006216

Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
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OCT 11 2006

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

DOE-0005-07

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 DRAFT CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 7 SILOS AND SUPPORT AREA

Enclosed for your review is the draft Certification Design Letter and Certification Project Specific Plan for Area 7 Silos and Support Area. This area consists of portions of the Transfer Tank Area Basin, the Silos 3 and 4 Area, and the Silos Process and Support Areas.

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

Sincerely,

Johnny Reising

Johnny W. Reising
Director

Enclosure

cc w/enclosure:
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006216

CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 7 SILOS AND SUPPORT AREA

FERNALD CLOSURE PROJECT
FERNALD, OHIO

OCTOBER 2006

U.S. DEPARTMENT OF ENERGY

20500-PSP-0017
REVISION A
DRAFT

006216

CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 7 SILOS AND SUPPORT AREA

Document Number 20500-PSP-0017
Draft Revision A

October 2006

APPROVAL:

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

FERNALD CLOSURE PROJECT

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LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area-specific constituent of concern
ASL	Analytical Support Level
BSL	Biodentrification Surge Lagoon
BTV	benchmark toxicity value
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CRDL	contract required detection limit
CU	certification unit
D&D	decontamination and dismantlement
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/L	micrograms per Liter
MDC	minimum detectable concentration
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
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
PPDD	Pilot Plant Drainage Ditch
PSP	Project Specific Plan
QA/QC	Quality Assurance/Quality Control
RF	Remediation Facility
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
SPL	Sample Processing Laboratory

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

TAL	Target Analyte List
TTA	Transfer Tank Area
TAT	turnaround time
UCL	Upper Confidence Limit
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
VSL	Validation Support Level
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization

EXECUTIVE SUMMARY

This document is a combination of the Certification Design Letter (CDL) and Certification Project Specific Plan (PSP) for the Area 7 Silos and Support Area into one document. This document describes the certification design, sampling, analysis, and validation for Area 7 Silos and Support Area. 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 Silos and Support Area;
- A presentation of the certification unit boundaries and proposed sampling strategy;
- Details of certification sampling, analysis, and validation that will take place;
- The analytical requirements and the statistical methodology that will be employed; and
- The proposed schedule for the certification activities.

The scope of this CDL/Certification PSP is limited to the Area 7 Silos and Support Area as shown in Figure 1-1. This area consists of portions of the Transfer Tank Area Basin Area, the Silos 3 and 4 Area, and the Silos Process and Support Areas. Remediation of these areas was completed in September 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.

During precertification, it became apparent through the use of real-time scanning, physical sampling, and site radiological control monitoring, that decontamination and dismantlement activities had impacted additional soil beyond the original design excavation in this area. Because of this, significant excavation was conducted through a larger portion of this area. The most intensive excavations were conducted around the Silos 1 and 2 Remediation Facility footprint. Excavation continued until real-time scanning indicated that no more soil need be removed.

Prior to submission of this document, the basic sampling information was informally submitted to the agencies for discussion. After revisions to the certification unit (CU) design and Target Analyte Lists based on comments received, sampling activities for Area 7 Silos and Support Area were begun.

The selection of Area 7 Silos and Support Area 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 Silos and Support Area consists of 16 CUs as shown in 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 Silos and Support Area. 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 Silos and Support Area has met the final remediation levels (FRLs) for all area-specific constituents of concern (ASCOCs). Certification demonstrates that ASCOCs meet the risk based FRLs. The format of this document follows (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 Silos and Support Area

3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for Area 7 Silos and Support Area

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

5.0 Schedule

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

7.0 Health and Safety

8.0 Disposition of Waste

9.0 Data Management

References

The major remediation actions for the areas covered by this document included;

- Demolition of the buildings located within the area (see Figure 1-2),
- Excavation of most at- and below-grade structures,
- Excavation of above-waste acceptance criteria (WAC) and/or above-FRL areas, and
- Utility removal.

The only remaining at- or below-grade structures are the two concrete pads that constituted the foundations of the Transfer Tank Area (TTA) Facility (Building 94B) and the Remediation Facility (RF - Building 94C).

Any utilities that ran under these two pads were left in place. Also, the Silos Warehouse (Building 94K) is being left in place for post-closure usage.

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 Silos and Support Area ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Present the details of certification sampling, analysis and validation that will take place;
- Summarize the analytical requirements and the statistical methodology employed;
- Present maps for acquired real-time precertification data; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

The scope of this CDL/Certification PSP includes details of certification sampling, analysis and validation that will take place in the Area 7 Silos and Support Area, an area consisting of approximately 11.1 acres. Figure 1-1 depicts the boundaries, location, and layout of the Area 7 Silos and Support Area.

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 Silos and Support Area. This area consists of portions of the TTA Basin Area, the Silos 3 and 4 Area, and the Silos Process and Support Area. Other portions of Area 7 either have been or will be submitted for certification under separate documentation.

Field activities for Area 7 Silos and Support Area are consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. The certification sampling program as discussed in Section 4.0 of this document will continue to be consistent with Data Quality Objective (DQO) SL-52, Revision 3, which is included as Appendix B.

The TTA Basin Area is situated south of the former Silo 1 footprint and north of the Pilot Plant Drainage Ditch (PPDD - see Figure 1-1). This area more recently contained the TTA Basin, which has since been removed.

The Silos 3 and 4 footprints and their adjacent areas constitute Area 7B and part of Area 7C, respectively. These areas are bordered on the north by Area 6J (Waste Pits Remedial Action Project Support Area), on the

west by 7C (the Cement Pond and surrounding area), on the south by the Silos 1 and 2 foot print (Area 7A), and on the east/northeast by the Biodenitrification Surge Lagoon (BSL).

The Silos Process and Support Area included the Silos Operations and Maintenance Building (Building 94A), the Silos 1 and 2 Remediation Facility (Building 94B), Silos 1 and 2 TTA Facility (Building 94C), Silos 1 and 2 Radon Control System Carbon Beds (Building 94D), Silos 1 and 2 Radon Control System (Building 94E), Silos 1 and 2 Electrical Building (Building 94G), Silos 1 and 2 Warehouse (Building 94K), Silos 1 and 2 Continuous Emissions Monitoring Building (Building 94L), Silos 1 and 2 High Pressure Pump/Breathing Air Utility Building (Building 94R), Small Lab Building - Silos Operations (Building 94S), Silos Accelerated Waste Retrieval Test Stand (Building 94T), and the Silo Maintenance Machine Shop (Building 94Y - see Figure 1-2). This area is bordered on the north by the BSL, on the west by the Silos, on the south by the PPDD, and on the east by the Lime Sludge Pond and the Building 30/45 Parking Lot (see Figure 1-1). The concrete pad for the TTA Facility will remain beyond certification.

The historical features for the Area 7 Silos and Support Area are shown on Figure 1-2. Figure 1-3 depicts the topography of this area.

Basic sampling information was submitted to the agencies prior to submission of this document. After revisions were made to both the CU design and the Target Analyte Lists (TALs) based on comments received for the agencies, sampling activities for Area 7 Silos and Support Area began.

The ASCOCs for the CUs in the Area 7 Silos and Support Area 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.

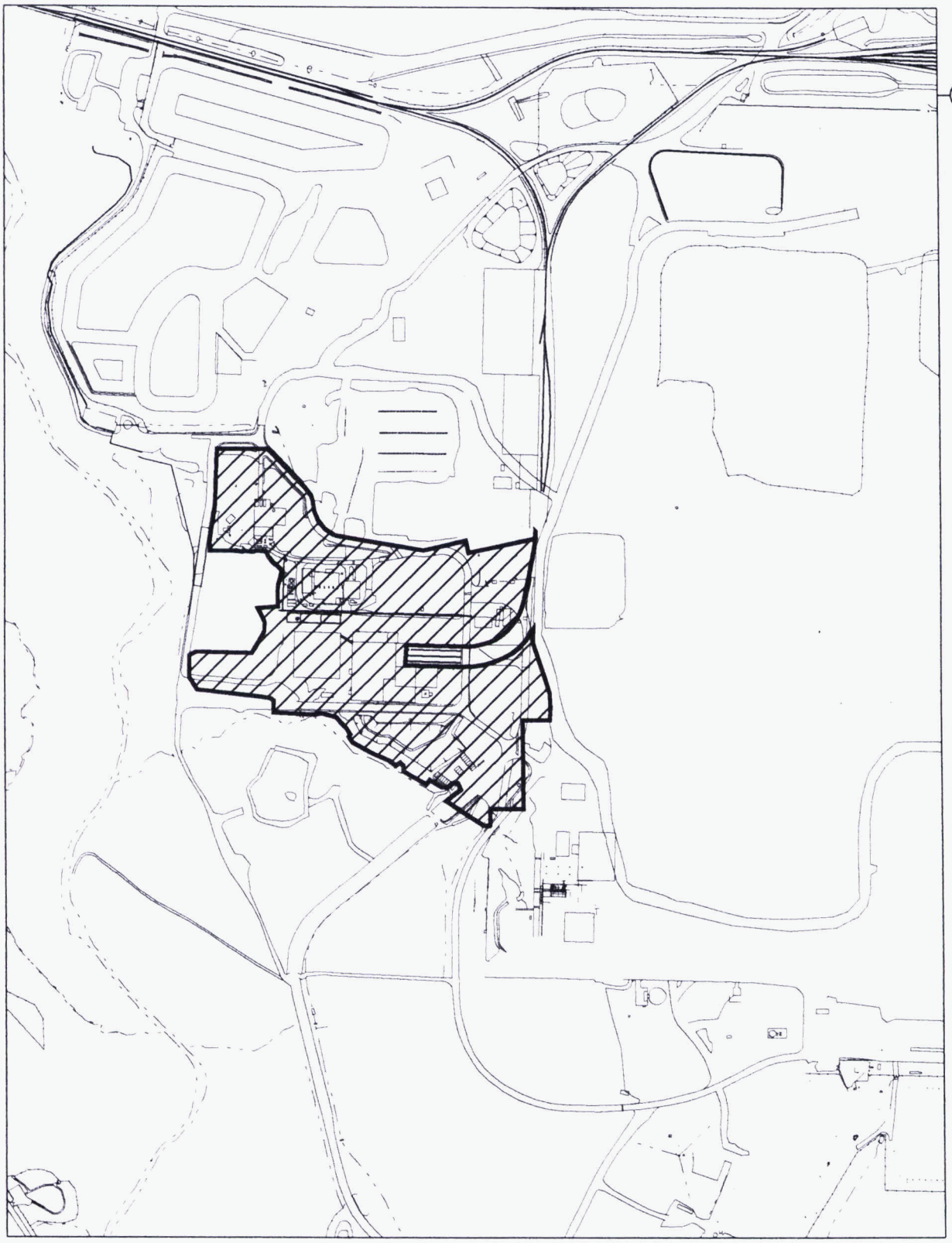
1.3 KEY PROJECT PERSONNEL

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 Silos and Support Characterization Lead	Debbie Brennan	Denise Arico
Field Sampling Manager	Tom Buhrlage	Mike Frank
Surveying Manager	Uday Kumthekar	Bernie Kienow/Andy Clinton
WAO Contact	Christa Walls	Pat Shanks
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	Denise Arico
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:

