Department of Energy

Ohio Field Office
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175 Tri-County Parkway
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SEP 20 2006

Mr. James A. Saric, Remedial Project Manager
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Chicago, Illinois 60604-3590

DOE-0201-06

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
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Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE FINAL CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR THE FORMER STORM WATER RETENTION BASIN AREA

References:
1) Letter DOE-0181-06, J. Reising to J. Saric/T. Schneider, "Transmittal of the Revised Certification Design Letter and Certification Project Specific Plan for the Former Storm Water Retention Basin Area," dated August 7, 2006

2) Letter, T. Schneider to J. Reising, "Approval - CDL/PSP for SWRB Area," dated August 10, 2006

3) Letter, J. Saric to J. Reising, "Storm Water Retention Basin Area Revised CDL and Certification PSP," dated August 23, 2006

Enclosed for your information is the final Certification Design Letter and Certification Project Specific Plan for the Former Storm Water Retention Basin Area. The revised plan (Reference 1) was conditionally approved by the U.S. Environmental Protection Agency and approved by the Ohio Environmental Protection Agency (OEPA) as noted in References 2 and 3. Minor changes were made to include lead-210 and thorium-230 in Table 3-3 and boundary changes were made to Certification Unit (CU) SWRB-C10-7 and sub-CU SWRB-C04-4D based on a verbal request by OEPA at the July 28, 2006 Technical Information Exchange Meeting.

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

Sincerely,

Johnny W. Reising
Director

Enclosure

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CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR THE FORMER STORM WATER RETENTION BASIN AREA

FERNALD CLOSURE PROJECT
FERNALD, OHIO

SEPTEMBER 2006

U.S. DEPARTMENT OF ENERGY

20500-PSP-0015
REVISON 0

CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR THE FORMER STORM WATER RETENTION BASIN AREA

Document Number 20500-PSP-0015
Revision 0

September 2006

APPROVAL:

9/19/06

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FERNALD CLOSURE PROJECT

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LIST OF ACRONYMS AND ABBREVIATIONS

A2PII	Area 2, Phase II
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
D&D	demolition and dismantlement
DOE	U.S. Department of Energy
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
GPC	gas proportional counting
GPS	global positioning system
HPGe	high-purity germanium (detector)
ICP/MS	inductively coupled plasma/mass spectroscopy
LCS	liquid scintillation counting
µg/L	micrograms per liter
MDL	minimum detectable level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NAD83	North American Datum of 1983
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
PAH	polyaromatic hydrocarbon
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
ppm	parts per million
PSP	Project Specific Plan
QA/QC	Quality Assurance/Quality Control
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RWP	Radiological Work Permit
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SPL	Sample Processing Laboratory

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

SWRB	Storm Water Retention Basin
TAL	Target Analyte List
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 document is a combination of the Certification Design Letter (CDL) and Certification Project Specific Plan (PSP) for the former Storm Water Retention Basin (SWRB) Area. This document describes the certification design, sampling, analysis, and validation for this area. Certification demonstrates that area-specific constituents of concern (ASCOCs) meet the risk based final remediation levels. The following information is included:

- The boundary of the former SWRB Area and a description of the area to be certified under the guidance of this CDL and Certification PSP;
- A discussion of historical data from the area proposed for certification;
- A discussion of the ASCOC selection process and list of ASCOCs assigned to the former SWRB Area;
- A presentation of the certification unit (CU) 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 CDL and Certification PSP is limited to the certification of the former SWRB Area. Remediation was complete in this area in 2006, thus initiating the certification process described in this CDL and Certification PSP. Field sampling of this area is scheduled to begin immediately following approval of this document.

The certification design presented in this CDL and Certification PSP follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (DOE 1998). The selection of ASCOCs was accomplished using constituent of concern (COC) lists in the Operable Unit 5 Record of Decision (DOE 1996), previous investigation data, and process knowledge. Eleven CUs have been defined for this CDL and Certification PSP. Total uranium, thorium-228, thorium-232, radium-226, and radium-228 (the sitewide primary radiological COCs) are considered ASCOCs in each CU. Secondary COCs are identified for specific CUs within the certification area.

1.0 INTRODUCTION

This Certification Design Letter (CDL)/Certification Project Specific Plan (PSP) describes the certification design, sampling, analysis, and validation necessary to demonstrate that soil within the boundaries of the former Storm Water Retention Basin (SWRB) Area have 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 CDL and Certification PSP follows guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998) and SEP Addendum (DOE 2001). Accordingly, this CDL and Certification PSP consists of ten sections:

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

2.0 Historical and Precertification Data - Discussion of historical soil data and presentation of precertification data from the former SWRB Area

3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for the former SWRB 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 boundaries of the area to be certified under the guidance of this CDL and Certification PSP;
- Define the ASCOC selection process and list the selected ASCOCs for the former SWRB Area;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;

- Summarize the analytical requirements and the statistical methodology that will be employed;
- Present the proposed schedule for the certification activities; and
- Provide details of certification sampling, analysis and validation that will take place in the area.

1.2 SCOPE AND AREA DESCRIPTION

The area included in this CDL and Certification PSP is approximately 9.3 acres. The area to be certified includes the former east, center, and west Storm Water Retention Basins, which are located south of the East Parking Lot. The scope of this CDL and Certification PSP includes details of certification sampling, analysis, and validation that will take place in the former SWRB Area. There are no underground storage tanks or hazardous waste management units. Figure 1-1 depicts the former SWRB area and Figure 1-2 shows the area to be certified under this CDL and Certification PSP.

Not included in the scope of this CDL/PSP is the area where the Silos Water Treatment Facility is located, which is currently undergoing demolition and dismantlement (D&D). Upon completion of D&D, this area will be certified under a separate CDL/PSP.

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
DOE Contact	Johnny Reising	Jane Powell
Project Manager	Jyh-Dong Chiou	Rich Abitz
Characterization Manager	Rich Abitz	Denise Arico
Field Sampling Manager	Tom Buhrlage	Mike Frank
Surveying Contact	Jim Schwing	Bernie Kienow/Andy Clinton
WAO Contact	Christa Walls	Pat Shanks
Laboratory Contact	Paul McSwigan	Amy Meyer
SWRB Data Management Lead	Denise Arico	Krista Flaugh
Data Validation Contact	James Chambers	Baohe Chen
Field Data Validation Contact	Ervin O'Bryan	James Chambers
FACTS/SED Database Contact	Mark Turner	Susan Marsh
QA/QC Contact	Reinhard Friske	Darren Wessel
Safety and Health Contact	Garner Powell	Jeff Middaugh

DOE - U.S. Department of Energy
FACTS - Fernald Analytical Computerized Tracking System
QA/QC - Quality Assurance/Quality Control
SED - Sitewide Environmental Database
WAO - Waste Acceptance Organization

FIGURE 1-1. FORMER SWRB AREA LOCATION MAP

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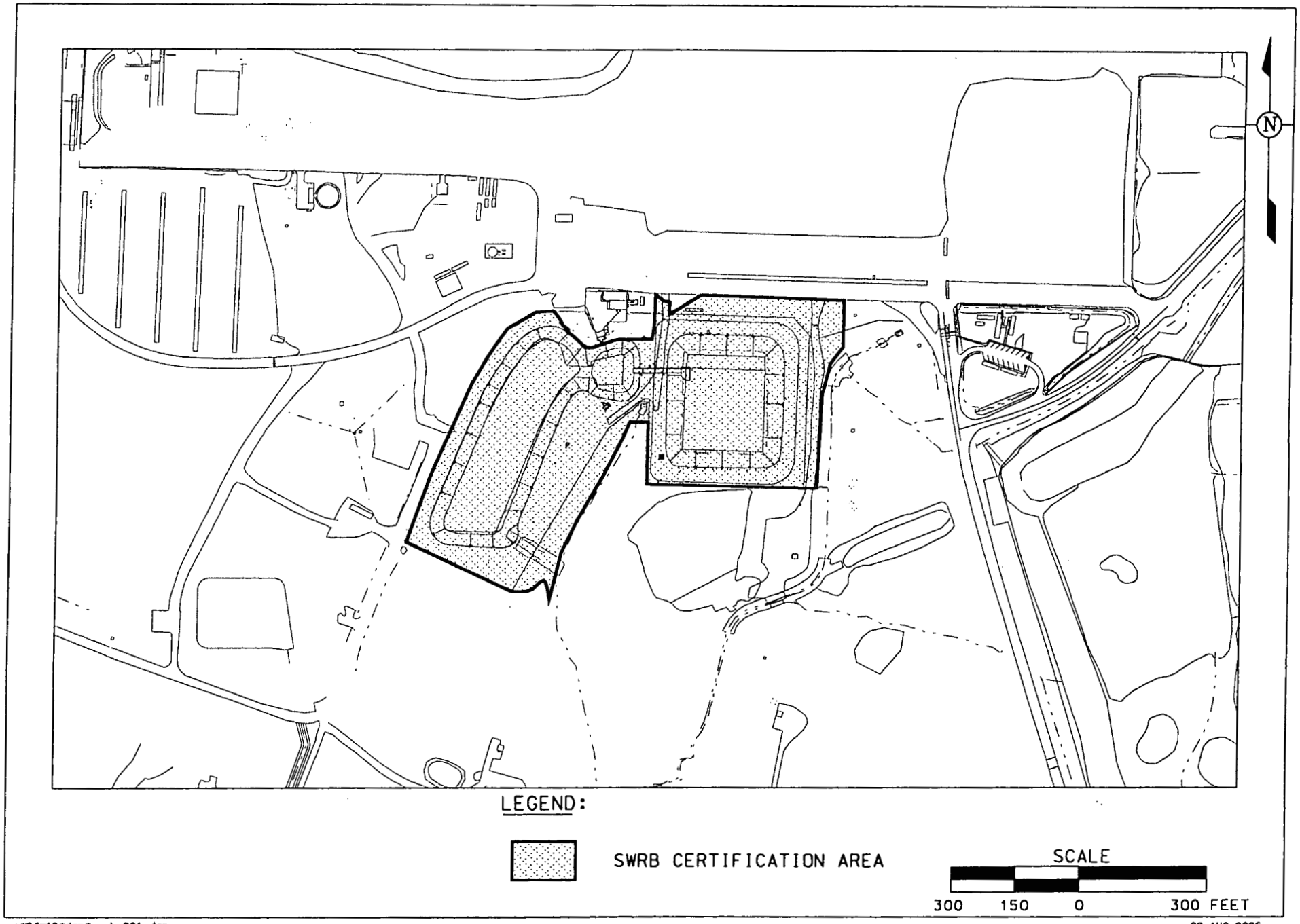
STATE PLANAR COORDINATE SYSTEM 1983

03-AUG-2006



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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 1-2. AREA TO BE CERTIFIED

02-AUG-2006

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.

In addition to the Predesign Investigations, the Remedial Investigation Report (RI, DOE 1995a), and Feasibility Study Report (FS, DOE 1995b) for OU5 were used for remedial design of the former SWRB Area. Predesign sampling data have been collected pursuant to the RI/FS.

Before initiating the certification process, all historical soil data within the boundary to be certified was pulled from the Sitewide Environmental Database (SED), and is summarized in Section 2.1. Based on the results of sampling activities summarized below, it has been determined that no further remedial actions are necessary to remove above-FRL or above-waste acceptance criteria (WAC) soil.

Those utilities removed as part of the remediation process were taken out after all excavation was completed to design grade and precertification had been completed. Once the utility had been removed as required by the technical specification, precertification was performed on the trench bottom created by removal of these utilities and then back-filled with the precertified overburden soil. These sampling events took place as described in Variance/Field Change Notice (V/FCN) 20500-PSP-0009-83, written to the PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0011) (DOE 2005a).

2.1 Historical, Predesign and Excavation Control

As the soil around the SWRBs was not impacted by production activities at the site, limited sampling was done on the soil in this area during the RI/FS. The sediment within the basins was periodically removed, therefore the sediment was not characterized during the RI/FS either.

The soil around the basins as well as the sediment within the basins were fully characterized during various predesign investigations.

All historical data are discussed in the Excavation Plan for Area 7 Silos and General Area (DOE 2005b) and the WAC Attainment Plan for Sediment in the Storm Water Retention Basins (DOE 2006). These include data collected during the RI/FS and various predesign investigations.

The east, center, and west SWRBs were excavated in 2006. The sediment from the west SWRB was below WAC for the OSDF, and was excavated for disposal in the OSDF. The sediment from the east and

center SWRBs had technetium-99 results above WAC for the OSDF, and was therefore excavated for off-site disposal.

All soil samples collected during predesign were below FRLs. The planned excavations for the SWRB area included the excavation of sediment from the SWRBs as well as the soil on the west side of the west SWRB. This excavation was a continuation of the excavation of impacted soil/flyash from the former Southern Waste Unit road as a remnant from Addendum No. 1 to the Implementation Plan for Area 2, Phase II (A2PII) - Subarea 3 (Infrastructure) Subcontractor Laydown Area and Equipment Wash Facility (DOE 2005c). The impacted soil/flyash was above FRL for aroclor-1254.

2.2 Precertification Data

According to guidelines established in Section 3.3.3 of the SEP, precertification activities were conducted to evaluate residual radiological contamination patterns as specified in the Area 7 Silos and General Area Excavation Control and Precertification PSP. These mapped results are provided on Figures A-1 through A-10 and the high-purity germanium detector (HPGe) results are provided in Tables A-1 and A-2, all of which are located in Appendix A.

It should be noted that the Phase 3 measurements in the west SWRB were collected following the excavation of radium-226 "hotspots" identified by real-time prior to the precertification scan being completed.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the Operable Unit (OU) 5 Record of Decision (ROD, DOE 1996), there are 80 soil constituents of concern (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 RI/FS data presented on spatial distribution maps, 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, 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

The selection process for retaining 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 that lies within the certification area boundary;
- It can be traced to site use in the remediation area of interest, either through process knowledge or known release of the constituent to the environment;
- Analytical results indicate that a contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated CRDLs;
- 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; or
- The contaminant is one of the sitewide primary COCs (total uranium, radium-226, radium-228, thorium-238, and thorium-232).

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

3.1.1 ASCOC Selection

Each COC on the Remediation Area 7 ASCOC list (Table 3-1) was evaluated for its relevance to the former SWRB Area. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOC. In addition to the assigned COCs for Remediation Area 7, the COCs from upgradient areas that were potentially carried with the storm flows are also included. All final COCs for the former SWRB Area are provided on Table 3-3.

TABLE 3-1
ASCOC LIST FOR REMEDIATION AREA 7[a]

ASCOC	FRL
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
Lead-210	38 pCi/g
Technetium-99	30 pCi/g
Thorium-230	280 pCi/g
Inorganics	
Arsenic	12 mg/kg
Beryllium	1.5 mg/kg
Lead	400 mg/kg
Manganese	4,600 mg/kg
Antimony	96 mg/kg
Cadmium	82 mg/kg
Molybdenum	2,900 mg/kg
Silver	29,000 mg/kg
Organics	
Aroclor-1254	0.13 mg/kg
Aroclor-1260	0.13 mg/kg
Dieldrin	0.015 mg/kg
Benzo(a)anthracene	20 mg/kg
Benzo(a)pyrene	2 mg/kg
Benzo(b)fluoranthene	20 mg/kg
Benzo(g,h,i)perylene	1 mg/kg[b]
Benzo(k)fluoranthene	200 mg/kg
Chrysene	2,000 mg/kg
Dibenzo(a,h)anthracene	2 mg/kg
Fluoranthene	10 mg/kg[b]
Indeno(1,2,3-cd)pyrene	20 mg/kg
Phenanthrene	5 mg/kg[b]
Pyrene	10 mg/kg[b]

[a]As listed in Table 2-7 of the SEP.
[b]ASCOC does not have a FRL therefore the benchmark toxicity value (BTV) will be used.

