



Department of Energy

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



OCT 17 2006

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

DOE-0014-07

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

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE FINAL CERTIFICATION DESIGN LETTER AND PROJECT SPECIFIC PLAN FOR AREA 7 MISCELLANEOUS AREAS

- References:
- 1) Letter, J. Saric to J. Reising, "Area 7 Miscellaneous CDL and PSP," dated October 4, 2006
 - 2) Letter DOE-0007-07, J. Reising to J. Saric/T. Schneider, "Transmittal of Responses to U.S. Environmental Protection Agency Technical Review Comments and Ohio Environmental Protection Agency Comments on the Draft Certification Design Letter and Certification Project Specific Plan for Area 7 Miscellaneous Areas," dated October 11, 2006
 - 3) Letter, T. Schneider to J. Reising, "Approval - Responses to OEPA's Comments on the Draft CDL and Certification PSP for Area 7 Miscellaneous Areas," dated October 13, 2006

Enclosed for your approval is the final Certification Design Letter and Certification Project Specific Plan for Area 7 Miscellaneous Areas. This document has been revised to include the responses to U.S. Environmental Protection Agency technical review comments and approved responses to Ohio Environmental Protection Agency comments as noted in the above-listed references.

Mr. James Saric
Mr. Thomas Schneider

-2-

DOE-0014-07

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

Sincerely,

A handwritten signature in black ink that reads "Johnny W. Reising". The signature is written in a cursive, flowing style.

Johnny W. Reising
Director

Enclosure: As Stated

cc w/enclosure:

J. Desormeau, DOE-OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosure)
G. Jablonowski, USEPA-V, SRF-5J
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
S. Helmer, ODH

cc w/o enclosure:

**CERTIFICATION DESIGN LETTER AND
CERTIFICATION PROJECT SPECIFIC PLAN
FOR AREA 7 MISCELLANEOUS AREAS**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



OCTOBER 2006

U.S. DEPARTMENT OF ENERGY

**20500-PSP-0016
REVISION 0**

**CERTIFICATION DESIGN LETTER AND
CERTIFICATION PROJECT SPECIFIC PLAN
FOR AREA 7 MISCELLANEOUS AREAS**

**Document Number 20500-PSP-0016
Revision 0**

October 2006

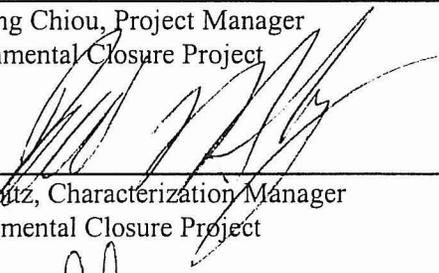
APPROVAL:



10/16/06

Jyh-Dong Chiou, Project Manager
Environmental Closure Project

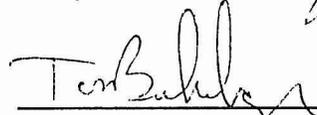
Date



10/16/06

Rich Abitz, Characterization Manager
Environmental Closure Project

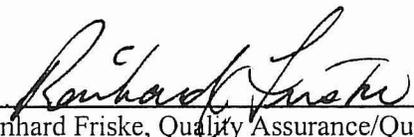
Date



10/15/06

Tom Buhrlage, Sampling Manager
Environmental Closure Project

Date



10/15/06

Reinhard Friske, Quality Assurance/Quality Control
Safety, Health and Quality Division

Date

FERNALD CLOSURE PROJECT

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LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area-specific constituent of concern
ASL	Analytical Support Level
AWWT	Advanced Wastewater Treatment (Facility)
BTV	benchmark toxicity value
CAWWT	Converted Advanced Wastewater Treatment (Facility)
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CRDL	contract required detection limit
CU	certification unit
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
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	gas chromatography
GPC	gas proportional counting
GPS	Global Positioning System
ICP-AES	inductively coupled plasma - atomic emission spectroscopy
ICP-MS	inductively coupled plasma - mass spectroscopy
LSC	liquid scintillation counting
µg/kg	micrograms per kilograms
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
PAHs	polyaromatic hydrocarbons
QA/QC	Quality Assurance/Quality Control
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
pCi/L	picoCuries per liter
PSP	Project Specific Plan
RDL	reportable detection limit
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RWP	Radiation Worker Permit
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SPIT	South Plume Interim Treatment Building

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

SPL	Sample Processing Laboratory
STP	Sewage Treatment Plant
SWRB	Storm Water Retention Basin
TACOS	Transitional Additional Contractor Office Space
TAL	Target Analyte List
TAT	turnaround-time
UCL	upper confidence limit
V/FCN	Variance/Field Change Notice
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 Area 7 Miscellaneous Areas into one document. This document describes the certification design, sampling, analysis, and validation for Area 7 Miscellaneous Areas. Certification demonstrates that area-specific constituents of concern (ASCOCs) meet the risk based final remediation levels (FRLs). The following information is included:

- The boundaries and a description of the areas to be certified under the guidance of this document;
- A discussion of historical data from the areas proposed for certification;
- A discussion of the ASCOC selection process and list of ASCOCs assigned to Area 7 Miscellaneous Areas;
- A presentation of the certification unit boundaries and proposed sampling strategy;
- Details of certification sampling, analysis, and validation;
- The analytical requirements and the statistical methodology to be employed; and
- The proposed schedule for the certification activities.

The scope of this CDL/Certification PSP is limited to the Area 7 Miscellaneous Areas shown on Figure 1-1. This area consists of portions of Area 7F (Building 30/45 Parking Lot), Area 7G (Converted Advanced Wastewater Treatment Facility, footprint of the former Sewage Treatment Plant and surrounding area), Area 7H [footprint of the former Transitional Additional Contractor Office Space (TACOS) Office Trailer Complex], and Areas 7I and 7K (the Silos Water Treatment Facility Area and adjacent road). Remediation of these areas was completed in August 2006, thus initiating the certification process described herein.

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

The selection of Area 7 Miscellaneous Areas ASCOCs was accomplished using constituent of concern (COC) lists in the Operable Unit 5 Record of Decision (DOE 1996) as well as the COCs and known contaminants from facilities historically located within this area. Area 7 Miscellaneous Areas consists of 17 certification units (CUs), as shown on Figure 4-1. Total uranium, thorium-228, thorium-232, radium-226, and radium-228 (the sitewide primary radiological COCs) are considered ASCOCs for all CUs in the Area 7 Miscellaneous Areas. Additionally, secondary COCs are identified for specific CUs within the certification area. Ecological COCs will be analyzed as needed.

Upon completion of the certification activities described in the final version of this document as approved by the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency, a Certification Report will be issued.

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 in the Area 7 Miscellaneous Areas has met the final remediation levels (FRLs) for all area-specific constituents of concern (ASCOCs). Certification demonstrates that ASCOCs meet the risk based FRLs. The format of this document follows (in general) guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998) and SEP Addendum (DOE 2001). Accordingly, it consists of ten sections:

- 1.0 Introduction - Presentation of the purpose, objectives, and scope of this CDL
- 2.0 Historical and Precertification Data - Presentation and discussion of historical soil data and presentation of precertification data from Area 7 Miscellaneous Areas
- 3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for Area 7 Miscellaneous Areas
- 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

The major remediation actions for the areas covered by this document included the excavation of most at- and below-grade structures, and/or above-FRL areas, the removal of overburden and debris, and utility removal. The only remaining below-grade structures are the 60-inch line that runs north to south under the access road north of the Storm Water Retention Basin (SWRB) and the adjacent 18-inch line that runs under the leachate collection system and the main effluent line that runs between the Converted Advanced Wastewater Treatment (CAWWT) Facility and the Great Miami River. The area to be certified is clearly defined on Figure 1-1. The scope of this document pertains only to the Area 7 Miscellaneous Areas.

1.1 OBJECTIVES

The primary objectives of this document are to:

- Define the boundaries of the areas to be certified under the guidance of this CDL/Certification PSP;
- Define the ASCOC selection process and list the selected Area 7 Miscellaneous Areas ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Present the details of certification sampling, analysis and validation;
- Summarize the analytical requirements and the statistical methodology employed;
- Present maps for acquired real-time precertification data; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

The scope of this CDL/Certification PSP includes details of certification sampling, analysis and validation that will take place in the Area 7 Miscellaneous Areas, an area consisting of approximately 20.8 acres. Figure 1-1 depicts the boundaries, location, and layout of the Area 7 Miscellaneous Areas.

Just as with other areas, certification of Area 7 is being performed in several phases based on the required action for each of the defined sections to be found in this area. This document only deals with the Area 7 Miscellaneous Areas. This area consists of portions of Area 7F (Building 30/45 Parking Lot), Area 7G [CAWWT Facility, the footprint of the former Sewage Treatment Plant (STP) Facility, and surrounding area], Area 7H [footprint of the former Transitional Additional Contractor Office Space (TACOS) Office Trailer Complex Area], and Areas 7I and 7K (the Silos Water Treatment Facility Area and adjacent road). Other portions of Area 7 either have been or will be submitted for certification under separate documentation.

Field activities for Area 7 Miscellaneous Areas are consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. However, due to the need to construct a backwash basin south of the CAWWT Facility, it was necessary to collect samples in the footprint of the designated area before beginning construction activities. These samples were collected and analyzed for the ASCOC list presented in Variance/Field Change Notice (V/FCN) 20500-PSP-0010-3 (Appendix D) written to the PSP for the Excavation Control and Precertification of Area 7 Support and Silos Process Area (DOE 2005a). The data is presented in Appendix E and a statistical review of the results will be in the certification report. The certification sampling program as discussed in Section 4.0 of this document will continue to be consistent with Data Quality Objective (DQO) SL-52, Revision 3, which is included as Appendix B.

The portion of Area 7F covered by this document consists of the Building 30/45 Parking Lot. Other parts of Area 7F are presented under separate certification efforts. The Building 30/45 Parking Lot is bordered to the north by the Lime Sludge Pond, to the east and south by Area 4B, to the west by the Silos Support Area.

Area 7G is bordered on the north by the Building 30/45 Parking Lot (Area 7F), on the west and south by the Silos Truck Staging Area, and on the east by Area 4B and the TACOS Office Trailer Complex Area (Area 7H). Included in this area were the Slurry Dewatering Facility (Building 51B), the Advanced Wastewater Treatment (AWWT) Lab Expansion (Building 51C), the Sewage Treatment Plant, and the New Boiler Plant. The CAWWT (Building 51A) will remain beyond certification.

Area 7H consists of the former TACOS Office Trailer Complex Area and an administrative support area that contained buried equipment (Figure 1-2). This area is bordered on the north by Area 4B, on the west by the CAWWT and Silo Truck Staging Area, on the south by the west SWRB and the Subcontractor Laydown Area, and on the east by the West Parking Lot (Figure 1-1).

Areas 7I and 7K are bordered on the north by the former TACO Office Trailer Complex Area, on the south by the SWRBs, on the west by Area 7H and on the east by the West Parking Lot (Figure 1-2). This area consists of the footprint of the Silos Water Treatment Facility Area and the adjacent road, and part of the nearby parking lot. Significant structures once found in this area include the South Plume Interim Treatment Building (SPIT - Building 18Q) and the AWWT Ozone Generation Building (Building 18Y).

Several CUs in Areas 7G and 7H contain high leachability areas. The total uranium FRL for CUs where this is the case is 20 milligrams per kilogram (mg/kg).

The historical surface features for the Area 7 Miscellaneous Areas are shown on Figure 1-2. Figure 1-3 depicts the topography of this area.

Basic sampling information was provided to the agencies prior to submission of this document. After a minor revision to the CU design based on comments received, sampling activities for Area 7 Miscellaneous Areas were begun.

The ASCOCs for the CUs in the Area 7 Miscellaneous Areas are total uranium, thorium-228, thorium-232, radium-226, and radium-228 [the sitewide primary radiological constituents of concern (COCs)]. Additionally, secondary COCs are identified for specific CUs within the certification area. Ecological COCs will be analyzed as needed.

1.3 KEY PROJECT PERSONNEL

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

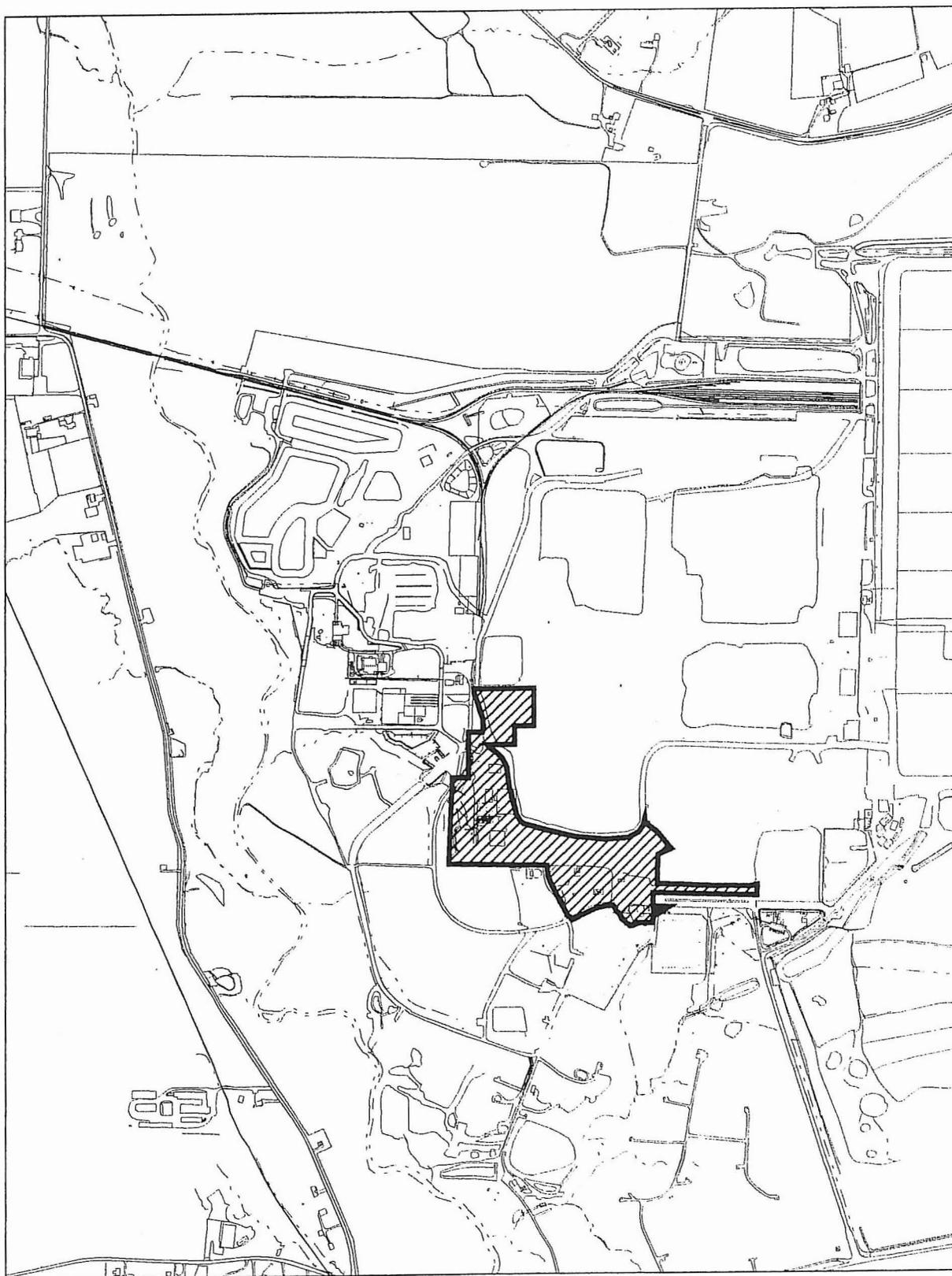
**TABLE 1-1
 KEY PERSONNEL**

Title	Primary	Alternate
Department of Energy (DOE) Contact	Johnny Reising	Jane Powell
Project Manager	Jyh-Dong Chiou	Rich Abitz
Characterization Manager	Rich Abitz	Debbie Brennan
Area 7 Miscellaneous Area Characterization Lead	Debbie Brennan	Greg Lupton
Field Sampling Manager	Tom Buhrlage	Mike Frank
Surveying Manager	Bernie Kienow	Andy Clinton
WAO Contact	Christa Walls	None
Laboratory Contact	Paul McSwigan	Amy Meyer
Data Validation Contact	Jim Chambers	Baohe Chen
Field Data Validation Contact	Ervin O'Bryan	Jim Chambers
Data Management Lead	Debbie Brennan	Greg Lupton
FACTS/SED Database Contact	Mark Turner	Susan Marsh
Quality Assurance Contact	Reinhard Friske	Darren Wessel
Safety and Health Contact	Garner Powell	Jeff Middaugh

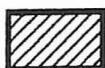
FACTS - Fernald Analytical Computerized Tracking

SED - Sitewide Environmental Database

WAO - Waste Acceptance Organization



LEGEND:



A7 MISC. AREA

SCALE

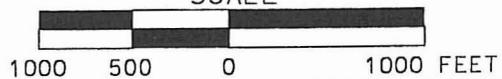
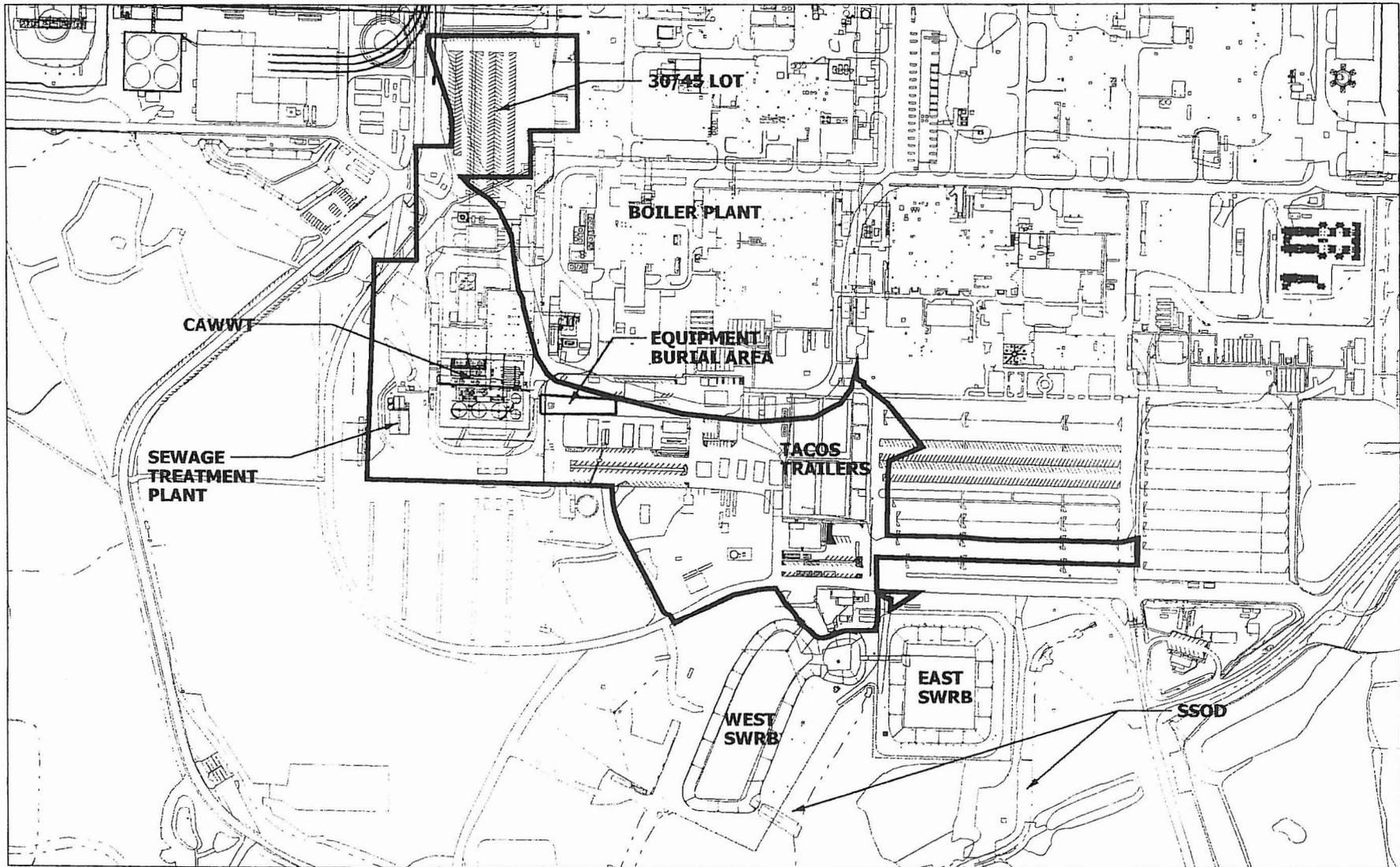


FIGURE 1-1. AREA 7 MISCELLANEOUS AREAS CERTIFICATION AREA LOCATION MAP



LEGEND:

———— A7MA BOUNDARY

SCALE

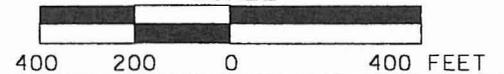
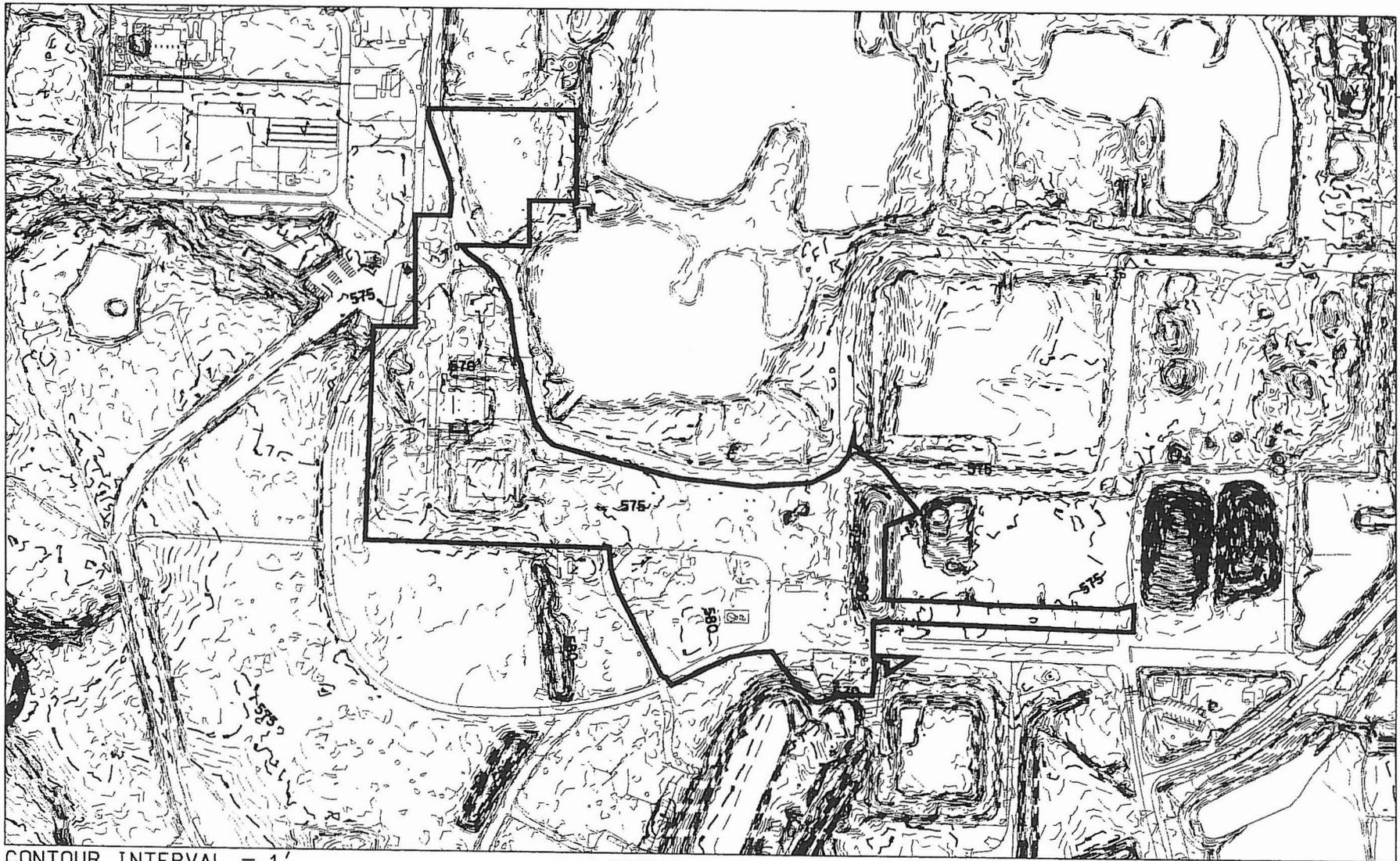


FIGURE 1-2. AREA 7 MISCELLANEOUS AREAS HISTORICAL FEATURES



CONTOUR INTERVAL = 1'
 INDEX CONTOUR = 5'

LEGEND:

————— A7MA BOUNDARY

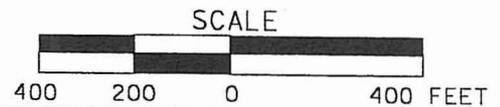


FIGURE 1-3. AREA 7 MISCELLANEOUS AREAS TOPOGRAPHY

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 Reports (RI, DOE 1995a and 1995b), and Feasibility Study Reports (FS, DOE 1995c and 1995d) for Operable Units (OUs) 3 and 5 were used for remedial design of the areas included in this certification effort. Final grade excavation monitoring/sampling and real-time scanning/sampling data have been collected pursuant to the RI/FS and remedial activities.