AREA 7 SILOS
& SUPPORT AREA

SCALE

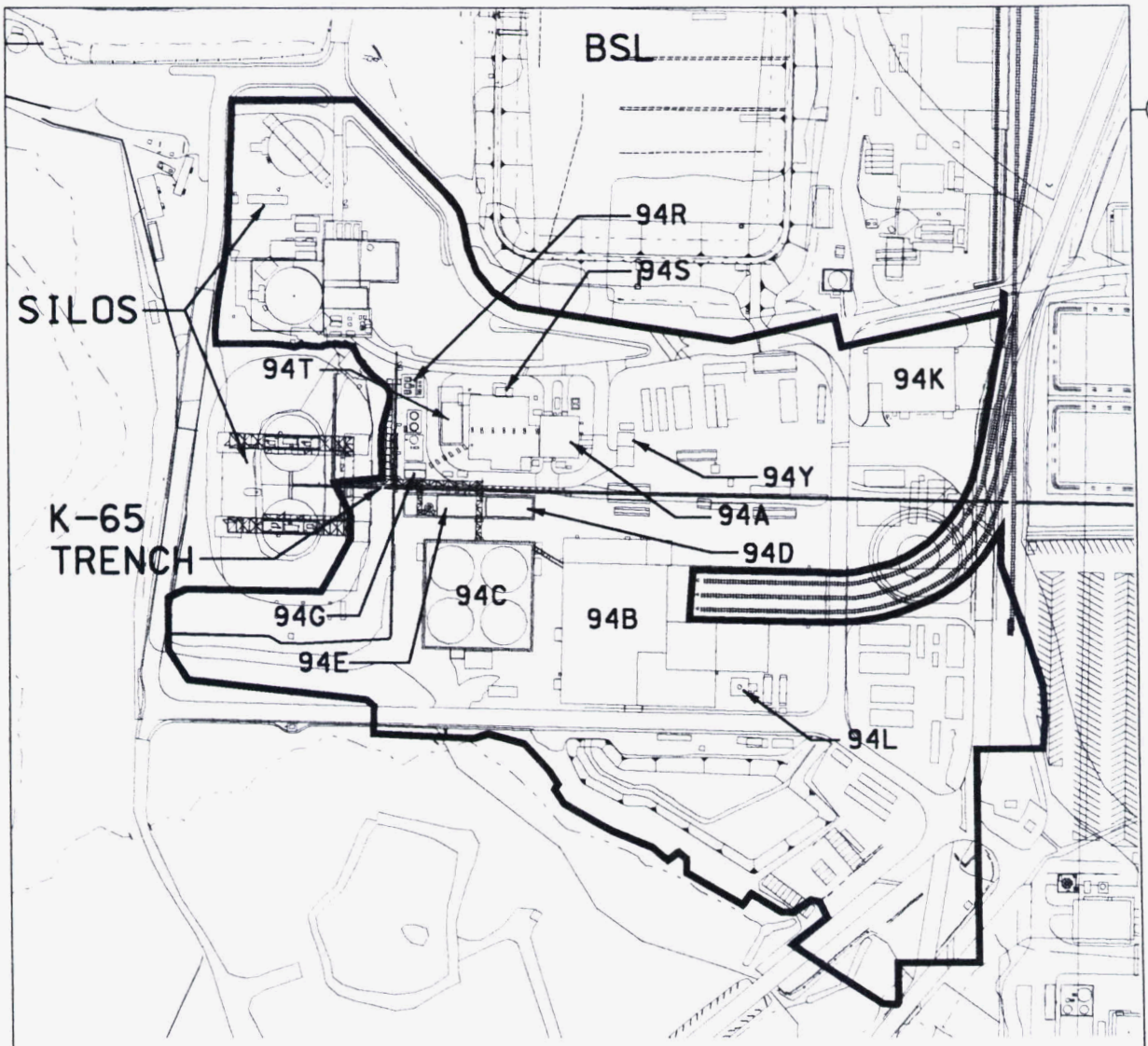
500 250 0 500 FEET

v:\2fm12\dgn\a7ec_001.dgn

STATE PLANAR COORDINATE SYSTEM 1983

27-SEP-2006

FIGURE 1-1. AREA 7 SILOS & SUPPORT AREA CERTIFICATION AREA LOCATION MAP



ID	Description
94A	Silos Operations & Maintenance Building
94B	Silos 1 & 2 Remediation Facility
94C	Silos 1 & 2 Transfer Tank Area
94D	Silos 1 & 2 Radon Control System Carbon Beds
94E	Silos 1 & 2 Radon Control System
94G	Silos 1 & 2 Electrical Building
94K	Silos 1 & 2 Warehouse
94L	Silos 1 & 2 Continuous Emissions Monitoring Building
94R	Silos 1 & 2 HIgh Pressure Pump/Breathing Air Utility Building
94S	Small Lab Building - Silos Operations
94T	Silos AWR Test Stand
94Y	Silos Maintenance Machine Shop

LEGEND:

AREA 7 SILOS & SUPPORT AREA

SCALE

250 125 0 250 FEET

FIGURE 1-2. AREA 7 SILOS & SUPPORT AREA HISTORICAL FEATURES

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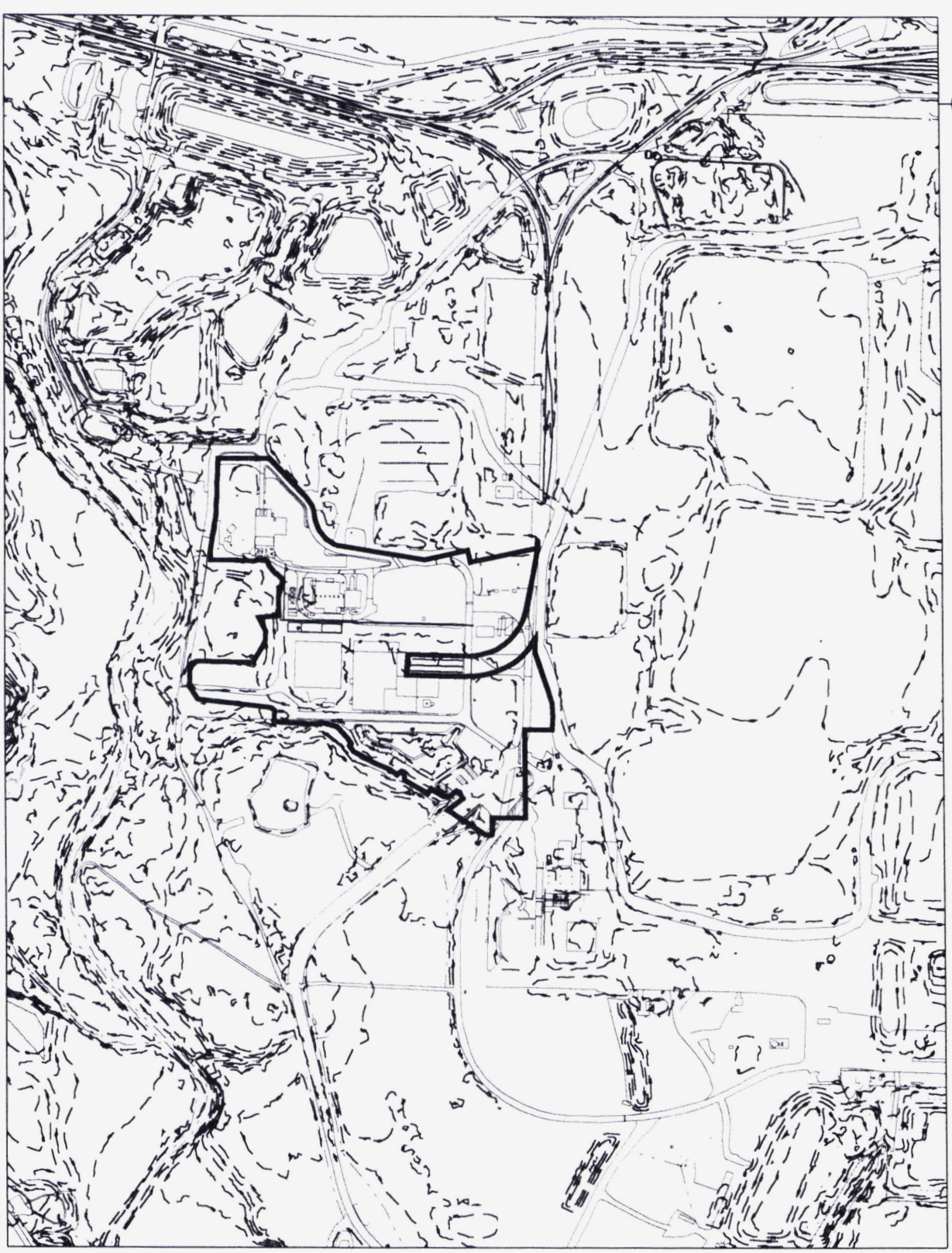
STATE PLANAR COORDINATE SYSTEM 1983

02-OCT-2006

v:\82fm12\dgn\ed01eo_003.dgn

STATE PLANAR COORDINATE SYSTEM 1983

27-SEP-2006



LEGEND:

AREA 7 SILOS & SUPPORT AREA

5 FOOT TOPOGRAPHIC INTERVAL

SCALE

500 250 0 500 FEET

FIGURE 1-3. AREA 7 SILOS & SUPPORT AREA 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 Silos and Support Area certification area were pulled from the Sitewide Environmental Database (SED). The data is summarized in Sections 2.1 through 2.3.

Based on the results of sampling and scanning activities summarized in Sections 2.1 through 2.3, it has been determined that no further remedial actions are necessary to remove above-FRL or above-WAC soil.

Utilities removed as part of the remediation process. 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 precertified overburden soil. These sampling events are described in Variance/Field Change Notices (V/FCNs) 20500-PSP-0009-35 and 20500-PSP-0009-36 written to the PSP for the Excavation Control and Precertification of Area 7 Silos and General Area (Supplement to 20300-PSP-0001) (DOE 2005a) and V/FCN 20500-PSP-0010-10 written to the PSP for the Excavation Control and Precertification of Area 7 Support and Silos Process Area (Supplement to 20300-PSP-0001) (DOE 2005b).

2.1 TTA Basin Area

2.1.1 Historical, Predesign and Excavation Control

Based on the results of historical data collection, predesign sampling was done to determine the nature and extent of contamination present in the TTA Basin Area. Additionally, samples were collected to fill in any data gaps left in this area. The results of this investigation are presented in the Excavation Plan for Area 7 Silos and General Area (DOE 2005c).

Excavation in the TTA Basin Area began in August 2005. Part of the Silos 1 and 2 above-FRL excavation extended into the area used to create the TTA Basin (see Figure 2-1). Any utilities, gravel, roadbeds,

and/or miscellaneous debris were removed from this area as part of the excavation effort. Subsequently, the TTA Basin was constructed in March 2006 to control the run-off associated with the decontamination and dismantlement (D&D) activities for the TTA Facility and adjacent structures.

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.

After D&D activities associated with the TTA Facility were completed, the TTA Basin Area was removed. This occurred in August 2006.

2.2 Silos 3 and 4 Area

2.2.1 Historical, Predesign and Excavation Control

As with other areas covered in this document, historical data were collected and evaluated prior to beginning predesign. Predesign samples were then collected to determine the nature and extent of contamination as well as to fill in any existing data gaps. The results of the investigations are presented in the Excavation Plan for Area 7 Silos and General Area (Supplement to 20300-PSP-0011).

Excavation of the Silos 3 and 4 Area began in August 2006 (see Figure 2-1). Existing foundations, slabs, and footers as well as other support structures were removed as part of the excavation effort. Likewise, all utilities and miscellaneous debris and gravel were removed.

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). Precertification real-time scanning results are provided in Appendix A.

During precertification, it became apparent through the use of real-time scanning, physical sampling, and site radiological control monitoring, that D&D activities had impacted additional soil beyond the original design excavation in this area. Because of this, significant excavation was conducted through a larger portion of this area. Excavation continued until real-time scanning indicated that no more soil need be removed (see Appendix A).