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

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TABLE 3-2
ASCOC LIST FOR THE FORMER SWRB AREA

ASCOC	Retained as ASCOC?	Justification
Radiological		
Radium-226	Yes	Sitewide primary COC
Radium-228	Yes	Sitewide primary COC
Thorium-228	Yes	Sitewide primary COC
Thorium-232	Yes	Sitewide primary COC
Total Uranium	Yes	Sitewide primary COC
Cesium-137	Yes	Retained as potentially upgradient storm flows COC
Lead-210	Yes	Retained as potentially upgradient storm flows COC
Technetium-99	Yes	Above-WAC in east SWRB; retained as potentially upgradient storm flows COC
Thorium-230	Yes	Retained as potentially upgradient storm flows COC
Inorganics		
Antimony	Yes	Retained as potentially upgradient storm flows COC
Arsenic	Yes	Retained as potentially upgradient storm flows COC
Barium	Yes	Retained as potentially upgradient storm flows COC
Beryllium	Yes	Retained as potentially upgradient storm flows COC
Cadmium	Yes	Retained as potentially upgradient storm flows COC
Chromium	Yes	Retained as potentially upgradient storm flows COC
Lead	Yes	Retained as potentially upgradient storm flows COC
Mercury	Yes	Retained as potentially upgradient storm flows COC
Molybdenum	Yes	Retained as potentially upgradient storm flows COC
Selenium	Yes	Retained as potentially upgradient storm flows COC
Silver	Yes	Retained as potentially upgradient storm flows COC
Pesticides/PCBs		
Aroclor-1254	Yes	Above-FRL results in adjacent A2PII Subarea 3; retained as potentially upgradient storm flows COC
Aroclor-1260	Yes	Retained as potentially upgradient storm flows COC
Dieldrin	Yes	Retained as potentially upgradient storm flows COC
PAHs		
Benzo(a)anthracene	Yes	Retained as potentially upgradient storm flows COC
Benzo(a)pyrene	Yes	Retained as potentially upgradient storm flows COC
Benzo(b)fluoranthene	Yes	Retained as potentially upgradient storm flows COC
Benzo(g,h,i)perylene	Yes	Retained as potentially upgradient storm flows COC
Benzo(k)fluoranthene	Yes	Retained as potentially upgradient storm flows COC
Chrysene	Yes	Retained as potentially upgradient storm flows COC
Dibenzo(a,h)anthracene	Yes	Retained as potentially upgradient storm flows COC
Fluoranthene	Yes	Retained as potentially upgradient storm flows COC
Indeno(1,2,3-cd)pyrene	Yes	Retained as potentially upgradient storm flows COC

TABLE 3-2
ASCOC LIST FOR THE FORMER SWRB AREA

ASCOC	Retained as ASCOC?	Justification
PAHs (continued)		
Phenanthrene	Yes	Retained as potentially upgradient storm flows COC
Pyrene	Yes	Retained as potentially upgradient storm flows COC
VOCs		
1,1,1-Trichloroethane	Yes	Retained as potentially upgradient storm flows COC
1,1-Dichloroethene	Yes	Retained as potentially upgradient storm flows COC
1,2-Dichloroethane	Yes	Retained as potentially upgradient storm flows COC
4-Methyl-2-pentanone	Yes	Retained as potentially upgradient storm flows COC
Acetone	Yes	Retained as potentially upgradient storm flows COC
Benzene	Yes	Retained as potentially upgradient storm flows COC
Carbon Tetrachloride	Yes	Retained as potentially upgradient storm flows COC
Ethylbenzene	Yes	Retained as potentially upgradient storm flows COC
Methylene chloride	Yes	Retained as potentially upgradient storm flows COC
Tetrachloroethene	Yes	Retained as potentially upgradient storm flows COC
Toluene	Yes	Retained as potentially upgradient storm flows COC
Trichloroethene	Yes	Retained as potentially upgradient storm flows COC
Xylenes, Total	Yes	Retained as potentially upgradient storm flows COC

PAHs - polyaromatic hydrocarbons
PCBs - polychlorinated biphenyls
VOCs - volatile organic compounds

TABLE 3-3
FINAL ASCOC LIST FOR THE FORMER SWRB AREA

ASCOC	FRL	Type of ASCOC	Where Retained
Radiological			
Radium-226	1.7 pCi/g	Primary	All CUs
Radium-228	1.8 pCi/g	Primary	All CUs
Thorium-228	1.7 pCi/g	Primary	All CUs
Thorium-232	1.5 pCi/g	Primary	All CUs
Total Uranium	8.2 mg/kg	Primary	All CUs
Cesium-137	1.4 pCi/g	Secondary	CUs 2, 3, 6, 7, 9
Lead-210	38 pCi/g	Secondary	CUs 2, 3, 6, 7, 9
Technetium-99	30.0 pCi/g	Secondary	CUs 1 through 10
Thorium-230	280 pCi/g	Secondary	CUs 2, 3, 6, 7, 9
Inorganics			
Antimony	96 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Arsenic	12 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Barium	68,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Beryllium	1.5 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Cadmium	82 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Chromium	300 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Lead	400 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Mercury	7.5 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Molybdenum	2,900 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Selenium	5,400 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Silver	29,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Pesticides/PCBs			
Aroclor-1254	0.13 mg/kg	Secondary	CUs 1 through 10
Aroclor-1260	0.13 mg/kg	Secondary	CUs 1 through 10
Dieldrin	0.015 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
PAHs			
Benzo(a)anthracene	20 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Benzo(a)pyrene	2 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Benzo(b)fluoranthene	20 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Benzo(g,h,i)perylene	1 mg/kg[a]	Secondary	CUs 2, 3, 6, 7, 9
Benzo(k)fluoranthene	200 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Chrysene	2,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Dibenzo(a,h)anthracene	2 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Fluoranthene	10 mg/kg[a]	Secondary	CUs 2, 3, 6, 7, 9
Indeno(1,2,3-cd)pyrene	20 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Phenanthrene	5 mg/kg[a]	Secondary	CUs 2, 3, 6, 7, 9
Pyrene	10 mg/kg[a]	Secondary	CUs 2, 3, 6, 7, 9

TABLE 3-3
FINAL ASCOC LIST FOR THE FORMER SWRB AREA

ASCOC	FRL	Type of ASCOC	Where Retained
VOCs			
1,1,1-Trichloroethane	4.3 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
1,1-Dichloroethene	0.41 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
1,2-Dichloroethane	0.16 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
4-Methyl-2-pentanone	2,500 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Acetone	43,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Benzene	850 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Carbon Tetrachloride	2.1 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Ethylbenzene	5,100 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Methylene chloride	37 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Tetrachloroethene	3.6 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Toluene	10,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Trichloroethene	25 mg/kg	Secondary	CUs 2, 3, 6, 7, 9
Xylenes, Total	92,000 mg/kg	Secondary	CUs 2, 3, 6, 7, 9

[a] ASCOC does not have a FRL, therefore the BTV will be used.

4.0 CERTIFICATION APPROACH

4.1 CERTIFICATION DESIGN

The certification design for the former SWRB Area follows the general approach outlined in Section 3.4 of the SEP. Many factors were taken into consideration when determining the boundaries for each CU within the former SWRB Area. These factors include: historical land use, proximity to other areas of the site, and residual COC data. To allow for more concentrated sampling and ensure that excavation of the SWRBs had no effect on the soil, Group 1 CUs have been established in the former SWRB Area. The CU design is shown on Figure 4-1 and Figure 4-2 and the sub-CU and certification sample locations are shown on Figure 4-3 through Figure 4-6.

4.1.1 Certification Unit Design

The former SWRB Area consists of eleven Group 1 CUs. CUs SWRB-C02, SWRB-C03, SWRB-C06, SWRB-C07, and SWRB-C09 were designed specifically around the footprints of the former east, center, and west SWRB. CU11 was designed around the access road located east of the east SWRB. The CUs are shown on Figure 4-1 and Figure 4-2.

4.1.2 Sample Location Design

The selection of certification sampling locations was conducted according to Section 3.4.2 of the SEP. Each 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 for 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 random locations met the minimum distance criteria.

The former SWRB Area sub-CUs and planned certification sampling locations are shown on Figures 4-3 through 4-6. For CUs SWRB-C01 through SWRB-C11, samples will be collected for analysis from the top 0 to 6 inches of the surface. Four of the 16 sample locations within CUs SWRB-C01 through SWRB-C11 are designated with a "V," indicating archive sample locations. Archive samples will not be collected unless they are needed for additional analysis. One sample location in each CU is designated with a "D," indicating a field duplicate sample collection location.

In addition to the 12 planned sample locations within CU5 and CU8, one bias sample location has been designated in each CU, along the haul road located east of the east SWRB. The bias sample locations are based upon the highest total counts from the real-time scan completed along the haul road. At the bias sample locations, the top 0 to 6 inches of gravel as well as the top 0 to 6 inches of soil will be collected.

It should be noted that sample locations SWRB-C10-4 and SWRB-C10-6, were sample locations SWRB-C08-1 and SWRB-C08-2 under Revision A of this CDL/PSP, respectively. Based on OEPA comments to include the center SWRB, the two samples from CU 08 now fall in CU 10. Two new samples locations, SWRB-C08-18 and SWRB-C08-19 have been added to CU 08. Sample locations SWRB-C10-4 and SWRB-C10-6 do not need to be sampled under this Revision of the CDL/PSP.

Prior to commencement of certification sampling field activities, all certification sample locations will be surveyed and field verified to make sure no surface obstacle prevents collection.

4.2 SURVEYING

Before certification sampling activities begin, the North American Datum of 1983 (NAD83) State Planar coordinates for each selected sampling location (with the exception of the archive sample locations) will be surveyed and identified in the field with a flag.

The former SWRB Area CU boundaries are shown on Figure 4-1, and the certification sampling locations are shown on Figures 4-3 through 4-6. All certification sample locations meet the minimum distance criterion. All sample location information can be found in Appendix B.

4.3 PHYSICAL SOIL SAMPLE COLLECTION

4.3.1 Sample Collection

Soil samples will be collected in accordance with procedure SMPL-01, Solids Sampling. Surface samples will be collected using 3-inch diameter, 6-inch long, plastic liners, or an alternate method as identified in SMPL-01, as long as sufficient volume is collected from the appropriate depth to perform the prescribed analyses. Following sample collection, each soil core shall be divided, if necessary, and placed into the proper sample containers. Upon completion of sample collection, the boreholes will be collapsed and no additional abandonment is necessary. Ultimately, the method of sample collection will be left to the discretion of the Field Sampling Lead.

Quality control sample requirements will include a duplicate field sample, a trip blank, and a container blank and/or rinsate. Quality control samples 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. 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 the entire former SWRB Area. 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 (e.g., a utility) 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;
- If the distance moved is greater than 3 feet, the move must be documented in a 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 Certification Report.

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 Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (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 CDL and Certification 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-C##-Location^Analysis-QC,* where:

SWRB	=	Sample collected from the former SWRB Area
C##	=	Certification unit from which sample was collected
Location	=	Sample location number within the CU (1 through 16)
Analysis	=	"R" indicates radiological analysis; "M" indicates metals analysis; "L" indicates volatile organic compound; "P" indicates PCB and/or pesticides analysis; "S" indicates semi-volatile organic compound analysis.
QC	=	Quality control sample, if applicable. A "B" indicates a bias sample location; a "D" indicates a field duplicate sample; "Y1" indicates the first container blank sample; "X1" indicates the first rinsate sample; and "TB1" indicates the first trip blank sample.

For example, a field duplicate sample taken from the first sample location from CU SWRB-C01, for radiological and PCB analysis would be identified as SWRB-C01-1^RP-D. If a rinsate sample is required, the first rinsate sample will be identified as SWRB-C-X1-R. If a container blank is required, the first sample will be identified as SWRB-C-Y1-RM. The first trip blank will be identified as SWRB-C-L-TB1. 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 is not required for trip blanks, rinsates, or container blanks.

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. Predesign data from the area will be used to ship the samples off site. The highest predesign total uranium result is 11.2 mg/kg from boring A7-SA4-9.

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.

Once all the radium-226 data (from the 7-day in-growth) for a CU have been evaluated by the Characterization Lead, the laboratory shall be notified to recount the sample with the highest result for radium-226 following a 21-day in-growth. The recount data shall be reported in 30 days (certificates of analysis and electronic data deliverable). All gamma analyses will have an identifier from the lab indicating whether the result represents a 7-day or 21-day in-growth. Samples with a 7-day in-growth will be denoted by a "7DAY" suffix while the sample chosen as a 21-day in-growth will be denoted by a "21DAY" suffix within the electronic data deliverable (EDD).

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. Analyses will be conducted to Analytical Support Level (ASL) D or E, where all requirements for ASL E are the same as ASL D except the minimum detection level (MDL) for the selected analytical method must be at least 10 percent of the 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. Samples rejected during validation will be re-analyzed, or an archive sample will be collected and submitted for analysis.

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 the former SWRB Area as it has been for previous certification efforts.

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. On an individual CU basis, any ASCOC with the 95 percent UCL above the FRL 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 second criterion. The second criterion is related to individual samples. An individual sample cannot be greater than two times the FRL or three 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.

There are three conditions that could result in a CU failing certification: 1) 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 and Certification PSP have passed certification, a Certification Report will be issued. The certification report will be submitted to the U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (OEPA) to receive acknowledgement that the pertinent OU 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.

TABLE 4-1
SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method[a]	Matrix	ASL	TAT	Preservative	Container[b]	Minimum Mass/Volume
Rads/PCBs (TALs AC)	Gamma Spec and/or LSC or GPC GC	Solid	D/E	EDD gamma 10 days[e] Final gamma 14 days[e] Final Tc99 10 days 10 days	Cool 4° C	Glass with Teflon-lined lid	500 g (1500 g)[c]
Rads/PCBs/Pest/ Metals/Semi-VOCs (TALs ABCDEF)	Gamma or Alpha Spec and/or LSC or GPC ICP or ICP/MS or CVAA	Solid	D/E	EDD gamma 10 days[e] Final gamma 14 days[e] Final alpha (Th230) 10 days Final Tc99 10 days 10 days	Cool 4° C	Glass with Teflon-lined lid	500 g (1500g)[c]
Rads (TAL H)	Gamma Spec	Solid	D/E	EDD gamma 10 days[e] Final gamma 14 days[e]	None	Plastic or Glass or Stainless Steel	300 g (900 g)[c]
VOCs (TAL G)	GC/MS	Solid	D/E	10 days	None	3 x 1-Encore Sampler plus 1 x 2-oz jar for percent moisture	Each full Encore Sampler will hold approx. 5 g
Metals (TAL E)	ICP or ICP/MS or CVAA	Liquid (rinsate[d])	D/E	10 days	HNO_3 pH<2	Polyethylene	500 ml
VOCs (TAL G)	GC/MS	Liquid (trip blank)	D/E	10 days	H_2SO_4 pH<2 Cool, 4° C	3 x 40-ml glass with Teflon-lined septa	120 ml (no headspace)

TABLE 4-1
SAMPLING AND ANALYTICAL REQUIREMENTS
(Continued)

[a] Samples will be analyzed according to ASL D requirements but the minimum detection level may cause some analyses to be considered ASL E. For radium-226, a seven-day in-growth is requested.

[b] 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.

[c] At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location in the CU in order for the contract laboratory to perform the required quality control analysis. The samples shall be identified on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

[d] If "push tubes" are used for sampling, the off-site laboratories will be sent container blanks. If an alternative sample method is used, the Field Technicians will collect a rinsate(s).

[e] One sample collected per CU will be selected for analysis utilizing a 21-day in-growth with a 30-day TAT for radium-226 only. Samples with a 7-day in-growth will be denoted by a "7DAY" suffix while the sample chosen as a 21-day in-growth will be denoted by a "21DAY" suffix within the EDD.

