006,10-22-2006

Measurement Period:10-20-2006 thru 10-22-2006



HPGe TU ppm
-999 to 246
246 to 999

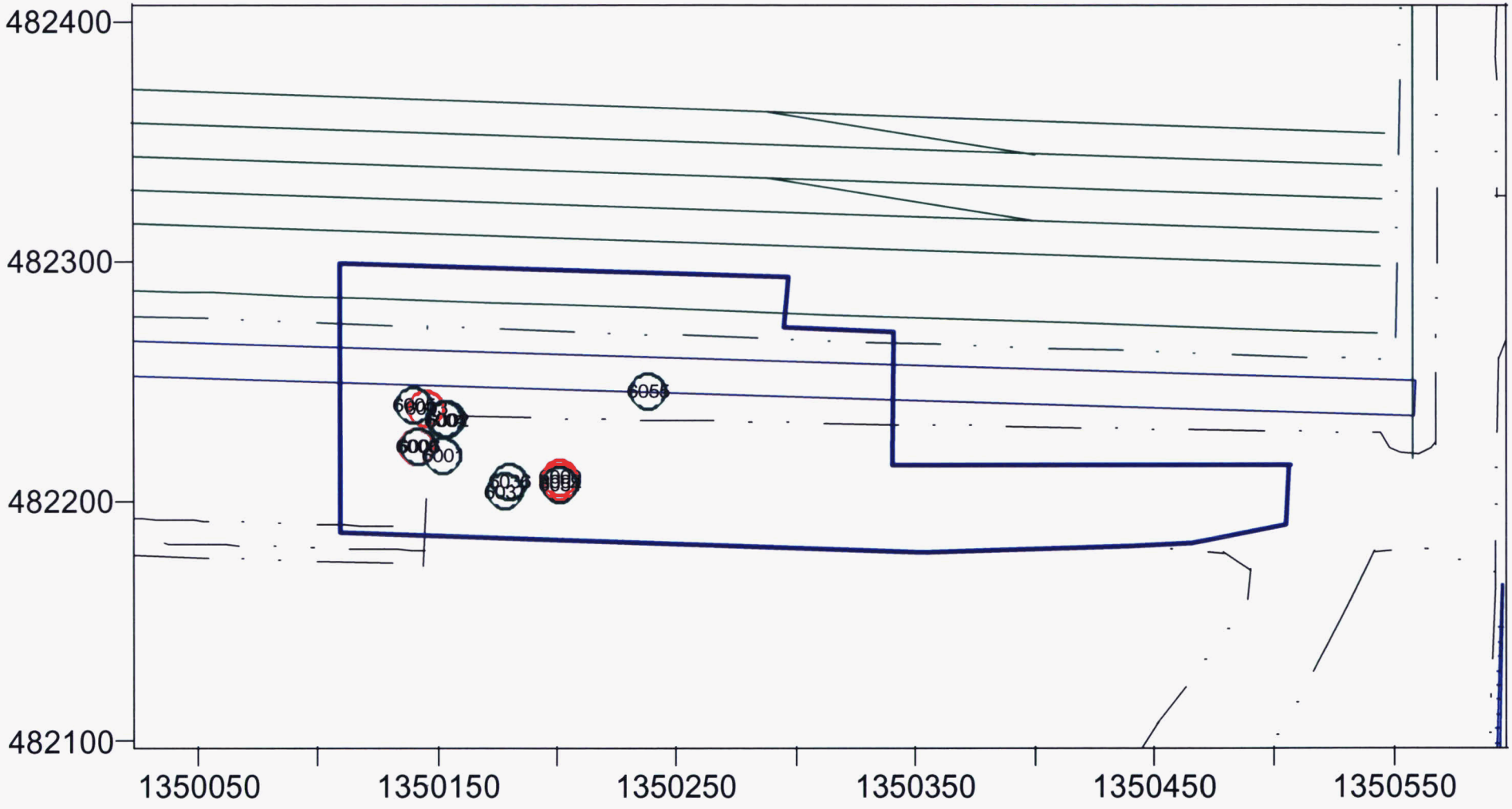
RTIMP DWG ID: SP8_P2_TU.srf
Project ID: Gen Char For Site Soil Remed - 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P2.xls