Before initiating the certification process, all historical soil data within the Area 7 Miscellaneous Areas certification area were pulled from the Sitewide Environmental Database (SED). The data are summarized in Sections 2.1 through 2.4.

Based on the results of sampling and scanning activities summarized in Sections 2.1 through 2.4, it has been determined that no further remedial actions are necessary to remove above-FRL 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 specifications, precertification was performed on the trench bottom created by the removal of these utilities and then back-filled with the precertified overburden soil. These sampling events are described in V/FCNs 20500-PSP-0009-36, 20500-PSP-0009-83, and 20500-PSP-0009-97 (Appendix D) written to the PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0001) (DOE 2005b) and V/FCN 20500-PSP-0010-10 (Appendix D) written to the PSP for the Excavation Control and Precertification of Area 7 Support and Silos Process-Area (Supplement to 20300-PSP-0011).

2.1 Area 7F - Building 30/45 Parking Lot

2.1.1 Historical, Predesign and Excavation Control

After a review of the historical data, predesign samples were collected and evaluated to determine the nature and extent of the contamination present in the Building 30/45 Parking Lot as well as to fill in existing data gaps. Data were also collected to bound above-FRL areas with physical sampling. The results of the investigations are presented in the Excavation Plan for Area 7 Silos and General Area (DOE 2005c).

Excavation of the Area 7F - Building 30/45 Parking Lot began in 2005. In addition to the removal of contamination present in the areas designated as above-FRL, existing at-grade concrete and asphalt pads/roads were excavated as part of the remediation process.

2.1.2 Precertification

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 PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0011). Precertification real-time scanning results are provided in Appendix A.

During precertification, real-time scanning indicated the presence of hotspots. Upon excavation, significant amounts of contaminated clay piping was exposed. Excavation continued until all of the contaminated clay pipe was removed from the area and real-time was able to determine that no additional contamination was present (Appendix A).

2.2 Area 7G - CAWWT Area

2.2.1 Historical, Predesign and Excavation Control

Prior to beginning predesign, all historical data from Area 7 were collected and evaluated. Predesign samples were then collected to determine the nature and extent of contamination as well as to fill in any existing data gaps. Data were also collected to bound above-FRL areas with physical sampling. The results of the investigations are presented in the Excavation Plan for Area 7 Silos and General Area and the Excavation Plan for Area 7 Support and Silos Process Area (DOE 2005d).

Excavation of the Area 7G - CAWWT Area began in 2005. In addition to the removal of contamination present in the areas designated as above-FRL, at-grade concrete and asphalt pads/roads were excavated as part of the remediation process. With the exception of the CAWWT Facility, which will remain through closure, all foundations, slabs, footers, and other support structures were removed.

Due to the need to construct a backwash basin to support CAWWT operations, sampling was needed in the basin footprint located to the south of the CAWWT Facility. This sampling effort was done under V/FCN 20500-PSP-0010-03 (Appendix D) written to the PSP for Excavation Control and Precertification of Area 7 Support and Silos Process Area. The data from this sampling effort is presented in Appendix E and a statistical review of the results will be in the certification report.

Prior to removal of the STP, predesign samples were collected, and no above-FRL contamination was detected in this area. This area did not require excavation.

2.2.2 Precertification

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 PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0011) and the PSP for Excavation Control and Precertification of the Area 7 Support and Silos Process Area (Supplement to 20300-PSP-0011). Precertification real-time scanning results are provided in Appendix A.

2.3 Area 7H - TACOS Office Trailer Complex Area

2.3.1 Historical, Predesign and Excavation Control

After a review of the historical data, predesign samples were collected and evaluated to determine the nature and extent of the contamination present in the TACOS Office Trailer Complex Area as well as to fill in existing data gaps. Data were also collected to bound above-FRL areas with physical sampling. The results of the investigations are presented in the Excavation Plan for Area 7 Silos and General Area.

Excavation of the Area 7H - TACOS Office Trailer Complex Area began in 2005. In addition to the removal of contamination present in the areas designated as above-FRL, existing at-grade concrete and asphalt pads/roads, existing foundations, slabs, footers and other support structures were removed.

Additionally, five perchloric acid fume hoods were excavated and removed from the Equipment Burial Area in August 2005 (see Figure 1-2). During Area 7 predesign, four borings were placed around the burial trenches. None of the samples collected revealed any above-FRL contamination. Upon completion of the excavation, excavation control samples were collected to confirm that no perchlorate contamination existed. Following the excavation of the perchloric acid fume hoods, physical samples were also collected for radiological analysis from the footprint of the excavation because the area was too wet for real-time scans. These samples were collected under V/FCN 20500-PSP-0009-04 (Appendix D) and revealed no above-FRL contamination.

2.3.2 Precertification

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 PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0011). Precertification real-time scanning results are provided in Appendix A.

2.4 Area 7I and 7K - Silos Water Treatment Facility Area and Adjacent Road

2.4.1 Historical, Predesign and Excavation Control

Based on the results of historical data collection and evaluation, predesign sampling was done to determine the nature and extent of contamination on Areas 7I and 7K. Additionally, samples were collected to fill

any data gaps left in this area. The results of these investigations are presented in the PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0011) and the PSP for Excavation Control and Precertification of Area 7 Support and Silos Process Area (Supplement to 20300-PSP-0011).

Excavation of the Area 7I and 7K - Silos Water Treatment Facility Area began in 2006. In addition to the removal of contamination present in the areas designated as above-FRL, existing at-grade concrete and asphalt pads/roads, existing foundations, slabs, footers, and other support structures were removed.

Two below-grade structures remain in this area. The first is the 60-inch pipe running north to south under the access road to the north of the SWRB. All contaminated sediment was removed from this line during the remediation process. It has been determined that any remaining contamination is of a fixed nature. The water flowing through the pipe has levels below the site discharge limits [30 micrograms per liter ($\mu\text{g/L}$)]. Due to these factors, no further remediation for the 60-inch pipe is planned. Access to this pipe will be restricted as required by Legacy Management at a future date. The other remaining below-grade structure is an 18-inch pipe adjacent to the 60-inch pipe. This line runs under the leachate collection system and the main effluent line running between the CAWWT and the Great Miami River. However, this line is isolated and has no likelihood of free flowing material in it. Therefore, no more remediation will be done on the remaining portion of this pipe.

2.4.2 Precertification

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 PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0011) and the PSP for Excavation Control and Precertification of Area 7 Support and Silos Process Area (Supplement to 20300-PSP-0011). Precertification real-time scanning results are provided in Appendix A.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the OU5 Record of Decision (ROD, DOE 1996), there are 80 soil COCs with established FRLs. These COCs were retained for further investigation based on a screening process that considered the presence of the constituent in site soil and the potential risk to a receptor exposed to soil containing this contaminant. 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 and present no significant risk to a receptor, thus eliminating them from further consideration. The 30 remaining sitewide COCs account for over 99 percent of the combined risk to a site receptor model, and they comprise the list from which all of the remediation ASCOCs are drawn. When planning certification for a remediation area, additional selection criteria are used to derive a subset of these 30 COCs. This subset of COCs is passed along to the certification process.

3.1 SELECTION CRITERIA

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

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

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

3.2 ASCOC SELECTION PROCESS

3.2.1 Area 7F - Building 30/45 Parking Lot ASCOC Selection

Each ASCOC on the Area 7 list (Table 3-1) was evaluated for its relevance to Area 7F - Building 30/45 Parking Lot Area. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the Area 7F - Building 30/45 Parking Lot Area CUs. Additional secondary COCs have been retained in this area due to historical above-FRL results. The complete list of COCs that are going to be retained for certification can be found in Table 3-3. The specific secondary COCs for this area are as follows:

Area 7F - Building 30/45 Parking Lot Area Secondary ASCOCs

- Antimony
- Arsenic
- Beryllium

3.2.2 Area 7G - CAWWT Area ASCOC Selection

Each ASCOC on the Area 7 list (Table 3-1) was evaluated for its relevance to Area 7G - CAWWT Area. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the Area 7G - CAWWT Area CUs. Additional secondary COCs have been retained in this area due to historical above-waste acceptance criteria (WAC) or above-FRL results as well as former land use. The complete list of COCs that are going to be retained for certification can be found in Table 3-3. The specific secondary COCs for this area are as follows:

Area 7G - CAWWT Area Secondary ASCOCs

- Aroclor-1254
- Aroclor-1260
- Arsenic
- Beryllium
- Dieldrin

3.2.3 Area 7H - TACOS Office Trailer Complex Area ASCOC Selection

Each ASCOC on the Area 7 list (Table 3-1) was evaluated for its relevance to Area 7H - TACOS Office Trailer Complex Area. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the Area 7H - TACOS Office Trailer Complex Area CUs. Additional

secondary COCs have been retained in this area due to historical above-WAC or above-FRL results as well as former land use. The complete list of COCs that are going to be retained for certification can be found in Table 3-3. The specific secondary COCs for this area are as follows:

Area 7H - TACOS Office Trailer Complex Area Secondary ASCOCs

- Aroclor-1254
- Aroclor-1260
- Arsenic
- Beryllium
- Dieldrin
- Perchlorates (equipment burial area only)

3.2.4 Area 7I and 7K - Silos Water Treatment Facility Area and Adjacent Road ASCOC Selection

Each ASCOC on the Area 7 list (Table 3-1) was evaluated for its relevance to Area 7I and 7K - Silos Water Treatment Facility Area and Adjacent Road. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the Area 7I and 7K - Silos Water Treatment Facility Area and Adjacent Road CUs. Additional secondary COCs have been retained in this area due to historical above-WAC or above-FRL results as well as any COCs from upgradient areas that were potentially carried into the basin with storm water flows. The complete list of COCs that are going to be retained for certification can be found in Table 3-3. The specific secondary COCs for this area are as follows:

Area 7I and 7K - Silos Water Treatment Facility Area and Adjacent Road Secondary ASCOCs

- Aroclor-1254
- Aroclor-1260
- Arsenic
- Technetium-99

TABLE 3-1
ASCOCs FOR AREA 7 FROM THE SEP

Primary COCs	Secondary COCs for Area 7
Radium-226	Aroclor-1254
Radium-228	Aroclor-1260
Thorium-228	Arsenic
Thorium-232	Beryllium
Total Uranium	Cesium-137
	Dieldrin
	Lead
	Lead-210
	Manganese
	Technetium-99
	Thorium-230
	Ecological COCs for Area 7
	Antimony
	Cadmium
	Molybdenum
	Silver
	PAHs

PAHs - polyaromatic hydrocarbons

TABLE 3-2
ASCOC LIST FOR AREA 7 MISCELLANEOUS AREAS

ASCOC	Retained as ASCOC?	Justification	CU
Radiological			
Radium-226	Yes	Sitewide primary COC	All
Radium-228	Yes	Sitewide primary COC	All
Thorium-228	Yes	Sitewide primary COC	All
Thorium-232	Yes	Sitewide primary COC	All
Total Uranium	Yes	Sitewide primary COC	All
Lead-210	No	No above-FRLs present	None
Technetium-99	Yes	COC for Area 7I	17
Thorium-230	No	No above-FRLs present	None
Cesium-137	No	No above-FRLs present	None
Inorganics			
Antimony	Yes	Ecological COC for 7F.	1
Arsenic	Yes	Above-FRL COC for 7G and 7H;	1-15
Beryllium	Yes	Above-FRL COC for 7F, 7G, and 7H	1-15
Cadmium	No	No above-FRLs present	None
Lead	No	No above-FRLs present	None
Manganese	No	No above-FRLs present	None
Molybdenum	No	No above-FRLs present	None
Perchlorate	Yes	COC for Area 7H (equipment burial area only)	7
Silver	No	No above-FRLs present	None
Organics			
Aroclor-1254	Yes	Above-FRL COC for 7G and 7H	3-15, 17
Aroclor-1260	Yes	Above-FRL COC for 7G and 7H	3-15, 17
Dieldrin	Yes	Above-FRL COC for 7G and 7H	3-15
PAHs	No	No above-FRLs present	None

**TABLE 3-3
 FINAL ASCOC LIST FOR AREA 7
 MISCELLANEOUS AREAS CERTIFICATION UNITS**

ASCOC	FRL (BTV)
Radiological	
Radium-226	1.7 pCi/g
Radium-228	1.8 pCi/g
Thorium-228	1.7 pCi/g
Thorium-232	1.5 pCi/g
Total Uranium	82 mg/kg
Total Uranium (high-leachability)	20 mg/kg
Technetium-99	29.1 pCi/g*
Inorganics	
Antimony	96 mg/kg (10 mg/kg)
Arsenic	12 mg/kg
Beryllium	1.5 mg/kg
Perchlorate	NA
Pesticides/PCBs	
Aroclor-1254	0.13 mg/kg
Aroclor-1260	0.13 mg/kg
Dieldrin	0.015 mg/kg

* Where the WAC is less than the FRL (as with technetium-99), the WAC value will be used when evaluating data.

BTV - benchmark toxicity value
 PCBs - polychlorinated biphenyls
 pCi/g - picoCuries per gram

4.0 CERTIFICATION DESIGN AND SAMPLING PROGRAM

4.1 CERTIFICATION DESIGN

The intent of this effort is to certify the soil within the Area 7 Miscellaneous Areas. The certification design for Area 7 Miscellaneous Areas follows the general approach outlined in Section 3.4 of the SEP. The CU design is shown on Figure 4-1 and sample locations are depicted on Figures 4-2 through 4-9. Seventeen Group 1 CUs were designed to represent the Area 7 Miscellaneous Areas. As discussed in Section 3.0 of this document, the five primary ASCOCs (total uranium, radium-226, radium-228, thorium-228, and thorium-232) will be retained in each CU as well as various other secondary ASCOC as outlined in Table 3-2.

Several factors were taken into consideration when determining the boundaries for each CU within the Area 7 Miscellaneous Areas. Some of these include: historical land use, proximity to other areas of the site, and COC data. Additionally, because the areas contain impacted material, they will be comprised of Group 1 CUs to allow for more concentrated sampling and ensure excavation activities and removal of above- and below-grade structures had no effect on the soil.

4.1.1 Certification Unit Design

The Area 7 Miscellaneous Areas consists of 17 Group 1 CUs that were designed around a combination of former land use, location, and COCs for each area. As shown on Figure 4-1, the separate areas included in this certification effort are represented by groups of CUs as follows:

- Area 7F
- Area 7G
- Area 7H
- Area 7I/K

Also, in Area 7G (CAWWT Area), CUs 4 and 6 through 10 are in a designated high-leachability zone. The minimum detectable level (MDL) for total uranium in these CUs is 20 mg/kg, which reflects the more restrictive criteria imposed for these areas.

Finally, one CU was designed around the perchlorate equipment burial area (CU 7).

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 of the CU. If the minimum distance criteria were not

met, an alternative random location was selected for that sub-CU and all the locations were re-tested. This process continued until all 16 random locations met the minimum distance criteria.

Several areas within this certification effort are covered with either asphalt or gravel. Sample locations that fall within these areas will require boring through the asphalt/gravel to the native soil below. Samples will be collected from the 0 to 6-inch interval of the native soil.

All Area 7 Miscellaneous Areas sub-CUs and planned certification sampling locations are shown on Figures 4-2 through 4-9. Four of the 16 sample locations in each CU are designated with a "V", indicating archive sample locations. One sample location per CU is designated with a "D", indicating a field duplicate sample collection location. The sample locations, field duplicate samples, and archive samples are identified in Appendix C.

4.2 SURVEYING

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

The Area 7 Miscellaneous Areas CU boundaries are shown on Figure 4-1. Appendix C and Figures 4-2 through 4-9 show the sub-CU boundaries and the tentative certification sampling locations, all of which meet the minimum distance criterion.

4.3 PHYSICAL SOIL SAMPLE COLLECTION

4.3.1 Sample Collection

Certification samples will be collected according to procedure SMPL-01, Solids Sampling, using 3-inch diameter, 6-inch long, plastic or stainless steel liners. At the discretion of the Field Sampling Lead, samples may be collected using alternative methods specified in SMPL-01, as long as sufficient volume is collected from the appropriate depth to perform the prescribed analyses. If necessary, the soil core shall be divided and placed into the proper sample containers. Samples will be collected from 12 of the 16 sample locations in the CU, including one field duplicate sample. The archive locations will not be collected unless necessary. Thirteen samples from the CU (12 plus one field duplicate) will be submitted for analysis. Upon completion of sample collection, the 0 to 6-inch boreholes will be collapsed and no additional abandonment is necessary.

The minimum quality control sample requirements include duplicate field samples and two container blanks as outlined in Section 6.1, and will be collected per procedure SMPL-21, Collection of Field

Quality Control Samples. If reusable equipment is used, then rinsate samples shall also be required as discussed in Section 6.1. 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 C. Container blanks will be collected (as specified in Section 6.1) from both the core liner and the end caps that will be used to seal it. All samples will be assigned unique sample identification numbers.

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

- The distance moved must be as small as possible (less than 3 feet);
- It must remain within the boundary of the same CU and sub-CU, and must still meet the minimum distance criterion; and
- If the distance moved is greater than 3 feet, the move must be documented in a V/FCN, considered as significant, which will be approved by the agencies prior to collection.
- Anytime a location is moved, Figures 4-2 through 4-9 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 for this area.

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

When possible, all soil samples with like analyses from a CU (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 blanks and/or rinsates will be listed on a separate Chain of Custody/Request for Analysis form. No alpha/beta screens are 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 be decontaminated before it is transported to the field site, and the 6-inch core liners will be decontaminated using the Level II (Section K.11 of the SCQ) procedure upon receipt from the

manufacturer. Decontamination is also necessary in the field if sampling equipment is reused. If an alternate sampling method is used, equipment will be decontaminated between collection of sample intervals, and again after the sampling performed under this PSP is completed. Following decontamination, clean disposable wipes may be used to replace air-drying of the equipment.

4.3.3 Physical Sample Identification

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

- A7MA = Sample collected from Area 7 Miscellaneous Areas
- C01 = Certification sample representing the 1st certification unit from the area (all subsequent CUs will be consecutively numbered)
- Location = Sample Location number within each CU (1 through 16)
- ^ = Separates Location from analysis type
- Analysis = "R" indicates radiological analysis, "M" indicates a metals analysis, "P" indicates a PCB/pesticides analysis, "S" indicates a semi-volatile analysis, "L" indicates volatile organic compound analysis, and "V" indicates an archive sample.
- QC = Quality control sample, if applicable. A "D" indicates a field duplicate sample; "Y" indicates a container blank sample; "TB" indicates a trip blank, and "X" indicates a rinsate.

For example, a field duplicate sample taken from the tenth sample location from the 3rd Area 7 Miscellaneous Areas CU for radiological, metals, and pesticides/PCBs analysis would be identified as A7MA-C03-10^RMP-D. The sample identifiers are presented in Appendix C.

Because the backwash basin built south of CAWWT necessitated sampling of the designated area prior to installation and therefore, before this document was submitted, the sample identifiers for this area do not follow the convention outlined above. The sample locations and identifiers are as outlined in V/FCN 20500-PSP-0010-3 shown in Appendix D.

4.4 ANALYTICAL METHODOLOGY

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. The total uranium value from boring A7-SA3-19-S-9, 33.1 mg/kg, will be used to ship the samples off site for all CUs with the exception of CU 3, which shall

use the value of 195 mg/kg from boring A7-SA2-19. These are the highest two total uranium results from the area.

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. This will mean using a 7-day in-growth for all gamma analyses. One sample per CU will be selected for a 21-day in-growth gamma analysis and data reporting, a 30-day TAT will be required. All gamma analyses will have an identifier from the lab indicating whether the result represents a 7-day or 21-day in-growth.

The sampling and analytical requirements for CUs 1 through 17 are listed in Table 4-1 and the Target Analyte Lists (TAL) are shown in Table 4-2.

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. The CRDL should be 10 percent of the FRL. Analyses will be conducted to either Analytical Support Level (ASL) D or E. All requirements for ASL E equivalent are the same as for ASL D except the minimum detection level for the selected analytical method should be 10 percent of the FRL. All results will be validated to Validation Support Level (VSL) B, and a minimum of 10 percent of the results will be validated to VSL D. The CU(s) to be validated to VSL D will be A7MA-C01, A7MA-C07, A7MA-C13, and A7MA-C17. Samples rejected during validation will be re-analyzed, or an alternate sample may be collected and substituted if there is insufficient material available from the initial sample. Once data are validated, results will be entered into the SED.

4.5 STATISTICAL ANALYSIS

Once data are entered into the SED, 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, Appendix G of the SEP, and Section 3.4.8 of the SEP Addendum.

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 COC to its FRL, or the 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with the 95 percent UCL above the FRL for primary ASCOCs (or 90 percent UCL above the FRL results for secondary COCs) results in that CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the second criterion. The second criterion is the hotspot criterion, which states that primary or secondary ASCOC results must not exceed two times the FRL. When the given UCL on the

mean for each COC is less than its FRL and the hotspot criterion is met, the CU will be considered certified.

In the event that the CU fails certification, the following scenarios will be evaluated: 1) a high variability in the data set, 2) localized contamination, and 3) widespread contamination. Details on the evaluation and responses to these possible outcomes are provided in Section 3.4.5 of the SEP. When the CU within the scope of this CDL have passed certification, a certification report will be issued. The Certification Report will be submitted to the U.S. Environmental Protection Agency (EPA) and the Ohio Environmental Protection Agency (OEPA) to receive acknowledgement that the pertinent operable unit remedial action was completed and the individual CU is certified 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 Reports.

**TABLE 4-1
 SAMPLING AND ANALYTICAL REQUIREMENTS**

Analyte	Method	Sample Matrix	ASL	Preservation	Hold Time	TAT	Container ^b	Minimum Mass/ Volume
Any combination of <u>Rads</u> , <u>Metals</u> , and/or <u>PCBs</u> (any combination of TALs A through H)	Gamma Spec and LSC or GPC	Solid	D/E ^a	Cool to 4°C	12 months	10 days ^e	Glass with Teflon-lined lid	500 g (1500 g) ^c
	ICP-AES or ICP-MS				6 months	10 days		
	GC				14 days	10 days		
<u>Radiological</u> (TALs A, B, and/or C)	Gamma Spec and LSC or GPC	Liquid ^d	D/E ^a	HNO ₃ to pH<2	6 months	10 days	Polyethylene	4 Liters
<u>Metals</u> (TALs F, G, or H)	ICP-AES or ICP-MS	Liquid ^d	D/E ^a	HNO ₃ to pH<2	6 months	10 days	Polyethylene	500 mL

^a Samples will be analyzed according to ASL D requirements but the minimum detection level may cause some analyses to be considered ASL E.

^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, a rinsate will be collected by the Field Technicians.

^e One sample per CU will be selected for analysis utilizing a 21-day in-growth with a 30-day TAT. 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 attached to the laboratory data.