CVAA - Cold Vapor/Atomic Absorption
GC/MS - gas chromatography/mass spectrometry
GPC - gas proportional counting
ICP/MS - inductively coupled plasma/mass spectrometry
LSC - liquid scintillation counting

ADDITIONAL INFORMATION

Historical data for shipment of these samples is 11.5 mg/kg total uranium from boring A7-SA4-9.
All data will be validated.
Approximately 10 rinsates or 2 container blanks for rads and metals, *along with 5 trip blanks, will be submitted under this project.*

TABLE 4-2
TARGET ANALYTE LISTS

20500-PSP-0015-A
(Est. 130 soil samples; Radiological - ASL D/E*)

Analyte	FRL[a]	MDL - Soil
Total Uranium	82 mg/kg	8.2 mg/kg
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g
Technetium-99	29.1 pCi/g	2.91 pCi/g

20500-PSP-0015-B
(Est. 65 soil samples; Radiological - ASL D/E*)

Analyte	FRL	MDL - Soil
Cesium-137	1.4 pCi/g	0.14 pCi/g
Lead-210	38 pCi/g	3.8 pCi/g
Thorium-230	280 pCi/g	28 pCi/g

20500-PSP-0015-C
(Est. 130 soil samples; PCBs - ASL D/E*)

Analyte	FRL	MDL - Soil
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg

20500-PSP-0015-D
(Est. 65 soil samples; Pesticides - ASL D/E*)

Analyte	FRL	MDL - Soil
Dieldrin	0.015 mg/kg	0.0015 mg/kg

20500-PSP-0015-E
(Est. 65 soil samples; Metals - ASL D/E*)

Analyte	FRL	MDL - Soil	MDL - Water
Antimony	96 mg/kg	9.6 mg/kg	1.5 mg/L
Arsenic	12 mg/kg	1.2 mg/kg	1.8 mg/L
Barium	68,000 mg/kg	6,800 mg/kg	10,200 mg/L
Beryllium	1.5 mg/kg	0.15 mg/kg	0.22 mg/L
Cadmium	82 mg/kg	8.2 mg/kg	0.75 mg/L
Chromium	300 mg/kg	30 mg/kg	45 mg/L
Lead	400 mg/kg	40 mg/kg	30 mg/L
Mercury	7.5 mg/kg	0.75 mg/kg	0.75 mg/L
Molybdenum	2,900 mg/kg	290 mg/kg	1.5 mg/L
Selenium	5,400mg/kg	540 mg/kg	810 mg/L
Silver	29,000 mg/kg	2,900 mg/kg	1.5 mg/L

TABLE 4-2
TARGET ANALYTE LISTS
(Continued)

20500-PSP-0015-F
(Est. 65 soil samples; PAHs - ASL D/E*)

Analyte	FRL	MDL - Soil
Benzo(a)anthracene	20 mg/kg	2 mg/kg
Benzo(a)pyrene	2 mg/kg	0.2 mg/kg
Benzo(b)fluoranthene	20 mg/kg	2 mg/kg
Benzo(g,h,i)perylene	1 mg/kg[b]	0.1 mg/kg
Benzo(k)fluoranthene	200 mg/kg	20 mg/kg
Chrysene	2000 mg/kg	200 mg/kg
Dibenzo(a,h)anthracene	2 mg/kg	0.2 mg/kg
Fluoranthene	10 mg/kg[b]	1 mg/kg
Indeno(1,2,3-cd)pyrene	20 mg/kg	2 mg/kg
Phenanthrene	5 mg/kg[b]	0.5 mg/kg
Pyrene	10 mg/kg[b]	1 mg/kg

20500-PSP-0015-G
(Est. 65 soil samples VOCs - ASL D/E*)

Analyte	FRL	MDL - Soil	MDL - Water
1,1,1-Trichloroethane	4.3 mg/kg	0.43 mg/kg	10 µg/L
1,1-Dichloroethene	0.41 mg/kg	0.041 mg/kg	10 µg/L
1,2-Dichloroethane	0.16 mg/kg	0.016 mg/kg	10 µg/L
4-Methyl-2-pentanone	2,500 mg/kg	250 mg/kg	10 µg/L
Acetone	43,000 mg/kg	4,300 mg/kg	10 µg/L
Benzene	850 mg/kg	85 mg/kg	10 µg/L
Carbon Tetrachloride	2.1 mg/kg	0.21 mg/kg	10 µg/L
Ethylbenzene	5,100 mg/kg	510 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	100,000 mg/kg	1,000 mg/kg	10 µg/L
Trichloroethene	25 mg/kg	2.5 mg/kg	10 µg/L
Xylenes, Total	920,000 mg/kg	9,200 mg/kg	10 µg/L

TABLE 4-2
TARGET ANALYTE LISTS
(Continued)

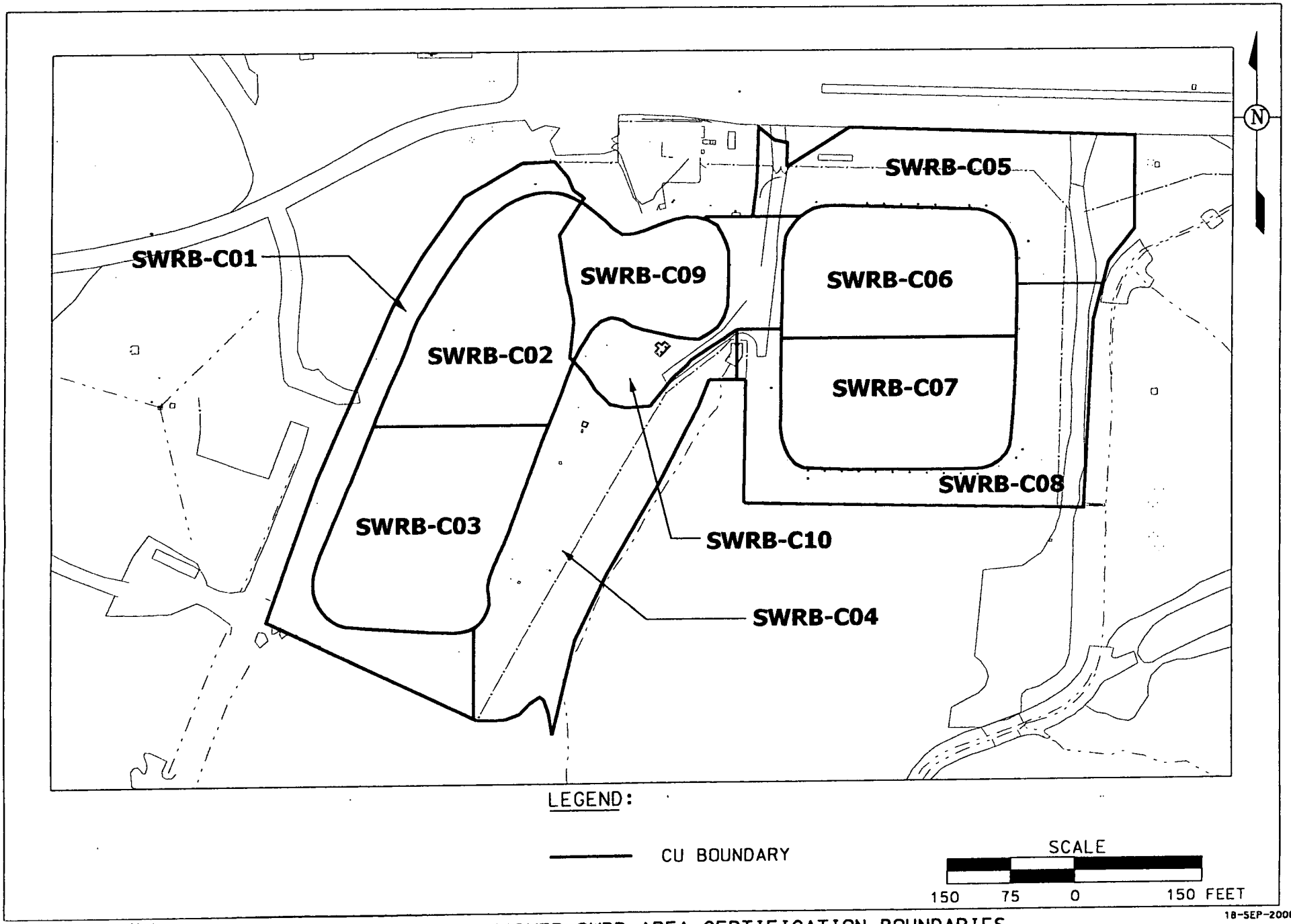
20500-PSP-0015-H
(Est. 17 soil samples; Radiological - ASL D/E*)

Analyte	FRL[a]	MDL - Soil
Total Uranium	82 mg/kg	8.2 mg/kg
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g

[a] The MDL for technetium-99 is 10 percent of the WAC limit, which is lower than the FRL.
[b] ASCOC does not have a FRL therefore the BTV will be used.

*Analytical requirements will meet ASL D but the MDL may cause some analyses to be considered ASL E.

µg/L - micrograms per liter
mg/L - milligrams per liter



v:\2fm12\dgn\swrb_202.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 4-1. FORMER SWRB AREA CERTIFICATION BOUNDARIES

18-SEP-2006

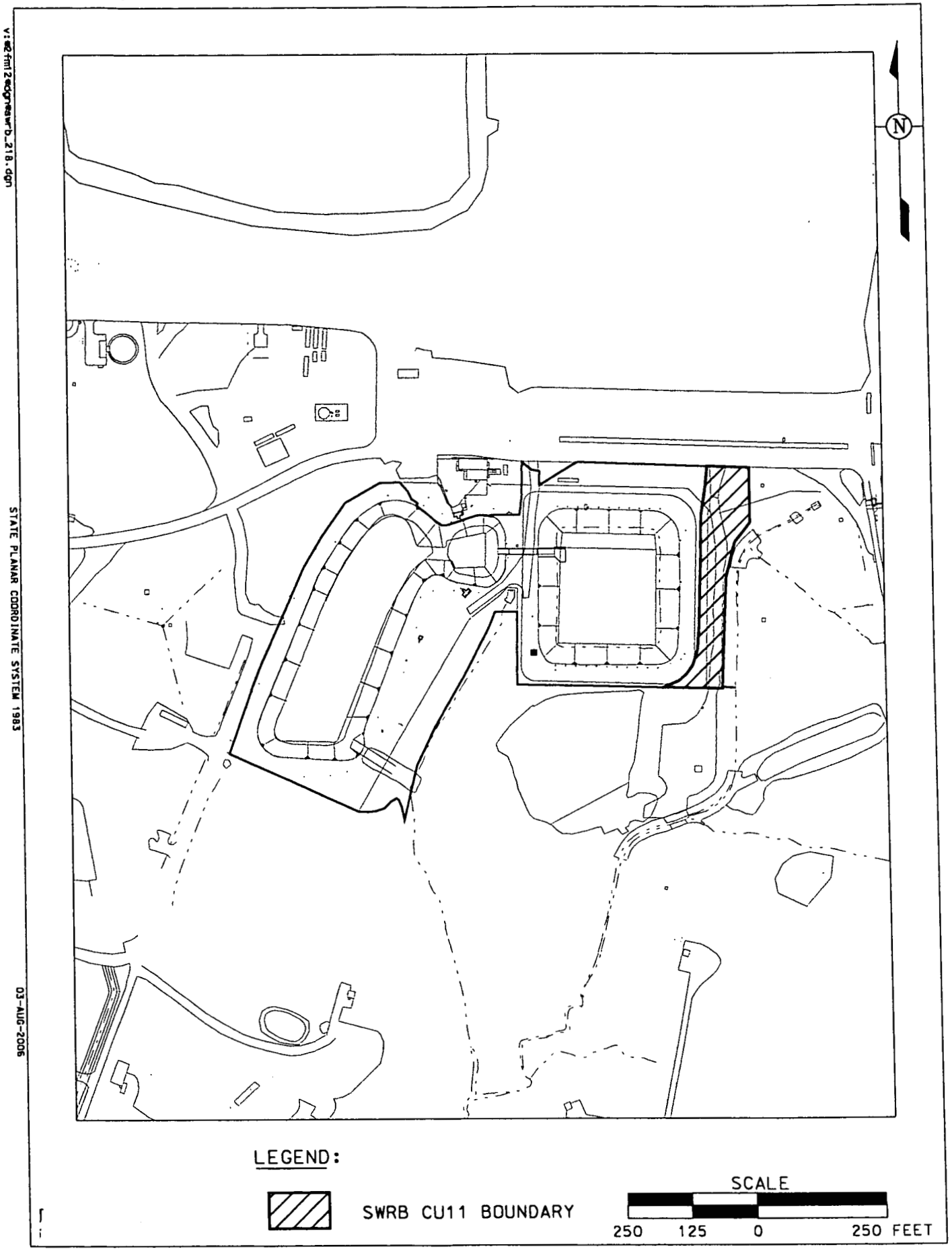


FIGURE 4-2. FORMER SWRB AREA CERTIFICATION BOUNDARY CU 11

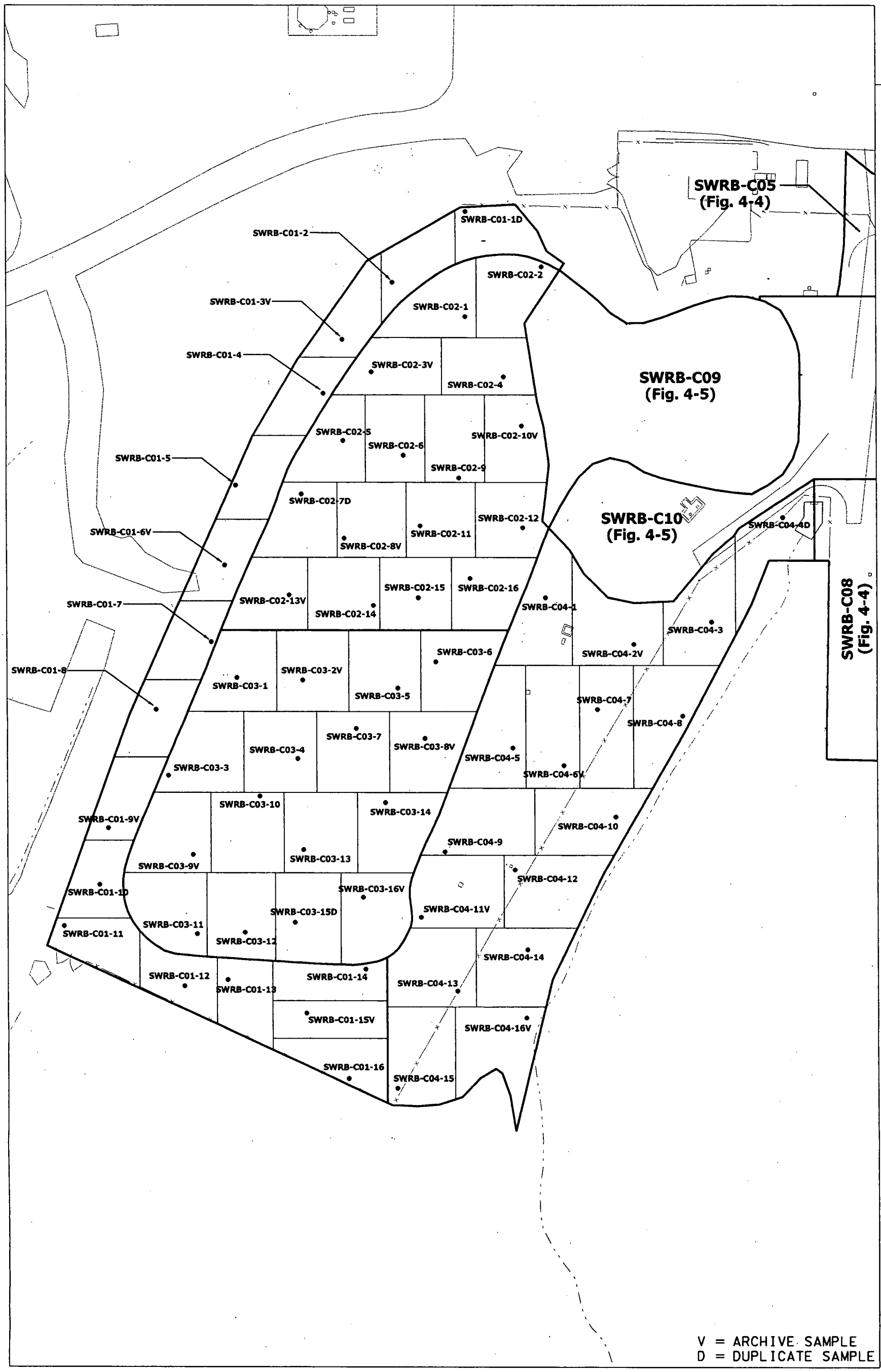


FIGURE 4-3. CERTIFICATION SAMPLING LOCATIONS (CUs 1-4)