922900

Figure A-8 Soil Pile 8 Area - Phase 3 Moisture Corrected Radium-226

Data Groups:30687_10-21-2006,40293_10-21-2006,30699_10-22-2006
40293_10-22-2006

Measurement Period:10-21-2006 thru 10-22-2006



HPGe Ra-226 pCi/g
- -999 to 5.1
- 5.1 to 999

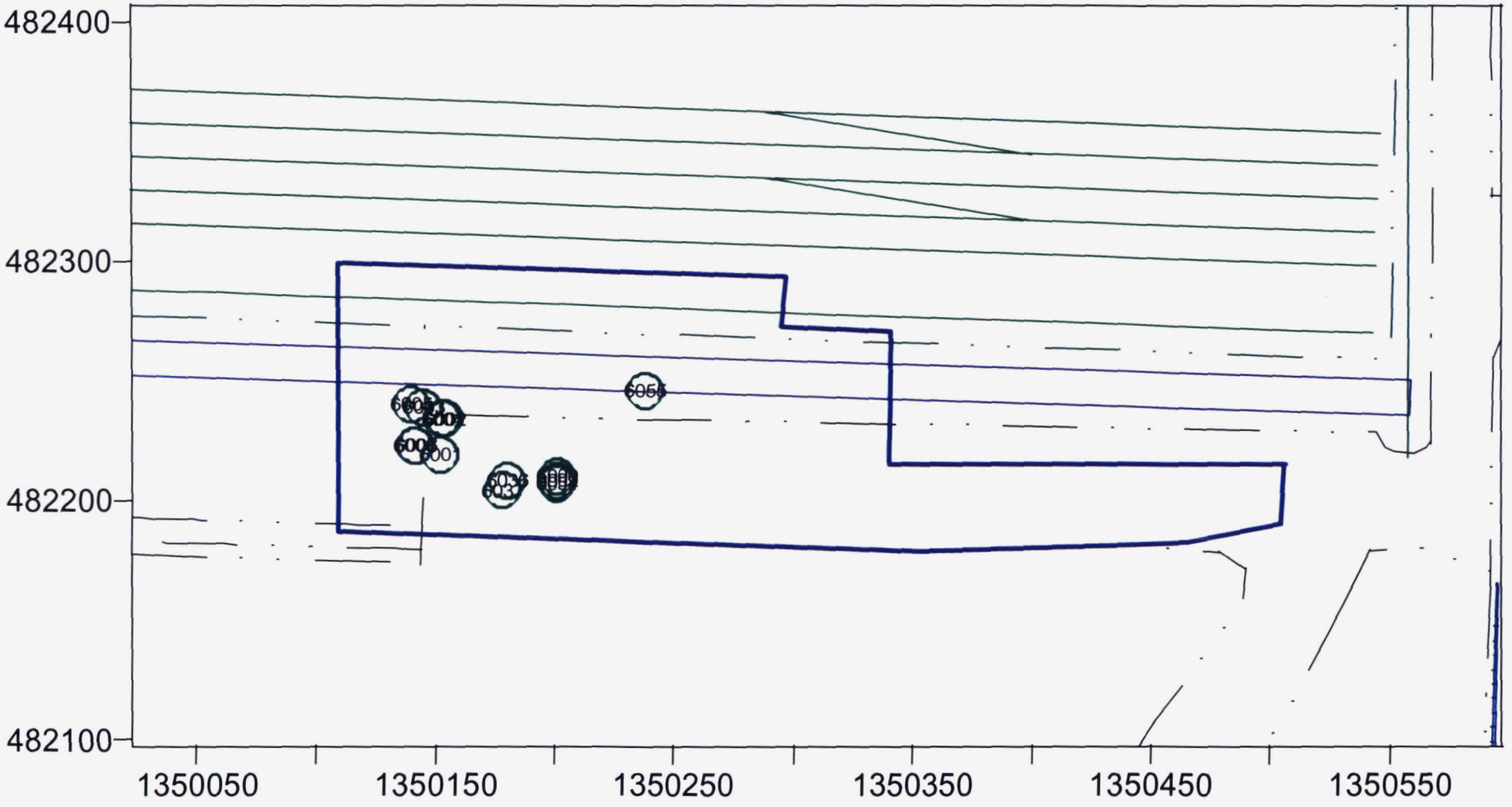
RTIMP DWG ID: SP8_P3_RA.srf
Project ID: Gen Char For Site Soil Remed - 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P3.xls