GC - gas chromatography

GPC - gas proportional counting

ICP-AES - inductively coupled plasma - atomic emission spectroscopy

ICP-MS - inductively coupled plasma - mass spectrometry

LSC - liquid scintillation counting

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**TABLE 4-2
TARGET ANALYTE LIST**

**20500-PSP-0016-A
(ASL D/E')
(221 estimated soil samples)**

Analyte	FRL	MDL	MDL (water)
Total Uranium	82 mg/kg	8.2 mg/kg	650 pCi/L
Total Uranium (high-leach)*	20 mg/kg	2.0 mg/kg	650 pCi/L
Radium-226	1.7 pCi/g	0.17 pCi/g	30 pCi/L
Radium-228	1.8 pCi/g	0.18 pCi/g	30 pCi/L
Thorium-228	1.7 pCi/g	0.17 pCi/g	30 pCi/L
Thorium-232	1.5 pCi/g	0.15 pCi/g	30 pCi/L

*CUs 4, 6, 7, 8, 9, and 10

**20500-PSP-0016-B
(ASL D/E')
(13 estimated soil samples)**

Analyte	FRL	MDL	MDL (water)
Technetium-99	29.1 mg/kg	2.91 mg/kg	10 pCi/L

**20500-PSP-0016-D
(ASL D/E')
(169 estimated soil samples)**

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

**20500-PSP-0016-E
(ASL D/E')
(195 estimated soil samples)**

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

**20500-PSP-0016-F
(ASL D/E')
(195 estimated soil samples)**

Analyte	FRL	MDL	MDL (water)
Arsenic	12 mg/kg	1.2 mg/kg	1.8 mg/L
Beryllium	1.5 mg/kg	0.15 mg/kg	0.225 mg/L

**TABLE 4-2
 TARGET ANALYTE LIST**

**20500-PSP-0016-G
 (ASL D/E'¹)
 (13 estimated soil samples)**

Analyte	FRL	MDL	MDL (water)
Antimony	96 mg/kg	9.6 mg/kg	1.5 mg/L

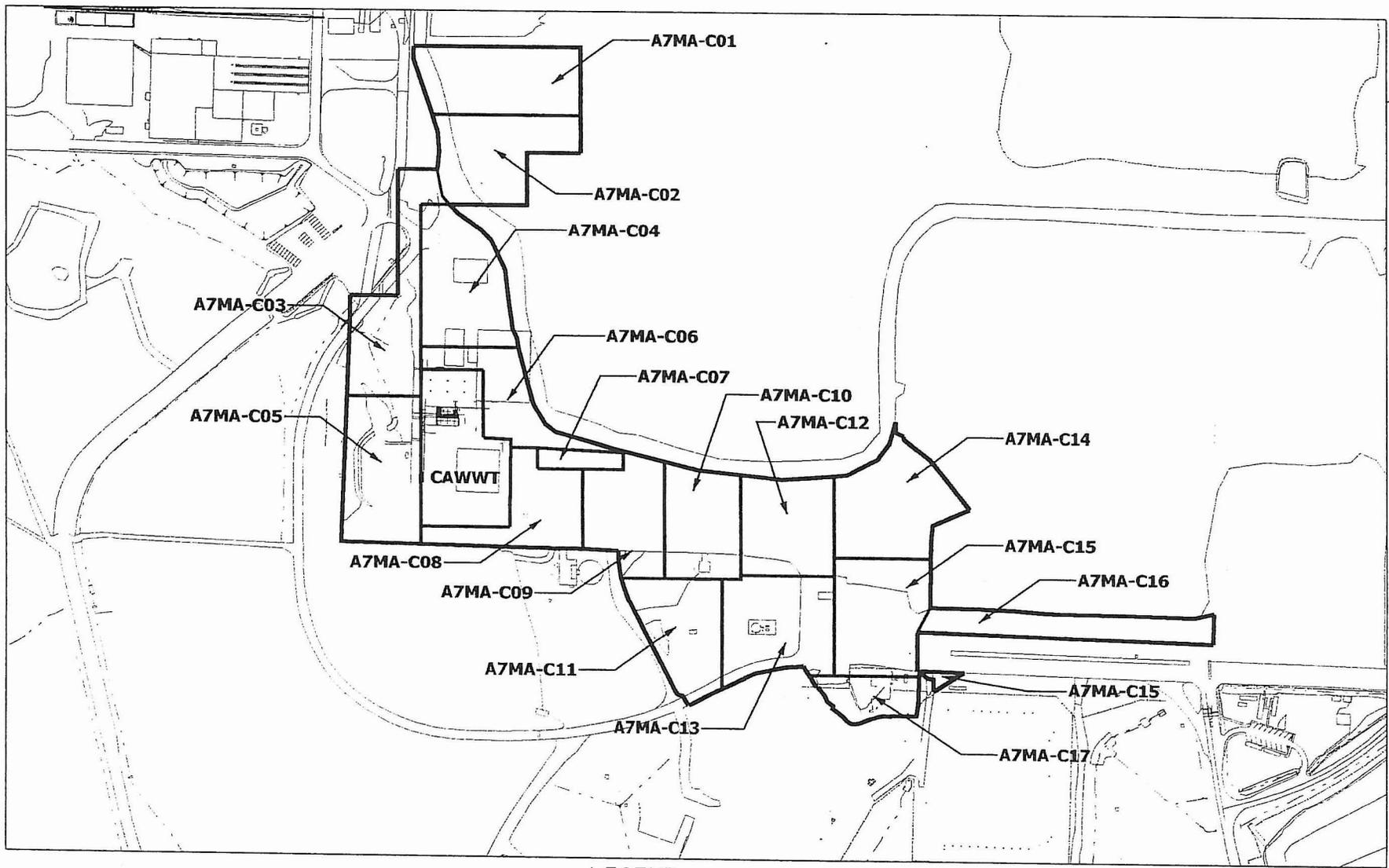
**20500-PSP-0016-H
 (ASL D/E'¹)
 (13 estimated soil samples)**

Analyte	FRL	MDL
Perchlorate	NA	Lab RDL

¹ Analytical requirements will meet ASL D but the MDL may cause some analyses to be considered ASL E.

² Where the WAC is less than the FRL (as with technetium-99), the WAC will be used for data evaluation purposes.

mg/L - milligrams per liter
 pCi/L - picoCuries per liter
 RDL - reportable detectable limit



LEGEND:

———— A7MA BOUNDARY

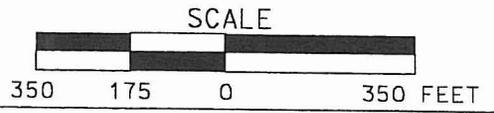
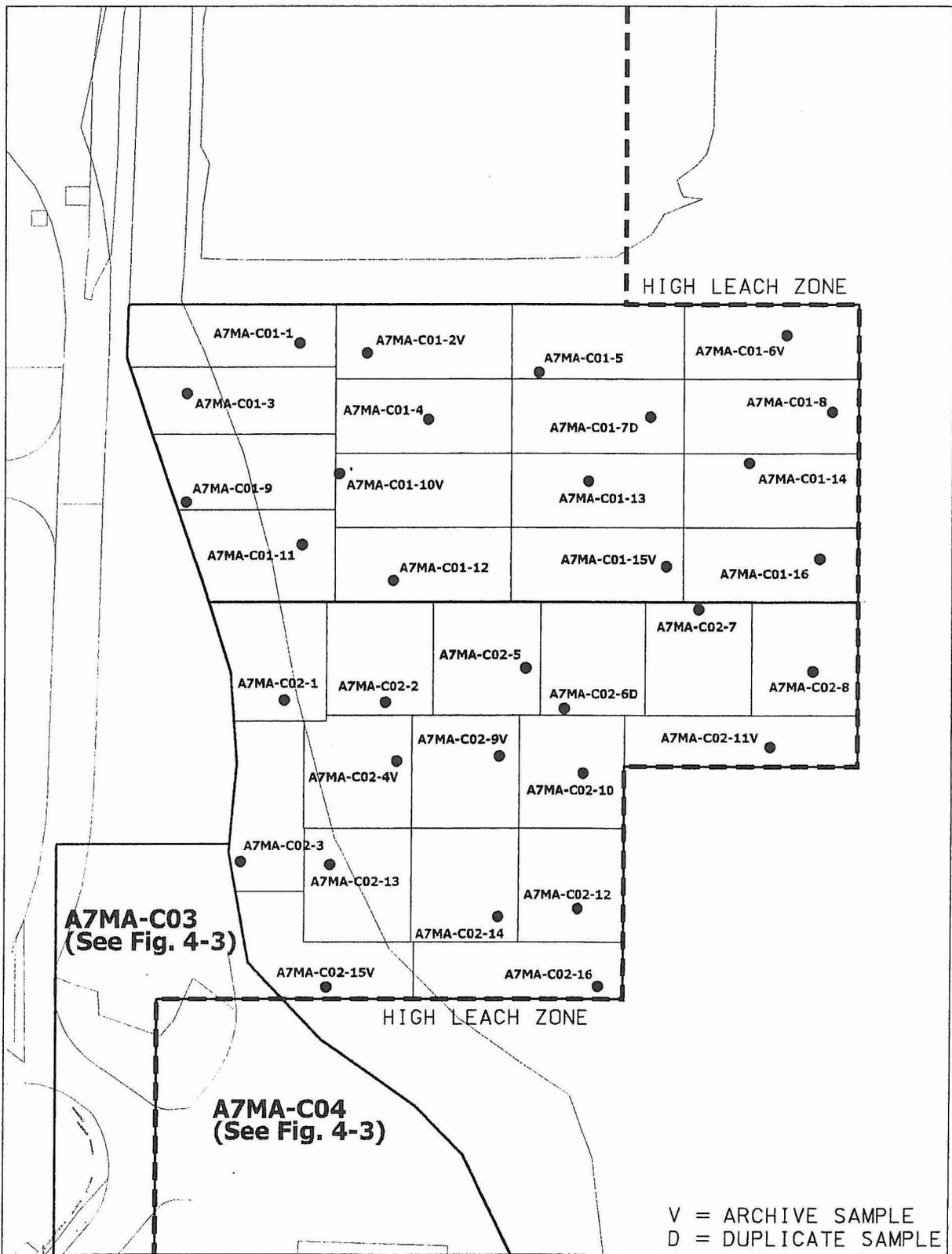


FIGURE 4-1. AREA 7 MISCELLANEOUS AREAS CU LOCATION MAP

006217



LEGEND:

● SAMPLE LOCATION

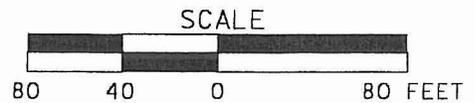


FIGURE 4-2. AREA 7 MISCELLANEDUS AREAS
SUB CU AND SAMPLE LOCATION MAP FOR CUs 1 & 2

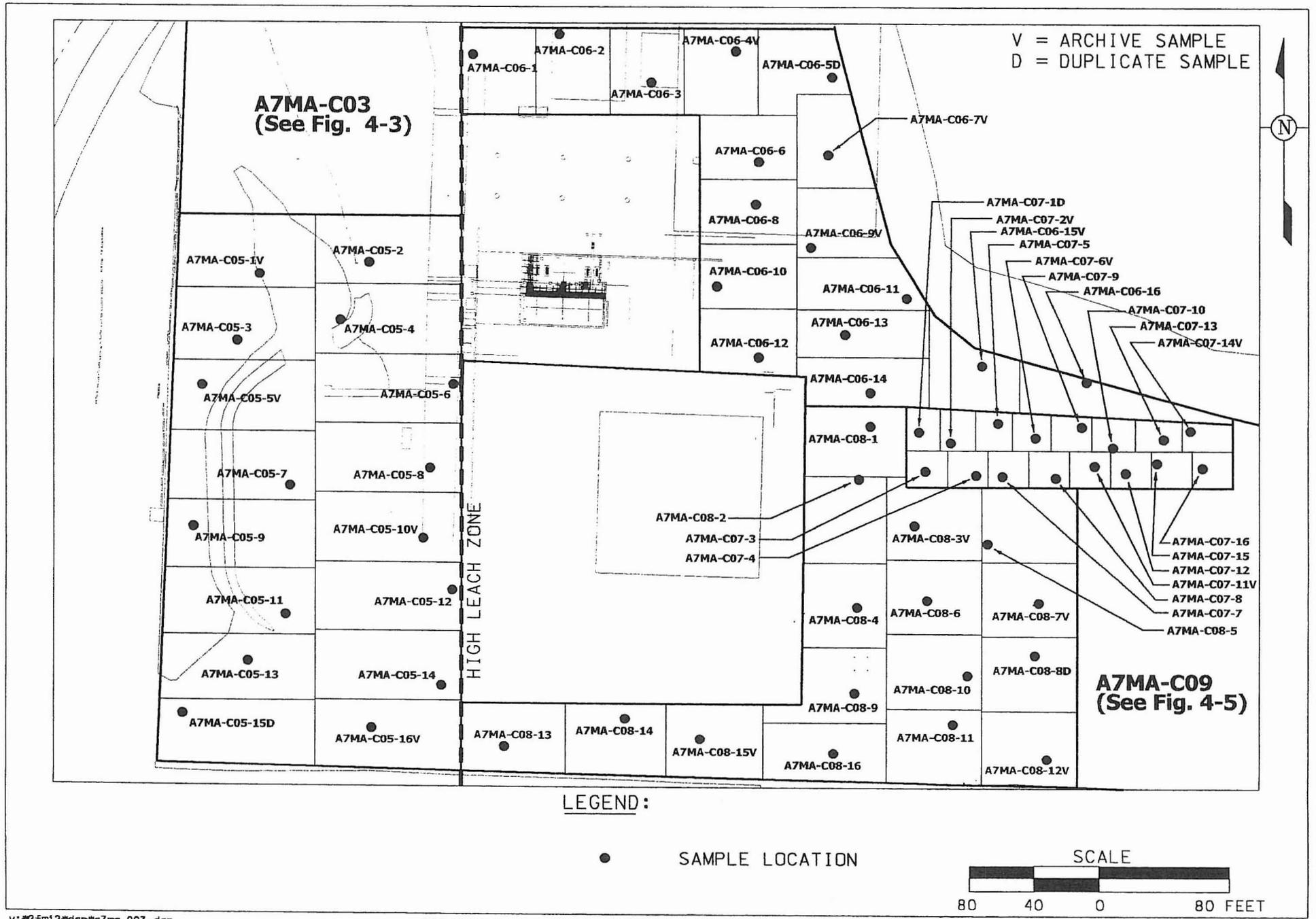


FIGURE 4-4. ARF 7 MISCELLANEOUS AREAS
SUB CU AND SAMPLE LOCATION MAP FOR CUs 5, 6, 7, & 8

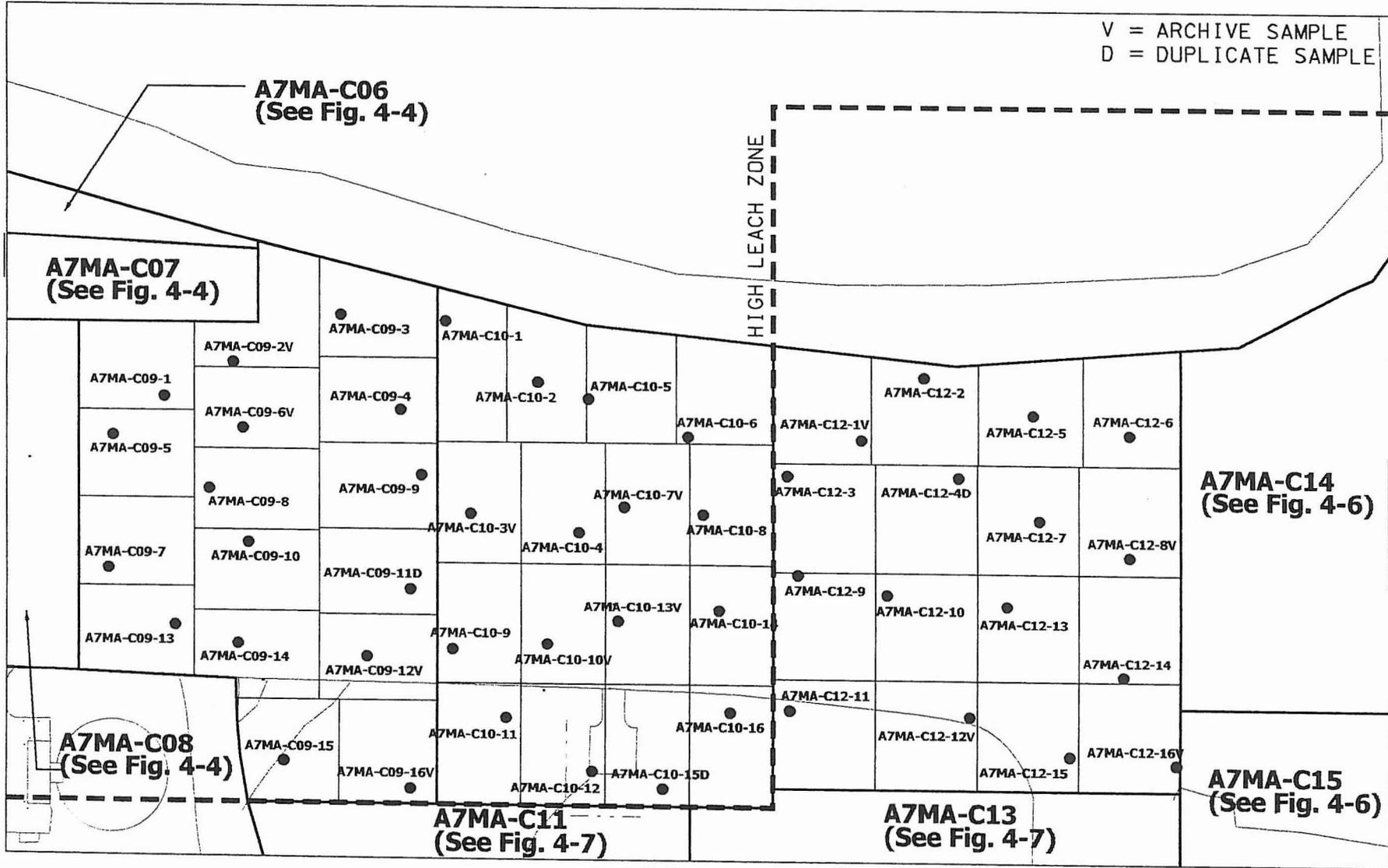


FIGURE 4-5. AREA 7 MISCELLANEOUS AREAS
SUB CU AND SAMPLE LOCATION MAP FOR CUs 9, 10, & 12

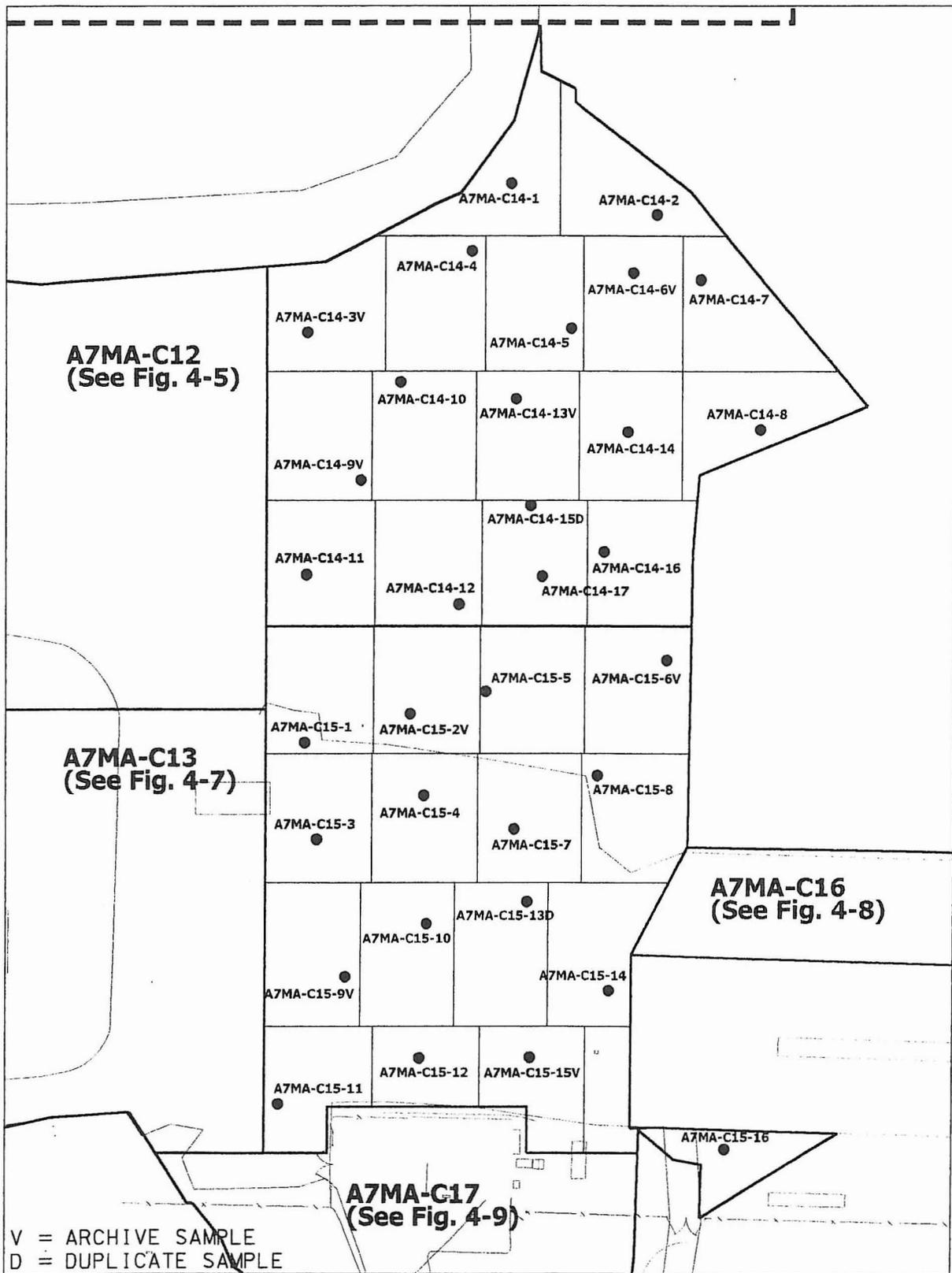


FIGURE 4-6. AREA 7 MISCELLANEOUS AREAS SUB CU AND SAMPLE LOCATION MAP FOR CUs 14 & 15

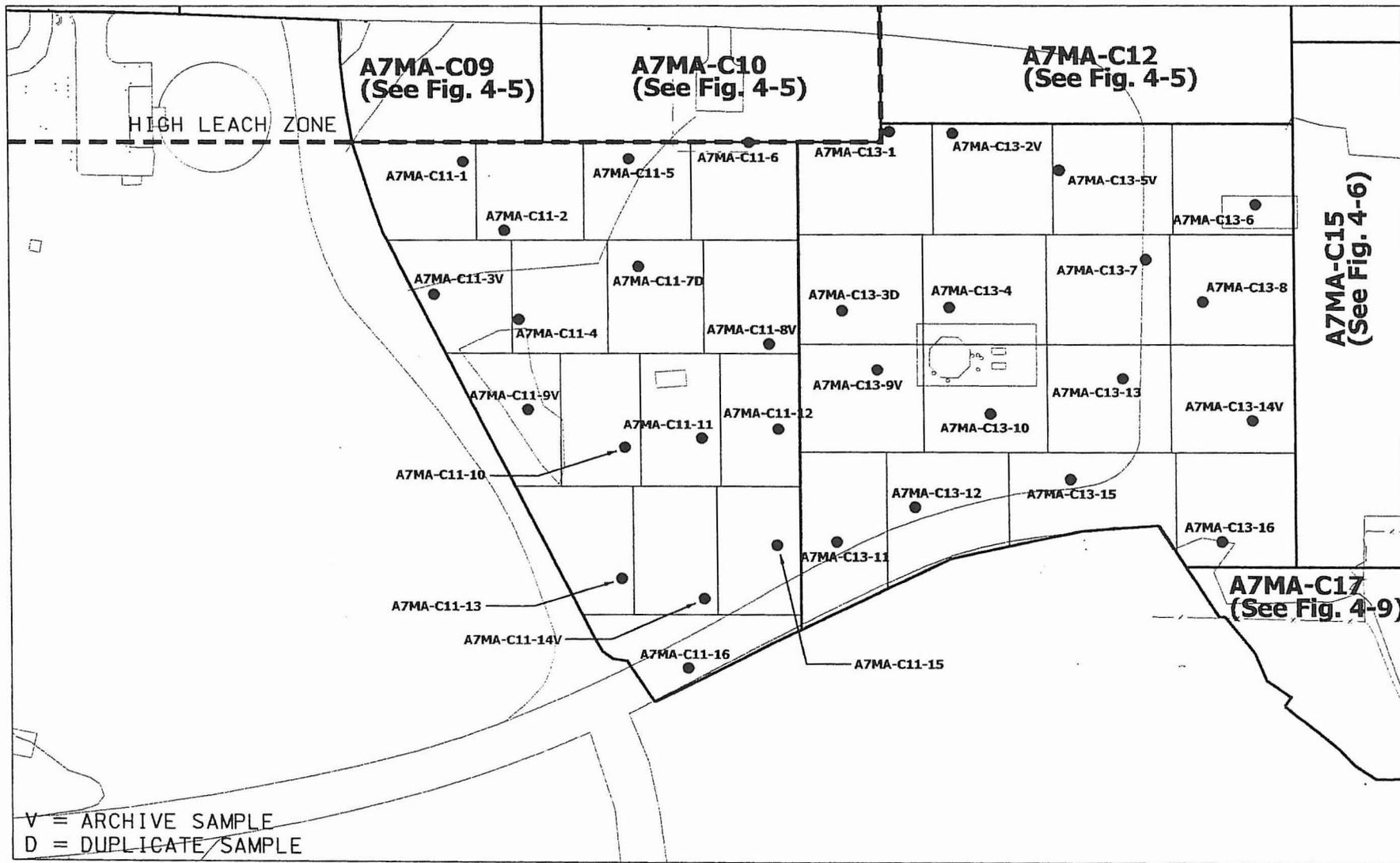


FIGURE 4-7. AREA 7 MISCELLANEOUS AREAS
SUB CU AND SAMPLE LOCATION MAP FOR CUs 11 & 13

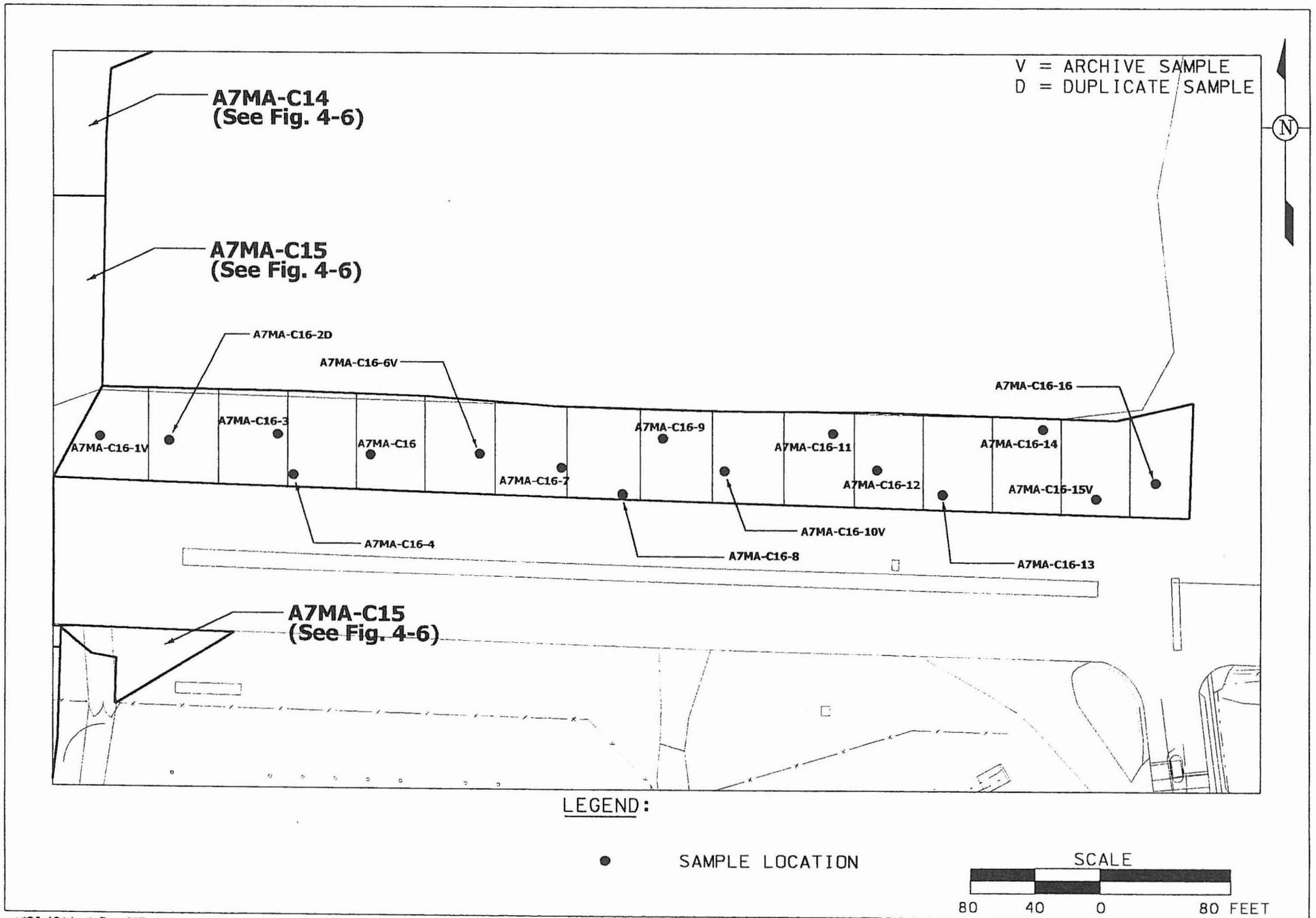
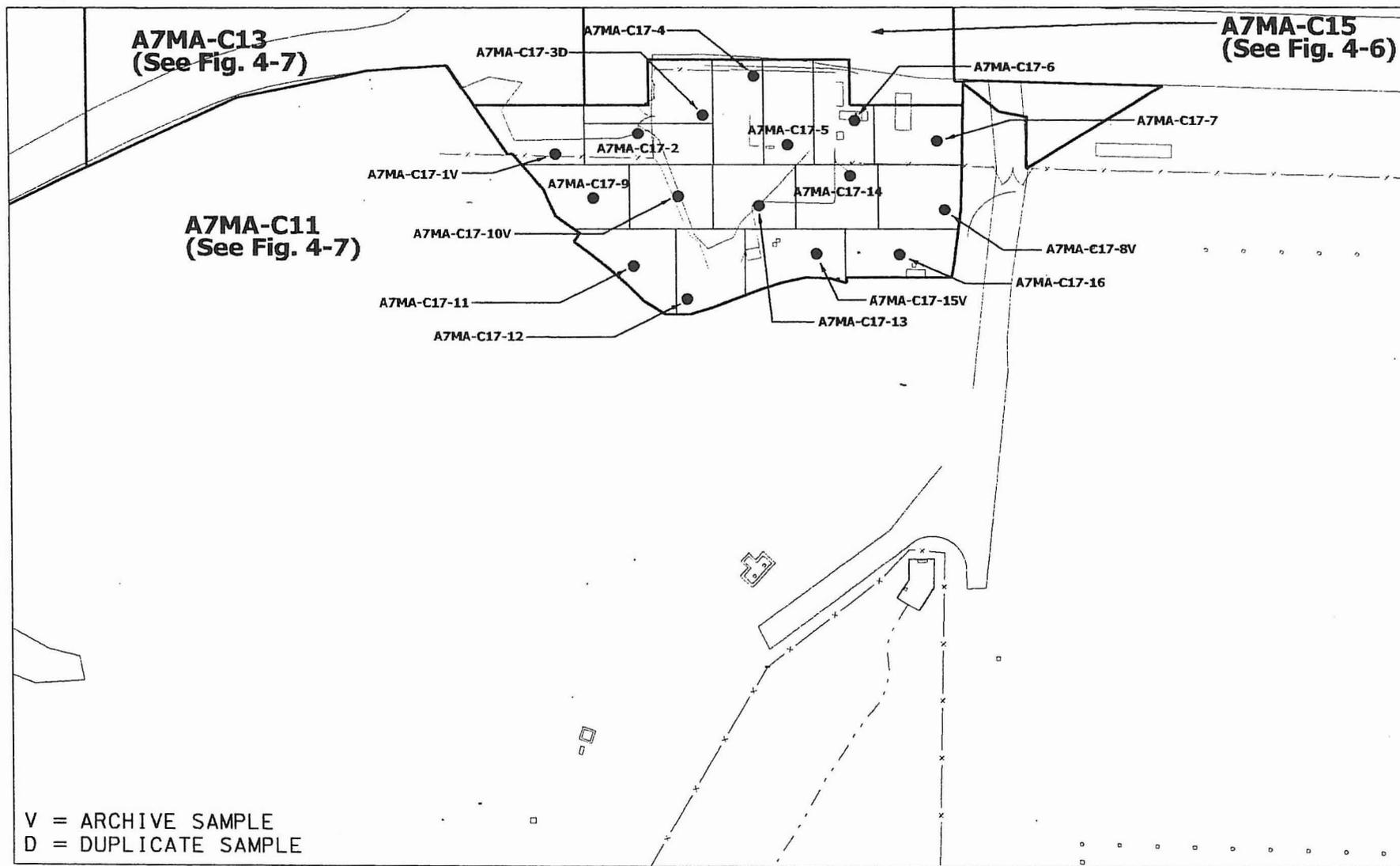


FIGURE 4-8. AREA 7 MISCELLANEOUS AREAS
SUB CU AND SAMPLE LOCATION MAP FOR CU 16



LEGEND:

● SAMPLE LOCATION

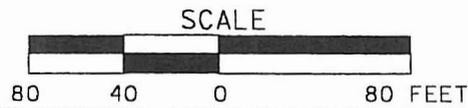


FIGURE 4-9. AREA 7 MISCELLANEOUS AREAS
SUB CU AND SAMPLE LOCATION MAP FOR CU 17

5.0 SCHEDULE

The following draft schedule shows key activities for the completion of the work within the scope of this CDL.

<u>Activity</u>	<u>Target Date</u>
Submittal of Certification Design Letter	September 21, 2006
Start of Certification Sampling	Complete
Complete Field Work	Complete
Complete Analytical Work	Complete
Complete Data Validation and Statistical Analysis	October 9, 2006
Submit Certification Report	October 19, 2006

*Only the date for submittal of the Certification Report is a commitment to the EPA and OEPA. Others 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 DQO SL-052, Revision 3 (Appendix B), 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 C. The field duplicate sample will be analyzed for the ASCOCs from the CU in which they were collected.

If "push tubes" are used for sample collection, two container blanks will be collected - one before sample collection begins and one at the conclusion of sample collection. The container blank samples will be analyzed for the primary radiological COCs that are identified in TAL A (Table 4-2). If an alternate sample collection method is used, one rinsate will be collected at a minimum frequency of one per 20 pieces of equipment reused in the field.

- All analyses will be performed at ASL D or E, where E should meet the MDL of 10 percent of the FRL and differs from 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 CUs to be validated to VSL D are A7MA-C01, A7MA-C07, A7MA-C13, and A7MA-C17. 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 to the PSP will be written to document references confirming that the new method supports data needs,
- Variations from the SCQ methodology are documented in a variance to the PSP, 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 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 and in the References section.

- 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan
- 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
- EQT-33, Real-Time Differential Global Positioning System
- 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) Quality Assurance (QA)/QC organization by conducting a surveillance, consisting of monitoring/observing ongoing project activities and work areas to verify conformance to specified requirements. The surveillance will be planned and documented in accordance with Section 12.3 of the SCQ.

6.4 IMPLEMENTATION OF CHANGES

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

7.0 HEALTH AND SAFETY

Coordinate with representatives of the Health and Safety and Industrial Hygiene and Construction for requirements to enter this area. Any hazards identified during the project 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), Fluor 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 supervisors are responsible for ensuring that all field activities comply with the Safety and Health requirements and ensuring compliance with the Work Plan. These briefings will be documented. Personnel who are not documented as having completed these briefings will not participate in the execution of field activities.

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

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

Sampling Leads will be provided with cellular phones for all sampling activities, and **all emergencies will be reported by dialing 911 and 648-6511**. Announcements for severe weather will be provided to select company issued 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 CAWWT 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, the 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 C. 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. Analytical data will be entered into the SED by Sample Data Management personnel. 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. Analytical data will be reviewed by the Data Management Lead 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 for Operable Unit 3," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 1995b, "Remedial Investigation for Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 1995c, "Feasibility Study for Operable Unit 3," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 1995d, "Feasibility Study 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 the Area 7 Support and Silos Process Area (Supplement to 20300-PSP-0011)," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 2005b, "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, 2005c, "Excavation Plan for Area 7 Silos and General Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.
- U.S. Department of Energy, 2005d, "Excavation Plan for Area 7 Support and Silos Process Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

006211

APPENDIX A

**PRECERTIFICATION REAL-TIME DATA MAPS
FOR AREA 7 MISCELLANEOUS AREAS**

Figure A-1 Area 7, Miscellaneous Area - Phase 1 Total Gross Counts per Second

Data Groups: RSS1_1174_07-08-2004,2519_05-05-2006,2642_06-28-2006,2645_06-29-2006,2658_07-05-2006
 2777_08-16-2006,2833_09-07-2006, 2946_10-09-2006

RSS2_1367_06-29-2006,1451_08-24-2006

RSS3_1423_05-16-2006,1432_05-23-2006,1511_06-29-2006

RSS4_1342_06-05-2006,1383_06-14-2006,1394_06-18-2006,1404_06-26-2006,1405_06-26-2006,
 1412_06-28-2006,1415_06-29-2006,1416_06-29-2006,1448_07-24-2006,1498_08-14-2006
 1533_08-24-2006

GATOR_0638_08-02-2005,0890_04-24-2006,1058_08-14-2006

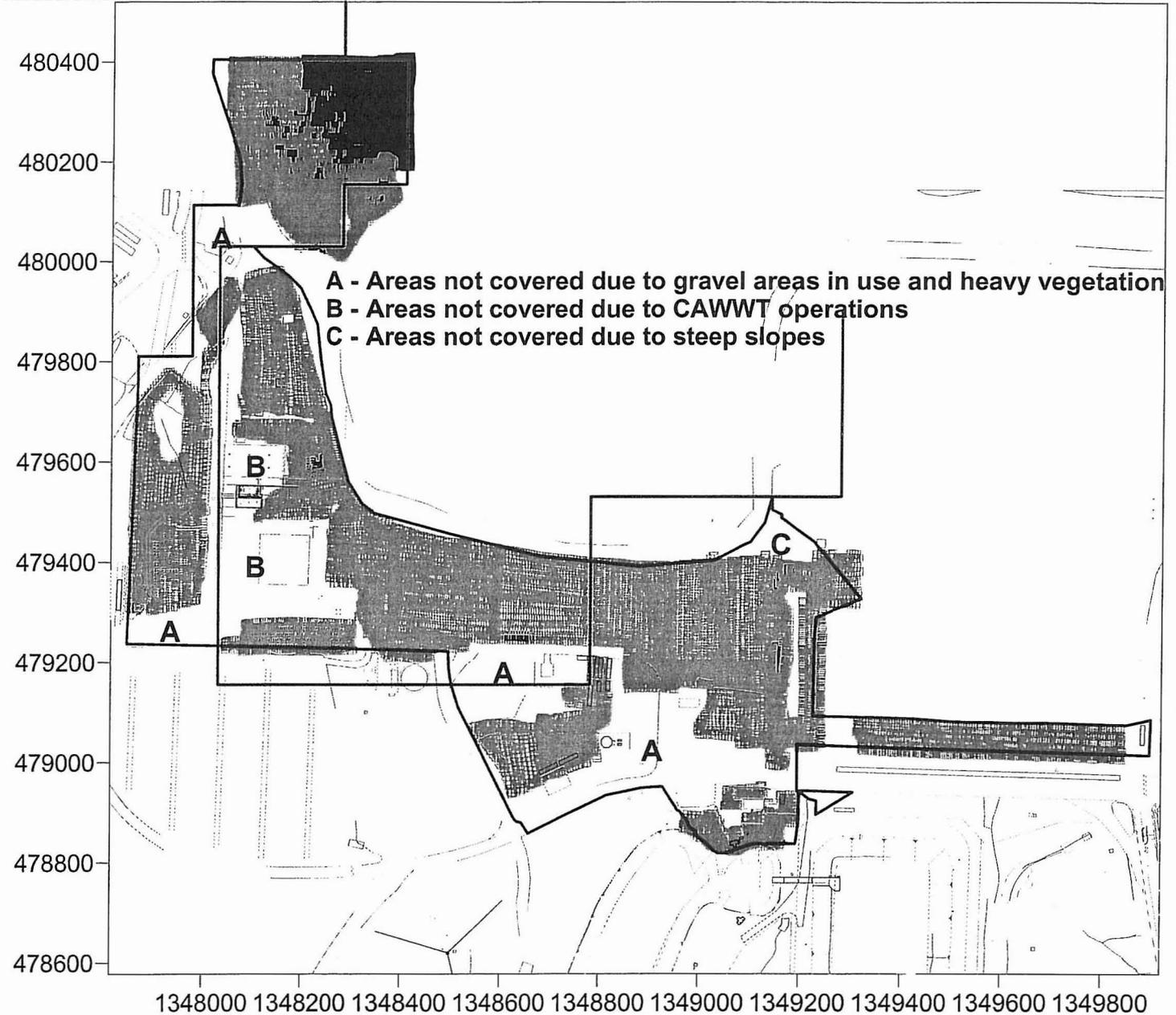
Surface Precert Data: RSS1_1169_07-08-2004,2622_06-12-2006,2639_06-24-2006,2666_07-09-2006,2672_07-11-2006

RSS2_1335_05-26-2006,1358_06-19-2006,1361_06-24-2006,1378_07-06-2006

RSS3_1439_05-25-2006,1464_06-08-2006

Design Grade Precert Data: EMS_0781_07-17-2006

Measurement Period: 07-08-2004 thru 10-09-2006



NAI Tcps	
[White Box]	0 to 3000
[Light Gray Box]	3000 to 5000
[Medium Gray Box]	5000 to 15000
[Dark Gray Box]	15000 to 18000
[Black Box]	18000 to 99999

High Leachability boundary ——— CDL Boundary ——— Sub Area Boundary

RTIMP DWG Title: A7MISC_P1_TC.srf
 Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
 Prepared: D.Seiller 09-20-2006; M. Frank 10-12-2006
 Support Data: A7MISC_P1.xls

Figure A-2 Area 7, Miscellaneous Area - Phase 1 Moisture Corrected Radium-226

Data Groups: RSS1_1174_07-08-2004,2519_05-05-2006,2642_06-28-2006,2645_06-29-2006,2658_07-05-2006
 2777_08-16-2006,2833_09-07-2006

RSS2_1367_06-29-2006,1451_08-24-2006

RSS3_1423_05-16-2006,1432_05-23-2006,1511_06-29-2006

RSS4_1342_06-05-2006,1383_06-14-2006,1394_06-18-2006,1404_06-26-2006,1405_06-26-2006,
 1412_06-28-2006,1415_06-29-2006,1416_06-29-2006,1448_07-24-2006,1498_08-14-2006
 1533_08-24-2006

GATOR_0638_08-02-2005,0890_04-24-2006,1058_08-14-2006

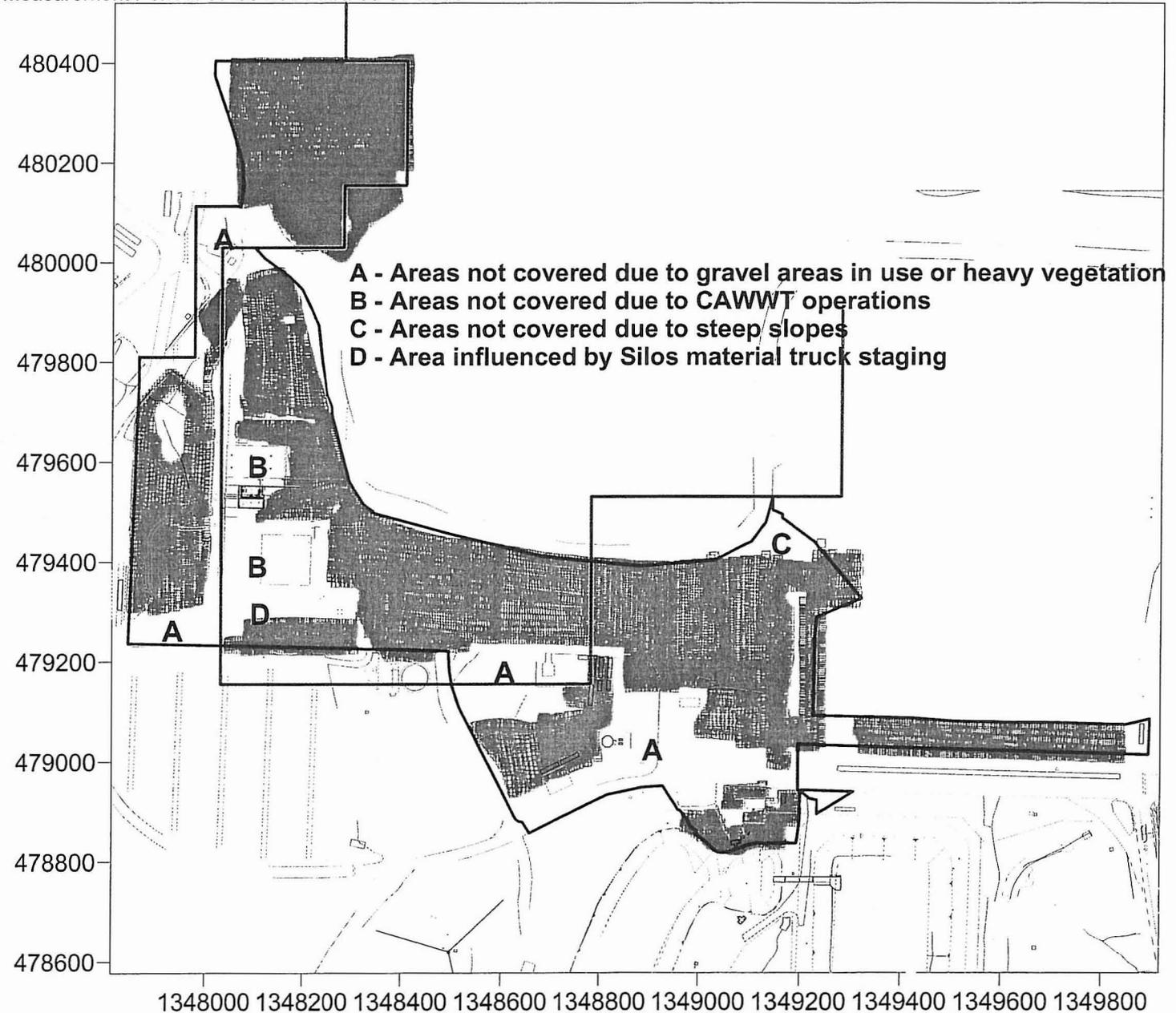
Surface Precert Data: RSS1_1169_07-08-2004,2622_06-12-2006,2639_06-24-2006,2666_07-09-2006,2672_07-11-2006

RSS2_1335_05-26-2006,1358_06-19-2006,1361_06-24-2006,1378_07-06-2006

RSS3_1439_05-25-2006,1464_06-08-2006

Design Grade Precert Data: EMS_0781_07-17-2006

Measurement Period: 07-08-2004 thru 09-07-2006



A - Areas not covered due to gravel areas in use or heavy vegetation
B - Areas not covered due to CAWWT operations
C - Areas not covered due to steep slopes
D - Area influenced by Silos material truck staging

High Leachability boundary
 CDL Boundary
 Sub Area Boundary

VAI Ra-226 pCi/g

□ -9999 to 5.1

□ 5.1 to 9999

RTIMP DWG Title: A7MISC_P1_RA.srf
 Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
 Prepared: D.Seiller 09-20-2006
 Support Data: A7MISC_P1.xls

Figure A-3 Area 7, Miscellaneous Area - Phase 1 Moisture Corrected Thorium-232

Data Groups: RSS1_1174_07-08-2004,2519_05-05-2006,2642_06-28-2006,2645_06-29-2006,2658_07-05-2006
2777_08-16-2006,2833_09-07-2006, 2946_10-09-2006

RSS2_1367_06-29-2006,1451_08-24-2006

RSS3_1423_05-16-2006,1432_05-23-2006,1511_06-29-2006

RSS4_1342_06-05-2006,1383_06-14-2006,1394_06-18-2006,1404_06-26-2006,1405_06-26-2006,
1412_06-28-2006,1415_06-29-2006,1416_06-29-2006,1448_07-24-2006,1498_08-14-2006
1533_08-24-2006

GATOR_0638_08-02-2005,0890_04-24-2006,1058_08-14-2006

Surface Precert Data: RSS1_1169_07-08-2004,2622_06-12-2006,2639_06-24-2006,2666_07-09-2006,2672_07-11-2006

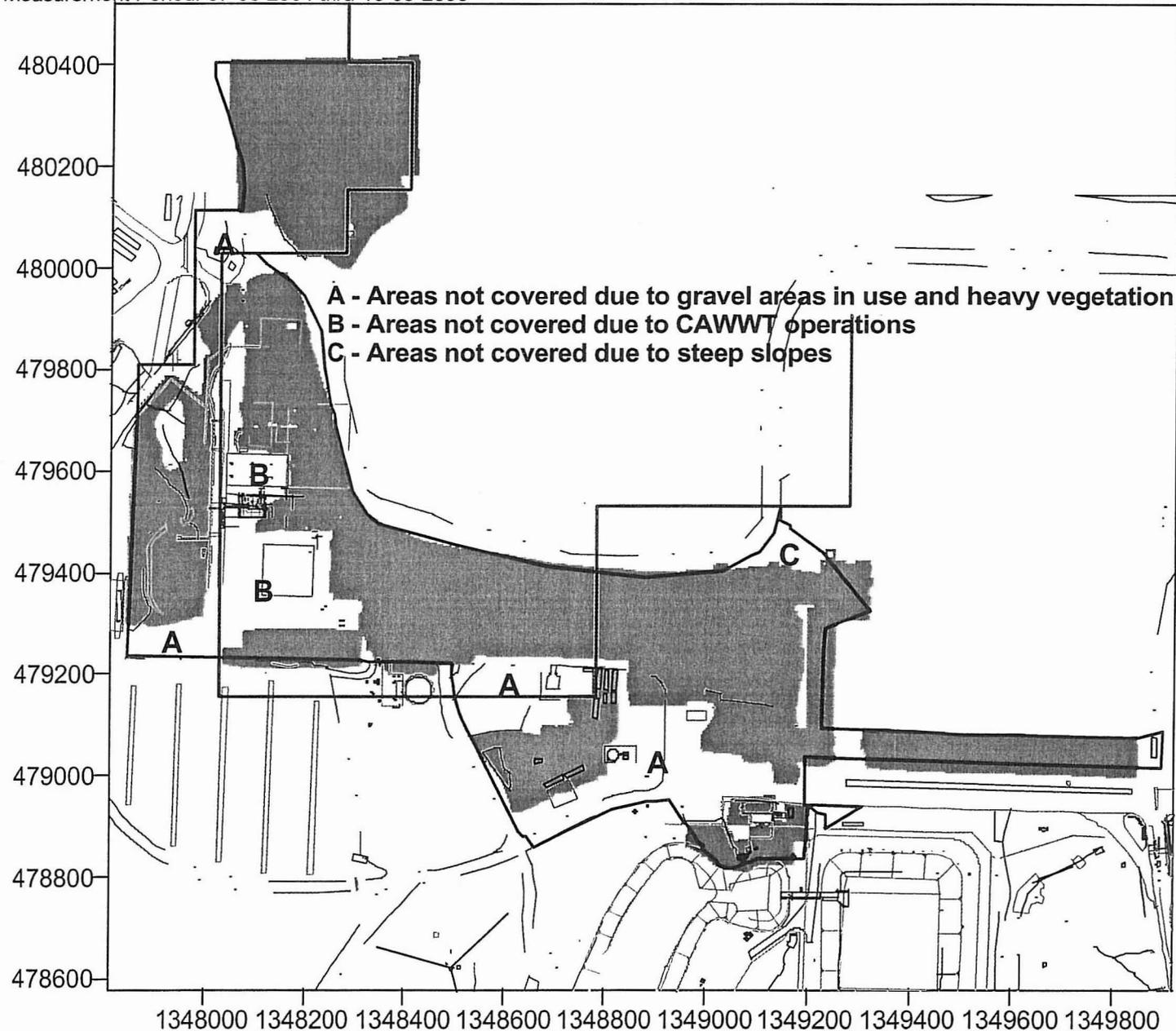
RSS2_1335_05-26-2006,1358_06-19-2006,1361_06-24-2006,1378_07-06-2006