STATE PLANAR COORDINATE SYSTEM 1983

18-SEP-2006

v1#24m2#dgn#swrb_215.dgn

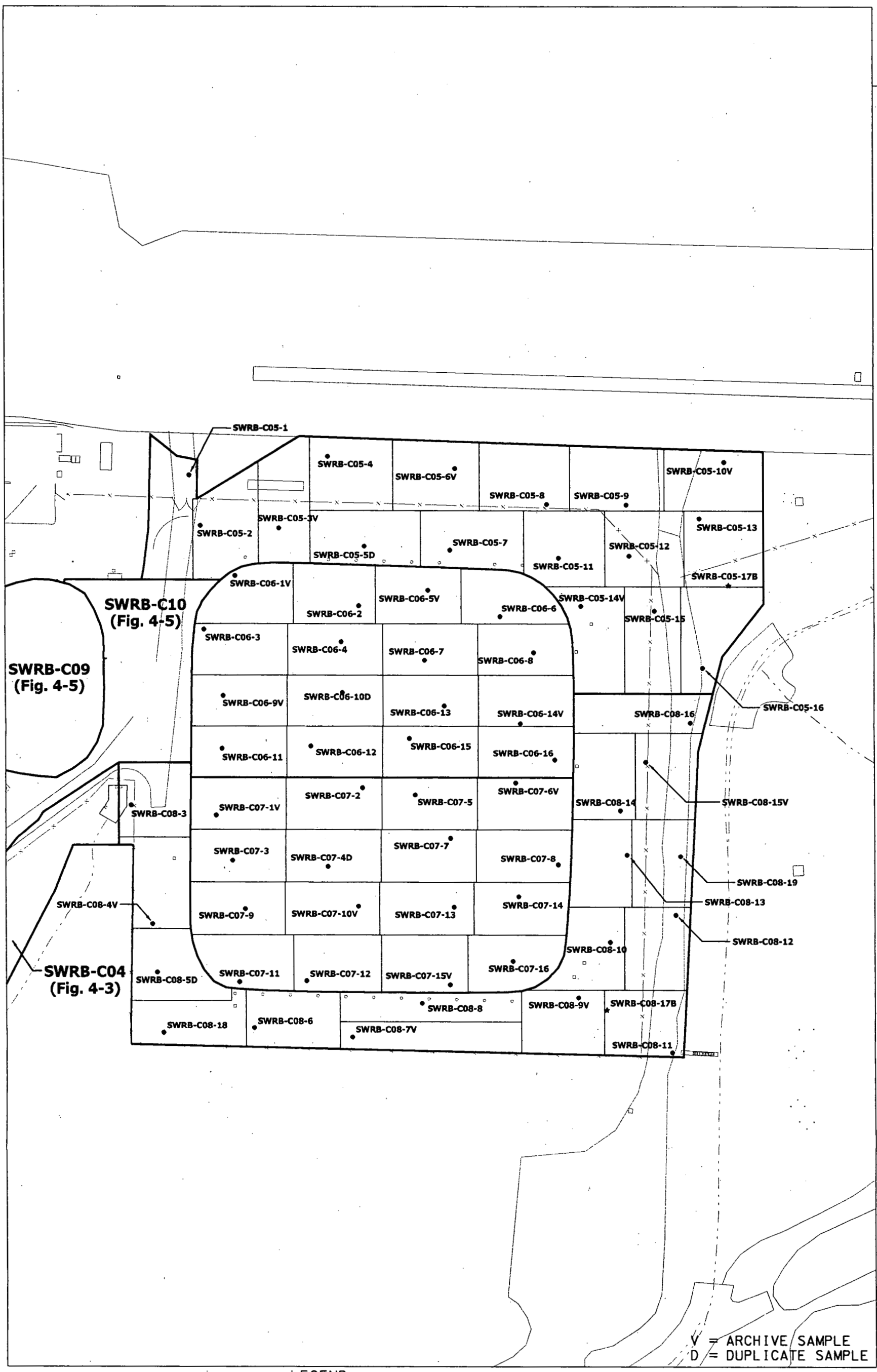


FIGURE 4-4. CERTIFICATION SAMPLING LOCATIONS (CUs 5-8)

STATE PLANAR COORDINATE SYSTEM 1983

18-SEP-2006

v:\82fm\2\dgn\swrb_216.dgn

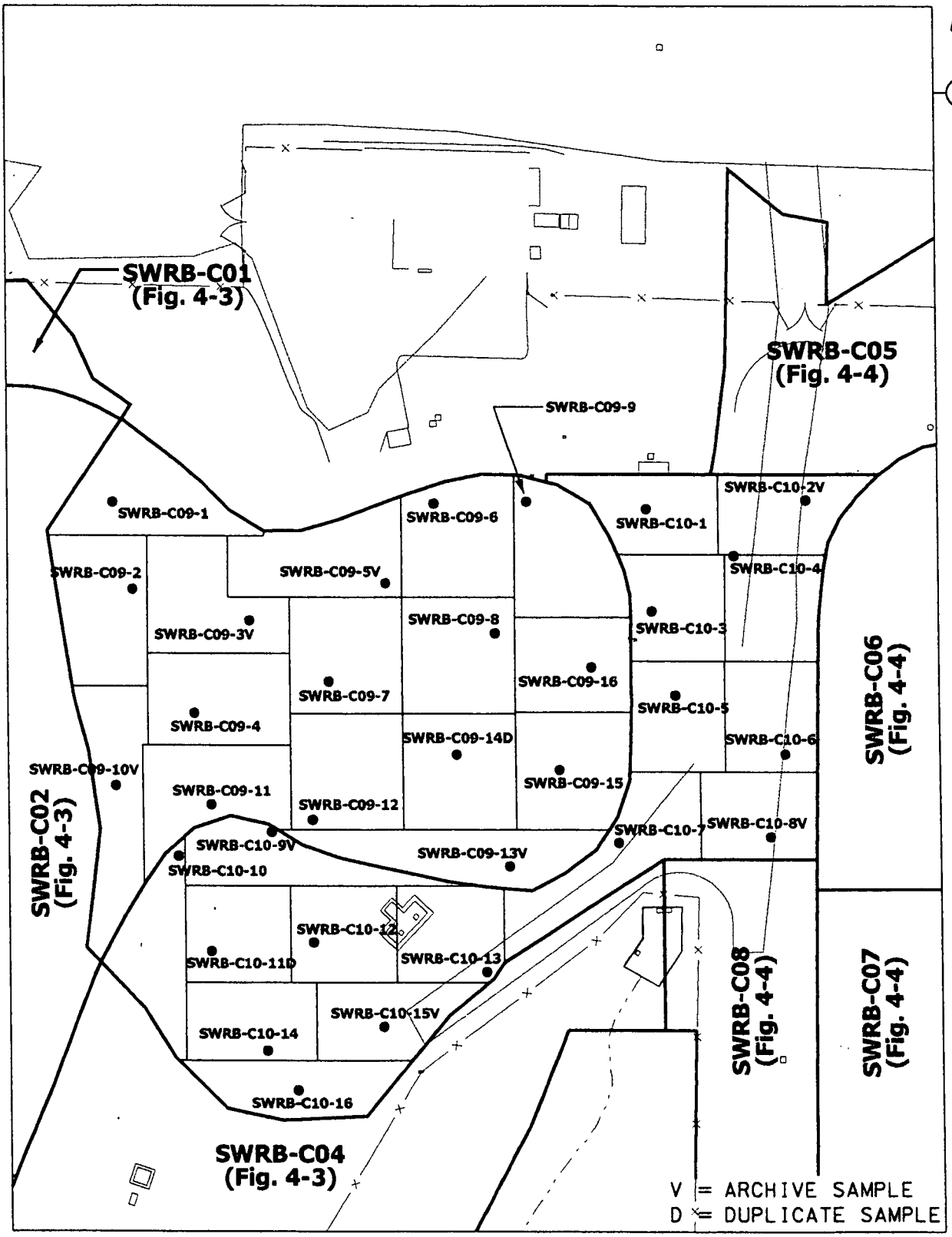
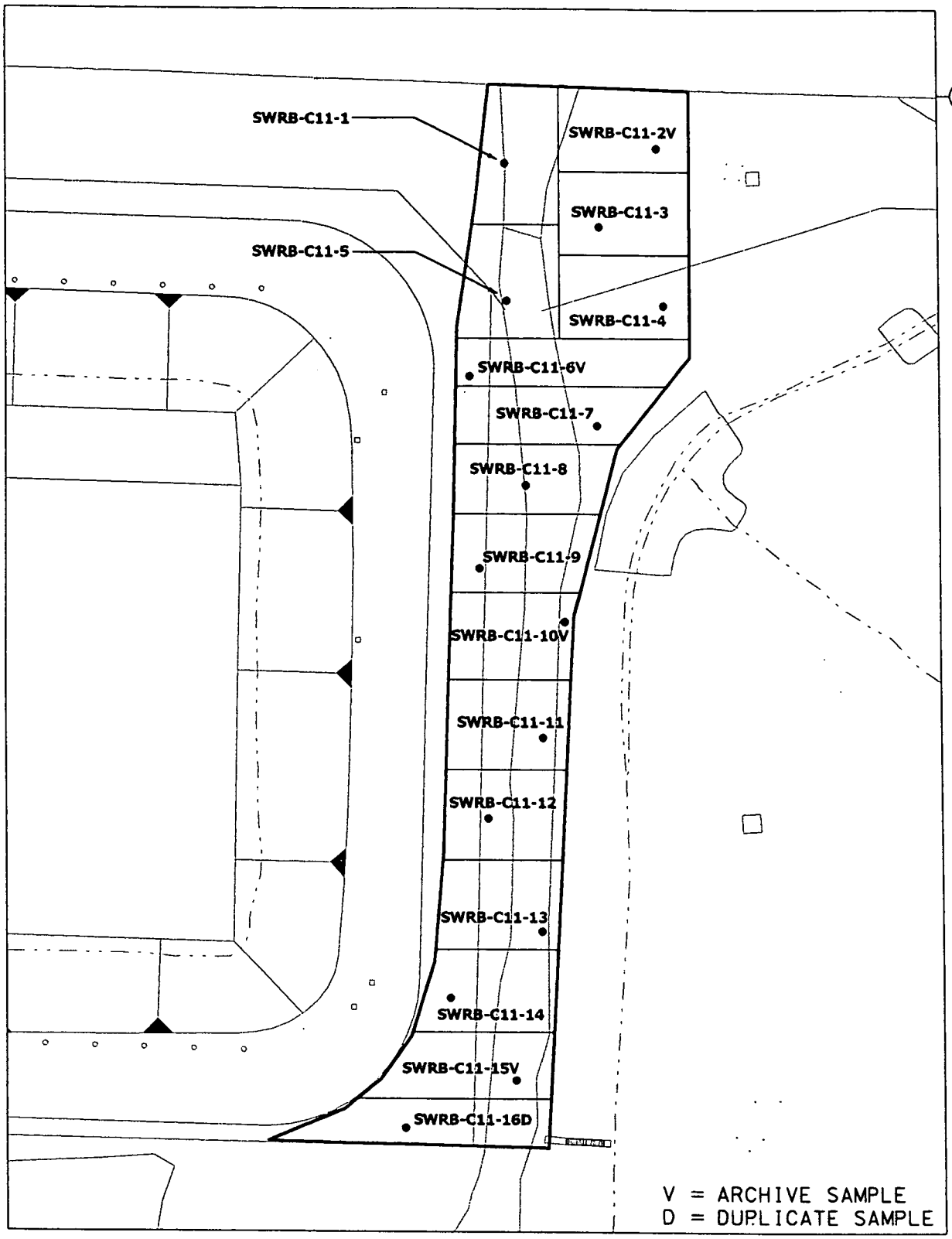


FIGURE 4-5. CERTIFICATION SAMPLING LOCATIONS (CUs 9 & 10)

v:\82fmf2\dgn\swrb_217.dgn
STATE PLANAR COORDINATE SYSTEM 1983
18-SEP-2006



LEGEND:

• SAMPLE LOCATION

SCALE

60 30 0 60 FEET

FIGURE 4-6. CERTFICATION SAMPLING LOCATIONS (CU11)

v:\2fm12\dgn\swrb_214.dgn
STATE PLANAR COORDINATE SYSTEM 1983
03-AUG-2006

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	May 31, 2006
Start of Certification Sampling	June 26, 2006
Complete Field Work	June 29, 2006
Complete Analytical Work	July 31, 2006
Complete Data Validation and Statistical Analysis	August 8, 2006
Submit Certification Report	August 15, 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 SWRB Area certification. The container blank sample will be analyzed for the same metal COCs from the CU in which it is collected. If an alternate sample collection method is used, one rinsate will be collected and analyzed for the same metal COCs from the CU in which it is collected 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 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 10 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. The following CUs will be validated to VSL D: SWRB-C07 and SWRB-C08. If any result is rejected during validation, the sample will be re-analyzed or an archive 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
- DRL-01, Plugging and Abandonment
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9501, Shipping Samples to Off-site Laboratories
- Trimble Pathfinder Pro-XL GPS Operation Manual

6.3 INDEPENDENT ASSESSMENT

An independent assessment may be performed by the Fernald Closure Project (FCP) 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, or designee, 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 walkdown must be corrected/controlled prior to the start of work. Weekly walkdowns 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), Flour Fernald work permits, Radiological Work Permit (RWP), penetration permits, Construction Traveler, and other applicable permits. The radiological work requirements for activities will be detailed in activity-specific RWPs. Concurrence with applicable safety permits is required by 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 surpervisors 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 cell phones. Cellular phones are provided to the Technicians by FCP, 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 that 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 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 A. 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, 1995a, "Remedial Investigation Report for Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1995b, "Feasibility Study Report for Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

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.