922900

Figure A-9 Soil Pile 8 Area - Phase 3 Moisture Corrected Thorium-232

Data Groups:30687_10-21-2006,40293_10-21-2006,30699_10-22-2006
40293_10-22-2006

Measurement Period:10-21-2006 thru 10-22-2006



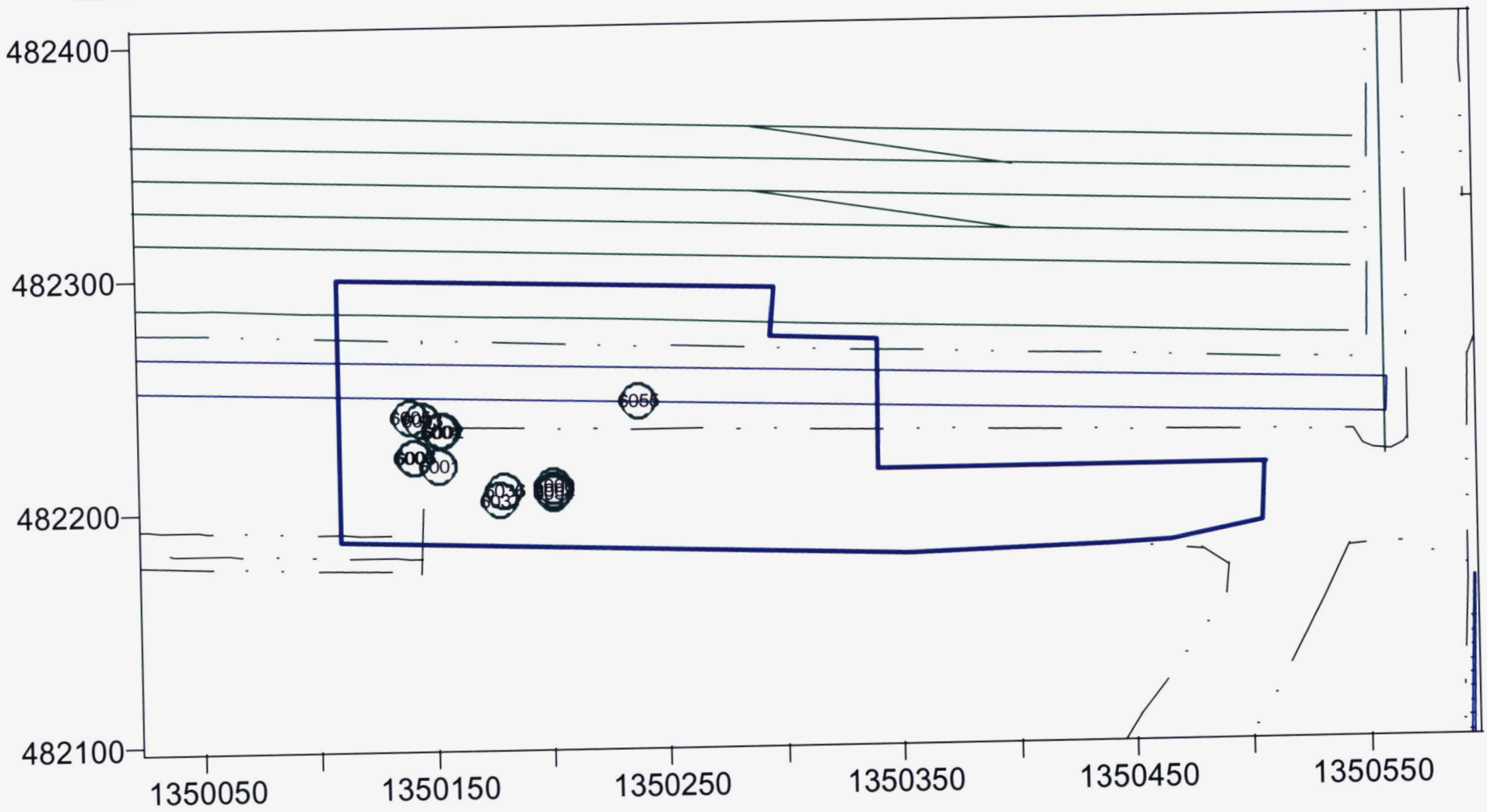
HPGe Th-232 pCi/g
-999 to 4.5
4.5 to 999

RTIMP DWG ID: SP8_P3_TH.srf
Project ID: Gen Char For Site Soil Remed - 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P3.xls

Figure A-10 Soil Pile 8 Area - Phase 3 Moisture Corrected Total Uranium

Data Groups:30687_10-21-2006,40293_10-21-2006,30699_10-22-2006
40293_10-22-2006

Measurement Period:10-21-2006 thru 10-22-2006



HPGe TU ppm
-999 to 246
246 to 999

RTIMP DWG ID: SP8_P3_TU.srf
Project ID: Gen Char For Site Soil Remed - 20300-PSP-0011
Prepared: D.Seiller 10-23-2006
Support Data: SP8_P3.xls