RSS3_1439_05-25-2006,1464_06-08-2006

Design Grade Precert Data: EMS_0781_07-17-2006



Measurement Period: 07-08-2004 thru 10-09-2006



VAI Th-232 pCi/g □ -9999 to 4.5 □ 4.5 to 9999	High Leachability boundary CDL Boundary Sub Area Boundary	RTIMP DWG Title: A7MISC_P1_TH.srf Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011 Prepared: D.Seiller 09-20-2006; M. Frank 10-12-2006 Support Data: A7MISC_P1.xls
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Figure A-4 Area 7, Miscellaneous Area - Phase 1 Moisture Corrected Total Uranium

Data Groups: RSS1_1174_07-08-2004,2519_05-05-2006,2642_06-28-2006,2645_06-29-2006,2658_07-05-2006
 2777_08-16-2006,2833_09-07-2006, 2946_10-09-2006

RSS2_1367_06-29-2006,1451_08-24-2006

RSS3_1423_05-16-2006,1432_05-23-2006,1511_06-29-2006

RSS4_1342_06-05-2006,1383_06-14-2006,1394_06-18-2006,1404_06-26-2006,1405_06-26-2006,
 1412_06-28-2006,1415_06-29-2006,1416_06-29-2006,1448_07-24-2006,1498_08-14-2006
 1533_08-24-2006

GATOR_0638_08-02-2005,0890_04-24-2006,1058_08-14-2006

Surface Precert Data: RSS1_1169_07-08-2004,2622_06-12-2006,2639_06-24-2006,2666_07-09-2006,2672_07-11-2006

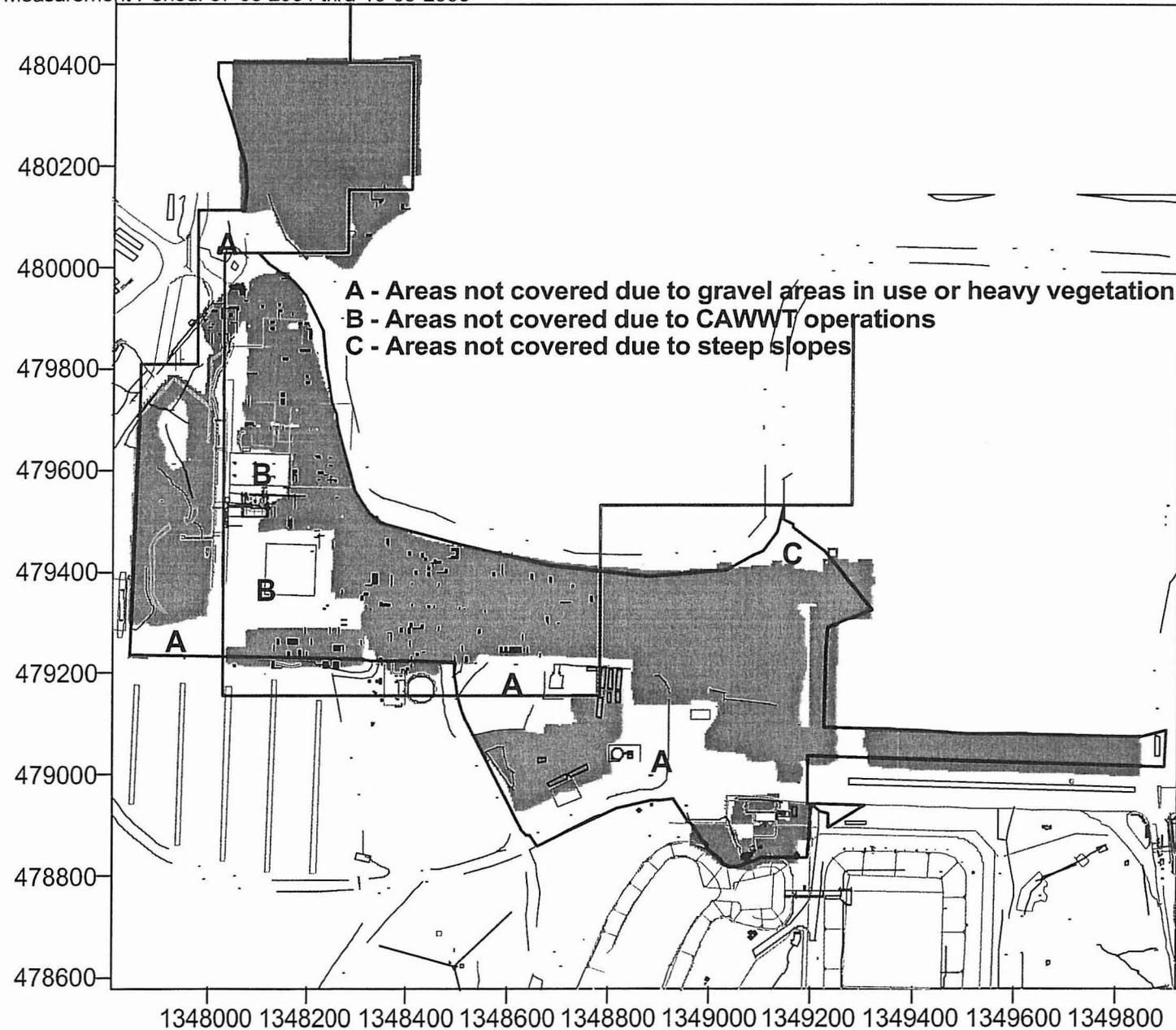
RSS2_1335_05-26-2006,1358_06-19-2006,1361_06-24-2006,1378_07-06-2006

RSS3_1439_05-25-2006,1464_06-08-2006

Design Grade Precert Data: EMS_0781_07-17-2006



Measurement Period: 07-08-2004 thru 10-09-2006



A - Areas not covered due to gravel areas in use or heavy vegetation
B - Areas not covered due to CAWWT operations
C - Areas not covered due to steep slopes

High Leachability boundary

CDL Boundary

Sub Area Boundary

NAI TU ppm High Leachability Area	NAI TU ppm Non High Leachability Area
□ -9999 to 60	□ -9999 to 246
□ 60 to 875	□ 246 to 875
□ 875 to 9999	□ 875 to 9999

RTIMP DWG Title: A7MISC_P1_TU.srf

Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011

Prepared: D.Seiller 09-20-2006; M. Frank 10-12-2006

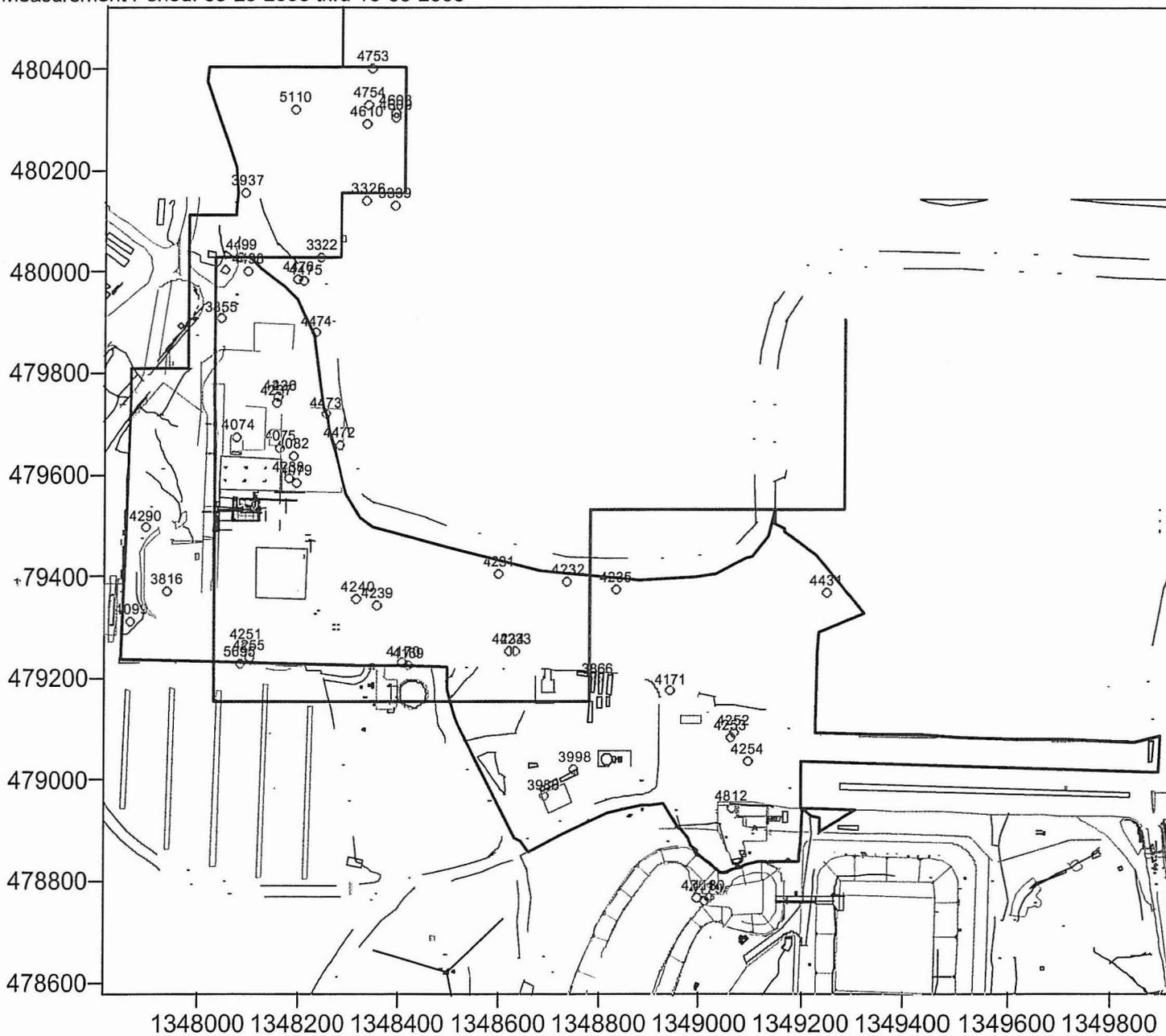
Support Data: A7MISC_P1.xls

Figure A-5 Area 7, Miscellaneous Area - Phase 2 Moisture Corrected Radium-226



Data Groups: 30699_04-05-2006,31204_04-10-2006,30687_05-23-2006,30687_06-16-2006,30687_06-17-2006
 40227_06-19-2006,30687_06-26-2006,40227_06-28-2006,30687_07-03-2006,31144_07-03-2006
 30687_07-06-2006,40227_07-05-2006,31144_07-08-2006,30687_7-24-2006,40227_7-24-2006,30687_07-26-2006
 40293_08-15-2006,40293_08-17-2006,40293_08-25-2006,31144_09-07-2006,40227_10-09-2006
 Surface Precert Data: 30687_06-05-2006 ,31144_05-25-2006 ,30699_06-20-2006, 31265_05-26-2006,30687_06-08-2006,
 30687_06-12-2006

Measurement Period: 05-23-2006 thru 10-09-2006



———— High Leachability boundary ————— CDL Boundary ————— Sub Area Boundary

HPGe Ra-226 pCi/g
 ○ -9999 to 5.1
 ● 5.1 to 9999

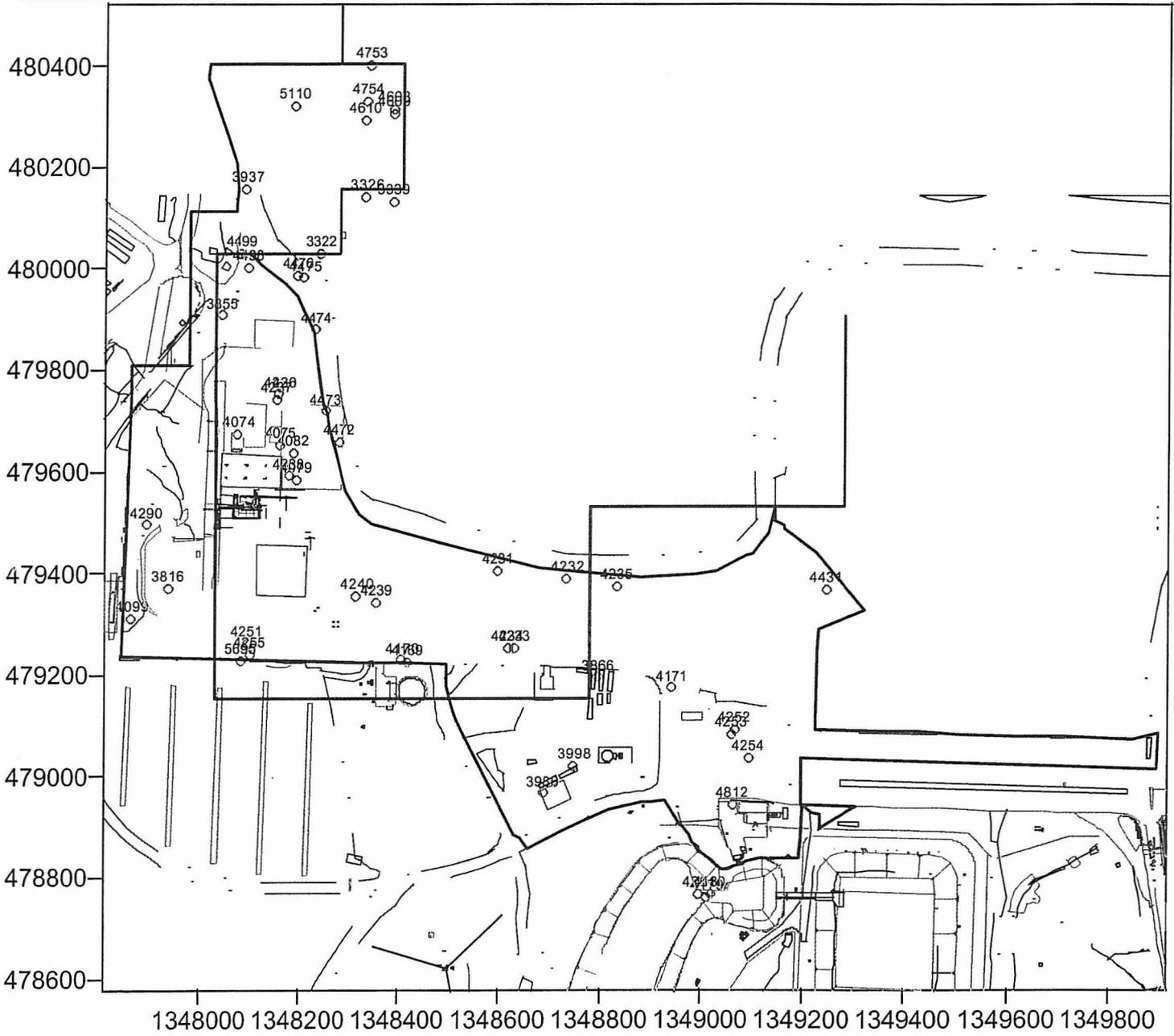
RTIMP DWG Title: A7MISC_P2_RA.srf
 Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
 Prepared: D.Seiller 09-20-2006; M. Frank 10-12-2006
 Support Data: A7MISC_P2.xls

Figure A-6 Area 7, Miscellaneous Area - Phase 2 Moisture Corrected Thorium-232



Data Groups: 30699_04-05-2006,31204_04-10-2006,30687_05-23-2006,30687_06-16-2006,30687_06-17-2006
 40227_06-19-2006,30687_06-26-2006,40227_06-28-2006,30687_07-03-2006,31144_07-03-2006,40277_10-09-2
 30687_07-06-2006,40227_07-05-2006,31144_07-08-2006,30687_7-24-2006,40227_7-24-2006,30687_07-26-2006
 40293_08-15-2006,40293_08-17-2006,40293_08-25-2006,31144_09-07-2006
 Surface Precert Data: 30687_06-05-2006 ,31144_05-25-2006 ,30699_06-20-2006, 31265_05-26-2006,30687_06-08-2006,
 30687_06-12-2006

Measurement Period: 05-23-2006 thru 10-09-2006



———— High Leachability boundary - - - - - CDL Boundary _____ Sub Area Boundary

HPGe Th-232 pCi/g

- -9999 to 4.5
- 4.5 to 9999

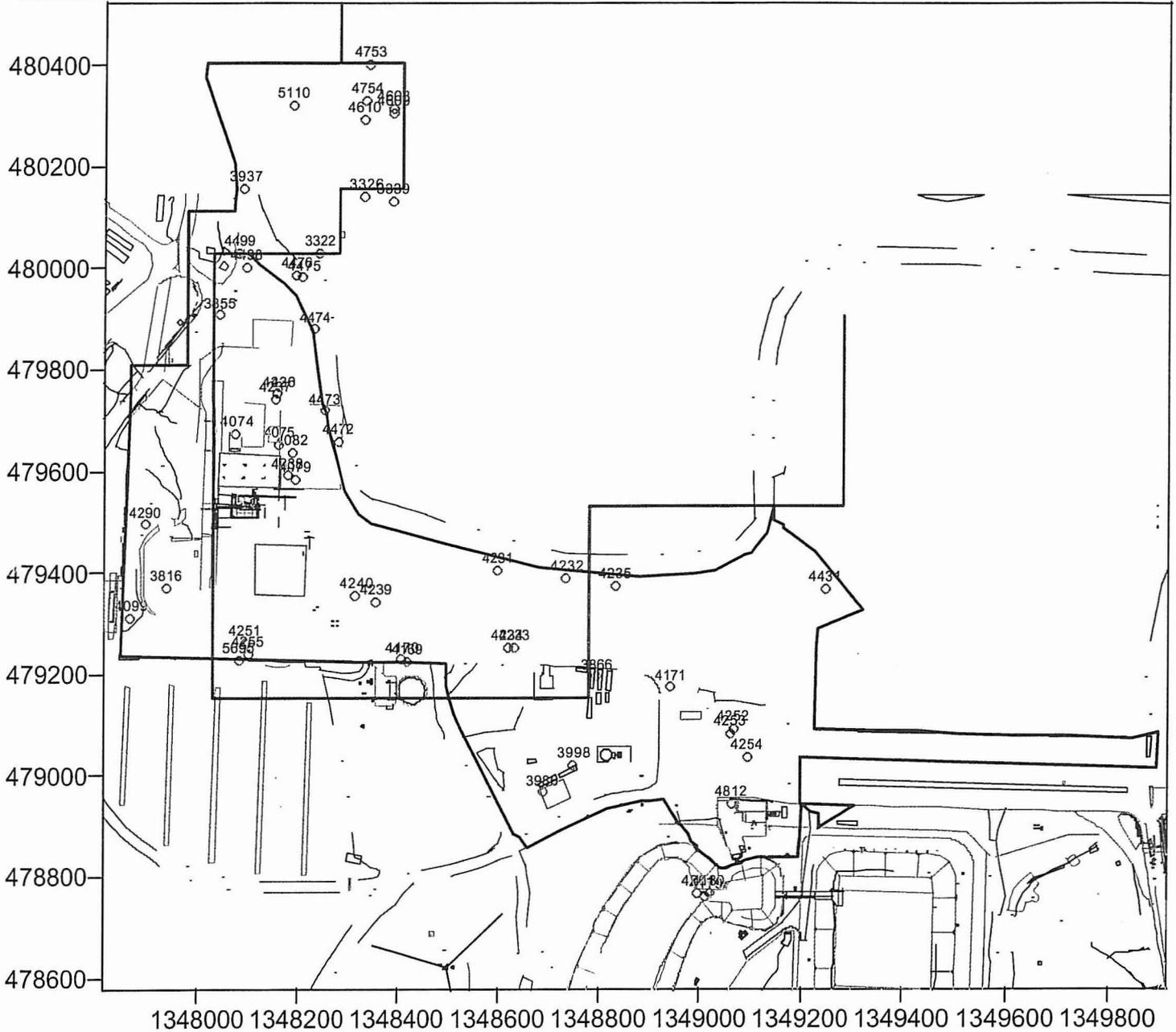
RTIMP DWG Title: A7MISC_P2_TH.srf
 Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
 Prepared: D.Seiller 09-20-2006; M. Frank 10-12-2006
 Support Data: A7MISC_P2.xls

Figure A-7 Area 7, Miscellaneous Area - Phase 2 Moisture Corrected Total Uranium



Data Groups: 30699_04-05-2006,31204_04-10-2006,30687_05-23-2006,30687_06-16-2006,30687_06-17-2006
 40227_06-19-2006,30687_06-26-2006,40227_06-28-2006,30687_07-03-2006,31144_07-03-2006
 30687_07-06-2006,40227_07-05-2006,31144_07-08-2006,30687_7-24-2006,40227_7-24-2006,30687_07-26-2006
 40293_08-15-2006,40293_08-17-2006,40293_08-25-2006,31144_09-07-2006, 40277_10-09-2006
 Surface Precert Data: 30687_06-05-2006 ,31144_05-25-2006 ,30699_06-20-2006, 31265_05-26-2006,30687_06-08-2006,
 30687_06-12-2006

Measurement Period: 05-23-2006 thru 10-09-2006



———— High Leachability boundary - - - - - CDL Boundary _____ Sub Area Boundary

HPGe TU ppm High Leachability Area	HPGe TU ppm Non High Leachability Area
○ -9999 to 60	○ -9999 to 246
○ 60 to 928	○ 246 to 928
○ 928 to 9999	○ 928 to 9999

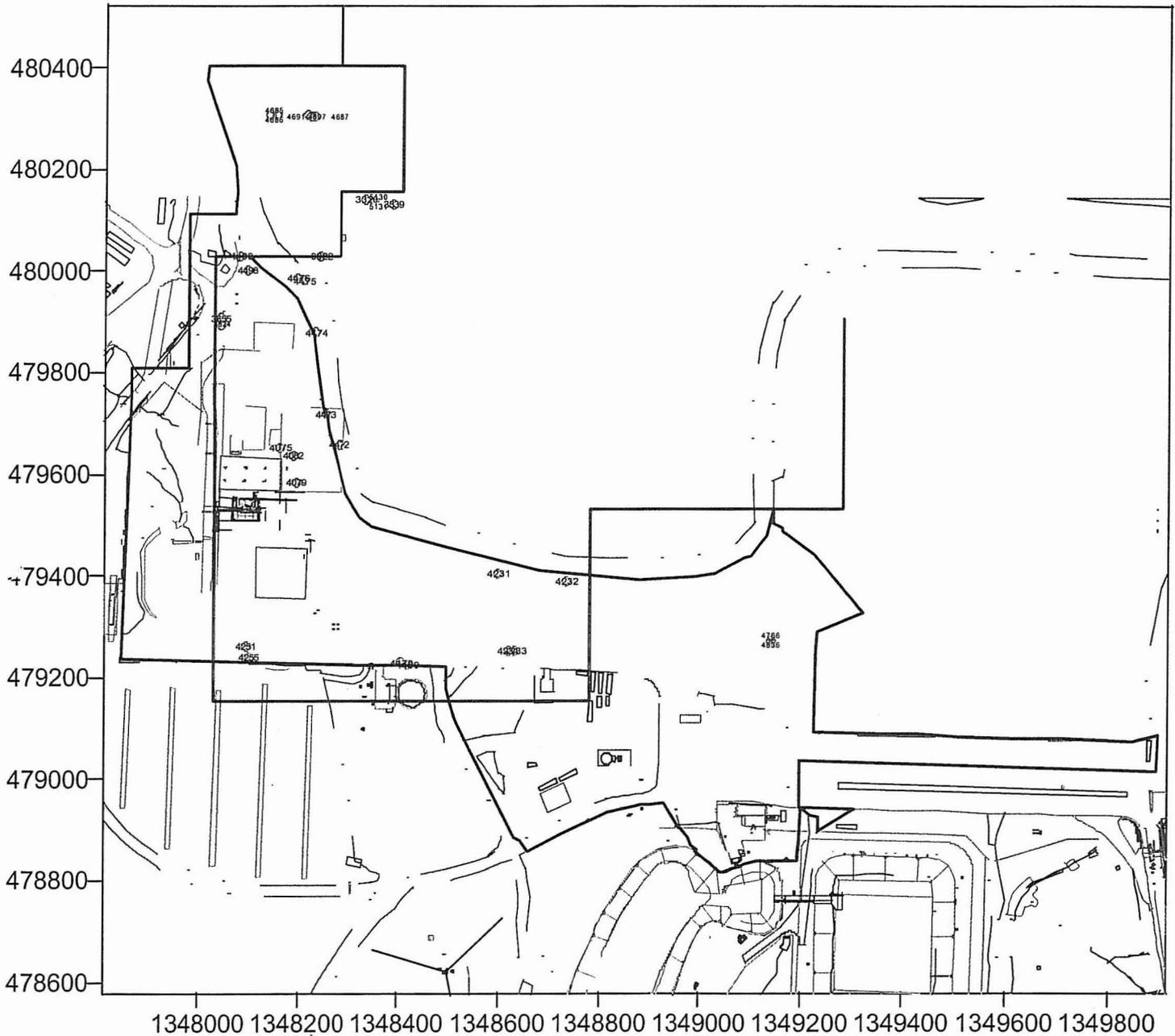
RTIMP DWG Title: A7MISC_P2_TU.srf
 Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
 Prepared: D.Seiller 09-20-2006; M. Frank 10-12-2006
 Support Data: A7MISC_P2.xls

Figure A-8 Area 7, Miscellaneous Area - Phase 3 Moisture Corrected Radium-226



Data Groups: 40227_08-09-2006,08-17-2006
31265_08-21-2006
40293_08-14-2006,08-18-2006,09-07-2006