U.S. Department of Energy, 1998, "Sitewide Excavation Plan," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2001, "Addendum to the Sitewide Excavation Plan," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005a, "Project Specific Plan for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0011)," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005b, "Excavation Plan for Area 7 Silos and General Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005c, "Addendum No. 1 to the Implementation Plan for Area 2, Phase II - Subarea 3 (Infrastructure) Subcontractor Laydown Area and Equipment Wash Facility," Revision B Addendum 1, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

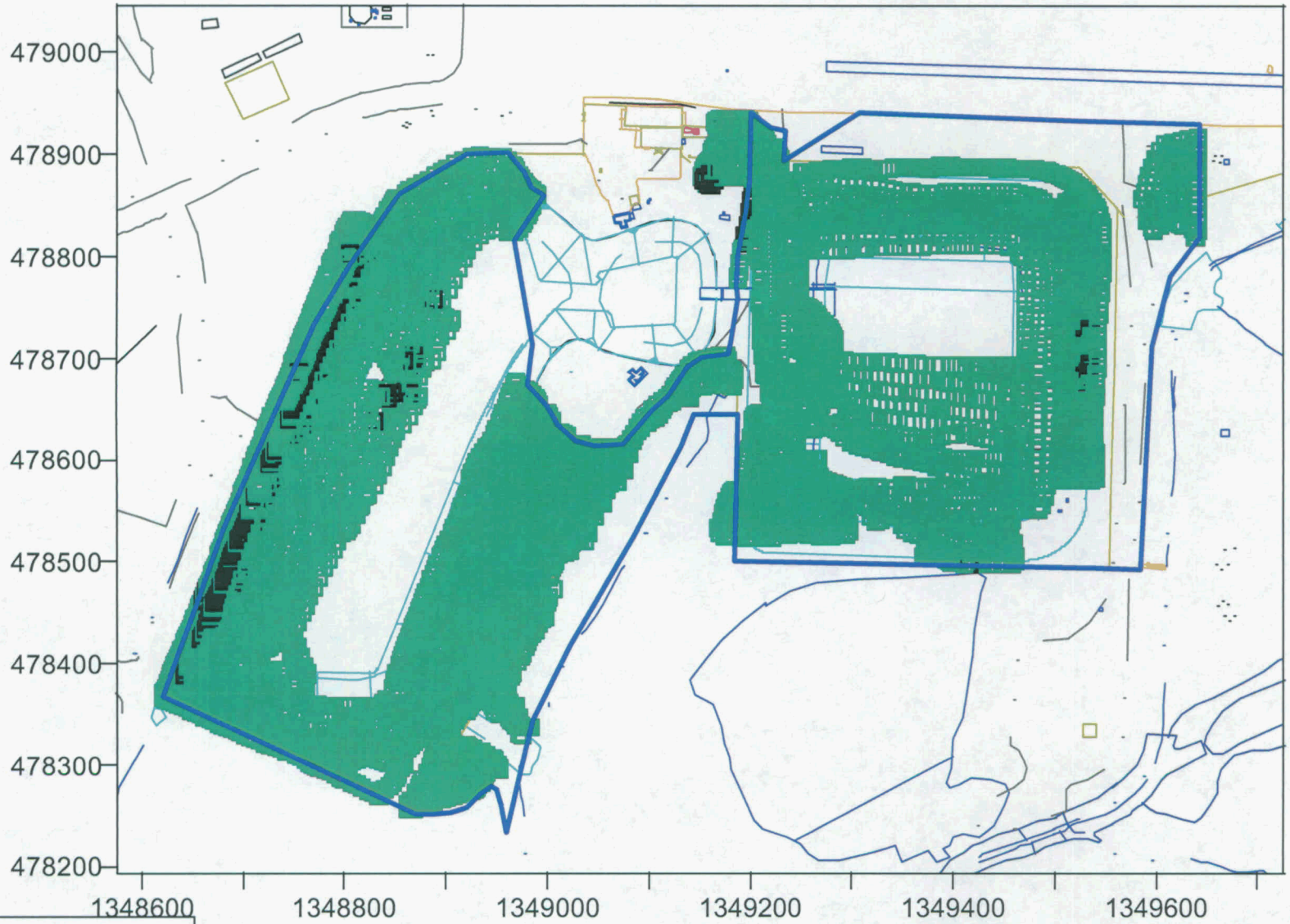
U.S. Department of Energy, 2006, "WAC Attainment Plan for Sediment in the Storm Water Retention Basins," Revision 1, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

APPENDIX A

PRECERTIFICATION REAL-TIME SCAN DATA FOR THE FORMER SWRB AREA

Figure A - 1 Former SWRB Area Total Gross Counts per Second

NaI Precertification Data: RSS1_2552_2-21-06, RSS3_1375_2-21-06, 1378_2-22-06; 2574_05-15-2006, 2577_05-16-2006, 2583_05-20-2006
RSS4_1051_2-21-06, 1099_05-16-2006
HPGe Data: 30687_04-24-2006, 05-23-2006; 30699_05-17-2006, 31265_05-19-2006; 30904_05-22-2006
Measurement Period: 02-21-2006 thru 05-23-2006



N

NaI Tcps
- 0 to 3000
- 3000 to 5000
- 5000 to 15000
- 15000 to 18000
- 18000 to 99000

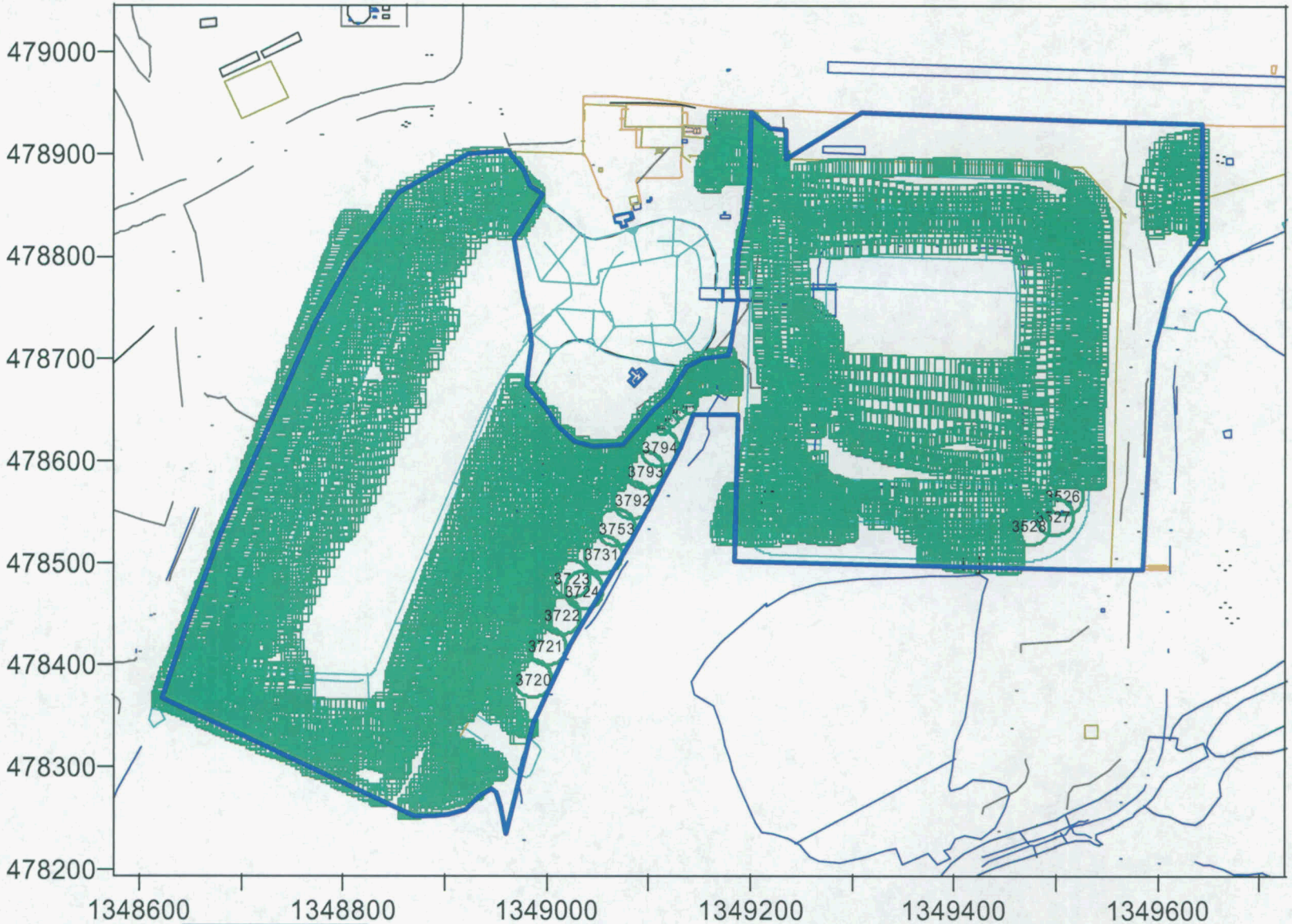
Certification Boundary

RTIMP DWG Title: SWRB_P1_TC.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: Curt Baumann 05-24-2006
Support Data: SWRB_P1.xls

Figure A - 2 Former SWRB Area Phase I Moisture Corrected Radium-226

NaI Precertification Data: RSS1_2552_2-21-06, RSS3_1375_2-21-06, 1378_2-22-06; 2574_05-15-2006, 2577_05-16-2006, 2583_05-20-2006
RSS4_1051_2-21-06, 1099_05-16-2006

HPGe Data: 30687_04-24-2006, 05-23-2006; 30699_05-17-2006, 31265_05-19-2006; 30904_05-22-2006
Measurement Period: 02-21-2006 thru 05-23-2006



N

NaI Ra-226 in pCi/g	HPGe Ra-226 in pCi/g
-9999 to 5.1	-999 to 5.1
5.1 to 9999	5.1 to 999

Certification Boundary

RTIMP DWG Title: SWRB_P1_RA.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: Curt Baumann 05-24-2006
Support Data: SWRB_P1.xls

Figure A - 3 Former SWRB Area Phase I Moisture Corrected Thorium-232

NaI Precertification Data: RSS1_2552_2-21-06, RSS3_1375_2-21-06, 1378_2-22-06; 2574_05-15-2006, 2577_05-16-2006, 2583_05-20-2006
RSS4_1051_2-21-06, 1099_05-16-2006

HPGe Data: 30687_04-24-2006, 05-23-2006; 30699_05-17-2006, 31265_05-19-2006; 30904_05-22-2006
Measurement Period: 02-21-2006 thru 05-23-2006

NaI Th-232 in pCi/g	HPGe Th-232 in pCi/g
-9999 to 4.5	-999 to 4.5
4.5 to 9999	4.5 to 999

Certification Boundary

RTIMP DWG Title: SWRB_P1_TH.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: Curt Baumann 05-24-2006
Support Data: SWRB_P1.xls

Figure A - 4 Former SWRB Area Phase I Moisture Corrected Total Uranium

NaI Precertification Data: RSS1_2552_2-21-06, RSS3_1375_2-21-06, 1378_2-22-06; 2574_05-15-2006, 2577_05-16-2006, 2583_05-20-2006
RSS4_1051_2-21-06, 1099_05-16-2006

HPGe Data: 30687_04-24-2006, 05-23-2006; 30699_05-17-2006, 31265_05-19-2006; 30904_05-22-2006
Measurement Period: 02-21-2006 thru 05-23-2006

N

NaI Total U in ppm	HPGe Total U in ppm
-9999 to 246	-999 to 246
246 to 9999	246 to 999

Certification Boundary

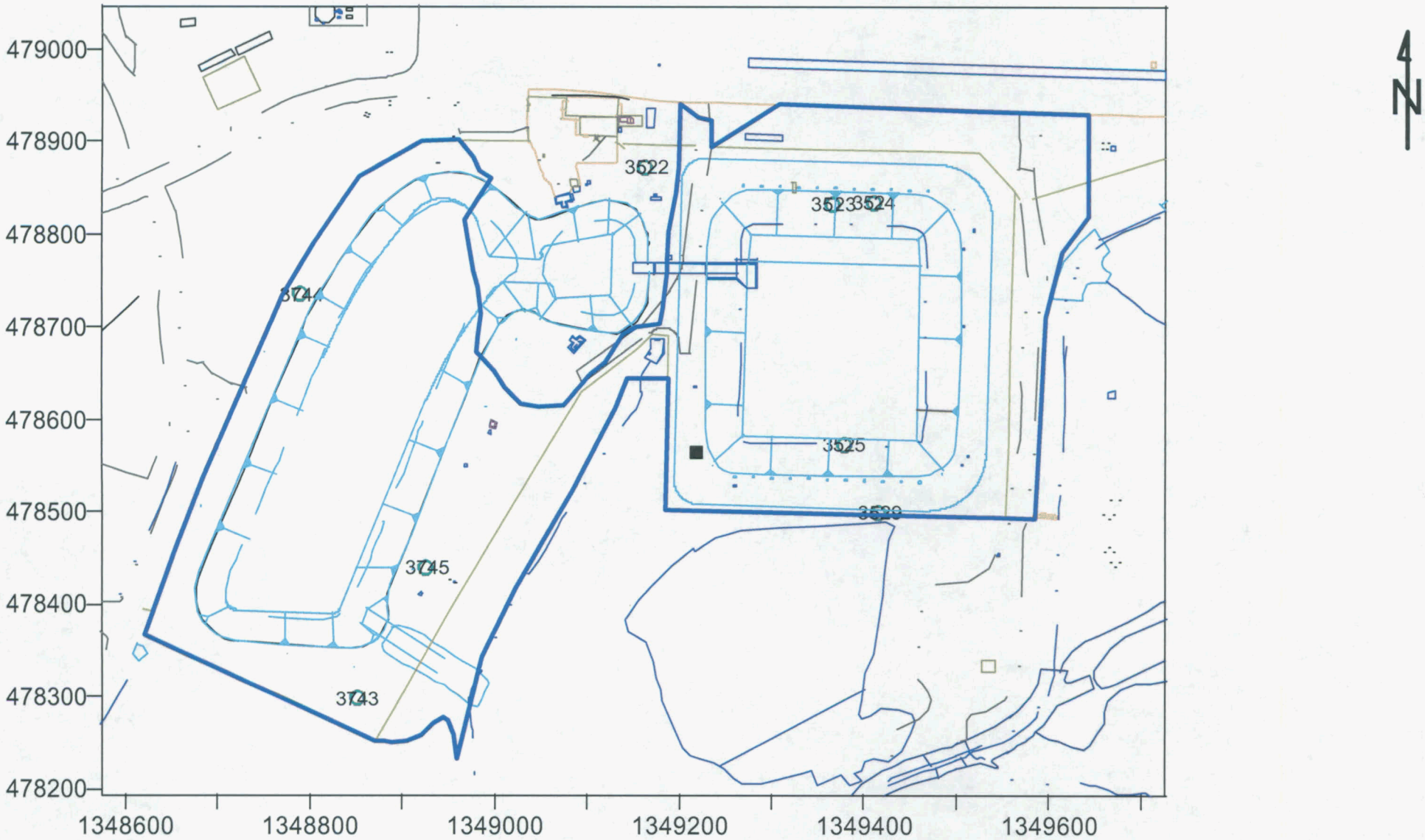
RTIMP DWG Title: SWRB_P1_TU.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: Curt Baumann 05-24-2006
Support Data: SWRB_P1.xls

TABLE A-1
FORMER SWRB AREA PHASE 2 - HPGe RESULTS DETECTOR HEIGHT 31 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A7J-P2-3522	24Apr06	478872	1349163	31	1.724	0.972	8.87E-02
A7J-P2-3522-D	24Apr06	478872	1349163	31	1.954	1.03	0
A7J-P2-3523	24Apr06	478832	1349366	31	1.657	0.959	0.145
A7J-P2-3524	24Apr06	478834	1349410	31	1.866	1.1	7.08E-02
A7J-P2-3525	24Apr06	478573	1349378	31	2.405	1.22	21.6
A7J-P2-3529	24Apr06	478499	1349416	31	3.707	0.862	14.9
SWRB-P2-3743	19May06	478298	1348852	31	1.363	1.19	15.1
SWRB-P2-3743-D	19May06	478298	1348852	31	1.409	1.06	0.125
SWRB-P2-3744	19May06	478735	1348790	31	1.638	1.26	0.137
SWRB-P2-3745	19May06	478440	1348926	31	1.654	1.03	7.83E-02
SWRB-P2-3787	22May06	478758	1348888	31	4.571	0.933	0.151
SWRB-P2-3787-D	22May06	478758	1348888	31	4.622	0.872	12.7
SWRB-P2-3905	01Jun06	478692	1349446	31	1.627	1.02	0
SWRB-P2-3953	06Jun06	478670	1348873	31	4.957	1.12	13.9
SWRB-P2-4323	15Jul06	478526	1349529	31	1.272	0.825	14.8
SWRB-P2-4324	15Jul06	478832	1349618	31	1.11	0.709	0.104
SWRB-P2-4371	20Jul06	478481	1348828	31	2.987	1.01	8.28E-02
SWRB-P2-4371-D	20Jul06	478481	1348828	31	2.901	0.975	0.109
SWRB-P2-4511	28Jul06	478772	1349017	31	1.297	0.824	5.74E-02
SWRB-P2-4510	28Jul06	478424	1348847	31	2.14	1.04	17.8
SWRB-P2-4571	01Aug06	478875	1349298	31	1.171	0.945	0.114

Figure A - 5 Former SWRB Area Phase 2 Moisture Corrected Radium-226

Data Groups: 30687_04-24-2006,30265_05-19-2006
Measurement Period: 04-24-2006 thru 05-19-2006