2.3 Silos Process and Support Areas

2.3.1 Historical, Predesign and Excavation Control

Based on the results of historical data collection, predesign sampling was done to determine the nature and extent of contamination present in Area 7. Additionally, samples were collected to fill-in any data gaps left in this area. Data were also collected to delineate 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).

The excavation in the Silos Process and Support Areas began in December 2005 (see Figure 2-1). Existing foundations, slabs, and footers as well as other support structures were removed as part of the excavation effort. Likewise all utilities and miscellaneous debris, gravel, and roadbed were removed.

The K-65 trench along with it's associated above-WAC areas (see Figure 2-1) was removed from this area as part of the excavation process. This trench runs from east to west through the Silos Process and Support Area and then runs north to south parallel to the former Silo structures. Due to issues involving safety and stability, it was necessary to backfill the trench created by the removal of the K-65 trench. When this occurred, sampling was needed of the trench bottom prior to backfilling.

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) and the PSP for the 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.

During precertification, it became apparent through the use of real-time scanning, physical sampling, and site radiological control monitoring, that D&D activities had impacted additional soil beyond the original design excavation in this area. Because of this, significant excavation was conducted through a larger portion of this area. The most intensive excavations were conducted around the Silos 1 and 2 Remediation Facility footprint. Excavation continued until real-time scanning indicated that no more soil need be removed (see Appendix A).

Once the K-65 trench had been removed as required by the Excavation Plan, real-time systems performed precertification scans and physical samples were collected on the trench bottom. These sampling events are described in V/FCNs 20500-PSP-0010-10, 20500-PSP-0010-12, and 20500-PSP-0010-15 written to the PSP for the Excavation Control and Precertification the Area 7 Support and Silos Process Area and V/FCNs 20500-PSP-0009-69 and 20500-PSP-0009-71, written to the PSP for the Excavation Control and

Precertification of Area 7 Silos and General Area. The data from these sampling events will be presented in the Certification Report.

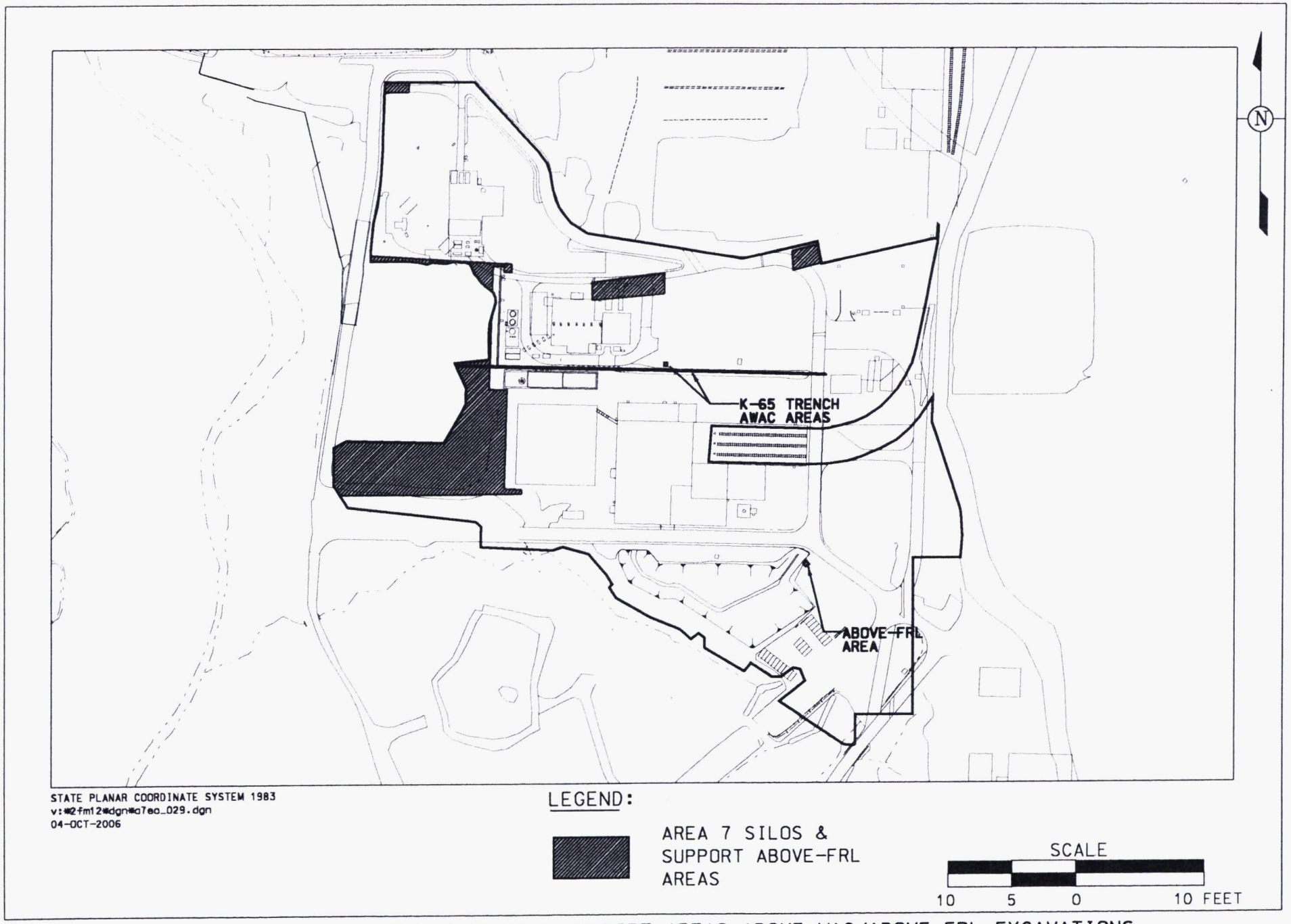


FIGURE 2-1. AREA 7 SILOS & SUPPORT AREAS ABOVE-WAC/ABOVE-FRL EXCAVATIONS

006216

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. In spite of the conservative nature of this COC retention process, many of the COCs with established FRLs have a limited distribution in site soil or the presence of the COC is based on high contract required detection limits (CRDLs). When FRLs were established for these COCs in the OU5 ROD, the FRLs were initially screened against site data presented on spatial maps to establish a picture of potential remediation areas.

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

3.1 SELECTION CRITERIA

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

Each ASCOC on the Area 7 list (see Table 3-1) was evaluated for its relevance to the areas covered by this document. 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 all areas. Additional secondary COCs have been retained in some areas due to historical above-WAC or above-FRL results as well as former land use. Also, some secondary COCs have been retained in areas where neither of the above conditions exists. However, D&D activities across several of the areas made it necessary to retain these COCs to ensure that historical contaminants were not transported into other areas and/or that all contamination has been removed. 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:

TTA Basin Area Secondary ASCOCs

- Aroclor-1254
- Arsenic
- Beryllium
- Cesium-137
- Chromium
- Lead-210
- Technetium-99
- Thorium-230

Silo 3, Silo 4, and Silos Processing Areas Secondary ASCOCs

- Antimony
- Aroclor-1254
- Aroclor-1260
- Arsenic
- Beryllium
- Cadmium
- Cesium-137
- Lead-210
- Molybdenum
- PAHs
- Silver
- Technetium-99
- Thorium-230

Silos Support Area Secondary ASCOCs

- Antimony
- Aroclor-1254
- Arsenic
- Beryllium
- Technetium-99

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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 SILOS AND SUPPORT AREA

Area 6 ASCOCs	Retained As ASCOC?	Justification	CUs
PRIMARY ASCOCs			
Radium-226	Yes	Retained as primary ASCOC	All
Radium-228	Yes	Retained as primary ASCOC	All
Thorium-228	Yes	Retained as primary ASCOC	All
Thorium-232	Yes	Retained as primary ASCOC	All
Total Uranium	Yes	Retained as primary ASCOC	All
SECONDARY ASCOCs			
Aroclor-1254	Yes	COC for 7A, 7B, 7D, 7E, 7E-Clean	CUs 1-7, 9-13, 15, and 16
Aroclor-1260	Yes	COC for 7B	CUs 3-7, 9-13, 15, and 16
Arsenic	Yes	COC for 7A, 7B, 7D, 7E, 7E-Clean	CUs 1-7, 9-13, 15, and 16
Beryllium	Yes	COC for 7A, 7B, 7D, 7E, 7E-Clean	CUs 1-7, 9-13, 15, and 16
Cesium-137	Yes	COC for 7A and 7B	CUs 1-7, 9-13, 15, and 16
Chromium	Yes	COC for 7A	CUs 1 and 2
Dieldrin	No	No above-FRLs present	None
Lead	No	No above-FRLs present	None
Lead-210	Yes	COC for 7A and 7B	CUs 1-7, 9-13, 15, and 16
Manganese	No	No above-FRLs present	None
Technetium-99	Yes	COC for 7A, 7B, 7D, 7E, 7E-Clean	All
Thorium-230	Yes	COC for 7A and 7B	CUs 1-7, 9-13, 15, and 16
ECOLOGICAL ASCOCs			
Antimony	Yes	COC for 7B, 7D, 7E, and 7E-Clean	CUs 1-7, 9-13, 15, and 16
Cadmium	Yes	COC for 7B and 7E	CUs 3-7, 9-13, 15, and 16
Molybdenum	Yes	COC for 7B and 7E	CUs 3-7, 9-13, 15, and 16
Silver	Yes	COC for 7B and 7E	CUs 3-7, 9-13, 15, and 16
PAHs	Yes	COC for 7B and 7E	CUs 3-7, 9-13, 15, and 16

TABLE 3-3
FINAL ASCOC LIST FOR AREA 7 SILOS AND SUPPORT AREA CERTIFICATION UNITS

ASCOC	FRL/*BTV***	MDC
Radiological		
Total Uranium	82.0 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
Cesium-137	1.4 pCi/g	0.14 pCi/g
Technetium-99	29.1 pCi/g*	2.91 pCi/g*
Thorium-230	280 pCi/g	28.0 pCi/g
Lead-210	38 pCi/g	3.8 pCi/g
PCBs/Pesticides		
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg
Metals		
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	*5.0 mg/kg*	*0.5 mg/kg*
Chromium	300 mg/kg	30 mg/kg
Silver	*10.0 mg/kg*	*1.0 mg/kg*
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Molybdenum	*10.0 mg/kg*	*1.0 mg/kg*
PAHs		
Benzo(a)anthracene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(b)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(g,h,i)perylene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(k)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Chrysene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene	*0.088 mg/kg*	*0.01 mg/kg* [1]
Fluoranthene	*10.0 mg/kg*	*1.0 mg/kg*
Indeno(1,2,3-cd)pyrene	*1.0 mg/kg*	*0.10 mg/kg*
Phenanthrene	*5.0 mg/kg*	*0.5 mg/kg*
Pyrene	*10.0 mg/kg*	*1.0 mg/kg*

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

** Benchmark toxicity values (BTVs) apply to Ecological COCs.

MDC - minimum detectable concentration
mg/kg – milligrams per kilogram
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 Silos and Support Area. The certification design for Area 7 Silos and Support Area follows the general approach outlined in Section 3.4 of the SEP. The CU design is shown in Figure 4-1 and sample locations are depicted in Figures 4-2 through 4-8. Fourteen Group 1 and two Group 2 CUs were designed to represent the Area 7 Silos and Support Area. As discussed in Section 3.0 of this document, the five primary ASCOCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained in 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 Silos and Support Area. Some of these include: historical land use, proximity to other areas of the site, and COC data. The areas known to have contained impacted material will be comprised of Group 1 CUs to allow for more concentrated sampling and to ensure excavation activities and removal of above- and below-grade structures left no contamination above FRLs in the soil.