Measurement Period: 08-09-2006 thru 09-07-2006



High Leachability boundary CDL Boundary Sub Area Boundary

HPGe Ra-226 pCi/g

- -999 to 5.1
- 5.1 to 999

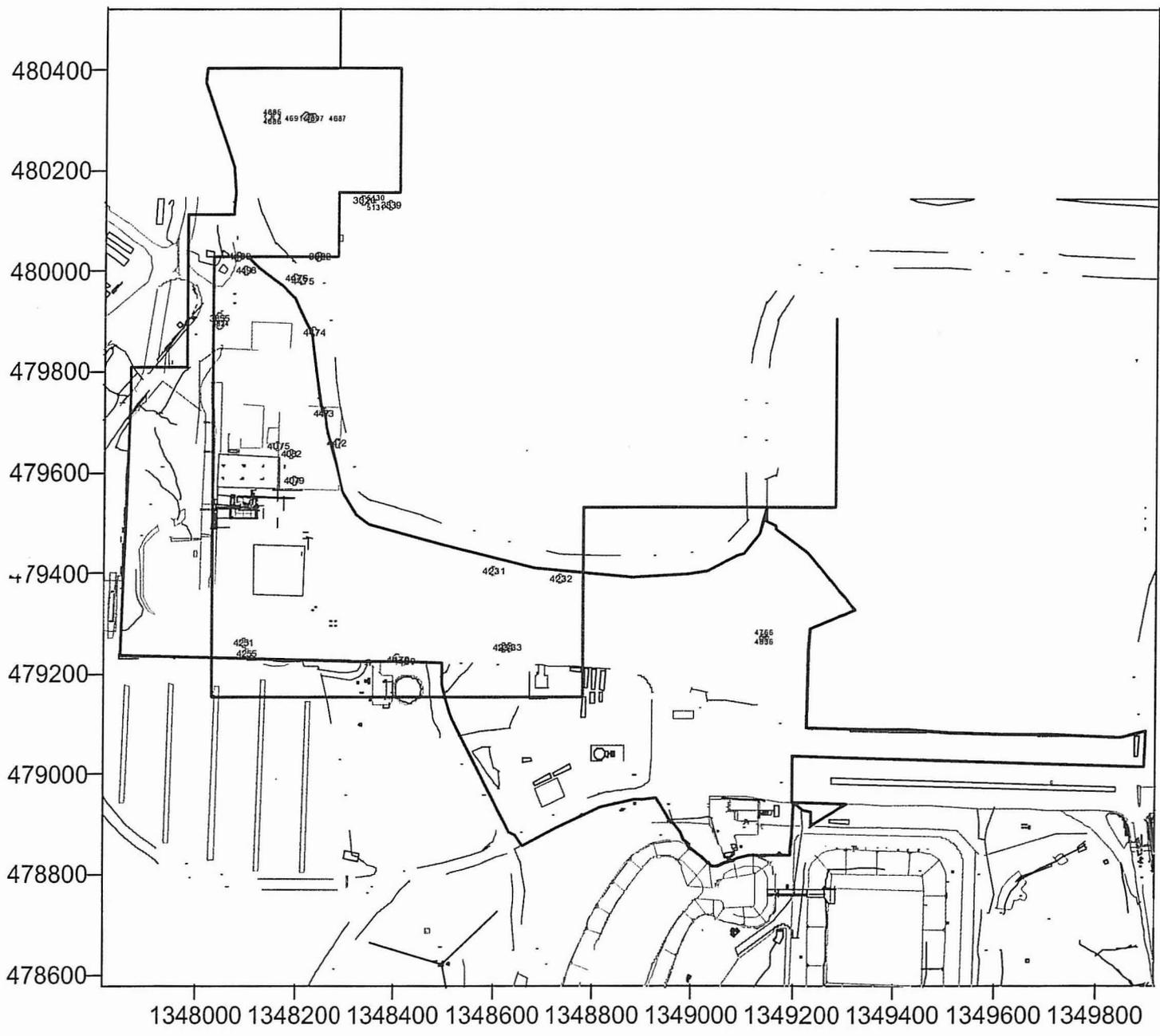
RTIMP DWG Title: A7MISC_P3_RA.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 09-20-2006
Support Data: A7MISC_P3.xls

Figure A-9 Area 7, Miscellaneous Area - Phase 3 Moisture Corrected Thorium-232



Data Groups: 40227_08-09-2006,08-17-2006
31265_08-21-2006
40293_08-14-2006,08-18-2006,09-07-2006

Measurement Period: 08-09-2006 thru 09-07-2006



High Leachability boundary CDL Boundary Sub Area Boundary

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

RTIMP DWG Title: A7MISC_P3_TH.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 09-20-2006
Support Data: A7MISC_P3.xls

APPENDIX B

DATA QUALITY OBJECTIVES SL-052, REV. 3

DQO #: SL-052, Rev. 3
 Effective Date: March 3, 2000

Page 1 of 12

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:


 James Chambers
 DQO Coordinator

Date:

3/13/00

Approval:


 J.D. Chiou
 SCEP Project Director

Date:

3/13/00

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

Laboratory Analysis

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

Validation

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

8.0 Use of Data to Test Null Hypothesis

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

Data Quality Objectives
Sitewide Certification Sampling and Analysis

1A. Task Description:

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

RI FS RD RA RvA Other (specify) _____

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

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

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

3. Data Use with Analytical 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 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>
Evaluation of Alternatives	Engineering Design
A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>
Monitoring During Remediation	Other
A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input checked="" type="checkbox"/> E <input type="checkbox"/>

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.

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 | <input type="checkbox"/> | 2. Uranium | <input checked="" type="checkbox"/> * | 3. BTX | <input type="checkbox"/> |
| Temperature | <input type="checkbox"/> | Full Radiological | <input checked="" type="checkbox"/> * | TPH | <input type="checkbox"/> |
| Specific Conductance | <input type="checkbox"/> | Metals | <input checked="" type="checkbox"/> * | Oil/Grease | <input type="checkbox"/> |
| Dissolved Oxygen | <input type="checkbox"/> | Cyanide | <input type="checkbox"/> | | |
| Technetium-99 | <input checked="" type="checkbox"/> * | Silica | <input type="checkbox"/> | | |
| | | | | | |
| 4. Cations | <input type="checkbox"/> | 5. VOA | <input checked="" type="checkbox"/> * | 6. Other (specify) | |
| Anions | <input type="checkbox"/> | BNA | <input type="checkbox"/> | | |
| TOC | <input type="checkbox"/> | PEST | <input checked="" type="checkbox"/> * | | |
| TCLP | <input type="checkbox"/> | PCB | <input checked="" type="checkbox"/> * | | |
| CEC | <input type="checkbox"/> | COD | <input type="checkbox"/> | | |

* 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 <u>Per SCQ and PSP</u>	SCQ Section <u>Appendix G, Tbls. 1&3</u>
ASL E <u>Per PSP</u>	SCQ Section <u>Appendix H (final)</u>

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	<input checked="" type="checkbox"/> ¹	Container Blanks	<input checked="" type="checkbox"/>
Field Blanks	<input checked="" type="checkbox"/> ²	Duplicate Samples	<input checked="" type="checkbox"/>
Equipment Rinsate Blanks	<input checked="" type="checkbox"/>	Split Samples	<input checked="" type="checkbox"/> ³
Preservative Blanks	<input type="checkbox"/>	Performance Evaluation Samples	<input type="checkbox"/>

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	<input checked="" type="checkbox"/>	Matrix Duplicate/Replicate	<input checked="" type="checkbox"/>
Matrix Spike	<input checked="" type="checkbox"/>	Surrogate Spikes	<input checked="" type="checkbox"/>
Tracer Spike	<input checked="" type="checkbox"/>	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.

APPENDIX C

**AREA 7 MISCELLANEOUS AREAS
CU SAMPLE LOCATIONS AND IDENTIFIERS**

APPENDIX C
AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
1	1-1	0"-6"	A7MA-C01-1^RM	A,F,G	480383.48	1348106.35
	1-2	0"-6"	A7MA-C01-2^V	Archive	480377.89	1348142.66
	1-3	0"-6"	A7MA-C01-3^RM	A,F,G	480356.06	1348045.74
	1-4	0"-6"	A7MA-C01-4^RM	A,F,G	480342.13	1348175.86
	1-5	0"-6"	A7MA-C01-5^RM	A,F,G	480367.66	1348233.21
	1-6	0"-6"	A7MA-C01-6^V	Archive	480387.68	1348367.02
	1-7D	0"-6"	A7MA-C01-7^RM	A,F,G	480343.63	1348294.06
			A7MA-C01-7^RM-D			
	1-8	0"-6"	A7MA-C01-8^RM	A,F,G	480346.29	1348391.27
	1-9	0"-6"	A7MA-C01-9^RM	A,F,G	480297.44	1348045.56
	1-10	0"-6"	A7MA-C01-10^V	Archive	480312.73	1348127.20
	1-11	0"-6"	A7MA-C01-11^RM	A,F,G	480274.28	1348107.97
	1-12	0"-6"	A7MA-C01-12^RM	A,F,G	480254.74	1348156.41
	1-13	0"-6"	A7MA-C01-13^RM	A,F,G	480308.64	1348260.68
	1-14	0"-6"	A7MA-C01-14^RM	A,F,G	480318.66	1348347.17
	1-15	0"-6"	A7MA-C01-15^V	Archive	480262.40	1348302.87
1-16	0"-6"	A7MA-C01-16^RM	A,F	480266.50	1348384.94	
2	2-1	0"-6"	A7MA-C02-1^RM	A,F	480190.13	1348098.60
	2-2	0"-6"	A7MA-C02-2^RM	A,F	480189.12	1348152.19
	2-3	0"-6"	A7MA-C02-3^RM	A,F	480103.31	1348075.40
	2-4	0"-6"	A7MA-C02-4^V	Archive	480157.36	1348158.54
	2-5	0"-6"	A7MA-C02-5^RM	A,F	480207.48	1348226.82
	2-6D	0"-6"	A7MA-C02-6^RM	A,F	480185.66	1348247.54
			A7MA-C02-6^RM-D			
	2-7	0"-6"	A7MA-C02-7^RM	A,F	480239.40	1348320.55
	2-8	0"-6"	A7MA-C02-8^RM	A,F	480205.68	1348381.49
	2-9	0"-6"	A7MA-C02-9^V	Archive	480160.04	1348213.07
	2-10	0"-6"	A7MA-C02-10^RM	A,F	480150.83	1348258.03
	2-11	0"-6"	A7MA-C02-11^V	Archive	480164.87	1348358.88
	2-12	0"-6"	A7MA-C02-12^RM	A,F	480078.11	1348255.54
	2-13	0"-6"	A7MA-C02-13^RM	A,F	480101.73	1348123.33
	2-14	0"-6"	A7MA-C02-14^RM	A,F	480073.85	1348212.82
	2-15	0"-6"	A7MA-C02-15^V	Archive	480036.02	1348121.68
2-16	0"-6"	A7MA-C02-16^RM	A,F	480036.35	1348266.87	

APPENDIX C
AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
3	3-1	0"-6"	A7MA-C03-1^RMP	A,D,F	480040.86	1348076.87
	3-2	0"-6"	A7MA-C03-2^RMP	A,D,F	480078.83	1347994.92
	3-3	0"-6"	A7MA-C03-3^RMP	A,D,F	480014.23	1348024.43
	3-4	0"-6"	A7MA-C03-4^V	Archive	479972.62	1347994.12
	3-5	0"-6"	A7MA-C03-5^RMP	A,D,F	479856.02	1347978.03
	3-6	0"-6"	A7MA-C03-6^RMP	A,D,F	479799.62	1348013.17
	3-7	0"-6"	A7MA-C03-7^V	Archive	479753.44	1348012.71
	3-8	0"-6"	A7MA-C03-8^RMP	A,D,F	479668.66	1348014.48
	3-9	0"-6"	A7MA-C03-9^V	Archive	479773.28	1347893.91
	3-10	0"-6"	A7MA-C03-10^RMP	A,D,F	479801.34	1347960.82
	3-11	0"-6"	A7MA-C03-11^RMP	A,D,F	479661.40	1347868.35
	3-12	0"-6"	A7MA-C03-12^RMP	A,D,F	479746.97	1347938.96
	3-13D	0"-6"	A7MA-C03-13^RMP	A,D,F	479677.48	1347961.72
			A7MA-C03-13^RMP-D			
	3-14	0"-6"	A7MA-C03-14^RMP	A,D,F	479622.22	1347927.06
	3-15	0"-6"	A7MA-C03-15^V	Archive	479579.93	1347867.98
3-16	0"-6"	A7MA-C03-16^RMP	A,D,F	479588.61	1347970.98	
4	4-1	0"-6"	A7MA-C04-1^V	Archive	480015.34	1348092.60
	4-2	0"-6"	A7MA-C04-2^RMP	A,D,F	479957.10	1348096.22
	4-3D	0"-6"	A7MA-C04-3^RMP	A,D,F	479974.37	1348156.47
			A7MA-C04-3^RMP-D			
	4-4	0"-6"	A7MA-C04-4^RMP	A,D,F	479900.94	1348179.13
	4-5	0"-6"	A7MA-C04-5^V	Archive	479920.16	1348106.35
	4-6	0"-6"	A7MA-C04-6^RMP	A,D,F	479892.74	1348045.74
	4-7	0"-6"	A7MA-C04-7^RMP	A,D,F	479834.12	1348045.56
	4-8	0"-6"	A7MA-C04-8^RMP	A,D,F	479879.04	1348150.81
	4-9	0"-6"	A7MA-C04-9^RMP	A,D,F	479810.96	1348107.97
	4-10	0"-6"	A7MA-C04-10^RMP	A,D,F	479838.38	1348149.09
	4-11	0"-6"	A7MA-C04-11^V	Archive	479753.28	1348049.15
	4-12	0"-6"	A7MA-C04-12^RMP	A,D,F	479791.42	1348156.41
	4-13	0"-6"	A7MA-C04-13^RMP	A,D,F	479832.40	1348197.67
	4-14	0"-6"	A7MA-C04-14^V	Archive	479696.72	1348213.07
	4-15	0"-6"	A7MA-C04-15^RMP	A,D,F	479737.22	1348128.28
4-16	0"-6"	A7MA-C04-16^RMP	A,D,F	479713.89	1348085.66	

APPENDIX C
AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
5	5-1	0"-6"	A7MA-C05-1^V	Archive	479539.44	1347906.52
	5-2	0"-6"	A7MA-C05-2^RMP	A,D,F	479547.01	1347973.90
	5-3	0"-6"	A7MA-C05-3^RMP	A,D,F	479498.47	1347892.91
	5-4	0"-6"	A7MA-C05-4^RMP	A,D,F	479511.24	1347956.26
	5-5	0"-6"	A7MA-C05-5^V	Archive	479470.73	1347871.26
	5-6	0"-6"	A7MA-C05-6^RMP	A,D,F	479472.16	1348025.53
	5-7	0"-6"	A7MA-C05-7^RMP	A,D,F	479408.81	1347925.24
	5-8	0"-6"	A7MA-C05-8^RMP	A,D,F	479420.00	1348011.13
	5-9	0"-6"	A7MA-C05-9^RMP	A,D,F	479383.12	1347865.81
	5-10	0"-6"	A7MA-C05-10^V	Archive	479376.83	1348006.99
	5-11	0"-6"	A7MA-C05-11^RMP	A,D,F	479328.60	1347922.60
	5-12	0"-6"	A7MA-C05-12^RMP	A,D,F	479344.37	1348024.85
	5-13	0"-6"	A7MA-C05-13^RMP	A,D,F	479299.61	1347899.44
	5-14	0"-6"	A7MA-C05-14^RMP	A,D,F	479285.28	1348018.11
	5-15D	0"-6"	A7MA-C05-15^RMP	A,D,F	479266.67	1347859.32
			A7MA-C05-15^RMP-D			
5-16	0"-6"	A7MA-C05-16^V	Archive	479258.49	1347975.34	
6	6-1	0"-6"	A7MA-C06-1^RMP	A,D,F	479675.91	1348037.78
	6-2	0"-6"	A7MA-C06-2^RMP	A,D,F	479688.05	1348090.71
	6-3	0"-6"	A7MA-C06-3^RMP	A,D,F	479659.26	1348146.88
	6-4	0"-6"	A7MA-C06-4^V	Archive	479677.98	1348198.86
	6-5D	0"-6"	A7MA-C06-5^RMP	A,D,F	479662.51	1348257.98
			A7MA-C06-5^RMP-D			
	6-6	0"-6"	A7MA-C06-6^RMP	A,D,F	479610.53	1348212.82
	6-7	0"-6"	A7MA-C06-7^V	Archive	479614.79	1348255.54
	6-8	0"-6"	A7MA-C06-8^RMP	A,D,F	479584.21	1348210.96
	6-9	0"-6"	A7MA-C06-9^V	Archive	479557.43	1348244.96
	6-10	0"-6"	A7MA-C06-10^RMP	A,D,F	479533.21	1348187.14
	6-11	0"-6"	A7MA-C06-11^RMP	A,D,F	479526.23	1348304.43
	6-12	0"-6"	A7MA-C06-12^RMP	A,D,F	479489.83	1348212.73
	6-13	0"-6"	A7MA-C06-13^RMP	A,D,F	479503.83	1348266.09
	6-14	0"-6"	A7MA-C06-14^RMP	A,D,F	479468.09	1348281.79
	6-15	0"-6"	A7MA-C06-15^V	Archive	479484.92	1348350.64
6-16	0"-6"	A7MA-C06-16^RMP	A,D,F	479475.19	1348415.15	

APPENDIX C
AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
7	7-1D	0"-6"	A7MA-C07-1^RMP	A,D,F,H	479443.82	1348312.03
			A7MA-C07-1^RMP-D			
	7-2	0"-6"	A7MA-C07-2^V	Archive	479437.22	1348331.38
	7-3	0"-6"	A7MA-C07-3^RMP	A,D,F,H	479419.45	1348315.94
	7-4	0"-6"	A7MA-C07-4^RMP	A,D,F,H	479417.19	1348347.22
	7-5	0"-6"	A7MA-C07-5^RMP	A,D,F,H	479449.48	1348360.67
	7-6	0"-6"	A7MA-C07-6^V	Archive	479440.36	1348383.88
	7-7	0"-6"	A7MA-C07-7^RMP	A,D,F,H	479416.56	1348363.33
	7-8	0"-6"	A7MA-C07-8^RMP	A,D,F,H	479415.77	1348396.15
	7-9	0"-6"	A7MA-C07-9^RMP	A,D,F,H	479447.15	1348412.20
	7-10	0"-6"	A7MA-C07-10^RMP	A,D,F,H	479434.69	1348431.23
	7-11	0"-6"	A7MA-C07-11^V	Archive	479423.13	1348420.11
	7-12	0"-6"	A7MA-C07-12^RMP	A,D,F,H	479418.78	1348439.18
	7-13	0"-6"	A7MA-C07-13^RMP	A,D,F,H	479439.74	1348462.50
	7-14	0"-6"	A7MA-C07-14^V	Archive	479444.94	1348479.07
	7-15	0"-6"	A7MA-C07-15^RMP	A,D,F,H	479424.92	1348458.44
7-16	0"-6"	A7MA-C07-16^RMP	A,D,F,H	479422.09	1348486.51	
8	8-1	0"-6"	A7MA-C08-1^RMP	A,D,F	479447.29	1348281.80
	8-2	0"-6"	A7MA-C08-2^RMP	A,D,F	479414.35	1348274.68
	8-3	0"-6"	A7MA-C08-3^V	Archive	479385.99	1348309.15
	8-4	0"-6"	A7MA-C08-4^RMP	A,D,F	479334.78	1348273.55
	8-5	0"-6"	A7MA-C08-5^RMP	A,D,F	479374.96	1348354.15
	8-6	0"-6"	A7MA-C08-6^RMP	A,D,F	479339.20	1348316.95
	8-7	0"-6"	A7MA-C08-7^V	Archive	479337.78	1348385.84
	8-8D	0"-6"	A7MA-C08-8^RMP	A,D,F	479305.16	1348383.40
			A7MA-C08-8^RMP-D			
	8-9	0"-6"	A7MA-C08-9^RMP	A,D,F	479281.46	1348272.00
	8-10	0"-6"	A7MA-C08-10^RMP	A,D,F	479292.71	1348341.74
	8-11	0"-6"	A7MA-C08-11^RMP	A,D,F	479262.29	1348332.72
	8-12	0"-6"	A7MA-C08-12^V	Archive	479240.44	1348390.79
	8-13	0"-6"	A7MA-C08-13^RMP	A,D,F	479247.34	1348056.66
	8-14	0"-6"	A7MA-C08-14^RMP	A,D,F	479264.97	1348130.61
	8-15	0"-6"	A7MA-C08-15^V	Archive	479252.36	1348176.69
8-16	0"-6"	A7MA-C08-16^RMP	A,D,F	479243.85	1348258.90	

APPENDIX C
AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
9	9-1	0"-6"	A7MA-C09-1^RMP	A,D,F	479370.56	1348454.81
	9-2	0"-6"	A7MA-C09-2^V	Archive	479389.16	1348491.64
	9-3	0"-6"	A7MA-C09-3^RMP	A,D,F	479414.69	1348548.99
	9-4	0"-6"	A7MA-C09-4^RMP	A,D,F	479364.43	1348581.19
	9-5	0"-6"	A7MA-C09-5^RMP	A,D,F	479349.76	1348427.52
	9-6	0"-6"	A7MA-C09-6^V	Archive	479353.86	1348496.83
	9-7	0"-6"	A7MA-C09-7^RMP	A,D,F	479278.85	1348425.04
	9-8	0"-6"	A7MA-C09-8^RMP	A,D,F	479321.55	1348478.75
	9-9	0"-6"	A7MA-C09-9^RMP	A,D,F	479329.60	1348592.16
	9-10	0"-6"	A7MA-C09-10^RMP	A,D,F	479293.03	1348499.68
	9-11D	0"-6"	A7MA-C09-11^RMP	A,D,F	479268.89	1348586.33
			A7MA-C09-11^RMP-D			
	9-12	0"-6"	A7MA-C09-12^V	Archive	479232.69	1348563.32
	9-13	0"-6"	A7MA-C09-13^RMP	A,D,F	479248.59	1348460.50
	9-14	0"-6"	A7MA-C09-14^RMP	A,D,F	479238.90	1348494.30
	9-15	0"-6"	A7MA-C09-15^RMP	A,D,F	479176.55	1348518.86
9-16	0"-6"	A7MA-C09-16^V	Archive	479162.57	1348586.68	
10	10-1	0"-6"	A7MA-C10-1^RMP	A,D,F	479411.86	1348604.97
	10-2	0"-6"	A7MA-C10-2^RMP	A,D,F	479379.87	1348654.50
	10-3	0"-6"	A7MA-C10-3^V	Archive	479309.43	1348618.65
	10-4	0"-6"	A7MA-C10-4^RMP	A,D,F	479299.71	1348676.35
	10-5	0"-6"	A7MA-C10-5^RMP	A,D,F	479371.05	1348681.65
	10-6	0"-6"	A7MA-C10-6^RMP	A,D,F	479351.20	1348734.78
	10-7	0"-6"	A7MA-C10-7^V	Archive	479313.53	1348700.72
	10-8	0"-6"	A7MA-C10-8^RMP	A,D,F	479309.76	1348742.76
	10-9	0"-6"	A7MA-C10-9^RMP	A,D,F	479237.03	1348608.89
	10-10	0"-6"	A7MA-C10-10^V	Archive	479240.10	1348659.63
	10-11	0"-6"	A7MA-C10-11^RMP	A,D,F	479200.55	1348637.79
	10-12	0"-6"	A7MA-C10-12^RMP	A,D,F	479172.34	1348683.54
	10-13	0"-6"	A7MA-C10-13^V	Archive	479252.71	1348697.27
	10-14	0"-6"	A7MA-C10-14^RMP	A,D,F	479258.86	1348751.37
	10-15D	0"-6"	A7MA-C10-15^RMP	A,D,F	479163.59	1348721.32
			A7MA-C10-15^RMP-D			
10-16	0"-6"	A7MA-C10-16^RMP	A,D,F	479204.18	1348757.51	