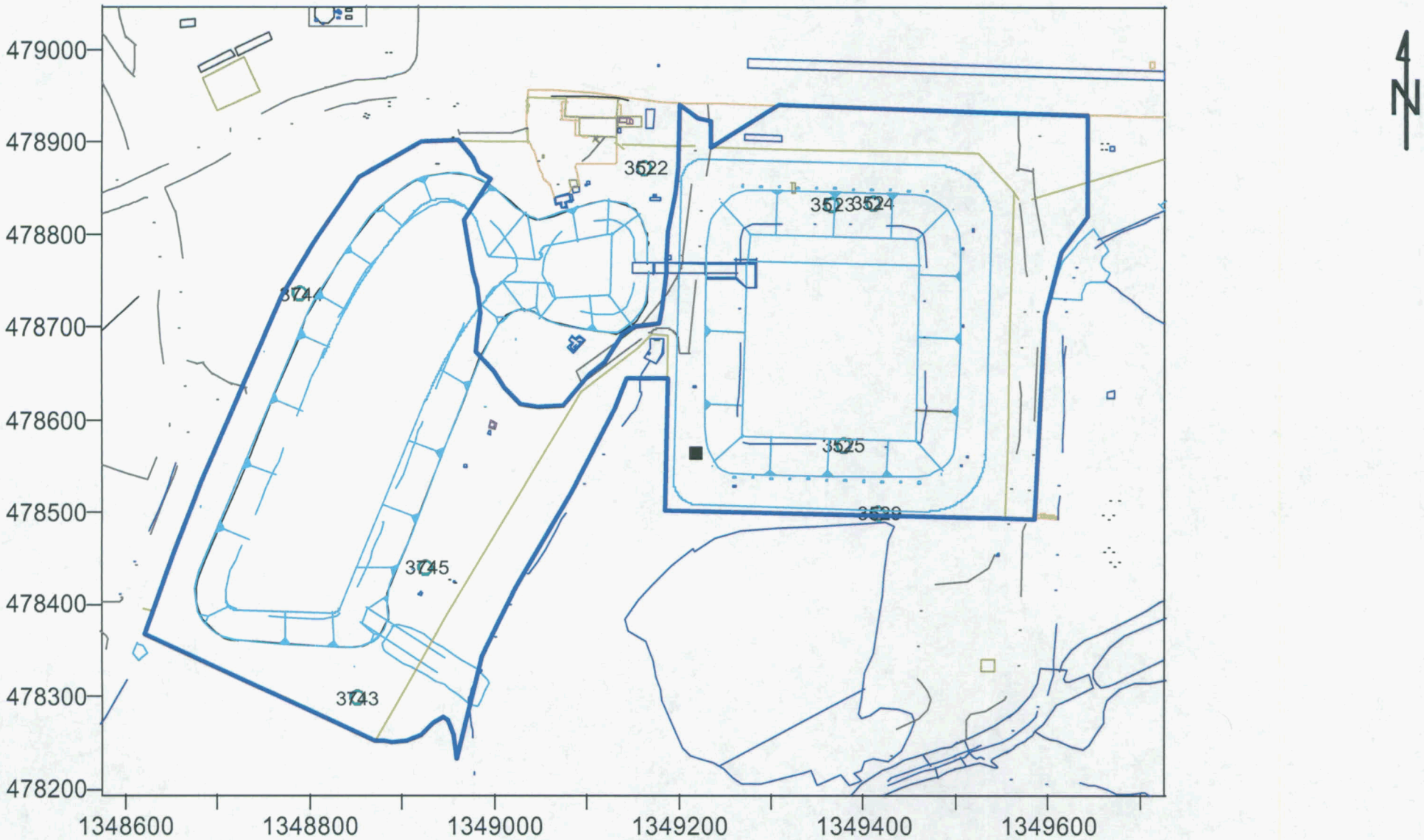


HPGe
Ra-226 (pCi/g)
-999 to 5.1
5.1 to 999

RTIMP DWG Title: SWRB_P2_RA.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 05-30-2006
Support Data: SWRB_P2.xls

Figure A - 6 Former SWRB Area Phase 2 Moisture Corrected Thorium-232

Data Groups: 30687_04-24-2006,30265_05-19-2006
Measurement Period: 04-24-2006 thru 05-19-2006

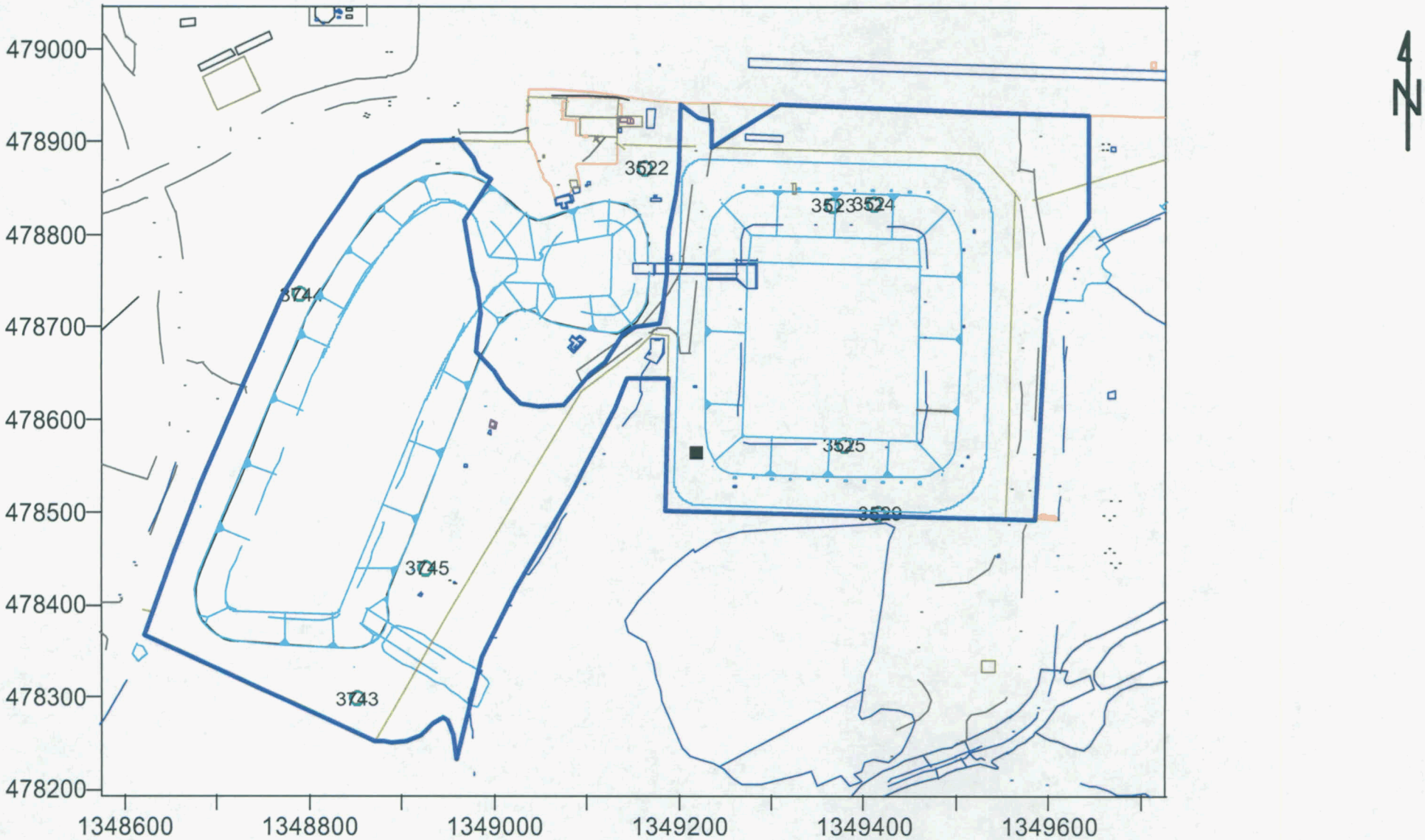


HPGe
Th-232 (pCi/g)
-999 to 4.5
4.5 to 999

RTIMP DWG Title: SWRB_P2_TH.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 05-30-2006
Support Data: SWRB_P2.xls

Figure A - 7 Former SWRB Area Phase 2 Moisture Corrected Total Uranium

Data Groups: 30687_04-24-2006,30265_05-19-2006
Measurement Period: 04-24-2006 thru 05-19-2006



HPGe
TotalU (ppm)
-999 to 246
246 to 999

RTIMP DWG Title: SWRB_P2_TU.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 05-30-2006
Support Data: SWRB_P2.xls

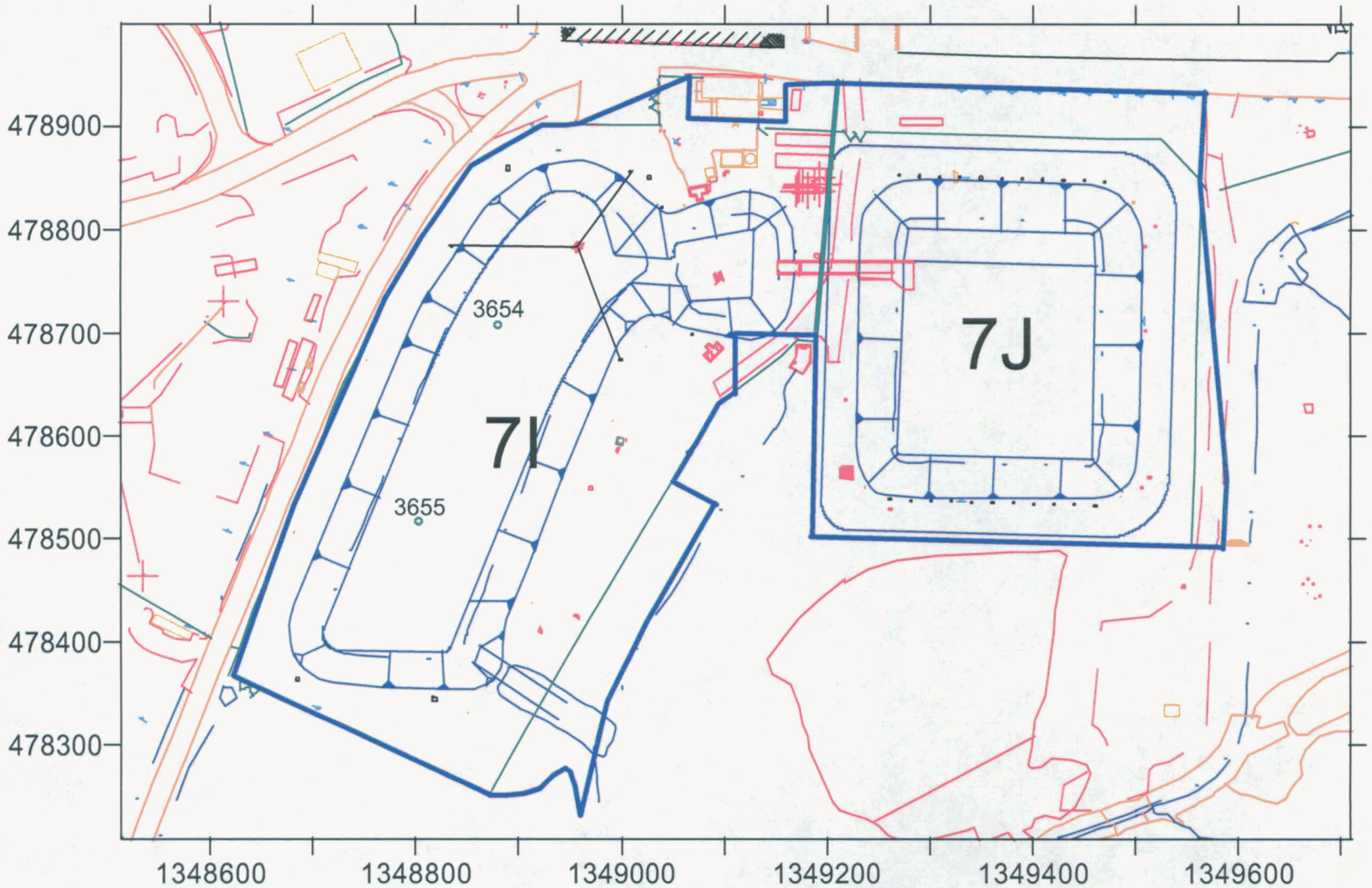
TABLE A-2
FORMER SWRB AREA PHASE 3 - HPGe RESULTS DETECTOR HEIGHT 15 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A7I-P3-3654	09May06	478708	1348880	15	1.97	1.07	6.94E-02
A7I-P3-3655	09May06	478516	1348803	15	2.29	1.25	23.1

Figure A-8 Former SWRB Area Phase 3 Moisture Corrected Radium-226

Data Group: 30687_05-09-2006

Measurement Date: 05-09-2006



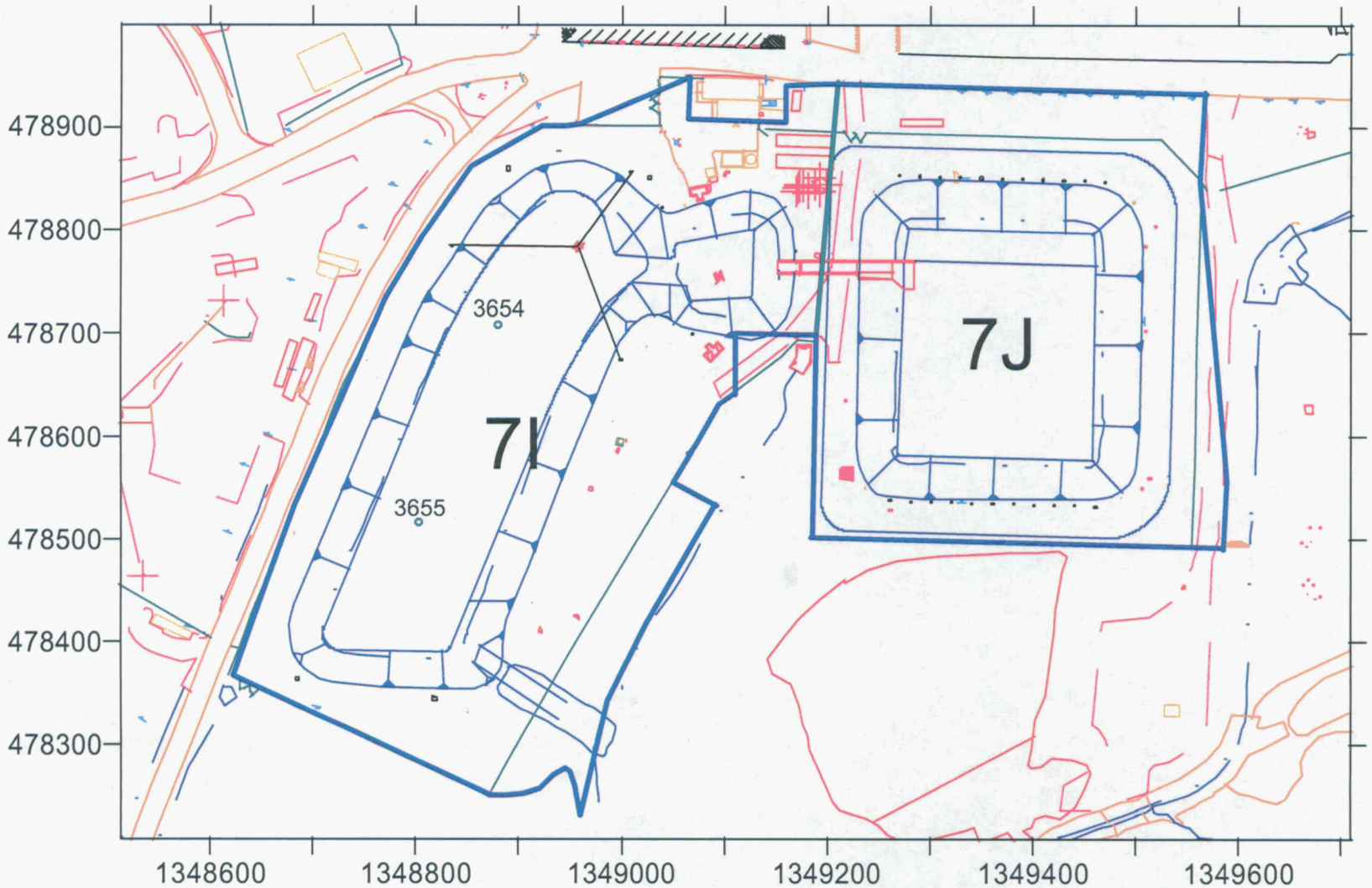
HPGe
Ra-226 (pCi/g)
-999 to 5.1
5.1 to 999