006226

APPENDIX B

CU SAMPLE LOCATIONS AND IDENTIFIERS FOR THE FORMER SOIL PILE-8 AREA

APPENDIX B
CU SAMPLE LOCATIONS AND IDENTIFIERS FOR THE FORMER SP-8 AREA

CU	Location	Sample ID	Analysis	Northing	Easting
A6-SP8-C01	A6-SP8-C01-1	A6-SP8-C01-1^RMPS	TAL B-A1-W-A2-S	482282.91	1350120.18
		A6-SP8-C01-1^L	TAL A3		
	A6-SP8-C01-2	A6-SP8-C01-2^RMPS	TAL B-A1-W-A2-S	482268.09	1350176.41
		A6-SP8-C01-2^L	TAL A3		
	A6-SP8-C01-3	A6-SP8-C01-3^RMPS	TAL B-A1-W-A2-S	482283.25	1350211.76
		A6-SP8-C01-3^L	TAL A3		
	A6-SP8-C01-4	A6-SP8-C01-4^RMPS	TAL B-A1-W-A2-S	482269.1	1350270.34
		A6-SP8-C01-4^L	TAL A3		
	A6-SP8-C01-5	A6-SP8-C01-5^RMPS	TAL B-A1-W-A2-S	482194.33	1350114.46
		A6-SP8-C01-5^L	TAL A3		
	A6-SP8-C01-6	A6-SP8-C01-6^RMPS	TAL B-A1-W-A2-S	482233.74	1350159.91
		A6-SP8-C01-6^L	TAL A3		
	A6-SP8-C01-7	A6-SP8-C01-7^RMPS	TAL B-A1-W-A2-S	482199.05	1350177.42
		A6-SP8-C01-7^L	TAL A3		
	A6-SP8-C01-8	A6-SP8-C01-8^RMPS	TAL B-A1-W-A2-S	482244.85	1350231.63
		A6-SP8-C01-8^L	TAL A3		
	A6-SP8-C01-9	A6-SP8-C01-9^RMPS	TAL B-A1-W-A2-S	482187.26	1350231.21
		A6-SP8-C01-9^L	TAL A3		
	A6-SP8-C01-10	A6-SP8-C01-10^RMPS	TAL B-A1-W-A2-S	482207.36	1350289.9
		A6-SP8-C01-10^L	TAL A3		
	A6-SP8-C01-11	A6-SP8-C01-11^RMPS	TAL B-A1-W-A2-S	482222.32	1350257.21
		A6-SP8-C01-11^L	TAL A3		
	A6-SP8-C01-12	A6-SP8-C01-12^RMPS	TAL B-A1-W-A2-S	482253.95	1350332.55
		A6-SP8-C01-12^L	TAL A3		
	A6-SP8-C01-13	A6-SP8-C01-13^RMPS	TAL B-A1-W-A2-S	482192.31	1350315.38
		A6-SP8-C01-13^L	TAL A3		
	A6-SP8-C01-14	A6-SP8-C01-14^RMPS	TAL B-A1-W-A2-S	482205.45	1350374.48
		A6-SP8-C01-14^L	TAL A3		
	A6-SP8-C01-15D	A6-SP8-C01-15^RMPS	TAL B-A1-W-A2-S	482190.29	1350406.46
		A6-SP8-C01-15^L	TAL A3		
		A6-SP8-C01-15D^RMPS	TAL B-A1-W-A2-S		
		A6-SP8-C01-15D^L	TAL A3		
	A6-SP8-C01-16	A6-SP8-C01-16^RMPS	TAL B-A1-W-A2-S	482199.05	1350485.25
		A6-SP8-C01-16^L	TAL A3		

APPENDIX C

DATA QUALITY OBJECTIVES SL-052, REV. 3

Control Number _____

Fernald Environmental Management Project

Data Quality Objectives

Title: Sitewide Certification Sampling and Analysis

Number: SL-052

Revision: 3

Effective Date: March 13, 2000

Contact Name: Mike Rolfes

Approval: _____ Date: 3/13/00
James Chambers
DQO Coordinator

Approval: _____ Date: 3/13/00
J.D. Chiou
SCEP Project Director

Rev. #	0	1	2	3			
Effective Date:	4/28/99	6/10/99	2/3/00	3/13/00			

DATA QUALITY OBJECTIVES
Sitewide Certification Sampling and Analysis

Members of Data Quality Objectives (DQO) Scoping Team

The members of the scoping team included individuals with expertise in QA, analytical methods, field sampling, statistics, laboratory analytical methods and data management.