4.1.1 Certification Unit Design

The Area 7 Silos and Support Area consists of fourteen Group 1 and two Group 2 CUs that were designed around a combination of former land use, location, and COCs for each area. As shown in Figure 4-1, the separate areas included in this certification effort are represented by groups of CUs as follows:

- TTA Basin Area - CUs A7SSA-C01 and A7SSA-C02
- Silo 3 and adjacent Area - CU A7SSA-C07
- Silo 4 and adjacent Area - CU A7SSA-C06
- Silos Support Area - CU A7SSA-C12
- Silos Processing Area - CUs A7SSA-C10 and A7SSA0C11
- K-65 Trench Area - CU A7SSA-C13
- TTA Pad (soil under) - CU A7SSA-C03
- RF Pad (soil under) - CUs A7SSA-C04 and A7SSA-C05
- Southern Retention Basin - CU A7SSA-C09
- Parking lots, access roads and former trailer footprints - CUs A7SSA-C08 and A7SSA-C14
- Area around the TTA and RF Pads - CUs A7SSA-C15 and A7SSA-C16

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.

All Area 7 Silos and Support Area sub-CUs and planned certification sampling locations are shown on Figures 4-2 through 4-8. No archive samples were designated for this certification effort. 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.

Additional samples were collected in CUs A7SSA-C03, A7SSA-C04, and A7SSA-C05. CUs A7SSA-C03 and A7SSA-C05 each included a small concrete pad that needed the soil under the pad to be sampled. While it would have been technically adequate to include these pads as part of the certification effort of the 16 samples collected under the larger pads, it was decided to add one random sample under each small pad to each of these CUs. In CU A7SSA-C04, three bias locations were designated to be sampled in association with sumps present in the concrete pad.

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 Silos and Support Area CU boundaries are shown on Figure 4-1. Appendix C and Figures 4-2 through 4-8 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 all sample locations in the CU, including one field duplicate sample. The samples (as shown in Appendix C) will be submitted for analysis. Upon completion of sample collection, the 0 to 6-inch boreholes will be collapsed for those samples not collected through the cement pad and no additional abandonment is necessary.

Quality control requirements will include a duplicate field sample and two container blanks as outlined in Section 6.1, and will be collected per procedure SMPL-21, Collection of Field Quality Control Samples. For the duplicate field sample, twice the soil volume (a second core) will be collected at one location in the

CU, and will not be homogenized with the original sample. The location that requires the collection of a duplicate sample is identified in Appendix 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 4-8 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.

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

4.3.2 Equipment Decontamination

Decontamination is performed to prevent the introduction of contaminants from sampling equipment to subsequent soil samples. Field Technicians will ensure that sampling equipment (core tubes and caps) has been decontaminated prior to transport to the field. As described in SMPL-01, all sampling equipment will have been decontaminated before it is transported to the field site, and the 6-inch core liners will be decontaminated using the Level II (Section K.11 of the SCQ) procedure upon receipt from the manufacturer. Decontamination is also necessary in the field if sampling equipment is reused. If an alternate sampling method is used, equipment will be decontaminated between 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:

A7SSA	=	Sample collected from Area 7 Silos and Support Area
C01	=	Certification sample representing the 1st certification unit from the area (all subsequent CUs will be consecutively numbered)
Location	=	Sample Location number within each CU (beginning with 1 and consecutively numbered thereafter)
^	=	Separates Location from Depth Interval
Depth Interval	=	(only if needed) Equals twice the bottom depth (in feet) (i.e., "1" = 0.0 to 0.5', "2" = 0.5 to 1.0', etc.)
Analysis	=	"R" indicates radiological analysis, "M" indicates a metals analysis, "P" indicates a PCB/pesticides analysis, and "S" indicates a semi-volatile analysis
QC	=	Quality control sample, if applicable. A "D" indicates a field duplicate sample; "Y" indicates a container blank sample; "TB" indicates a trip blank, and "X" indicates a rinsate.

For example, a field duplicate sample taken from the 10th sample location from the 10th Area 7 Silos and Support Area CU for radiological, metals, pesticides/PCBs analysis and semi-volatile analysis would be identified as A7SSA-C10-10^RMPS-D. The sample identifiers are as presented in Appendix C.

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 predesign sample boring A7-SA1-42, 82.2 mg/kg, will be used to ship the samples off site. This is the highest total uranium result from the area.

Samples collected for volatile organic compound (VOC) analysis should be shipped to an off-site laboratory within 24 hours of sample collection. As soon as the samples arrive at the laboratory where the analysis will take place, all samples should be prepared for analysis (including homogenization), and radiological samples should be sealed to begin the in-growth period for radium analysis. A 10-day turnaround time

(TAT) will be required for all non-gamma (i.e., chemical analyses and technetium-99) analyses and data reporting. A 10-day TAT for preliminary data will be required for gamma analysis. For the standard in-growth gamma analysis and data reporting, a 30-day TAT will be required.

The sampling and analytical requirements for CUs 1 through 16 are listed in Table 4-1 and the Target Analyte Lists (TALs) are shown in Table 4-2.

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

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. The CRDL is set at 10 percent of the FRL. Analyses will be conducted to either Analytical Support Level (ASL) D or E. All requirements for ASL E are the same as for ASL D except the minimum detection level for the selected analytical method must be at least 10 percent of 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 randomly selected. 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. If any sample fails validation, all data from the laboratory with the rejected result will then be validated to VSL D to determine the integrity of all data from that laboratory. 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 has passed certification, a certification report will be issued. The Certification Report will be submitted to the U.S. Environmental Protection Agency (EPA) and the Ohio Environmental Protection Agency (OEPA) to receive acknowledgement that the pertinent operable unit remedial 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

TAL(s)	Method	Matrix	ASL	TAT	Preservative	Container[b]	Minimum Mass/Volume
Rads/ Metals/ PCBs/SemiVOAs Any combination of TALs A/B/C/D/E/F/H/I/J	Gamma or Alpha Spec and/or LSC or GPC	Solid	D/E[a]	EDD gamma 10 days[c] Final gamma 14 days[c] Final alpha (Th230) 10 days Final Tc99 10 days	Cool 4° C	Glass with Teflon-lined lid	700 g (2100g)[c]
	ICP or ICP-MS			10 days			
	GC			10 days			
	GC			10 days			
Metals TALs D/F/G/I	ICP-AES or ICP-MS	Liquid[d]	D/E[a]	HNO_3 to pH<2	10 days	Polyethylene	500 mL

Special Instructions (Samplers):

[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 radium-226 analysis utilizing a 21-day in-growth with a 25-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.

Special Instructions (SPL/Lab):

Field QC will be collected as part of this sampling effort.

Analytical Data Validation is required - VSL D.

Data package requirement - Certificates of Analysis within 10 Days. Full ASL D/E data package within 14 days.

Historical Data for Shipping is 82.2 mg/kg total uranium from boring A7-SA1-42.

GC - gas chromatography
GPC - gas proportional counting
ICP-AES - inductively coupled-atomic emission spectrometry
ICP-MS - inductively coupled plasma-mass spectrometry
LSC - liquid scintillation counting

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TABLE 4-2
TARGET ANALYTE LIST

TAL 20500-PSP-0017-A
(ASL D/E[1])
(293 estimated samples)

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

TAL 20500-PSP-0017-B
(ASL D/E[1])
(261 estimated samples)

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

TAL 20500-PSP-0017-C
(ASL D/E[1])
(293 estimated samples)

Analyte	FRL	MDL - Soil[2]
Technetium-99	29.1 pCi/g	3.0 pCi/g

TAL 20500-PSP-0017-D
(ASL D/E[1])
(64 estimated samples)

Analyte	FRL	MDL - Soil	MDL - Water
Arsenic	12 mg/kg	1.2 mg/kg	1.8 mg/L
Beryllium	1.5 mg/kg	0.15 mg/kg	0.22 mg/L
Chromium	300 mg/kg	30 mg/kg	45 mg/L

TAL 20500-PSP-0017-E
(ASL D/E[1])
(96 estimated samples)

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

TABLE 4-2
TARGET ANALYTE LIST

TAL 20500-PSP-0017-F
(ASL D/E[1])
(96 estimated samples)

Analyte	FRL	MDL - Soil	MDL - Water
Antimony	96 mg/kg	9.6 mg/kg	1.5 mg/L
Arsenic	12 mg/kg	1.2 mg/kg	1.8 mg/L
Beryllium	1.5 mg/kg	0.15 mg/kg	0.22 mg/L

TAL 20500-PSP-0017-G
(ASL D/E[1])
(for rinseates only)

Analyte	FRL	MDL - Soil	MDL - Water
Antimony	96 mg/kg	9.6 mg/kg	1.5 mg/L
Arsenic	12 mg/kg	1.2 mg/kg	1.8 mg/L
Beryllium	1.5 mg/kg	0.15 mg/kg	0.22 mg/L
Chromium	300 mg/kg	30 mg/kg	45 mg/L

TAL 20500-PSP-0017-H
(ASL D/E[1])
(197 estimated samples)

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

TAL 20500-PSP-0017-I
(ASL D/E[1])
(197 estimated samples)

Analyte	FRL/*BTV*	MDL	MDL (water)
Antimony	96 mg/kg	9.6 mg/kg	1.5 mg/L
Arsenic	12 mg/kg	1.2 mg/kg	1.8 mg/L
Beryllium	1.5 mg/kg	0.15 mg/kg	0.22 mg/L
Cadmium	*5.0 mg/kg*	*0.5 mg/kg*	2.0 µg/L
Molybdenum	*10 mg/kg*	*1.0 mg/kg*	20 µg/L
Silver	*10 mg/kg*	*1.0 mg/kg*	5.0 µg/L

TABLE 4-2
TARGET ANALYTE LIST

TAL 20500-PSP-0017-J
(ASL D/E[1])
(197 estimated samples)