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AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
11	11-1	0"-6"	A7MA-C11-1^RMP	A,D,F	479143.77	1348558.07
	11-2	0"-6"	A7MA-C11-2^RMP	A,D,F	479107.26	1348580.03
	11-3	0"-6"	A7MA-C11-3^V	Archive	479073.38	1348542.27
	11-4	0"-6"	A7MA-C11-4^RMP	A,D,F	479060.14	1348587.35
	11-5	0"-6"	A7MA-C11-5^RMP	A,D,F	479145.40	1348646.15
	11-6	0"-6"	A7MA-C11-6^RMP	A,D,F	479154.123	1348710.122
	11-7D	0"-6"	A7MA-C11-7^RMP	A,D,F	479088.24	1348650.82
			A7MA-C11-7^RMP-D			
	11-8	0"-6"	A7MA-C11-8^V	Archive	479047.07	1348720.06
	11-9	0"-6"	A7MA-C11-9^V	Archive	479012.08	1348591.93
	11-10	0"-6"	A7MA-C11-10^RMP	A,D,F	478991.76	1348642.93
	11-11	0"-6"	A7MA-C11-11^RMP	A,D,F	478996.65	1348683.80
	11-12	0"-6"	A7MA-C11-12^RMP	A,D,F	479001.69	1348724.51
	11-13	0"-6"	A7MA-C11-13^RMP	A,D,F	478922.42	1348640.68
	11-14	0"-6"	A7MA-C11-14^V	Archive	478911.56	1348684.45
	11-15	0"-6"	A7MA-C11-15^RMP	A,D,F	478939.90	1348723.23
11-16	0"-6"	A7MA-C11-16^RMP	A,D,F	478874.68	1348675.53	
12	12-1	0"-6"	A7MA-C12-1^V	Archive	479350.26	1348827.90
	12-2	0"-6"	A7MA-C12-2^RMP	A,D,F	479383.98	1348861.34
	12-3	0"-6"	A7MA-C12-3^RMP	A,D,F	479331.03	1348787.98
	12-4D	0"-6"	A7MA-C12-4^RMP	A,D,F	479330.88	1348880.15
			A7MA-C12-4^RMP-D			
	12-5	0"-6"	A7MA-C12-5^RMP	A,D,F	479364.29	1348920.23
	12-6	0"-6"	A7MA-C12-6^RMP	A,D,F	479354.05	1348972.08
	12-7	0"-6"	A7MA-C12-7^RMP	A,D,F	479308.19	1348923.65
	12-8	0"-6"	A7MA-C12-8^V	Archive	479289.45	1348972.08
	12-9	0"-6"	A7MA-C12-9^RMP	A,D,F	479278.40	1348793.58
	12-10	0"-6"	A7MA-C12-10^RMP	A,D,F	479268.01	1348841.66
	12-11	0"-6"	A7MA-C12-11^RMP	A,D,F	479205.60	1348789.47
	12-12	0"-6"	A7MA-C12-12^V	Archive	479203.09	1348886.23
	12-13	0"-6"	A7MA-C12-13^RMP	A,D,F	479262.34	1348906.17
	12-14	0"-6"	A7MA-C12-14^RMP	A,D,F	479225.15	1348968.94
	12-15	0"-6"	A7MA-C12-15^RMP	A,D,F	479182.29	1348940.12
12-16	0"-6"	A7MA-C12-16^V	Archive	479178.36	1348997.47	

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AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
13	13-1	0"-6"	A7MA-C13-1^RMP	A,D,F	479160.06	1348784.79
	13-2	0"-6"	A7MA-C13-2^V	Archive	479159.12	1348818.33
	13-3D	0"-6"	A7MA-C13-3^RMP	A,D,F	479064.80	1348758.92
			A7MA-C13-3^RMP-D			
	13-4	0"-6"	A7MA-C13-4^RMP	A,D,F	479066.62	1348815.80
	13-5	0"-6"	A7MA-C13-5^V	Archive	479139.43	1348874.92
	13-6	0"-6"	A7MA-C13-6^RMP	A,D,F	479121.15	1348979.54
	13-7	0"-6"	A7MA-C13-7^RMP	A,D,F	479092.16	1348920.91
	13-8	0"-6"	A7MA-C13-8^RMP	A,D,F	479069.78	1348951.12
	13-9	0"-6"	A7MA-C13-9^V	Archive	479033.37	1348777.40
	13-10	0"-6"	A7MA-C13-10^RMP	A,D,F	479009.89	1348837.33
	13-11	0"-6"	A7MA-C13-11^RMP	A,D,F	478941.82	1348754.99
	13-12	0"-6"	A7MA-C13-12^RMP	A,D,F	478960.10	1348796.86
	13-13	0"-6"	A7MA-C13-13^RMP	A,D,F	479028.90	1348908.05
	13-14	0"-6"	A7MA-C13-14^V	Archive	479006.60	1348976.91
	13-15	0"-6"	A7MA-C13-15^RMP	A,D,F	478974.92	1348879.66
13-16	0"-6"	A7MA-C13-16^RMP	A,D,F	478942.30	1348960.37	
14	14-1	0"-6"	A7MA-C14-1^RMP	A,D,F	479444.20	1349129.46
	14-2	0"-6"	A7MA-C14-2^RMP	A,D,F	479427.39	1349208.39
	14-3	0"-6"	A7MA-C14-3^V	Archive	479364.93	1349021.10
	14-4	0"-6"	A7MA-C14-4^RMP	A,D,F	479408.11	1349108.65
	14-5	0"-6"	A7MA-C14-5^RMP	A,D,F	479366.83	1349162.13
	14-6	0"-6"	A7MA-C14-6^V	Archive	479396.30	1349195.62
	14-7	0"-6"	A7MA-C14-7^RMP	A,D,F	479392.68	1349232.10
	14-8	0"-6"	A7MA-C14-8^RMP	A,D,F	479312.95	1349264.48
	14-9	0"-6"	A7MA-C14-9^V	Archive	479285.98	1349049.48
	14-10	0"-6"	A7MA-C14-10^RMP	A,D,F	479338.30	1349070.44
	14-11	0"-6"	A7MA-C14-11^RMP	A,D,F	479235.63	1349020.88
	14-12	0"-6"	A7MA-C14-12^RMP	A,D,F	479219.83	1349102.32
	14-13	0"-6"	A7MA-C14-13^V	Archive	479329.32	1349132.35
	14-14	0"-6"	A7MA-C14-14^RMP	A,D,F	479311.68	1349192.96
	14-15D	0"-6"	A7MA-C14-15^RMP	A,D,F	479272.44	1349140.57
			A7MA-C14-15^RMP-D			
14-16	0"-6"	A7MA-C14-16^RMP	A,D,F	479247.86	1349180.66	

APPENDIX C
AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
15	15-1	0"-6"	A7MA-C15-1^RMP	A,D,F	479146.37	1349020.21
	15-2	0"-6"	A7MA-C15-2^V	Archive	479161.66	1349076.30
	15-3	0"-6"	A7MA-C15-3^RMP	A,D,F	479095.32	1349026.78
	15-4	0"-6"	A7MA-C15-4^RMP	A,D,F	479118.17	1349083.87
	15-5	0"-6"	A7MA-C15-5^RMP	A,D,F	479173.64	1349116.56
	15-6	0"-6"	A7MA-C15-6^V	Archive	479190.03	1349214.48
	15-7	0"-6"	A7MA-C15-7^RMP	A,D,F	479100.78	1349132.26
	15-8	0"-6"	A7MA-C15-8^RMP	A,D,F	479128.78	1349177.40
	15-9	0"-6"	A7MA-C15-9^V	Archive	479022.52	1349042.43
	15-10	0"-6"	A7MA-C15-10^RMP	A,D,F	479050.51	1349085.49
	15-11	0"-6"	A7MA-C15-11^RMP	A,D,F	478954.91	1349006.85
	15-12	0"-6"	A7MA-C15-12^RMP	A,D,F	478948.83	1349093.22
	15-13D	0"-6"	A7MA-C15-13^RMP	A,D,F	479062.23	1349139.36
			A7MA-C15-13^RMP-D			
	15-14	0"-6"	A7MA-C15-14^RMP	A,D,F	479015.12	1349184.25
	15-15	0"-6"	A7MA-C15-15^V	Archive	478979.82	1349141.35
15-16	0"-6"	A7MA-C15-16^RMP	A,D,F	478931.13	1349247.07	
16	16-1	0"-6"	A7MA-C16-1^V	Archive	479059.87	1349224.36
	16-2D	0"-6"	A7MA-C16-2^R	A	479057.67	1349266.76
			A7MA-C16-2^R-D			
	16-3	0"-6"	A7MA-C16-3^R	A	479062.09	1349333.19
	16-4	0"-6"	A7MA-C16-4^R	A	479037.35	1349342.82
	16-5	0"-6"	A7MA-C16-5^R	A	479049.96	1349390.06
	16-6	0"-6"	A7MA-C16-6^V	Archive	479050.91	1349457.01
	16-7	0"-6"	A7MA-C16-7^R	A	479042.72	1349507.15
	16-8	0"-6"	A7MA-C16-8^R	A	479026.65	1349544.32
	16-9	0"-6"	A7MA-C16-9^R	A	479060.85	1349569.26
	16-10	0"-6"	A7MA-C16-10^V	Archive	479041.15	1349606.89
	16-11	0"-6"	A7MA-C16-11^R	A	479064.28	1349673.49
	16-12	0"-6"	A7MA-C16-12^R	A	479041.95	1349700.85
	16-13	0"-6"	A7MA-C16-13^R	A	479027.30	1349741.08
	16-14	0"-6"	A7MA-C16-14^R	A	479067.48	1349803.17
	16-15	0"-6"	A7MA-C16-15^V	Archive	479024.94	1349835.83
16-16	0"-6"	A7MA-C16-16^R	A	479034.55	1349872.54	

APPENDIX C
AREA 7 MISCELLANEOUS AREAS SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	Northing	Easting
17	17-1	0"-6"	A7MA-C17-1^V	Archive	478902.45	1348983.79
	17-2	0"-6"	A7MA-C17-2^RP	A,B,E	478908.492	1349027.489
	17-3D	0"-6"	A7MA-C17-3^RP	A,B,E	478937.315	1349054.905
			A7MA-C17-3^RP-D			
	17-4	0"-6"	A7MA-C17-4^RP	A,B,E	478948.761	1349089.108
	17-5	0"-6"	A7MA-C17-5^RP	A,B,E	478899.457	1349107
	17-6	0"-6"	A7MA-C17-6^RP	A,B,E	478915.808	1349142.022
	17-7	0"-6"	A7MA-C17-7^RP	A,B,E	478874.8	1349091.38
	17-8	0"-6"	A7MA-C17-8^V	Archive	478890.72	1349139.97
	17-9	0"-6"	A7MA-C17-9^RP	A,B,E	478915.71	1349134.47
	17-10	0"-6"	A7MA-C17-10^V	Archive	478909.44	1349186.32
	17-11	0"-6"	A7MA-C17-11^RP	A,B,E	478872.56	1349190.23
	17-12	0"-6"	A7MA-C17-12^RP	A,B,E	478848.26	1349165.94
	17-13	0"-6"	A7MA-C17-13^RP	A,B,E	478842.11	1349024.65
	17-14	0"-6"	A7MA-C17-14^RP	A,B,E	478825.07	1349048.94
	17-15	0"-6"	A7MA-C17-15^V	Archive	478847.42	1349086.64
17-16	0"-6"	A7MA-C17-16^RP	A,B,E	478848.73	1349121.79	

APPENDIX D

**VARIANCES/FIELD CHANGE NOTICES
ASSOCIATED WITH THIS DOCUMENT**

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No): NO	V/F: 20500-PSP-0009-04
WBS NO.: PROJECT/DOCUMENT/ECDC # 20500-PSP-0009 Rev. A		Page: 1 of 2
PROJECT TITLE: PSP for the Excavation Control of Area 7 Silos and General Area		Date: 8/09/05

VARIANCE / FIELD CHANGE NOTICE (Include justification):

EXCAVATION CONTROL

This V/FCN documents the collection of grab soil samples to replace the real-time lift scanning requirements for total uranium from lift 1 from an over the former decant sump. The area is approximately 40 feet by 50 feet. Coordinate with the Construction Lead for this sampling event.

Since the area is less than 100 feet by 100 feet, two samples of representative spacing should be collected from the floor of the excavation. There are no sidewalls. The samples will be submitted to an offsite laboratory for total uranium analysis (TAL D) analysis. The TAL and Sampling and Analytical Requirements are listed in Attachment 1.

The first soil sample should be identified as A7S-DS-L1-1^RTL, where:

- A7S = Area 7 Silos
- DS = Decant Sump Area
- L1 = Lift 1
- 1, 2 = consecutive sample numbers (locations)
- RTL = Real-time lift scan

Surveying required: Yes, by sampling team

Field QC samples required: No

Field data validation required: Yes

Offsite Data package requirement (if applicable): Certificate of analysis only

Analytical data validation required: No

Historical data for shipping is 18,000 pCi/g radium-226, provided by the Silo project.

Justification:

Due to existing field conditions, real-time scanning could not be performed on the floor of this area. Therefore, physical samples for total uranium analysis will be collected in lieu of the real-time scan to represent the lift scan for this area. Per Section 1.3 of the PSP, the collection of physical samples will be documented with a V/FCN.

REQUESTED BY: Denise Arico

Date: 8/09/05

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske <i>[Signature]</i>	8/10/05	X	PROJECT MANAGER: J. Smith <i>[Signature]</i>	10/10/05
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller <i>[Signature]</i>	8/10/05
X	ANALYTICAL CUSTOMER SUPPORT <i>[Signature]</i>	8/11/05		RTIMP Manager	
X	<i>[Signature]</i>	8-15-05	X	Sampling Manager: T. Buhler <i>[Signature]</i>	8/23/05
VARIANCE/FCN APPROVED [X]YES []NO			REVISION REQUIRED: []YES [x]NO		
DISTRIBUTION					
PROJECT MANAGER:		DOCUMENT CONTROL: Jeanne Rosser		OTHER:	
QUALITY ASSURANCE:		CHARACTERIZATION MANAGER: Frank Miller		OTHER:	
FIELD MANAGER:		OTHER:		OTHER:	

SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Lab	Sample Matrix	ASL	TAT	Preservative	Holding Time	Container	Minimum Sample Mass
TAL D	Offsite	Soil	B	24 hours	None	12 months	Glass or Plastic	300 g

TAL 20500-PSP-0009-D

Soil Analysis (ASL B)

Analyte	WAC	MDL - Soil
Total Uranium	1030 mg/kg	103 mg/kg

VARIANCE / FIELD CHANGE NOTICE

Significant?
(Yes or No): **NO**

V/F: 20500-PSP-0009-36

WBS NO.: PROJECT/DOCUMENT/ECDC # 20500-PSP-0009 Rev.0

Page: 1 of 3

PROJECT TITLE: Project Specific Plan for Excavation Control And Precertification of Area 7 Silos and General Area

Date: 12/8/05

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of physical soil samples for precertification of the soil beneath the bedding of excavated utilities located in Area 7 Silos Area. Construction will be excavating known utilities; however, the possibility exists that unknown utilities will be uncovered during excavation. All sampling locations will be field located approximately every fifty feet along the bottom of the excavation. All samples will be collected from the bottom of the excavation from the bucket of an excavator (if necessary) after the piping and bedding material has been removed or from paddys created to represent the sample locations. The goal will be to collect samples from the top six inches of soil from the bottom of the excavation. Additionally, if there is evidence of leakage from the piping (e.g. broken, cracked, or disjointed piping, stained or discolored soil), then a biased sample location will be flagged and samples will be collected from the floor and both sidewalls approximately one foot from the floor of the excavation.

The TALs are listed on Attachment 1 and the Sampling and Analytical Requirements are listed on Attachment 2.

dma 12/15/05

The estimated number of sample locations is 50. The sample identifiers from the first location shall be A7GA-T-1^RMP and each additional sample ID will be sequentially numbered (e.g. second sample ID is A7GA-T-2^RMP).

Where:

- A7GA = Area 7 General Area
- T = trench
- 1, 2, 3, etc. = Consecutive Sample Numbers (Locations)
- R = Radiological analysis; M=Metals; P=Pesticides/PCBs

Field Sketch Required: *No* *Yes dma 12/15/05*

Surveying Required: Yes. ~~Samplers shall contact Surveying when locations are ready to be surveyed.~~

Real-time will survey dma 12/15/05

Field QC samples required: No

Field validation required: Yes

Analytical data validation required: Yes, VSL D

Data package requirements: ASL D (E)

Data for shipping: Total Uranium = 192 mg/kg from boring A7-SA2-19

Justification:

Because the utilities in this area are so deep, it is necessary to backfill the trenches after the utilities have been removed in order to ensure the area is left in a safe condition. Therefore, samples will be collected from the bottom of the excavation prior to backfilling the trenches similarly to the sampling performed during the excavation of the Abandoned Outfall Line.

REQUESTED BY: Denise Arico

Date: 12/8/05

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE R. Friske <i>[Signature]</i>	12/12/05	X	PROJECT MANAGER: J.D. Chou <i>[Signature]</i>	12/9/05
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller <i>[Signature]</i>	12/9/05
X	ANALYTICAL CUSTOMER SUPPORT <i>Paul S. McSwiggin</i>	12/13/05		RTIMP Manager	
X	WAO <i>[Signature]</i>	12/19/05	X	SAMPLING MANAGER: T. Buhrlage <i>[Signature]</i>	12/12/05
VARIANCE/FCN APPROVED [X]YES []NO			REVISION REQUIRED: []YES [x]NO		

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ATTACHMENT 1

TAL 20500-PSP-0009-E

Component	FRL	MDL
Total Uranium	20 mg/kg	2.0 pCi/g
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

TAL 20500-PSP-0009-I

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

TAL 20500-PSP-0009-J

Component	FRL	MDL
Beryllium	1.5 mg/kg	0.15 mg/kg

ATTACHMENT 2

SAMPLING AND ANALYTICAL REQUIREMENTS

TALs	Method	ASL	Matrix	Preserve	Hold Time	TAT	Container ^a	Minimum Mass
Rads/Metals/Pest-PCBs (TALs EIJ)	Gamma Spec	D/E	Solid	Cool 4° C	12 months	Prelim 10 days ^b Final 30 days	Glass with Teflon lined Lid	500 g
	ICP or ICP/MS				6 months	10 days		
	GC				14 days	10 days		

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

^b The full data package for Lead-210, Technetium-99, and Thorium-230 is required in 10 days. Only an EDD is required for the preliminary gamma data.

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VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No): NO	V/F: 20500-PSP-0009-83
WBS NO.: PROJECT/DOCUMENT/ECDC # 20500-PSP-0009 Rev. 0		Page: 1 of 2
PROJECT TITLE: PSP for the Excavation Control and Precertification of Area 7 Silos and General Area		Date: 4/3/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):
EXCAVATION CONTROL

This V/FCN documents the collection of physical soil samples for precertification of soil beneath the bedding of excavated utilities located in the Area 7 Storm Water Retention Basins Area. Construction will be excavating known utilities; however, the possibility exists that unknown utilities will be uncovered during excavation. All sampling locations will be field located approximately every fifty feet along the bottom of the excavation. All samples will be collected from the bottom of the excavation from the bucket of an excavator (if necessary) after the piping and bedding material has been removed or from paddys created to represent the sample locations. The goal will be to collect samples from the top six inches of soil from the bottom of the excavation. Additionally, if there is evidence of leakage from the piping (e.g., broken, cracked, or disjoined piping, stained or discolored soil), then a biased sample location will be flagged and samples will be collected from the floor of both sidewalls approximately one foot from the floor of the excavation.

The Sampling and Analytical Requirements and TALs are provided on Attachment 1. The area specific constituents of concern for this sampling effort will be the primary radionuclides (total uranium, radium-226, radium-228, thorium-228, thorium-232 – TAL E), technetium-99 (TAL A), and aroclor-1254 and aroclor-1260 (TAL K).

The first sample ID shall be A7-SA4-T-1^RP, and each additional sample consecutively numbered, where:

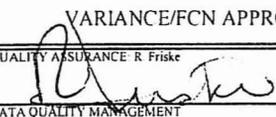
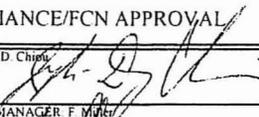
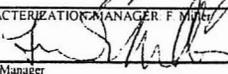
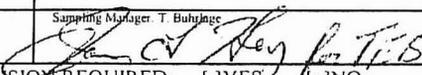
- A7 = Area 7
- SA4 = Subarea 4
- T = Trench
- 1, 2, etc.. = consecutive sample numbers (locations)
- ^ = radiological and PCB analysis

Field sketch required: Yes
Surveying required: No, will be provided by Real-Time

Justification:

As discussed in Sections 3.5.3 and 3.6 of the Excavation Plan for Area 7 Silos and General Area, due to the depths of the excavations to access the inspection sump and underdrain collection sump/system, the soil will be removed as below-FRL soil. Because the utilities in this area are so deep, it is necessary to backfill the trenches after the utilities have been removed in order to ensure the area is left in a safe condition. Therefore, samples will be collected from the bottom of the excavation prior to backfilling the trenches similarly to the sampling performed during the excavation of the Abandoned Outfall Line. Per Section 1.3 of the PSP, the collection of physical samples will be documented with a V/FCN.

REQUESTED BY: Denise Arico Date: 4/3/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske 	4-5-06	X	PROJECT MANAGER: J.D. Chitt 	4/3/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller 	4/3/06
X	ANALYTICAL CUSTOMER SUPPORT: Paul S. McWhirgin WAO 	4/3/06		RTIMP Manager	
	VARIANCE/FCN APPROVED [X] YES [] NO		X	Sampling Manager: T. Buhajda 	4/19/06
			REVISION REQUIRED: [] YES [X] NO		

DISTRIBUTION

PROJECT MANAGER	DOCUMENT CONTROL: Jeannie Rosser	OTHER
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER
FIELD MANAGER	OTHER:	OTHER

ATTACHMENT 1

SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method	Matrix	ASL ^b	TAT	Preservative	Container ^a	Minimum Mass/Volume
A	GPC or LSC	Soil	D/E	10 days	Cool 4°C	Glass with Teflon-lined lid	500 g
E	Gamma Spec			PEDD 10 days ^c			
K	GC			Final Gamma 30 days 10 days			

Special Instructions (samplers):

^aSample container types may be changed at the direction of the Field Sampling Lead, as long as the mass/volume requirements, container compatibility requirements, and SCQ requirements are met.

Special Instructions (SPL/Lab):

^bAnalyses will be conducted to ASL D or E, where all requirements for ASL E are the same as ASL D except the minimum detection level for the selected analytical method must be at least 10 percent of the FRL. The preliminary gamma spec analysis can be ran according to ASL B requirements.

^cFor radium-226, a seven-day in-growth is requested. The preliminary gamma spec analysis can be ran according to ASL B requirements.

No field QC will be collected under this V/FCN.

Analytical Data Validation is required, VSL D.

Data Package Requirement – Full ASL D package

Historical Data for Shipping is 11.5 mg/kg total uranium from boring A7-SA4-9.

TAL 20500-PSP-0009-A

(50 estimated soil analysis specified in V/FCN)

Analyte	WAC**	MDL - Soil
Technetium-99	29.1 pCi/g	2.91 pCi/g

**WAC is lower than the FRL therefore it will be used.

TAL 20500-PSP-0009-E

(50 estimated soil analysis specified in V/FCN)

Analyte	FRL	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

TAL 20500-PSP-0009-K

(50 estimated soil analysis specified in V/FCN)

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

VARIANCE / FIELD CHANGE NOTICE

Significant?
(Yes or No): **YES**

V/F: 20500-PSP-0009-97

WBS NO.: PROJECT/DOCUMENT/ECDC # 20500-PSP-0009 Rev.0

Page: 1 of 3

PROJECT TITLE: Project Specific Plan for Excavation Control And Precertification of Area 7 Silos and General Area

Date: 8/9/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of physical soil samples for precertification of the soil beneath an excavated contaminated utility running east to west across the 30/45 parking lot. All sampling locations will be field located approximately every fifty feet along the bottom of the excavation. All samples will be collected from the bottom of the excavation. The goal will be to collect samples from the top six inches of soil from the bottom of the excavation.

The TALs are listed on Attachment 1 and the Sampling and Analytical Requirements are listed on Attachment 2.

The estimated number of sample locations is 3. The sample identifiers from the first location shall be the next consecutive number from the utility trench sampling designated in V/FCN 20500-PSP-0009-36.

Where:

- A7GA = Area 7 General Area
- T = trench
- 1, 2, 3, etc. = Consecutive Sample Numbers (Locations)
- R = Radiological analysis; M=Metals; P=Pesticides/PCBs

Field Sketch Required: No

Surveying Required: Yes. Samplers shall contact Surveying when locations are ready to be surveyed.

Field QC samples required: No

Field validation required: Yes

Justification:

Samples are required to confirm/verify that no above-FRL areas exist for any of the ASCOCs in the trenches areas. Per Section 1.3 of the PSP, the collection of physical sample will be documented with a V/FCN.

REQUESTED BY: Debbie Brennan

Date: 8/8/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske <i>R. Friske</i>	8-23-06	X	PROJECT MANAGER: J.D. Chian <i>J.D. Chian</i>	10/29/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: Frank Miller <i>Frank Miller</i>	10/29/06
X	ANALYTICAL CUSTOMER SUPPORT: <i>Paul S. McLaughlin</i>	8/10/06		RTIMP Manager	
X	<i>WAO</i> <i>Chris [Signature]</i>	8-5-06	X	SAMPLING MANAGER: T. Buhrige <i>T. Buhrige</i>	8/10/06
VARIANCE/FCN APPROVED [X] YES [] NO			REVISION REQUIRED: [] YES [x] NO		

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ATTACHMENT 1

TAL 20500-PSP-0009-E

Component	FRL	MDL
Total Uranium	20 mg/kg	3.0 pCi/g
Radium-226	1.7 pCi/g	0.3 pCi/g
Radium-228	1.8 pCi/g	0.3 pCi/g
Thorium-228	1.7 pCi/g	0.3 pCi/g
Thorium-232	1.5 pCi/g	0.3 pCi/g

TAL 20500-PSP-0009-I

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

TAL 20500-PSP-0009-J

Component	FRL	MDL
Beryllium	1.5 mg/kg	0.15 mg/kg

ATTACHMENT 2

SAMPLING AND ANALYTICAL REQUIREMENTS

TALs	Method	ASL	Matrix	Preserve	Hold Time	TAT	Container ^a	Minimum Mass
Rads/Metals/Pest-PCBs (TALs EIJ)	Gamma Spec	D/E	Solid	Cool 4° C	12 months	EDD gamma 10 days Final gamma 14 days	Glass with Teflon lined Lid	500 g
	ICP or ICP/MS				6 months	10 days		
	GC				14 days	10 days		

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

GC - gas chromatography

ICP/MS - inductively coupled plasma/mass spectrometry

Special Instructions (SPL/Lab):

No field QC will be collected under this V/FCN.