Conceptual Model of the Site

Soil sampling was conducted at the Fernald Environmental Management Project (FEMP) during the Operable Unit 5 (OU5) Remedial Investigation/Feasibility Study (RI/FS). Final Remediation Levels (FRLs) for constituents of concern (COCs), along with the extent of soil contaminated above the FRLs, were identified in the OU5 Record of Decision (ROD). Actual soil remediation activities now fall under the guidance of the final Sitewide Excavation Plan (SEP).

As outlined in the SEP, the FEMP has been divided into individual Remediation Areas (or phased areas within a Remediation Area) to sequentially carry out soil remedial activities. Under the strategy identified in the SEP, pre-design investigations are first conducted to better define the limits of soil excavation requirements. Following any necessary excavation, pre-certification real-time scanning activities are conducted to evaluate residual patterns of soil contamination. Pre-certification scan data should provide a level of assurance that the FRLs will be achieved. When pre-certification data indicate that remediation goals are likely to be met, they are used to define certification units (CUs) within the Remediation Area of interest. Table 2-9 of the final SEP identifies a list of area-specific COCs (ASCOCs) for each Remediation Area at the FEMP. Based on existing data and production knowledge, a subset of these ASCOCs are conservatively identified within each CU as potentially present in the CU. This suite of CU-specific COCs is the subset of the ASCOCs to be evaluated against the FRLs within that CU. At a minimum, the five primary radiological COCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained as CU-specific COCs for certification of each CU.

Delineation and justification for the final CU boundaries, along with each corresponding suite of CU-specific ASCOCs is documented in a Certification Design Letter. Upon approval of the Certification Design Letter by the EPA, certification activities can begin. Section 3.4 of the final SEP presents the general certification strategy.

1.0 Statement of Problem

FEMP soil and potentially impacted adjacent off-property soil must be certified on a CU by CU basis for compliance with the FRLs of all CU-specific ASCOCs. The appropriate sampling, analytical and information management criteria must be developed to provide the required qualified data necessary to demonstrate attainment of certification statistical criteria. For every area undergoing certification, a sampling plan must be in place that will direct soil samples to be collected which are representative of the CU-specific COC concentrations within the framework of the certification approach identified in the final SEP. The appropriate analytical methodologies must be selected to provide the required data.

Exposure to Soil

The cleanup standards, or FRLs, were developed for a final site land use as an undeveloped park. Under this exposure scenario, receptors could be directly exposed to contaminated soil through dermal contact, external radiation, incidental ingestion, and/or inhalation of fugitive dust while visiting the park. Exposure to contaminated soil by the modeled receptor is expected to occur at random locations within the boundaries of the FEMP and would not be limited to any single area. Some soil FRLs were developed based on the modeled cross-media impact potential of soil contamination to the underlying aquifer. In these instances, potential exposure to contaminants would be indirect through the groundwater pathway, and not directly linked to soil exposure. Off-site soil FRLs were established at more conservative levels than the on-property soil FRLs, based on an agricultural receptor. Benchmark Toxicity Values (BTVs) are also being considered in the cleanup process by assessing habitat impact of individual BTVs under post-remedial conditions.

Available Resources

Time: Certification sampling will be accomplished by the field sampling team prior to interim or final regrading or release of soil for construction activities. The certification sampling schedule must allow sufficient time, in the event additional remediation is required, to demonstrate certification of FRLs prior to permanent construction or regrading. Certification sampling will have to be completed and analytical results validated and statistical analysis completed prior to submission of a Certification Report to the regulatory agencies.

Project Constraints: Certification sampling and analytical testing must be performed with existing manpower, materials and equipment to support the certification effort. Remediation areas are prioritized for certification sampling and analysis according to the date required for initiation of sequential construction activities in those areas. Fluor Daniel Fernald (FDF) and DOE must demonstrate post-remedial compliance with the CU-specific COC FRLs to release the designated Remediation Area for

planned interim grading, eventual restoration under the Natural Resources Restoration Plan (NRRP), and other final land use activities.