RTIMP DWG Title: SWRB_P3_RA.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 05-30-2006
Support Data: SWRB_P3.xls

Figure A-9 Former SWRB Area Phase 3 Moisture Corrected Thorium-232

Data Group: 30687_05-09-2006

Measurement Date: 05-09-2006



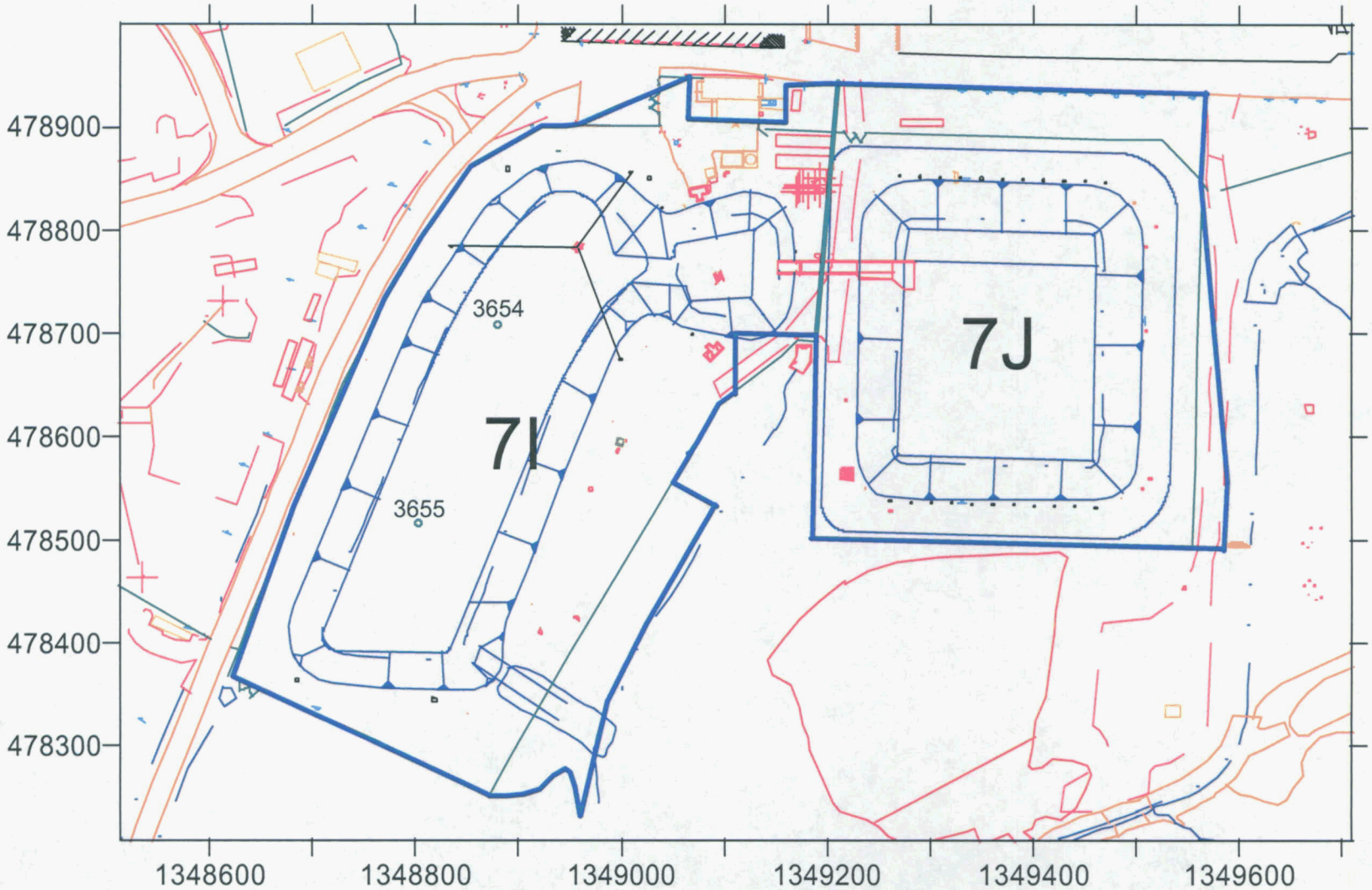
HPGe
Th-232 (pCi/g)
-999 to 4.5
4.5 to 999

RTIMP DWG Title: SWRB_P3_TH.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 05-30-2006
Support Data: SWRB_P3.xls

Figure A-10 Former SWRB Area Phase 3 Moisture Corrected Total Uranium

Data Group: 30687_05-09-2006

Measurement Date: 05-09-2006



HPGe
Total U (ppm)
-999 to 246
246 to 999

RTIMP DWG Title: SWRB_P3_TU.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 05-30-2006
Support Data: SWRB_P3.xls

APPENDIX B

FORMER SWRB AREA SAMPLE LOCATIONS AND IDENTIFIERS

APPENDIX B
FORMER SWRB AREA SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	Northing	Easting
1	SWRB-C01-1D	0" - 6"	SWRB-C01-1^RP	TAL AC	478897.49	1348925.14
		0" - 6"	SWRB-C01-1^RP-D	TAL AC		
	SWRB-C01-2	0" - 6"	SWRB-C01-2^RP	TAL AC	478846.1	1348872.38
	SWRB-C01-3V	0" - 6"	SWRB-C01-3V	Archive	478804.73	1348836.16
	SWRB-C01-4	0" - 6"	SWRB-C01-4^RP	TAL AC	478765.54	1348822.39
	SWRB-C01-5	0" - 6"	SWRB-C01-5^RP	TAL AC	478699.26	1348759.09
	SWRB-C01-6V	0" - 6"	SWRB-C01-6V	Archive	478641.51	1348751
	SWRB-C01-7	0" - 6"	SWRB-C01-7^RP	TAL AC	478586.05	1348741.2
	SWRB-C01-8	0" - 6"	SWRB-C01-8^RP	TAL AC	478537.15	1348701.22
	SWRB-C01-9V	0" - 6"	SWRB-C01-9V	Archive	478451.7	1348666.53
	SWRB-C01-10	0" - 6"	SWRB-C01-10^RP	TAL AC	478411	1348660.08
	SWRB-C01-11	0" - 6"	SWRB-C01-11^RP	TAL AC	478381.44	1348634.49
	SWRB-C01-12	0" - 6"	SWRB-C01-12^RP	TAL AC	478338.1	1348721.26
	SWRB-C01-13	0" - 6"	SWRB-C01-13^RP	TAL AC	478342.71	1348752.31
	SWRB-C01-14	0" - 6"	SWRB-C01-14^RP	TAL AC	478350.31	1348851.65
	SWRB-C01-15V	0" - 6"	SWRB-C01-15V	Archive	478318.19	1348808.84
	SWRB-C01-16	0" - 6"	SWRB-C01-16^RP	TAL AC	478271.18	1348839.22
2	SWRB-C02-1	0" - 6"	SWRB-C02-1^RMPS	TAL ABCDEF	478821.29	1348924.86
		0" - 6"	SWRB-C02-1^L	TAL G		
	SWRB-C02-2	0" - 6"	SWRB-C02-2^RMPS	TAL ABCDEF	478857.25	1348980.08
		0" - 6"	SWRB-C02-2^L	TAL G		
	SWRB-C02-3V	0" - 6"	SWRB-C02-3V	Archive	478781.11	1348857.15
	SWRB-C02-4	0" - 6"	SWRB-C02-4^RMPS	TAL ABCDEF	478777.58	1348952.48
		0" - 6"	SWRB-C02-4^L	TAL G		
	SWRB-C02-5	0" - 6"	SWRB-C02-5^RMPS	TAL ABCDEF	478731.39	1348836.59
		0" - 6"	SWRB-C02-5^L	TAL G		
	SWRB-C02-6	0" - 6"	SWRB-C02-6^RMPS	TAL ABCDEF	478720.75	1348880.08
		0" - 6"	SWRB-C02-6^L	TAL G		
	SWRB-C02-7D	0" - 6"	SWRB-C02-7^RMPS	TAL ABCDEF	478692.87	1348806.47
		0" - 6"	SWRB-C02-7^L	TAL G		
		0" - 6"	SWRB-C02-7^RMPS-D	TAL ABCDEF		
		0" - 6"	SWRB-C02-7^L-D	TAL G		
	SWRB-C02-8V	0" - 6"	SWRB-C02-8V	Archive	478660.83	1348837.05
	SWRB-C02-9	0" - 6"	SWRB-C02-9^RMPS	TAL ABCDEF	478704.61	1348919.96
		0" - 6"	SWRB-C02-9^L	TAL G		
	SWRB-C02-10V	0" - 6"	SWRB-C02-10V	Archive	478741.93	1348965.36
	SWRB-C02-11	0" - 6"	SWRB-C02-11^RMPS	TAL ABCDEF	478669.86	1348891.86
		0" - 6"	SWRB-C02-11^L	TAL G		
	SWRB-C02-12	0" - 6"	SWRB-C02-12^RMPS	TAL ABCDEF	478668.48	1348965.96
		0" - 6"	SWRB-C02-12^L	TAL G		
	SWRB-C02-13V	0" - 6"	SWRB-C02-13V	Archive	478619.83	1348797.38
	SWRB-C02-14	0" - 6"	SWRB-C02-14^RMPS	TAL ABCDEF	478612.16	1348858.1
		0" - 6"	SWRB-C02-14^L	TAL G		
	SWRB-C02-15	0" - 6"	SWRB-C02-15^RMPS	TAL ABCDEF	478617.81	1348900.44
		0" - 6"	SWRB-C02-15^L	TAL G		
	SWRB-C02-16	0" - 6"	SWRB-C02-16^RMPS	TAL ABCDEF	478631.95	1348927.86
		0" - 6"	SWRB-C02-16^L	TAL G		

APPENDIX B
FORMER SWRB AREA SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	Northing	Easting
3	SWRB-C03-1	0" - 6"	SWRB-C03-1^RMPS	TAL ABCDEF	478560.1	1348759.6
		0" - 6"	SWRB-C03-1^L	TAL G		
	SWRB-C03-2V	0" - 6"	SWRB-C03-2V	Archive	478558.3	1348806.88
	SWRB-C03-3	0" - 6"	SWRB-C03-3^RMPS	TAL ABCDEF	478489.54	1348710.01
		0" - 6"	SWRB-C03-3^L	TAL G		
	SWRB-C03-4	0" - 6"	SWRB-C03-4^RMPS	TAL ABCDEF	478501.58	1348803.15
		0" - 6"	SWRB-C03-4^L	TAL G		
	SWRB-C03-5	0" - 6"	SWRB-C03-5^RMPS	TAL ABCDEF	478552.44	1348875.47
		0" - 6"	SWRB-C03-5^L	TAL G		
	SWRB-C03-6	0" - 6"	SWRB-C03-6^RMPS	TAL ABCDEF	478571.62	1348902.97
		0" - 6"	SWRB-C03-6^L	TAL G		
	SWRB-C03-7	0" - 6"	SWRB-C03-7^RMPS	TAL ABCDEF	478523.27	1348845.34
		0" - 6"	SWRB-C03-7^L	TAL G		
	SWRB-C03-8V	0" - 6"	SWRB-C03-8V	Archive	478516.11	1348894.92
	SWRB-C03-9V	0" - 6"	SWRB-C03-9V	Archive	478432.75	1348727.67
	SWRB-C03-10	0" - 6"	SWRB-C03-10^RMPS	TAL ABCDEF	478474.87	1348775.85
		0" - 6"	SWRB-C03-10^L	TAL G		
	SWRB-C03-11	0" - 6"	SWRB-C03-11^RMPS	TAL ABCDEF	478375.8	1348730.41
		0" - 6"	SWRB-C03-11^L	TAL G		
	SWRB-C03-12	0" - 6"	SWRB-C03-12^RMPS	TAL ABCDEF	478376.63	1348764.89
		0" - 6"	SWRB-C03-12^L	TAL G		
	SWRB-C03-13	0" - 6"	SWRB-C03-13^RMPS	TAL ABCDEF	478436.29	1348807.2
		0" - 6"	SWRB-C03-13^L	TAL G		
	SWRB-C03-14	0" - 6"	SWRB-C03-14^RMPS	TAL ABCDEF	478470.22	1348866.34
		0" - 6"	SWRB-C03-14^L	TAL G		
	SWRB-C03-15D	0" - 6"	SWRB-C03-15^RMPS	TAL ABCDEF	478384.01	1348800.87
		0" - 6"	SWRB-C03-15^L	TAL G		
		0" - 6"	SWRB-C03-15^RMPS-D	TAL ABCDEF		
		0" - 6"	SWRB-C03-15^L-D	TAL G		
	SWRB-C03-16V	0" - 6"	SWRB-C03-16V	Archive	478401.91	1348850.01
4	SWRB-C04-1	0" - 6"	SWRB-C04-1^RP	TAL AC	478617.74	1348982.17
	SWRB-C04-2V	0" - 6"	SWRB-C04-2V	Archive	478584.27	1349046.04
	SWRB-C04-3	0" - 6"	SWRB-C04-3^RP	TAL AC	478600.29	1349102.33
	SWRB-C04-4D	0" - 6"	SWRB-C04-4^RP	TAL AC	478676.23	1349154.01
		0" - 6"	SWRB-C04-4^RP-D	TAL AC		
	SWRB-C04-5	0" - 6"	SWRB-C04-5^RP	TAL AC	478509.26	1348958.37
	SWRB-C04-6V	0" - 6"	SWRB-C04-6V	Archive	478496.78	1348995.24
	SWRB-C04-7	0" - 6"	SWRB-C04-7^RP	TAL AC	478537.1	1349019.56
	SWRB-C04-8	0" - 6"	SWRB-C04-8^RP	TAL AC	478532.37	1349081.25
	SWRB-C04-9	0" - 6"	SWRB-C04-9^RP	TAL AC	478434.64	1348909.07
	SWRB-C04-10	0" - 6"	SWRB-C04-10^RP	TAL AC	478459.77	1349032.48
	SWRB-C04-11V	0" - 6"	SWRB-C04-11V	Archive	478387.78	1348891.7
	SWRB-C04-12	0" - 6"	SWRB-C04-12^RP	TAL AC	478421.71	1348959.42
	SWRB-C04-13	0" - 6"	SWRB-C04-13^RP	TAL AC	478334.44	1348917.81
	SWRB-C04-14	0" - 6"	SWRB-C04-14^RP	TAL AC	478364.39	1348968.57
	SWRB-C04-15	0" - 6"	SWRB-C04-15^RP	TAL AC	478264.33	1348874.31
	SWRB-C04-16V	0" - 6"	SWRB-C04-16V	Archive	478314.82	1348967.49