Analytical data validation required: Yes, VSL D

Data package requirements: ASL D (E)

Data for shipping: Total Uranium = 44.4 mg/kg from boring A7MA-C04-6

006217

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No): NO	V/F: 20500-PSP-0010-3
WBS NO.: PROJECT/DOCUMENT/ECDC # 20500-PSP-0010 Rev.A		Page: 1 of 4
PROJECT TITLE: PSP for the Excavation Control of Area 7 Support and Silos Process		Date: 9/27/05

VARIANCE / FIELD CHANGE NOTICE (Include justification):

EXCAVATION CONTROL SAMPLING

This Variance/Field Change Notice (V/FCN) documents the collection of grab soil samples from the area south of the CAWWT facility. At each boring location, two samples are to be collected - one sample will be analyzed for the primary rads (TAL D), technetium-99 (TAL A), and beryllium (TAL B); the other sample will be analyzed for aroclor-1254 and aroclor-1260 (TAL E). The Sampling and Analytical Requirements and TALs are shown on Attachment 1. The location of the area to be sampled and all sample locations are shown in Figure 1.

The Sample Locations and Identifiers are provided on Attachment 2. The IDs for the samples collected from the first boring shall be A7E-CAWWT-PC-1^RM and A7E-CAWWT-PC-1^P, where:

DRB 9/27/05 *DRB 9/27/05*

- A7E = Area 7 Excavation Control/Precertification
- CAWWT = Area South of CAWWT
- PC = Precertification

- 1, 2, etc. = Consecutive Sample Numbers (Locations)
- RM = radiological and metals analysis
- P = PCB analysis

D = Duplicate Sample DRB 9/27/05

Historical data for shipping is 9.0 mg/kg total uranium from boring A7E-CAWWT-SF-5.

- Surveying required: Yes, by surveying group
- Field QC samples required: Yes
- Field data validation: Yes
- Analytical data validation: Yes
- Off-site data package requirements (if applicable): ASL D

Justification:

Additional soil from this area is required to be excavated in order to construct the CAWWT Backwash Facility. Once all contaminated material has been remediated from this footprint, samples will be collected to confirm that no additional remediation is necessary. Therefore, this area will undergo Precertification activities including physical sampling. This is similar to the approach used in the Area 5 Administration Complex remediation.

REQUESTED BY: Debbie Brennan Date: 9/27/05

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Frisko <i>[Signature]</i>	9/29/05	X	PROJECT MANAGER: D. [Signature]	9/27/05
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller <i>[Signature]</i>	9/27/05
X	ANALYTICAL CUSTOMER SUPPORT: <i>Paul J. McWhirgan</i>	9/27/05		RTIMP Manager	
X	WAO <i>[Signature]</i>	9/27/05	X	SAMPLING MANAGER: T. [Signature]	9/27/05

VARIANCE/FCN APPROVED YES NO REVISION REQUIRED: YES NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Sample Matrix	Lab	ASL	TAT	Preservative	Holding Time	Container	Sample Volume/Mass
TAL ABD (rads/metals)	Solid	Offsite	B	30 days	Cool 4 deg C	12 months 6 months	Appropriate Plastic or Glass	500 g
TAL E (PCBs)	Solid	Offsite	B	30 days	Cool 4 deg C	14 days	Appropriate Glass w/ Teflon lid	100 g

TAL 20500-PSP-0009-A

Component	MDL
Technetium-99	2.91 pCi/g

TAL 20500-PSP-0009-B

Component	MDL
Beryllium	0.15 mg/kg

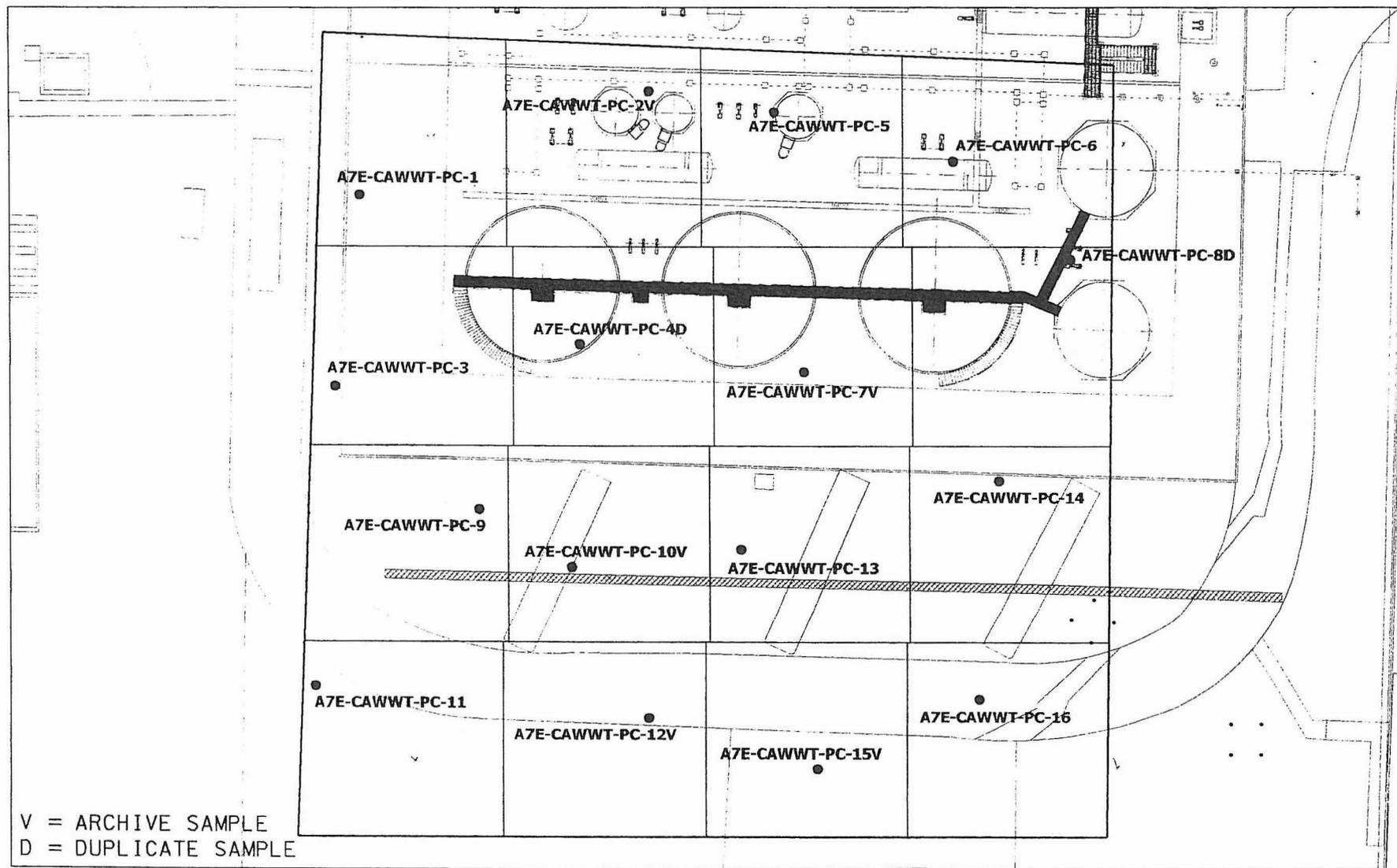
TAL 20500-PSP-0009-D

Component	MDL
Total Uranium	8.2 mg/kg
Radium-226	0.17 pCi/g
Radium-228	0.18 pCi/g
Thorium-228	0.17 pCi/g
Thorium-232	0.15 pCi/g

TAL 20500-PSP-0009-E

Component	MDL
Aroclor-1254	0.013 mg/kg
Aroclor-1260	0.013 mg/kg

SAMPLE LOCATIONS AND IDENTIFIERS				
Boring	Sample ID	Analysis (TAL)	Northing	Easting
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^RM	ABD	479443.39	1348041.4
	A7E-CAWWT-PC-1^P	E		
A7E-CAWWT-PC-2V	A7E-CAWWT-PC-2^RM	archive	479471.07	1348118.19
	A7E-CAWWT-PC-2^P			
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^RM	ABD	479393.23	1348034.8
	A7E-CAWWT-PC-3^P	E		
A7E-CAWWT-PC-4D	A7E-CAWWT-PC-4^RM	ABD	479404.38	1348099.58
	A7E-CAWWT-PC-4^P	E		
	A7E-CAWWT-PC-4^RM-D	ABD		
	A7E-CAWWT-PC-4^P-D	E		
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^RM	ABD	479465.45	1348151.33
	A7E-CAWWT-PC-5^P	E		
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^RM	ABD	479452.23	1348198.96
	A7E-CAWWT-PC-6^P	E		
A7E-CAWWT-PC-7V	A7E-CAWWT-PC-7^RM	archive	479397.08	1348159
	A7E-CAWWT-PC-7^P			
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^RM	ABD	479426.57	1348230.1
	A7E-CAWWT-PC-8^P	E		
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^RM	ABD	479360.82	1348072.92
	A7E-CAWWT-PC-9^P	E		
A7E-CAWWT-PC-10V	A7E-CAWWT-PC-10^RM	archive	479345.73	1348097.39
	A7E-CAWWT-PC-10^P			
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^RM	ABD	479314.12	1348029.45
	A7E-CAWWT-PC-11^P	E		
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^RM	ABD	479305.76	1348117.76
	A7E-CAWWT-PC-12^P	E		
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^RM	ABD	479350.28	1348142.11
	A7E-CAWWT-PC-13^P	E		
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^RM	ABD	479368.39	1348210.96
	A7E-CAWWT-PC-14^P	E		
A7E-CAWWT-PC-15V	A7E-CAWWT-PC-15^RM	archive	479292.21	1348162.34
	A7E-CAWWT-PC-15^P			
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^RM	ABD	479310.65	1348205.6
	A7E-CAWWT-PC-16^P	E		

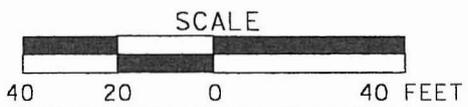


V = ARCHIVE SAMPLE
 D = DUPLICATE SAMPLE

STATE PLANAR COORDINATE SYSTEM 1983

LEGEND:

● SAMPLE LOCATION



DRAFT

FIGURE 1. AREA 7 - CAWWT BACKWASH BASIN FACILITY PRECERTIFICATION AREA

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No): NO	V/F: 20500-PSP-0010-10
WBS NO.: PROJECT/DOCUMENT/ECDC # 20500-PSP-0010 Rev.0		Page: 1 of 4 006211
PROJECT TITLE: PSP for the Excavation Control of Area 7 Support and Silos Process Area		Date: 12/7/05

VARIANCE / FIELD CHANGE NOTICE (Include justification):

EXCAVATION CONTROL SAMPLING

This Variance/Field Change Notice (V/FCN) documents the collection of physical soil samples for precertification of the soil beneath the bedding of excavated utilities located throughout Area 7 Support and Silos Process Area (Figure 1). Contact the WAO representative or construction lead for the locations to be sampled.

Construction will be excavating known utilities; however, the possibility exists that unknown utilities will be uncovered during excavation. All sampling locations will be field located approximately every fifty feet along the bottom of the excavation. All samples will be collected from the bottom of the excavation from the bucket of an excavator (if necessary) after the piping and bedding material has been removed or from paddys created to represent the sample locations. The goal will be to collect samples from the top six inches of soil from the bottom of the excavation. The estimated number of samples is 30.

Additionally, if there is evidence of leakage from the piping (e.g. broken, cracked, or disjointed piping, stained or discolored soil), then a biased sample location will be flagged and samples will be collected from the floor and both sidewalls approximately one foot from the floor of the excavation.

The TALs are listed on Attachment 1 and the sampling and analytical requirements are listed on Attachment 2. The first sample ID will be A7SSP-T-1^RMP and each additional sample ID will be sequentially numbered (e.g. second sample ID will be A7SSP-T-2^RMP).

- Where:
- A7SSP = Area 7 Support and Silos Process Area
 - T = trench
 - 1, 2, 3, etc. = Consecutive Sample Numbers (Locations)
 - R = Radiological analysis; M=Metals; P=Aroclor-1254

- Field sketch required: no
- Surveying required: Yes. Samplers shall contact Surveying when locations are ready to be surveyed.
- Field QC samples required: No
- Field data validation: Yes
- Analytical data validation: Yes VSL D
- Off-site data package requirements (if applicable): ASL D(E)
- The highest total uranium result from this area is 574 mg/kg from boring location P34-1.

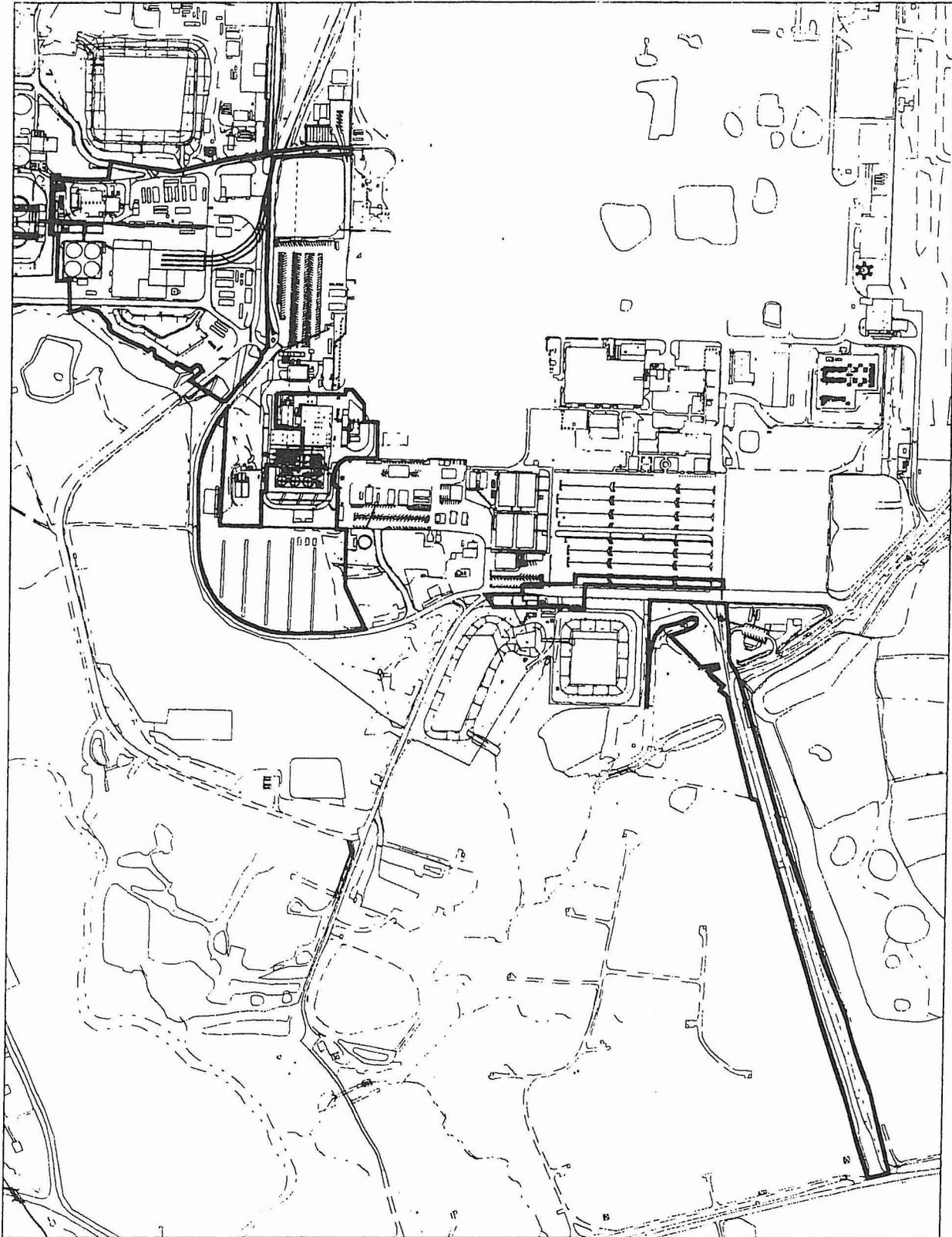
Justification:
 Samples are required to confirm/verify that no above-FRL areas exist for any of the ASCOCs in the trenched areas. Per Section 1.3 of the PSP, the collection of physical sample will be documented with a V/FCN.

REQUESTED BY: Debbie Brennan Date: 12/7/05

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske <i>[Signature]</i>	12/12/05	X	PROJECT MANAGER J.D. Chiou <i>[Signature]</i>	12/8/05
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller <i>[Signature]</i>	12/8/05
X	ANALYTICAL CUSTOMER SUPPORT: <i>[Signature]</i>	12/13/05		RTIMP Manager	
X	WAO <i>[Signature]</i>	12/9/05	X	SAMPLING MANAGER: T. Burridge <i>[Signature]</i>	12/12/05
VARIANCE/FCN APPROVED [X] YES [] NO			REVISION REQUIRED: [] YES [x] NO		

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:



LEGEND:

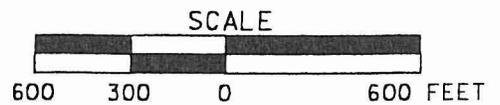


FIGURE 1 AREA 7 SUPPORT AND SILOS PROCESS AREA LOCATION MAP

ATTACHMENT 1

TAL 20500-PSP-0010-A
Soil Analysis (ASL D/E)

Analyte	WAC	FRL	MDL - Soil
Technetium-99	29.1 pCi/g	30 pCi/g	2.91 pCi/g

TAL 20500-PSP-0010-B
Soil Analysis (ASL D/E)

Component	WAC	FRL	MDL
Beryllium	-----	1.5 mg/kg	0.15 mg/kg

TAL 20500-PSP-0010-D
Soil Analysis (ASL D/E)

Component	WAC	FRL	MDL
Total Uranium	1030 mg/kg	20 mg/kg	2.0 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

TAL 20500-PSP-0010-F
Soil Analysis (ASL D/E)

Component	WAC	FRL	MDL
Aroclor-1254	-----	0.13 mg/kg	0.013 mg/kg

ATTACHMENT 2

SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Lab	Sample Matrix	TAT	ASL	Preservative	Holding Time	Container	Minimum Sample Mass
TAL ABDF (rads/metals)	Solid	Offsite	10-day TAT - all non-RADs	D/E	Cool 4 deg C	12 months	Appropriate Glass w/ Teflon lid	600 g
			10-day TAT - prelim. RADs			6 months		
			30-day TAT - final RADs			14 days		

APPENDIX E

DATA ASSOCIATED WITH THE CAWWT BACKWASH BASIN

**APPENDIX E
DATA ASSOCIATED WITH THE CAWWT BACKWASH BASIN**

Boring ID	Sample ID	Parameter	Result	Val. Qual.	Units	FRL	FRL Unit
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^P	Aroclor-1254	3.8	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^P	Aroclor-1260	3.8	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^RM	Beryllium	0.586	-	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^RM	Radium-226	1.37	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^RM	Radium-228	1.15	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^RM	Technetium-99	0.896	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^RM	Thorium-228	1.18	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^RM	Thorium-232	1.15	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-1	A7E-CAWWT-PC-1^RM	Uranium, Total	7.43	J	mg/kg	82	mg/kg
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^P	Aroclor-1254	34.1	UJ	ug/kg	130	ug/kg
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^P	Aroclor-1260	34.1	UJ	ug/kg	130	ug/kg
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^RM	Beryllium	0.242	U	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^RM	Radium-226	0.804	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^RM	Radium-228	0.566	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^RM	Technetium-99	0.865	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^RM	Thorium-228	0.574	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^RM	Thorium-232	0.566	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-11	A7E-CAWWT-PC-11^RM	Uranium, Total	5.46	J	mg/kg	82	mg/kg
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^P	Aroclor-1254	3.5	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^P	Aroclor-1260	3.5	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^RM	Beryllium	0.101	U	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^RM	Radium-226	0.332	J	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^RM	Radium-228	0.431	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^RM	Technetium-99	0.834	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^RM	Thorium-228	0.455	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^RM	Thorium-232	0.431	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-12	A7E-CAWWT-PC-12^RM	Uranium, Total	2.97	U	mg/kg	82	mg/kg
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^P	Aroclor-1254	3.8	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^P	Aroclor-1260	3.8	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^RM	Beryllium	0.396	U	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^RM	Radium-226	0.965	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^RM	Radium-228	0.918	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^RM	Technetium-99	0.814	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^RM	Thorium-228	0.932	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^RM	Thorium-232	0.918	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-13	A7E-CAWWT-PC-13^RM	Uranium, Total	15.3	J	mg/kg	82	mg/kg
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^P	Aroclor-1254	3.9	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^P	Aroclor-1260	3.9	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^RM	Beryllium	0.51	-	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^RM	Radium-226	1.18	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^RM	Radium-228	0.779	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^RM	Technetium-99	1.29	-	pCi/g	30	pCi/g
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^RM	Thorium-228	0.867	-	pCi/g	1.7	pCi/g

APPENDIX E
DATA ASSOCIATED WITH THE CAWWT BACKWASH BASIN

Boring ID	Sample ID	Parameter	Result	Val. Qual.	Units	FRL	FRL Unit
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^RM	Thorium-232	0.779	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-14	A7E-CAWWT-PC-14^RM	Uranium, Total	4.27	U	mg/kg	82	mg/kg
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^P	Aroclor-1254	35.1	UJ	ug/kg	130	ug/kg
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^P	Aroclor-1260	35.1	UJ	ug/kg	130	ug/kg
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^RM	Beryllium	0.106	U	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^RM	Radium-226	0.546	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^RM	Radium-228	0.324	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^RM	Technetium-99	0.793	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^RM	Thorium-228	0.317	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^RM	Thorium-232	0.324	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-16	A7E-CAWWT-PC-16^RM	Uranium, Total	2.74	U	mg/kg	82	mg/kg
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^P	Aroclor-1254	3.4	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^P	Aroclor-1260	3.4	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^RM	Beryllium	0.13	U	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^RM	Radium-226	0.599	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^RM	Radium-228	0.308	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^RM	Technetium-99	0.872	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^RM	Thorium-228	0.332	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^RM	Thorium-232	0.308	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-3	A7E-CAWWT-PC-3^RM	Uranium, Total	3.19	J	mg/kg	82	mg/kg
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^P	Aroclor-1254	3.9	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^P	Aroclor-1260	3.9	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^P-D	Aroclor-1254	4	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^P-D	Aroclor-1260	4	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM	Beryllium	0.534	-	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM	Radium-226	1.25	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM	Radium-228	0.904	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM	Technetium-99	0.869	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM	Thorium-228	0.913	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM	Thorium-232	0.904	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM	Uranium, Total	5.82	J	mg/kg	82	mg/kg
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM-D	Beryllium	0.554	-	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM-D	Radium-226	1.19	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM-D	Radium-228	0.996	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM-D	Technetium-99	0.806	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM-D	Thorium-228	1.01	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM-D	Thorium-232	0.996	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-4	A7E-CAWWT-PC-4^RM-D	Uranium, Total	3.47	U	mg/kg	82	mg/kg
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^P	Aroclor-1254	3.9	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^P	Aroclor-1260	3.9	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^RM	Beryllium	0.535	-	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^RM	Radium-226	1.22	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^RM	Radium-228	1.07	-	pCi/g	1.8	pCi/g

APPENDIX E
DATA ASSOCIATED WITH THE CAWWT BACKWASH BASIN

Boring ID	Sample ID	Parameter	Result	Val. Qual.	Units	FRL	FRL Unit
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^RM	Technetium-99	1.41	-	pCi/g	30	pCi/g
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^RM	Thorium-228	1.13	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^RM	Thorium-232	1.07	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-5	A7E-CAWWT-PC-5^RM	Uranium, Total	7.97	J	mg/kg	82	mg/kg
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^P	Aroclor-1254	4	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^P	Aroclor-1260	4	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^RM	Beryllium	0.541	U	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^RM	Radium-226	1.36	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^RM	Radium-228	0.939	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^RM	Technetium-99	0.9	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^RM	Thorium-228	0.938	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^RM	Thorium-232	0.939	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-6	A7E-CAWWT-PC-6^RM	Uranium, Total	5.65	J	mg/kg	82	mg/kg
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^P	Aroclor-1254	4.3	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^P	Aroclor-1260	4.3	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^RM	Beryllium	0.496	U	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^RM	Radium-226	1.31	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^RM	Radium-228	0.861	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^RM	Technetium-99	0.878	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^RM	Thorium-228	0.88	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^RM	Thorium-232	0.861	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-8	A7E-CAWWT-PC-8^RM	Uranium, Total	4.61	U	mg/kg	82	mg/kg
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^P	Aroclor-1254	4.8	J	ug/kg	130	ug/kg
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^P	Aroclor-1260	3.7	U	ug/kg	130	ug/kg
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^RM	Beryllium	0.344	U	mg/kg	1.5	mg/kg
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^RM	Radium-226	0.898	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^RM	Radium-228	0.769	-	pCi/g	1.8	pCi/g
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^RM	Technetium-99	0.859	U	pCi/g	30	pCi/g
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^RM	Thorium-228	0.783	-	pCi/g	1.7	pCi/g
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^RM	Thorium-232	0.769	-	pCi/g	1.5	pCi/g
A7E-CAWWT-PC-9	A7E-CAWWT-PC-9^RM	Uranium, Total	3.42	U	mg/kg	82	mg/kg