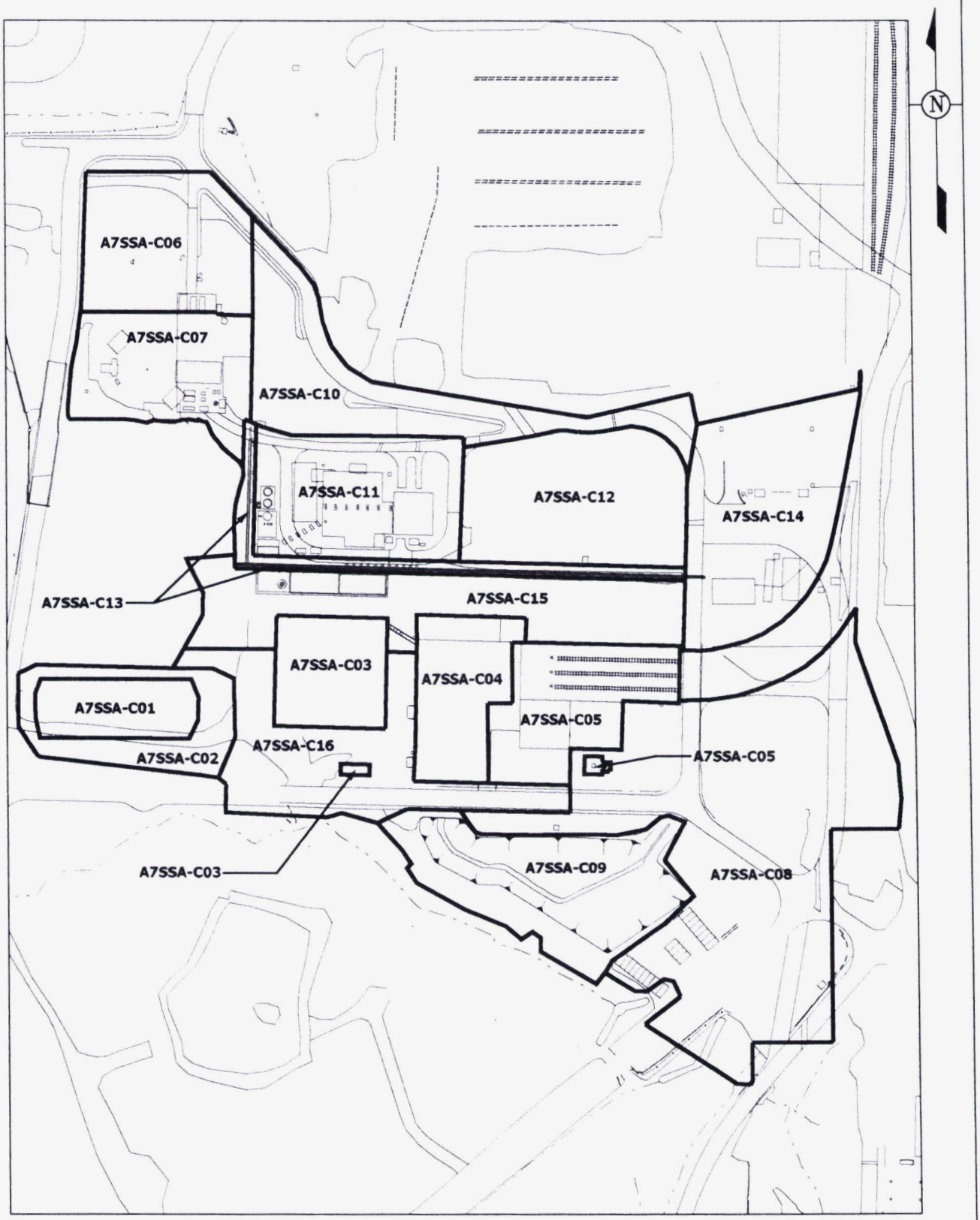
Analyte	FRL/*BTV*[3]	MDL
Benzo(a)anthracene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(b)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(g,h,i)perylene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(k)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Chrysene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene	*0.088 mg/kg*	*0.01 mg/kg* [1]
Fluoranthene	*10.0 mg/kg*	*1.0 mg/kg*
Indeno(1,2,3-cd)pyrene	*1.0 mg/kg*	*0.10 mg/kg*
Phenanthrene	*5.0 mg/kg*	*0.5 mg/kg*
Pyrene	*10.0 mg/kg*	*1.0 mg/kg*

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

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

[3]Where both the FRL and the BTV are present, the MDL is based on the lower of the two values given.

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



LEGEND:

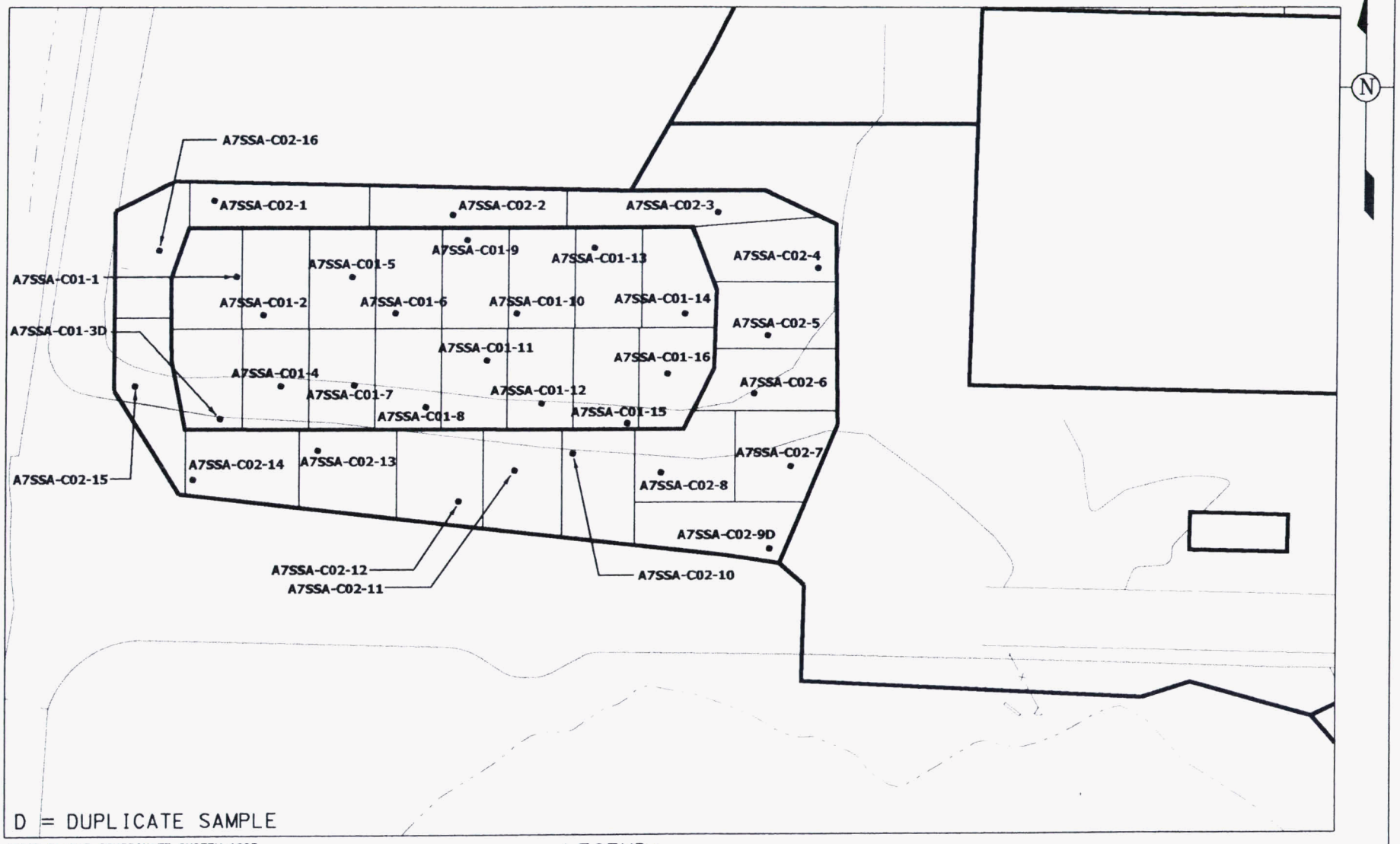
AREA BOUNDARY

SCALE

200 100 0 200 FEET

FIGURE 4-1. AREA 7 SILOS & SUPPORT AREA CU LOCATION MAP

V:\02fm12\dgn\07oc_015.dgn
STATE PLANAR COORDINATE SYSTEM 1983
04-OCT-2006



STATE PLANAR COORDINATE SYSTEM 1983
v:\2fm12\dgn\a7ec_011.dgn
03-OCT-2006

LEGEND:

AREA BOUNDARY

SAMPLE LOCATION

SCALE

60 30 0 60 FEET

FIGURE 4-2. AREA 7 SILOS & SUPPORT AREA SUB-CU & SAMPLE LOCATION MAP FOR A7SSA-C01 & A7SSA-C02

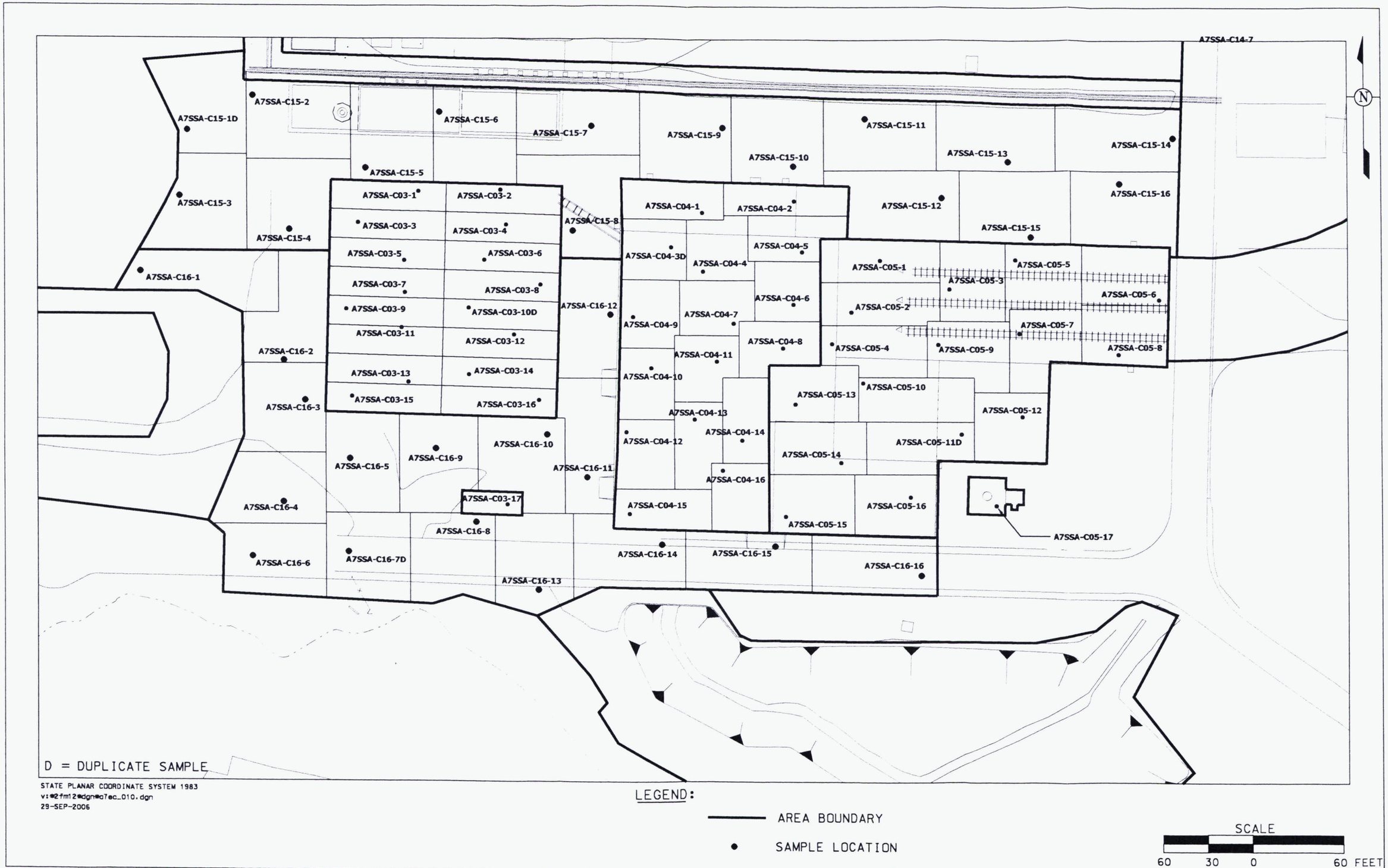
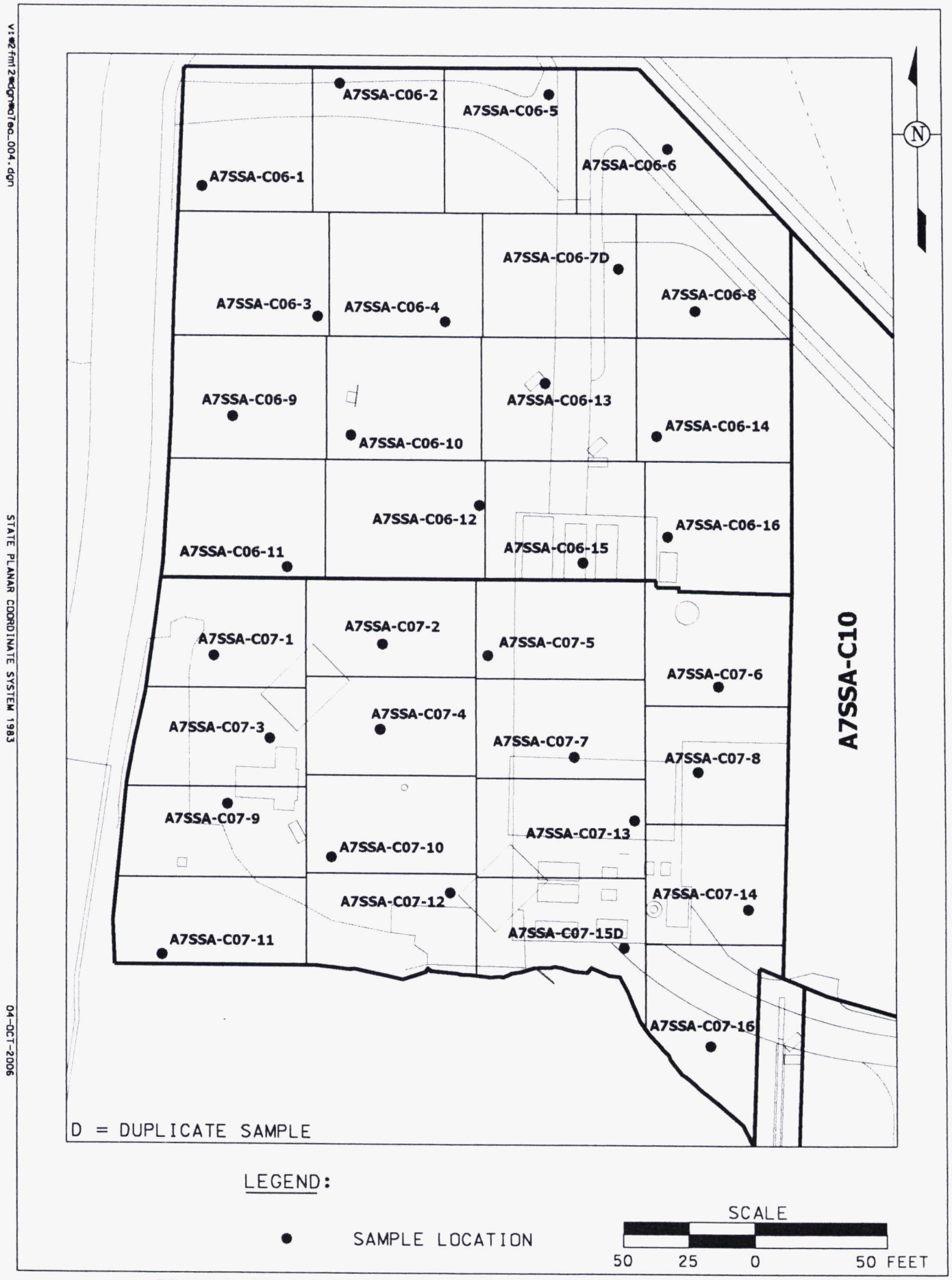