2.0 Identify the Decision

Decision

Demonstrate within each CU if all CU-specific COCs pass the certification criteria. These criteria are as follows: 1) The average concentration of each CU-specific COC is below the FRL and within the agreed upon confidence limits (95% for primary ASCOCs and 90% for secondary ASCOCs); and 2) the hot-spot criteria, that no result for any CU-specific COC is more than two times the associated soil FRL. The certification criteria are discussed in greater detail in Section 3.4.4 of the final SEP.

Possible Results

1. The average concentration of each CU-specific COC is demonstrated to be below the FRLs within the confidence level, with no single result for any CU-specific COC greater than two times the associated FRL. The CU can then be certified as attaining remediation goals.

2. The average concentration of at least one CU-specific COC is demonstrated to be above the FRL at the given confidence level. The CU will fail certification and require additional remedial action, per Section 3.4.5 of the final SEP.

3. If a result(s) of one or more CU-specific COC is demonstrated to be at or above two times the FRL, the CU will fail certification. The CU will fail certification and require additional remedial action per Section 3.4.5 of the final SEP. A combination of results 2 and 3 also constitutes certification failure.

3.0 Inputs That Affect the Decision

Required Information

Certification data will be obtained through physical soil sampling. Based on the certification analytical results, the average concentrations of each CU-specific COC with specified confidence levels will be calculated using the statistical methods identified in Appendix G of the final SEP.

Source of Information

Per the SEP, analysis of certification samples for each CU-specific COC will be conducted at analytical support level (ASL) D in accordance with methods and QA/QC standards in the FEMP Sitewide CERCLA Quality Assurance Project Plan [SCQ].

Contaminant-Specific Action Levels
The cleanup levels are the soil FRLs published in the OU5 and OU2 RODs. BTVs being considered in the remediation process are discussed for consideration during certification in Appendix C of the NRRP.

Methods of Sampling and Analysis
Physical soil samples will be collected in accordance with the applicable site sampling procedures. Per the SEP, laboratory analysis will be conducted at ASL D using QA/QC protocols specified in the SCQ. Full raw data deliverables will be required from the laboratory to allow for appropriate data validation. For FEMP-approved on- and off-site laboratories, the analytical method used will meet the required precision, accuracy and detection capabilities necessary to achieve FRL analyte ranges.

4.0 The Boundaries of the Situation

Spatial Boundaries
Domain of the Decision: The boundaries of this certification DQO extend to all surface, stockpile and fill soil in areas that are undergoing certification as part of FEMP remediation.

Population of Soil: Soil includes all excavated surfaces, undisturbed relatively unimpacted native soil, and sub-surface intervals (stockpile or fill areas only) in areas undergoing certification sampling and analysis.

Scale of Decision Making
Based on considerations of the final certification units and the COC evaluation process, the CU-specific COCs are determined. The area undergoing certification will be evaluated on a CU basis, based on physical sample results, as to whether it has passed or failed the criteria for attainment of certification (final SEP Section 3.4.4).

Temporal Boundaries
Time frame: Certification sampling must be performed in time to sequentially release certified areas for scheduled interim grading, restoration, and other final land use activities. Certification sampling data received from the laboratory will be validated and statistically evaluated. Certification results and findings will be documented in Certification Reports, which must be submitted to and approved by the regulatory agencies prior to release of the areas for scheduled interim grading, restoration, and other final land use activities.

Practical Considerations: Some areas undergoing remediation will not be accessible for certification sampling until decontamination/demolition and remedial excavation activities are complete. Other areas, such as wood lots, that are relatively uncontaminated and not planned for excavation, may require preparation, such as cutting of grass or removal of undergrowth prior to certification sampling, thus requiring coordination with FEMP Maintenance personnel.

5.0 Decision Rule

Successful certification of soil within the boundaries of a certification unit (CU) demonstrates that the certified soil (surface or subsurface) has concentrations of CU-specific COC(s) that meet the established criteria for attainment of Certification.

Parameters of Interest

The parameters of interest are the individual and average surface soil concentrations of CU-specific COCs and confidence limits on the calculated average within a CU. OU2 and OU5 ROD identify all applicable soil FRLs. The SEP identifies the ASCOCs, a subset of which will be used to establish CU-specific COCs within each Remediation Area undergoing certification sampling and analysis.

Action Levels

The applicable action levels are the on- and off-property soil FRLs published in the OU5 or OU2 ROD for each ASCOC.

Decision Rules

If the average concentration for each CU-specific COC is demonstrated to be below the FRLs within the agreed upon confidence level (95% for primary COCs; 90% for secondary COCs), and no analytical result exceeds two times the soil FRL, then the CU can be certified as complying with the cleanup criteria. If a CU does not meet the FRLs within the agreed upon confidence level for one or more CU-specific COCs, or one or more analytical results for one or more CU-specific COCs is greater than two times the associated soil FRL, then the CU fails certification and requires further assessment as per the SEP.