APPENDIX B
FORMER SWRB AREA SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	Northing	Easting
5	SWRB-C05-1	0" - 6"	SWRB-C05-1^RP	TAL AC	478911.87	1349234
	SWRB-C05-2	0" - 6"	SWRB-C05-2^RP	TAL AC	478875.25	1349236.48
	SWRB-C05-3V	0" - 6"	SWRB-C05-3V	Archive	478873.4	1349293
	SWRB-C05-4	0" - 6"	SWRB-C05-4^RP	TAL AC	478925.42	1349328.5
	SWRB-C05-5D	0" - 6"	SWRB-C05-5^RP	TAL AC	478860.45	1349354.56
		0" - 6"	SWRB-C05-5^RP-D	TAL AC		
	SWRB-C05-6V	0" - 6"	SWRB-C05-6V	Archive	478916.78	1349420.16
	SWRB-C05-7	0" - 6"	SWRB-C05-7^RP	TAL AC	478857.65	1349416.41
	SWRB-C05-8	0" - 6"	SWRB-C05-8^RP	TAL AC	478890.98	1349486.58
	SWRB-C05-9	0" - 6"	SWRB-C05-9^RP	TAL AC	478890.61	1349544.12
	SWRB-C05-10V	0" - 6"	SWRB-C05-10V	Archive	478921.53	1349615
	SWRB-C05-11	0" - 6"	SWRB-C05-11^RP	TAL AC	478852.02	1349494.91
	SWRB-C05-12	0" - 6"	SWRB-C05-12^RP	TAL AC	478853.6	1349546.02
	SWRB-C05-13	0" - 6"	SWRB-C05-13^RP	TAL AC	478880.61	1349596.85
	SWRB-C05-14V	0" - 6"	SWRB-C05-14V	Archive	478817.26	1349510.93
	SWRB-C05-15	0" - 6"	SWRB-C05-15^RP	TAL AC	478813.73	1349564.23
	SWRB-C05-16	0" - 6"	SWRB-C05-16^RP	TAL AC	478772.66	1349599.07
	SWRB-C05-17B	0" - 6"	SWRB-C05-17^1-R-B	TAL H	478832	1349618
		6" - 12"	SWRB-C05-17^2-R-B	TAL H		
6	SWRB-C06-1V	0" - 6"	SWRB-C06-1V	Archive	478838.99	1349261.32
	SWRB-C06-2	0" - 6"	SWRB-C06-2^RMPS	TAL ABCDEF	478817.4	1349350.44
		0" - 6"	SWRB-C06-2^L	TAL G		
	SWRB-C06-3	0" - 6"	SWRB-C06-3^RMPS	TAL ABCDEF	478800.32	1349238.82
		0" - 6"	SWRB-C06-3^L	TAL G		
	SWRB-C06-4	0" - 6"	SWRB-C06-4^RMPS	TAL ABCDEF	478791.53	1349337.67
		0" - 6"	SWRB-C06-4^L	TAL G		
	SWRB-C06-5V	0" - 6"	SWRB-C06-5V	Archive	478828.69	1349400.24
	SWRB-C06-6	0" - 6"	SWRB-C06-6^RMPS	TAL ABCDEF	478809.66	1349452.47
		0" - 6"	SWRB-C06-6^L	TAL G		
	SWRB-C06-7	0" - 6"	SWRB-C06-7^RMPS	TAL ABCDEF	478778.22	1349397.8
		0" - 6"	SWRB-C06-7^L	TAL G		
	SWRB-C06-8	0" - 6"	SWRB-C06-8^RMPS	TAL ABCDEF	478783.77	1349476.68
		0" - 6"	SWRB-C06-8^L	TAL G		
	SWRB-C06-9V	0" - 6"	SWRB-C06-9V	Archive	478752.4	1349252.47
	SWRB-C06-10D	0" - 6"	SWRB-C06-10^RMPS	TAL ABCDEF	478754.67	1349338.36
		0" - 6"	SWRB-C06-10^L	TAL G		
		0" - 6"	SWRB-C06-10^RMPS-D	TAL ABCDEF		
		0" - 6"	SWRB-C06-10^L-D	TAL G		
	SWRB-C06-11	0" - 6"	SWRB-C06-11^RMPS	TAL ABCDEF	478714.19	1349251.56
		0" - 6"	SWRB-C06-11^L	TAL G		
	SWRB-C06-12	0" - 6"	SWRB-C06-12^RMPS	TAL ABCDEF	478716.08	1349315.56
		0" - 6"	SWRB-C06-12^L	TAL G		
	SWRB-C06-13	0" - 6"	SWRB-C06-13^RMPS	TAL ABCDEF	478745.16	1349411.96
		0" - 6"	SWRB-C06-13^L	TAL G		
	SWRB-C06-14V	0" - 6"	SWRB-C06-14V	Archive	478732.56	1349466.82
	SWRB-C06-15	0" - 6"	SWRB-C06-15^RMPS	TAL ABCDEF	478721.57	1349386.58
		0" - 6"	SWRB-C06-15^L	TAL G		
	SWRB-C06-16	0" - 6"	SWRB-C06-16^RMPS	TAL ABCDEF	478706.17	1349491.69
		0" - 6"	SWRB-C06-16^L	TAL G		

APPENDIX B
FORMER SWRB AREA SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	Northing	Easting
7	SWRB-C07-1V	0" - 6"	SWRB-C07-1V	Archive	478666.39	1349247.28
	SWRB-C07-2	0" - 6"	SWRB-C07-2^RMPS	TAL ABCDEF	478686.06	1349352.73
		0" - 6"	SWRB-C07-2^L	TAL G		
	SWRB-C07-3	0" - 6"	SWRB-C07-3^RMPS	TAL ABCDEF	478633.85	1349258.92
		0" - 6"	SWRB-C07-3^L	TAL G		
	SWRB-C07-4D	0" - 6"	SWRB-C07-4^RMPS	TAL ABCDEF	478629.56	1349327.71
		0" - 6"	SWRB-C07-4^L	TAL G		
		0" - 6"	SWRB-C07-4^RMPS-D	TAL ABCDEF		
		0" - 6"	SWRB-C07-4^L-D	TAL G		
	SWRB-C07-5	0" - 6"	SWRB-C07-5^RMPS	TAL ABCDEF	478680.95	1349390.76
		0" - 6"	SWRB-C07-5^L	TAL G		
	SWRB-C07-6V	0" - 6"	SWRB-C07-6V	Archive	478689.61	1349463.3
	SWRB-C07-7	0" - 6"	SWRB-C07-7^RMPS	TAL ABCDEF	478649.94	1349416.18
		0" - 6"	SWRB-C07-7^L	TAL G		
	SWRB-C07-8	0" - 6"	SWRB-C07-8^RMPS	TAL ABCDEF	478630.79	1349493.84
		0" - 6"	SWRB-C07-8^L	TAL G		
	SWRB-C07-9	0" - 6"	SWRB-C07-9^RMPS	TAL ABCDEF	478598.88	1349287.88
		0" - 6"	SWRB-C07-9^L	TAL G		
	SWRB-C07-10V	0" - 6"	SWRB-C07-10V	Archive	478600.84	1349349.66
	SWRB-C07-11	0" - 6"	SWRB-C07-11^RMPS	TAL ABCDEF	478546.45	1349263.63
		0" - 6"	SWRB-C07-11^L	TAL G		
	SWRB-C07-12	0" - 6"	SWRB-C07-12^RMPS	TAL ABCDEF	478547.13	1349312
		0" - 6"	SWRB-C07-12^L	TAL G		
	SWRB-C07-13	0" - 6"	SWRB-C07-13^RMPS	TAL ABCDEF	478600.39	1349418.62
		0" - 6"	SWRB-C07-13^L	TAL G		
	SWRB-C07-14	0" - 6"	SWRB-C07-14^RMPS	TAL ABCDEF	478607.92	1349465.34
		0" - 6"	SWRB-C07-14^L	TAL G		
	SWRB-C07-15V	0" - 6"	SWRB-C07-15V	Archive	478544.45	1349415.56
	SWRB-C07-16	0" - 6"	SWRB-C07-16^RMPS	TAL ABCDEF	478561.26	1349460.95
		0" - 6"	SWRB-C07-16^L	TAL G		
8	**SWRB-C08-1**	**0" - 6"**	**SWRB-C08-1^RP**	**TAL AC**	**478808.19**	**1349201.43**
	SWRB-C08-2	**0" - 6"**	**SWRB-C08-2^RP**	**TAL AC**	**478740.22**	**1349218.67**
	SWRB-C08-3	0" - 6"	SWRB-C08-3^RP	TAL AC	478673.49	1349185.8
	SWRB-C08-4V	0" - 6"	SWRB-C08-4V	Archive	478587.89	1349201.05
	SWRB-C08-5D	0" - 6"	SWRB-C08-5^RP	TAL AC	478553.29	1349204.24
		0" - 6"	SWRB-C08-5^RP-D	TAL AC		
	SWRB-C08-6	0" - 6"	SWRB-C08-6^RP	TAL AC	478513.12	1349274.25
	SWRB-C08-7V	0" - 6"	SWRB-C08-7V	Archive	478506.43	1349344.85
	SWRB-C08-8	0" - 6"	SWRB-C08-8^RP	TAL AC	478530.88	1349395.15
	SWRB-C08-9V	0" - 6"	SWRB-C08-9V	Archive	478535.03	1349508.49
	SWRB-C08-10	0" - 6"	SWRB-C08-10^RP	TAL AC	478575.2	1349531.45
	SWRB-C08-11	0" - 6"	SWRB-C08-11^RP	TAL AC	478495.47	1349576.31
	SWRB-C08-12	0" - 6"	SWRB-C08-12^RP	TAL AC	478594.54	1349579.17
	SWRB-C08-13	0" - 6"	SWRB-C08-13^RP	TAL AC	478637.87	1349546.8
	SWRB-C08-14	0" - 6"	SWRB-C08-14^RP	TAL AC	478669.76	1349539.08
	SWRB-C08-15V	0" - 6"	SWRB-C08-15V	Archive	478704.66	1349557.47
	SWRB-C08-16	0" - 6"	SWRB-C08-16^RP	TAL AC	478733.1	1349590.06
	SWRB-C08-17B	0" - 6"	SWRB-C08-17^1-R-B	TAL H	478526	1349529
		6" - 12"	SWRB-C08-17^2-R-B	TAL H		
	SWRB-C08-18	0" - 6"	SWRB-C08-18^RP	TAL AC	478509.7	1349208.64
	SWRB-C08-19	0" - 6"	SWRB-C08-19^RP	TAL AC	478636.96	1349582.64

APPENDIX B
FORMER SWRB AREA SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	Northing	Easting
9	SWRB-C09-1	0" - 6"	SWRB-C09-1^RMPS	TAL ABCDEF	478826.55	1348990.07
		0" - 6"	SWRB-C09-1^L	TAL G		
	SWRB-C09-2	0" - 6"	SWRB-C09-2^RMPS	TAL ABCDEF	478796.55	1348996.6
		0" - 6"	SWRB-C09-2^L	TAL G		
	SWRB-C09-3V	0" - 6"	SWRB-C09-3V	Archive	478785.84	1349036.65
	SWRB-C09-4	0" - 6"	SWRB-C09-4^RMPS	TAL ABCDEF	478754.19	1349017.38
		0" - 6"	SWRB-C09-4^L	TAL G		
	SWRB-C09-5V	0" - 6"	SWRB-C09-5V	Archive	478798.60	1349082.91
	SWRB-C09-6	0" - 6"	SWRB-C09-6^RMPS	TAL ABCDEF	478826.02	1349099.71
		0" - 6"	SWRB-C09-6^L	TAL G		
	SWRB-C09-7	0" - 6"	SWRB-C09-7^RMPS	TAL ABCDEF	478765.02	1349063.33
		0" - 6"	SWRB-C09-7^L	TAL G		
	SWRB-C09-8	0" - 6"	SWRB-C09-8^RMPS	TAL ABCDEF	478781.43	1349120.05
		0" - 6"	SWRB-C09-8^L	TAL G		
	SWRB-C09-9	0" - 6"	SWRB-C09-9^RMPS	TAL ABCDEF	478826.81	1349130.95
		0" - 6"	SWRB-C09-9^L	TAL G		
	SWRB-C09-10V	0" - 6"	SWRB-C09-10V	Archive	478729.26	1348990.42
	SWRB-C09-11	0" - 6"	SWRB-C09-11^RMPS	TAL ABCDEF	478722.69	1349022.8
		0" - 6"	SWRB-C09-11^L	TAL G		
	SWRB-C09-12	0" - 6"	SWRB-C09-12^RMPS	TAL ABCDEF	478717.61	1349057.49
		0" - 6"	SWRB-C09-12^L	TAL G		
	SWRB-C09-13V	0" - 6"	SWRB-C09-13V	Archive	478701.52	1349124.29
	SWRB-C09-14D	0" - 6"	SWRB-C09-14^RMPS	TAL ABCDEF	478739.99	1349106.73
		0" - 6"	SWRB-C09-14^L	TAL G		
		0" - 6"	SWRB-C09-14^RMPS-D	TAL ABCDEF		
		0" - 6"	SWRB-C09-14^L-D	TAL G		
	SWRB-C09-15	0" - 6"	SWRB-C09-15^RMPS	TAL ABCDEF	478734.75	1349141.52
		0" - 6"	SWRB-C09-15^L	TAL G		
	SWRB-C09-16	0" - 6"	SWRB-C09-16^RMPS	TAL ABCDEF	478769.87	1349152.88
		0" - 6"	SWRB-C09-16^L	TAL G		
10	SWRB-C10-1	0" - 6"	SWRB-C10-1^RP	TAL AC	478685.58	1349155.94
	SWRB-C10-2V	0" - 6"	SWRB-C10-2V	Archive	478827.27	1349226.31
	SWRB-C10-3	0" - 6"	SWRB-C10-3^RP	TAL AC	478789.03	1349173.57
	SWRB-C10-4	0" - 6"	SWRB-C10-4^RP	TAL AC	478808.19	1349201.43
	SWRB-C10-5	0" - 6"	SWRB-C10-5^RP	TAL AC	478760.35	1349181.38
	SWRB-C10-6	0" - 6"	SWRB-C10-6^RP	TAL AC	478740.22	1349218.67
	SWRB-C10-7	0" - 6"	SWRB-C10-7^RP	TAL AC	478709.60	1349161.58
	SWRB-C10-8V	0" - 6"	SWRB-C10-8V	Archive	478711.78	1349213.25
	SWRB-C10-9V	0" - 6"	SWRB-C10-9V	Archive	478713.27	1349043.46
	SWRB-C10-10	0" - 6"	SWRB-C10-10^RP	TAL AC	478705.00	1349011.49
	SWRB-C10-11D	0" - 6"	SWRB-C10-11^RP-D	TAL AC	478672.06	1349022.46
		0" - 6"	SWRB-C10-11^RP	TAL AC		
	SWRB-C10-12	0" - 6"	SWRB-C10-12^RP	TAL AC	478675.14	1349057.47
	SWRB-C10-13	0" - 6"	SWRB-C10-13^RP	TAL AC	478665.06	1349116.13
	SWRB-C10-14	0" - 6"	SWRB-C10-14^RP	TAL AC	478637.90	1349041.57
	SWRB-C10-15V	0" - 6"	SWRB-C10-15V	Archive	478646.18	1349081.14
	SWRB-C10-16	0" - 6"	SWRB-C10-16^RP	TAL AC	478624.17	1349051.83

APPENDIX B
FORMER SWRB AREA SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	Northing	Easting
11	SWRB-C11-1	0" - 6"	SWRB-C11-1^R	TAL H	478898.88	1349568.08
	SWRB-C11-2V	0" - 6"	SWRB-C11-2V	Archive	478905.19	1349629.98
	SWRB-C11-3	0" - 6"	SWRB-C11-3^R	TAL H	478872.74	1349606.31
	SWRB-C11-4	0" - 6"	SWRB-C11-4^R	TAL H	478840.29	1349632.61
	SWRB-C11-5	0" - 6"	SWRB-C11-5^R	TAL H	478842.39	1349568.78
	SWRB-C11-6V	0" - 6"	SWRB-C11-6V	Archive	478811.17	1349553.35
	SWRB-C11-7	0" - 6"	SWRB-C11-7^R	TAL H	478790.82	1349605.25
	SWRB-C11-8	0" - 6"	SWRB-C11-8^R	TAL H	478766.09	1349576.14
	SWRB-C11-9	0" - 6"	SWRB-C11-9^R	TAL H	478731.71	1349557.2
	SWRB-C11-10V	0" - 6"	SWRB-C11-10V	Archive	478709.61	1349591.92
	SWRB-C11-11	0" - 6"	SWRB-C11-11^R	TAL H	478661.73	1349582.8
	SWRB-C11-12	0" - 6"	SWRB-C11-12^R	TAL H	478628.4	1349560.36
	SWRB-C11-13	0" - 6"	SWRB-C11-13^R	TAL H	478581.74	1349582.1
	SWRB-C11-14	0" - 6"	SWRB-C11-14^R	TAL H	478554.21	1349544.58
	SWRB-C11-15V	0" - 6"	SWRB-C11-15V	Archive	478520.18	1349571.23
	SWRB-C11-16D	0" - 6"	SWRB-C11-16^R	TAL H	478500.53	1349525.99
		0" - 6"	SWRB-C11-16^R-D	TAL H		

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.: _____

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

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

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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.