FIGURE 4-3. AREA 7 SILOS & SUPPORT AREA SUB-CU AND SAMPLE LOCATION MAP FOR A7SSA-C03, A7SSA-C04, A7SSA-C05, A7SSA-C15 & A7SSA-C16

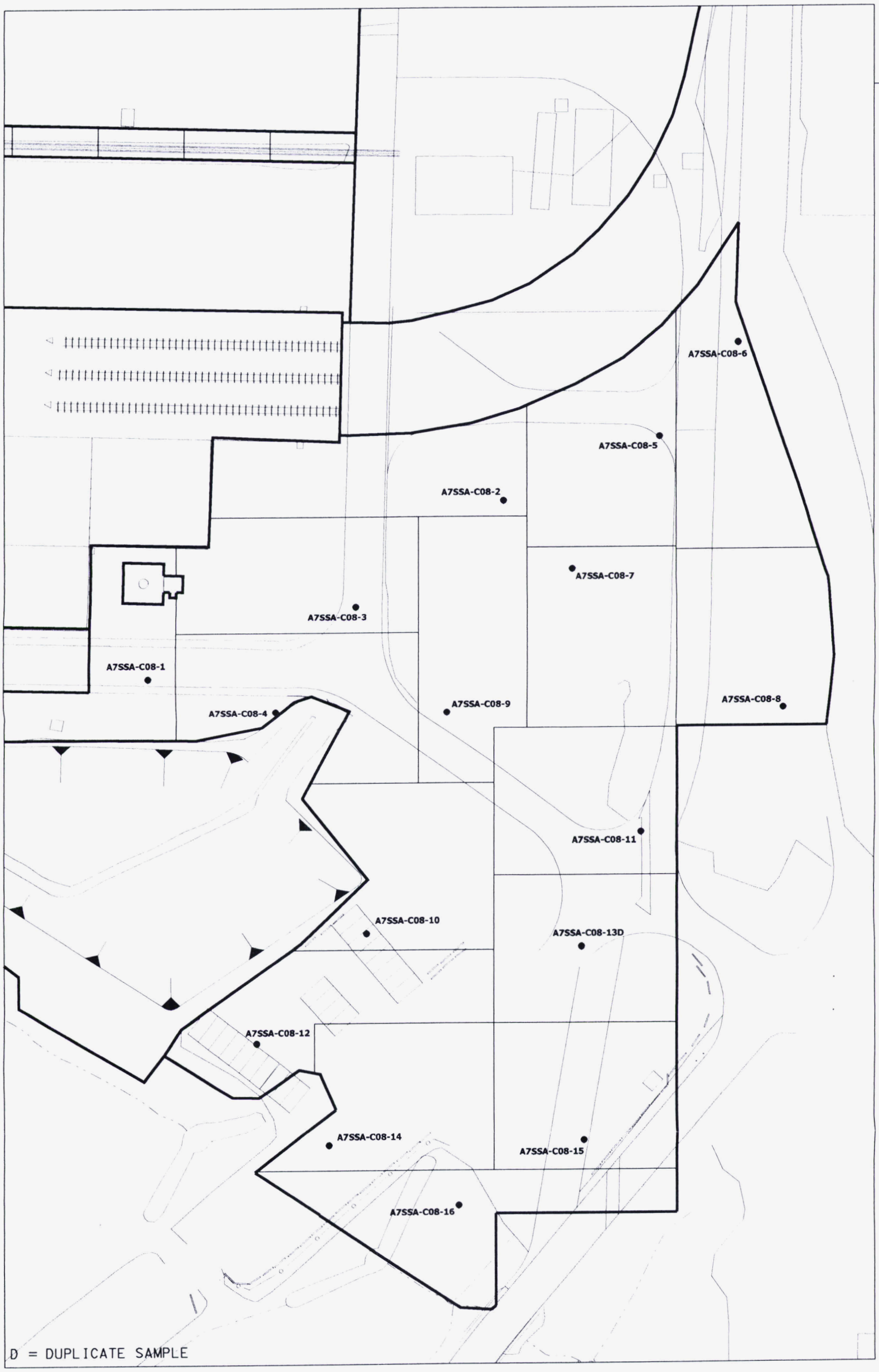


v:\2fm12\dgn\a07eo_004.dgn

STATE PLANAR COORDINATE SYSTEM 1983

04-OCT-2006

FIGURE 4-4. AREA 7 SILOS & SUPPORT AREA SUB-CU AND SAMPLE LOCATION MAP FOR A7SSA-C06 & A7SSA-C07



LEGEND:

AREA BOUNDARY

SAMPLE LOCATION

SCALE

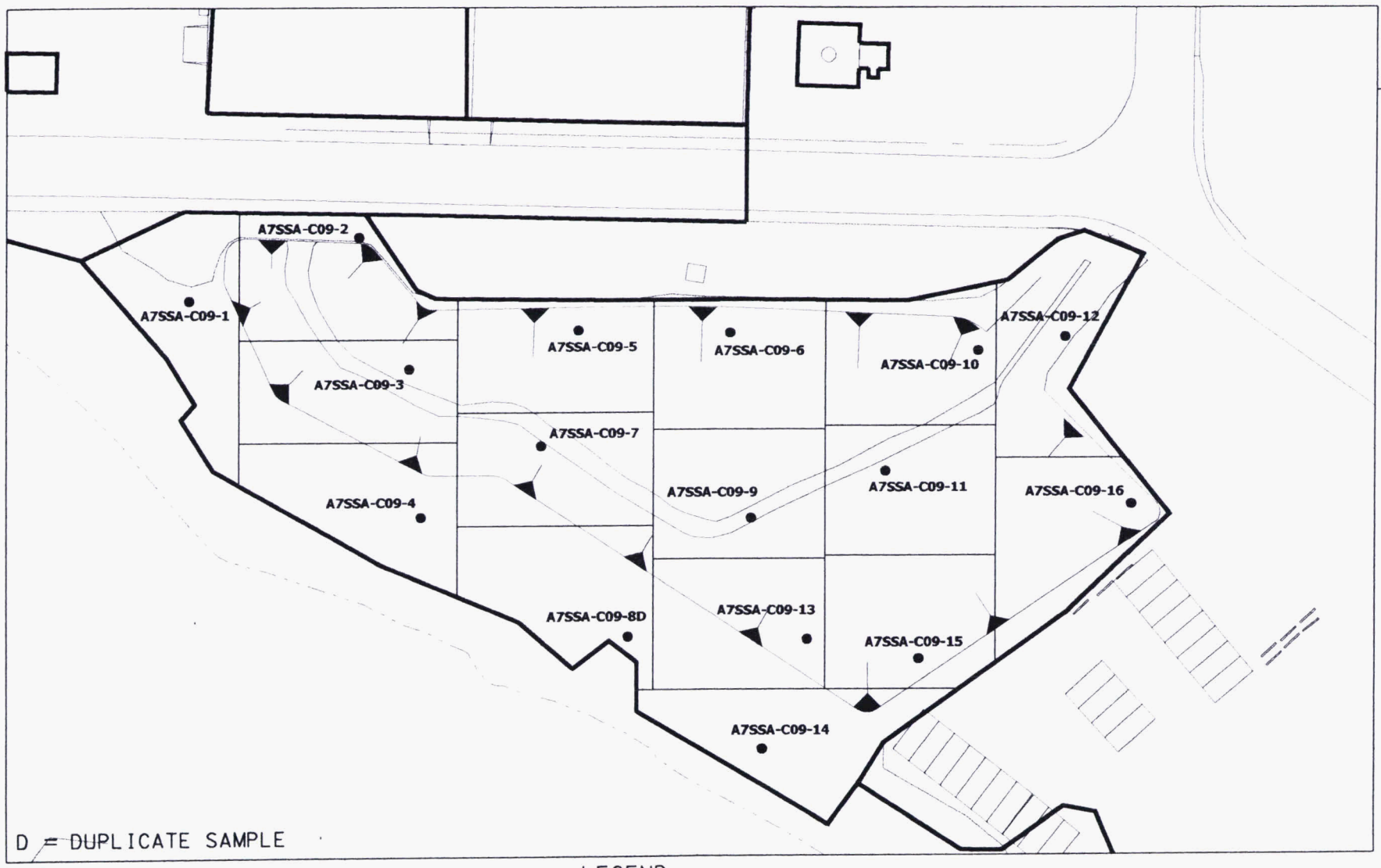
60 30 0 60 FEET

STATE PLANAR COORDINATE SYSTEM 1983

03-OCT-2006

006216

FIGURE 4-5. AREA 7 SILOS & SUPPORT AREA SUB-CU AND SAMPLE LOCATION MAP FOR A7SSA-C08



STATE PLANAR COORDINATE SYSTEM 1983
v:\2fm12\dgn\A7EC_012.DGN
03-OCT-2006

LEGEND:

AREA BOUNDARY

SAMPLE LOCATION

SCALE

60 30 0 60 FEET

FIGURE 4-6. AREA 7 SILOS & SUPPORT AREA SUB-CU AND SAMPLE LOCATION MAP FOR A7SSA-C09

006216

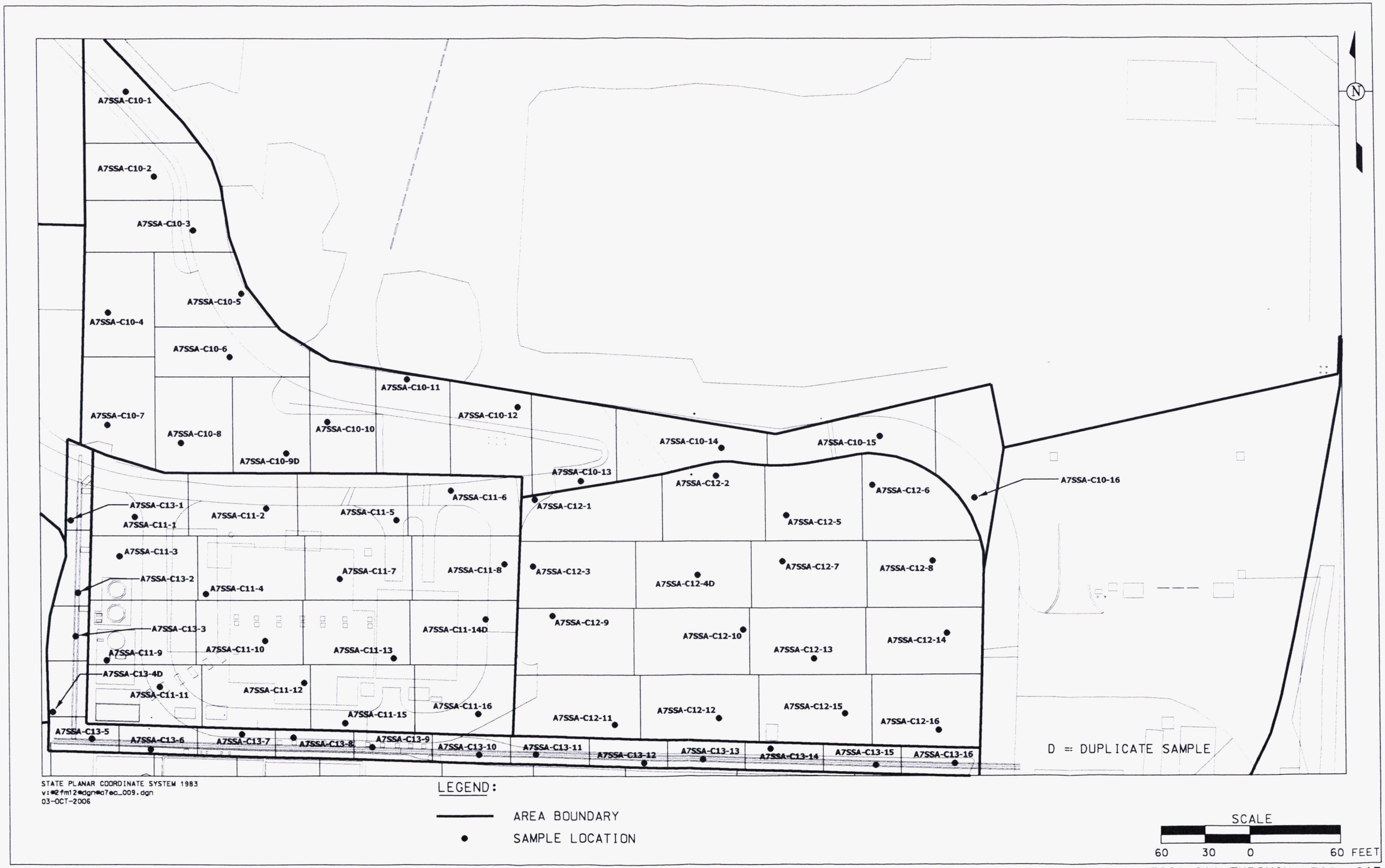


FIGURE 4-7. AREA 7 SILOS & SUPPORT AREA SUB-CU AND SAMPLE LOCATION MAP FOR A7SSA-C10 THROUGH A7SSA-C13

LEGEND:

AREA BOUNDARY

SAMPLE LOCATION

SCALE

60 30 0 60 FEET

v:\2fm12\dgn\a07ec_016.dgn

STATE PLANAR COORDINATE SYSTEM 1927

03-OCT-2006

FIGURE 4-8. AREA 7 SILOS & SUPPORT AREA SUB-CU AND SAMPLE LOCATION MAP FOR A7SSA-C14

5.0 SCHEDULE

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

Activity	Target Date
Submittal of Certification Design Letter	October 6, 2006
Start of Certification Sampling	Complete
Complete Field Work	Complete
Complete Analytical Work	Complete
Complete Data Validation and Statistical Analysis	October 13, 2006
Submit Certification Report	October 18, 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 (see 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.

  A trip blank is required if VOC samples are being collected. The frequency for a trip blank is one per day, one per batch of 20 VOC samples, or one per cooler to be shipped, whichever is more frequent.

- All analyses will be performed at ASL D or E, where E meets the MDL of 10 percent of the FRL and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for all of the data.

- All field data will be validated. A minimum of 10 percent of the laboratory data will be validated to VSL D with the remainder validated to VSL B. The CUs to be validated to VSL D will be A7SSA-C06 and A7SSA-C16. 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), Flour Fernald work permits, Radiological Work Permit (RWP), penetration permits, Construction Traveler, and other applicable permits. The radiological work requirements for activities will be detailed in activity-specific RWPs. Concurrence with applicable safety permits is required by each technician in the performance of their assigned duties.

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

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

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

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

8.0 DISPOSITION OF WASTE

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

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

9.0 DATA MANAGEMENT

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

All field measurements, observations, and sample collection information associated with physical sample collection will be recorded, as applicable, on the Sample Collection Log, the FAL, the Chain of Custody/Request for Analysis form, 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 Area 7 Silos and General Area (Supplement to 20300-PSP-0001)," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005b, "Project Specific Plan for Excavation Control and Precertification the Area 7 Support and Silos Process Area (Supplement to 20300-PSP-0001)," 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.

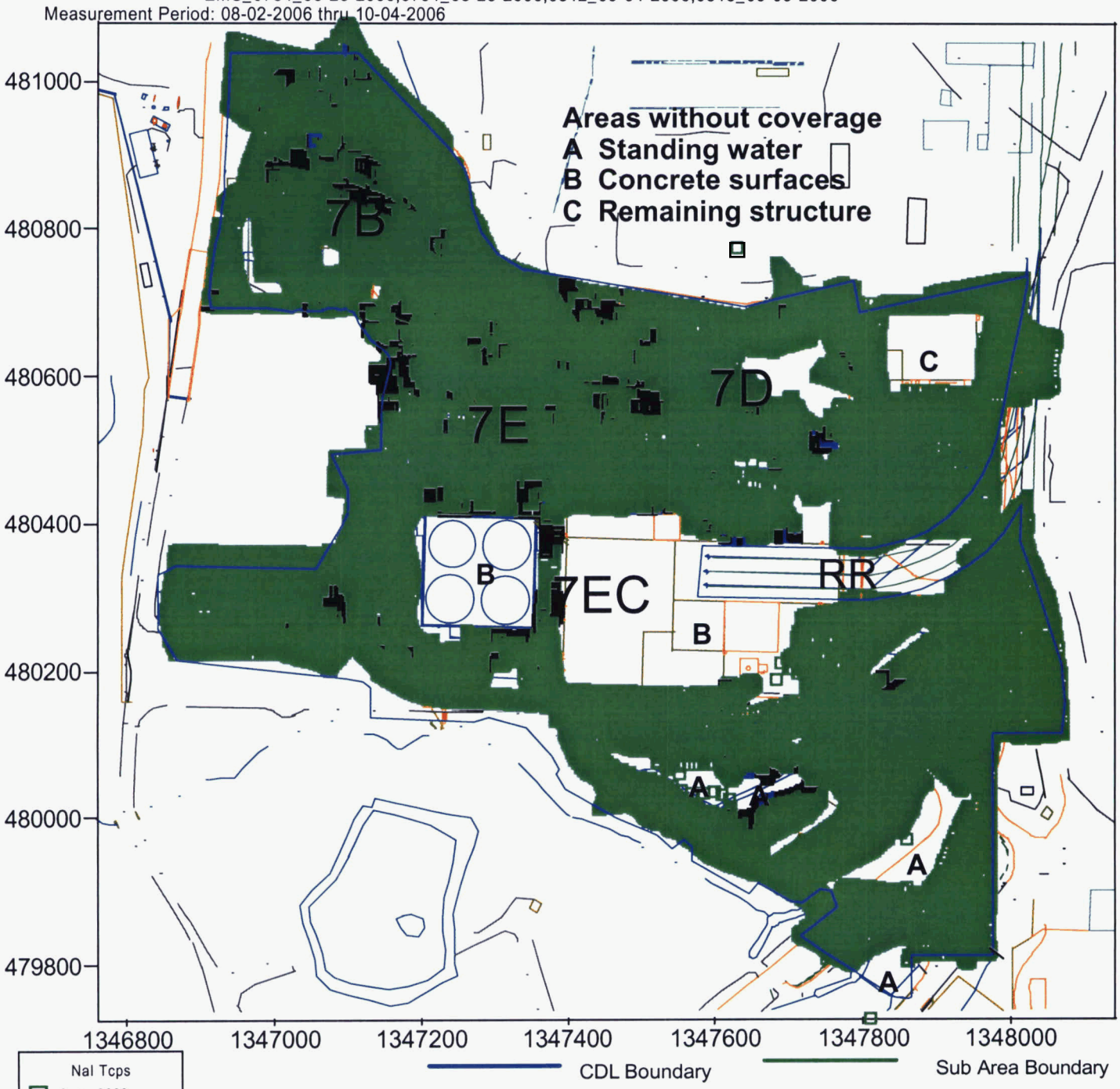
U.S. Department of Energy, 2005d, "Excavation Plan for Area 7 Support and Silos Process Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

APPENDIX A

PRECERTIFICATION REAL-TIME DATA MAPS FOR AREA 7 SILOS AND SUPPORT AREA

Figure A-1 Area 7 Silos and Support Areas-Phase 1 Total Gross Counts per Second

Data Groups: RSS1_2761_08-09-2006,2826_09-06-2006,2827_09-06-2006,2836_09-08-2006,2872_09-20-2006
2877_09-21-2006,2878_09-21-2006,2884_09-26-2006,2885_09-26-2006,2894_09-29-2006
2893_09-29-2006,2905_10-02-2006
RSS2_1464_09-09-2006,1465_09-09-2006,1468_09-10-2006,1499_09-29-2006
RSS3_1615_08-09-2006,1688_09-08-2006,1709_09-21-2006,1723_09-29-2006,1736_10-02-2006
1740_10-03-2006,1743_10-04-2006
RSS4_1515_08-18-2006,1573_09-08-2006,1586_09-09-2006,1590_09-10-2006,1599_09-14-2006
1623_09-21-2006,1740_10-03-2006
GATOR_1087_09-13-2006,1093_09-27-2006
EMS_0835_09-15-2006,0836_09-15-2006,0841_09-26-2006,0847_09-29-2003
30687_09-25-2006,31265_09-19-2006
Design Grade Data: RSS1_2789_08-19-2006,2805_08-31-2006,2825_09-06-2006,RSS2-1443_08-19-2006,
RSS3_1536_07-09-2006,1685_09-07-2006,RSS4_1520_08-19-2006,1567_09-06-2006,1575_09-08-2006
EMS_0784_08-23-2006,0791_08-25-2006,0812_09-04-2006,0815_09-05-2006
Measurement Period: 08-02-2006 thru 10-04-2006