6.0 Limits on Decision Errors

Types of Decision Errors and Consequences

Definition

Decision Error 1: This decision error occurs when the decision maker decides that a CU has met the certification criteria, when in reality, the certification criteria have not been met. This situation could result in an increased risk to human health and the environment. In addition, this type of error could result in regulatory fees and penalties.

Decision Error 2: This decision error occurs when the decision maker decides a CU does not met the certification criteria, when actually, the certification criteria have been met. This error would result in unnecessary added costs due to the excavation of soil containing COC concentrations below their FRLs, and an increased volume of soil assigned to the OSDF. In addition, unnecessary delays in the remediation schedule may result.

True State of Nature for the Decision Errors

The true state of nature for Decision Error 1 is that the certification criteria are not met (average CU-specific COC concentrations not below the FRL within the specified confidence limits; or a single sample result above two times the FRL). The true state of nature for Decision Error 2 is that certification criteria are met (average CU-specific COC concentrations are below the FRL within the specified confidence limits, and no result is above two times the FRL). Decision Error 1 is the more severe error due to the potential threat this poses to human health and the environment.

Null Hypothesis

H_0: The average concentration of at least one CU-specific COC within a CU is equal to or greater than the associated FRL.

H_1: The average concentration of all CU-specific COCs within a CU is less than the action levels.

False Positive and False Negative Errors

A false positive is Decision Error 1: less than or equal to five percent ($p = .05$) is considered the acceptable decision error in determination of compliance with FRLs for primary ASCOCs, while ten percent ($p = .10$) is acceptable for secondary ASCOCs.

A false negative is Decision Error 2: less than or equal to 20 percent is considered the acceptable decision error. This decision error is controlled through the determination of sample sizes (see Section G.1.4.1 of the final SEP).

7.0 Design for Obtaining Quality Data

Section 3.4.2 of the final SEP presents the specifics of the certification sampling design. The following text describes the general certification sampling design.

Soil Sample Locations

In order to select certification sampling locations, each CU is divided into 16 approximately equal sub-CUs. Certification sample locations are then generated by randomly selecting an easting and northing coordinate within the boundaries of each cell. Additional alternative sample locations are also generated in case the original random sample location fails the minimum distance criterion. The minimum distance criterion is defined as the minimum distance allowed between random sample locations in order to eliminate the chance of random sample points clustering within a small area. This clustering would tend to over emphasize a small area and, conversely, under represent a large area in certification determination. By not allowing sample locations to be too closely arranged, the sample locations are spread out and provide a more uniform coverage, thus reducing the possibility of large unsampled areas. The equation for determining minimum distance criterion is presented in Section 3.4.2.1 of the SEP.

In the event that the original random sample location failed the minimum distance criterion, the first alternate location was selected and all the locations were retested. This process continued until all 16 random locations passed the minimum distance criteria.

Each CU is also divided into four quadrants, each of which contains 4 sub-CUs and 4 sample locations. Three of the four locations per quadrant (12 per CU) are then selected for sample collection and analysis. The other one per quadrant (4 per CU) are designated as "archives", and samples will not be collected and analyzed unless need arises due to analytical or validation problems warrant. Per Section 3.4.2 of the SEP, as few as 8 samples may be collected from Group 2 CUs for analysis of secondary COCs.

Physical Samples

Physical soil certification samples will be collected from the surface according to SMPL-01 at locations identified in the PSP (generally 12 of the 16 locations per CU).

If stockpiled soil is to be certified, two CUs will be established, on for the stockpile and one for the underlying soil (i.e., the "footprint"). To certify the stockpile, samples will be collected from predetermined random intervals from within the stockpiled soil at each certification sampling location identified in the PSP. To certify the footprint, the first 6-inches of native soil present at each sampling location will also be collected for certification. If fill soil is to be certified, the strategy (surface or sampling at depth) will be based on results from the precertification scan of the fill area(s), as discussed in the Certification Design Letter and the certification PSP.

Laboratory Analysis

As defined in the PSP, a minimum of 8 to 12 samples per CU will be submitted to the on-site laboratory or a FDF approved off-site laboratory for analysis. All certification analyses will meet ASL D requirements per the SCQ except for the HAMDC. Samples will be analyzed for all CU-specific ASCOCs, with minimum detection levels set according to the SCQ and applicable project guidelines.

Validation

All field data will be validated. Also, a minimum of 10 percent of the analytical data from each laboratory will be subject to analytical validation to ASL D requirements in the SCQ, and will require an ASL D package. The remaining analytical data will be validated to a minimum of ASL B, and will require an ASL B package.

8.0 Use of Data to Test Null Hypothesis

Appendix G of the final SEP discusses in detail, the statistical evaluations of certification data used to determine attainment of certification criteria.

Data Quality Objectives
Sitewide Certification Sampling and Analysis

1A. Task Description:

1B. Project Phase: (Put an X in the appropriate selection.)

RI☐ FS☐ RD☐ RA☒ RvA☐ Other (specify) _____

1C. DQO No.: SL-052, Rev. 2 DQO Reference No.: _____

---

2. Media Characterization: (Put an X in the appropriate selection.)

Air☐ Biological☐ Groundwater☐ Sediment☒ Soil☒
Waste☐ Wastewater☐ Surface Water☐ Other (specify) _____

---

3. Data Use with Ananlytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable data use)

Site Characterization	Risk Assessment
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☐ E☐
Evaluation of Alternatives	Engineering Design
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☐ E☐
Monitoring During Remediation	Other
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☒ E☐

4A. Drivers: Remediation Area Remedial Action Work Plans, Applicable or Relevant and Appropriate Requirements (ARARs) and Operable Unit 2 and Operable Unit 5 Records of Decision (ROD), Sitewide Excavation Plan (SEP).

4B. Objective: Confirmation that remediation areas at the FEMP, or adjacent off-property areas, have met certification criteria on a CU by CU basis.

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5. Site Information (Description):

The OU2 and OU5 RODs have identified areas at the FEMP that require soil remediation activities. The RODs specify that the soil in these areas will be demonstrated to be below the FRLs. Certification is necessary for all FEMP soil and some adjacent off-property soil to demonstrate that the residual soil does not contain COC contamination exceeding the FRL at a specified confidence level.

6A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

1. pH	☐	2. Uranium	☒*	3. BTX	☐
Temperature	☐	Full Radiological	☒*	TPH	☐
Specific Conductance	☐	Metals	☒*	Oil/Grease	☐
Dissolved Oxygen	☐	Cyanide	☐		
Technetium-99	☒*	Silica	☐		
4. Cations	☐	5. VOA	☒*	6. Other (specify)	
Anions	☐	BNA	☐		
TOC	☐	PEST	☒*		
TCLP	☐	PCB	☒*		
CEC	☐	COD	☐		

* As identified in the area certification PSP

6.B. Equipment Selection and SCQ Reference:

	Equipment Selection		Refer to SCQ Section
ASL A	_____	SCQ Section	_____
ASL B	_____	SCQ Section	_____
ASL C	_____	SCQ Section	_____
ASL D	Per SCQ and PSP	SCQ Section	Appendix G, Tbls. 1&3
ASL E	Per PSP	SCQ Section	Appendix H (final)

7A. Sampling Methods: (Put an X in the appropriate selection.)

Biased☐ Composite☐ Grab☒ Environmental☐ Grid☐
Intrusive☒ Non-Intrusive☐ Phased☐ Source☐ Random☒*
*Systematic random samples, selected one per cell and meeting the minimum distance criterion

7B. Sample Work Plan Reference: Project Specific Plan for the associated Remediation area Remedial Action Work Plan

Background samples: OU5 RI

7C. Sample Collection Reference: Associated PSP(s), SMPL-01

8. Quality Control Samples: (Put an X in the appropriate selection.)

8A. Field Quality Control Samples:

Trip Blanks	☒[1]	Container Blanks	☒
Field Blanks	☒[2]	Duplicate Samples	☒
Equipment Rinsate Blanks	☒	Split Samples	☒[3]
Preservative Blanks	☐	Performance Evaluation Samples	☐

Other (specify) _____

1) Collected for volatile organic sampling
2) As noted in the PSP
3) Split samples will be taken where required by the EPA

8B. Laboratory Quality Control Samples:

Method Blank	☒	Matrix Duplicate/Replicate	☒
Matrix Spike	☒	Surrogate Spikes	☒
Tracer Spike	☒	Other (specify) _____	

9. Other: Please identify any other germane information that may impact the data quality or gathering of this particular objective, task, or data use.

Sample density will be dependent upon the CU size (Group 1 [250'x250'] or Group 2 [500'x500']), as determined by historical and pre-certification scan data.