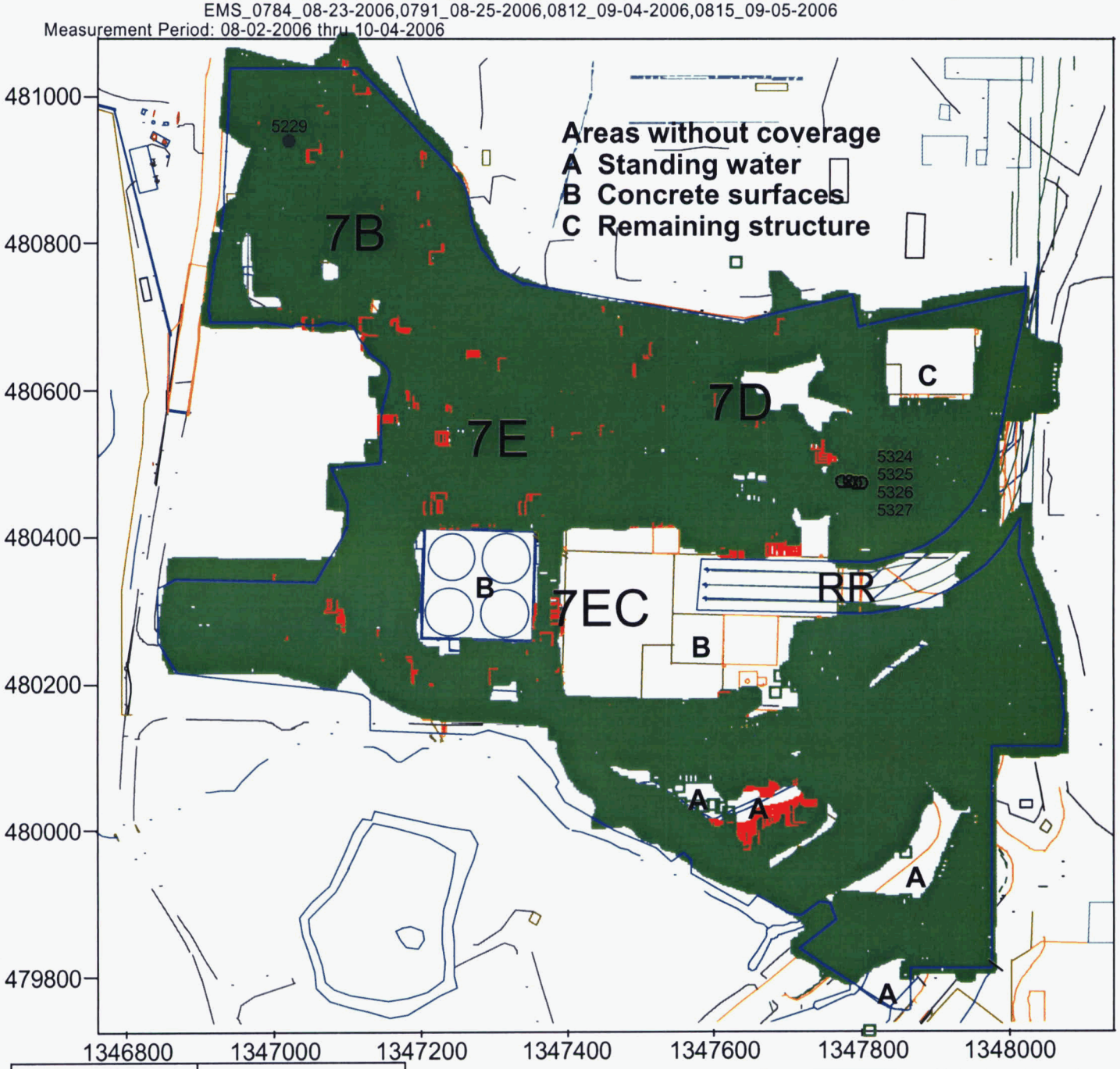
RTIMP DWG Title: A7SILOS_P1_TC.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P1.xls

Figure A-2 Area 7 Silos and Support Areas - Phase 1 Moisture Corrected Radium-226

Data Groups: RSS1_2761_08-09-2006,2826_09-06-2006,2827_09-06-2006,2836_09-08-2006,2872_09-20-2006
2877_09-21-2006,2878_09-21-2006,2884_09-26-2006,2885_09-26-2006,2894_09-29-2006
2893_09-29-2006,2905_10-02-2006
RSS2_1464_09-09-2006,1465_09-09-2006,1468_09-10-2006,1499_09-29-2006
RSS3_1615_08-09-2006,1688_09-08-2006,1709_09-21-2006,1723_09-29-2006,1736_10-02-2006
1740_10-03-2006,1743_10-04-2006
RSS4_1515_08-18-2006,1573_09-08-2006,1586_09-09-2006,1590_09-10-2006,1599_09-14-2006
1623_09-21-2006,1740_10-03-2006
GATOR_1087_09-13-2006,1093_09-27-2006
EMS_0835_09-15-2006,0836_09-15-2006,0841_09-26-2006,0847_09-29-2003
30687_09-25-2006,31265_09-19-2006

Design Grade Data: RSS1_2789_08-19-2006,2805_08-31-2006,2825_09-06-2006,RSS2-1443_08-19-2006,
RSS3_1536_07-09-2006,1685_09-07-2006,RSS4_1520_08-19-2006,1567_09-06-2006,1575_09-08-2006
EMS_0784_08-23-2006,0791_08-25-2006,0812_09-04-2006,0815_09-05-2006

Measurement Period: 08-02-2006 thru 10-04-2006



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

HPGe Ra-226 pCi/g	
-999 to 1.7	
1.7 to 5.1	
5.1 to 9999	

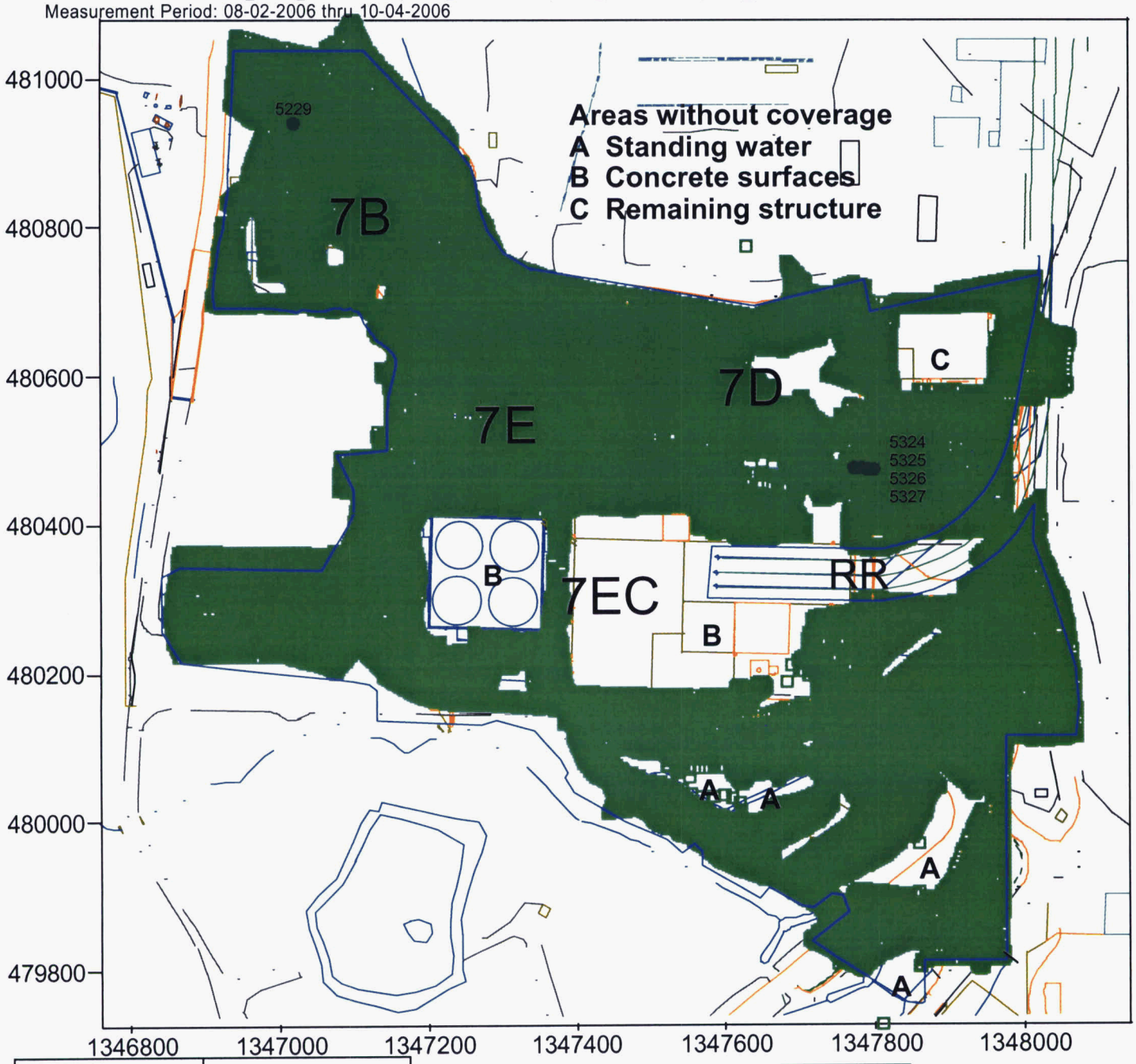
RTIMP DWG Title: A7SILOS_P1_RA.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P1.xls

Figure A-3 Area 7 Silos and Support Areas - Phase 1 Moisture Corrected Thorium-232

Data Groups: RSS1_2761_08-09-2006,2826_09-06-2006,2827_09-06-2006,2836_09-08-2006,2872_09-20-2006
2877_09-21-2006,2878_09-21-2006,2884_09-26-2006,2885_09-26-2006,2894_09-29-2006
2893_09-29-2006,2905_10-02-2006
RSS2_1464_09-09-2006,1465_09-09-2006,1468_09-10-2006,1499_09-29-2006
RSS3_1615_08-09-2006,1688_09-08-2006,1709_09-21-2006,1723_09-29-2006,1736_10-02-2006
1740_10-03-2006,1743_10-04-2006
RSS4_1515_08-18-2006,1573_09-08-2006,1586_09-09-2006,1590_09-10-2006,1599_09-14-2006
1623_09-21-2006,1740_10-03-2006
GATOR_1087_09-13-2006,1093_09-27-2006
EMS_0835_09-15-2006,0836_09-15-2006,0841_09-26-2006,0847_09-29-2003
30687_09-25-2006,31265_09-19-2006

Design Grade Data: RSS1_2789_08-19-2006,2805_08-31-2006,2825_09-06-2006,RSS2-1443_08-19-2006,
RSS3_1536_07-09-2006,1685_09-07-2006,RSS4_1520_08-19-2006,1567_09-06-2006,1575_09-08-2006
EMS_0784_08-23-2006,0791_08-25-2006,0812_09-04-2006,0815_09-05-2006

Measurement Period: 08-02-2006 thru 10-04-2006

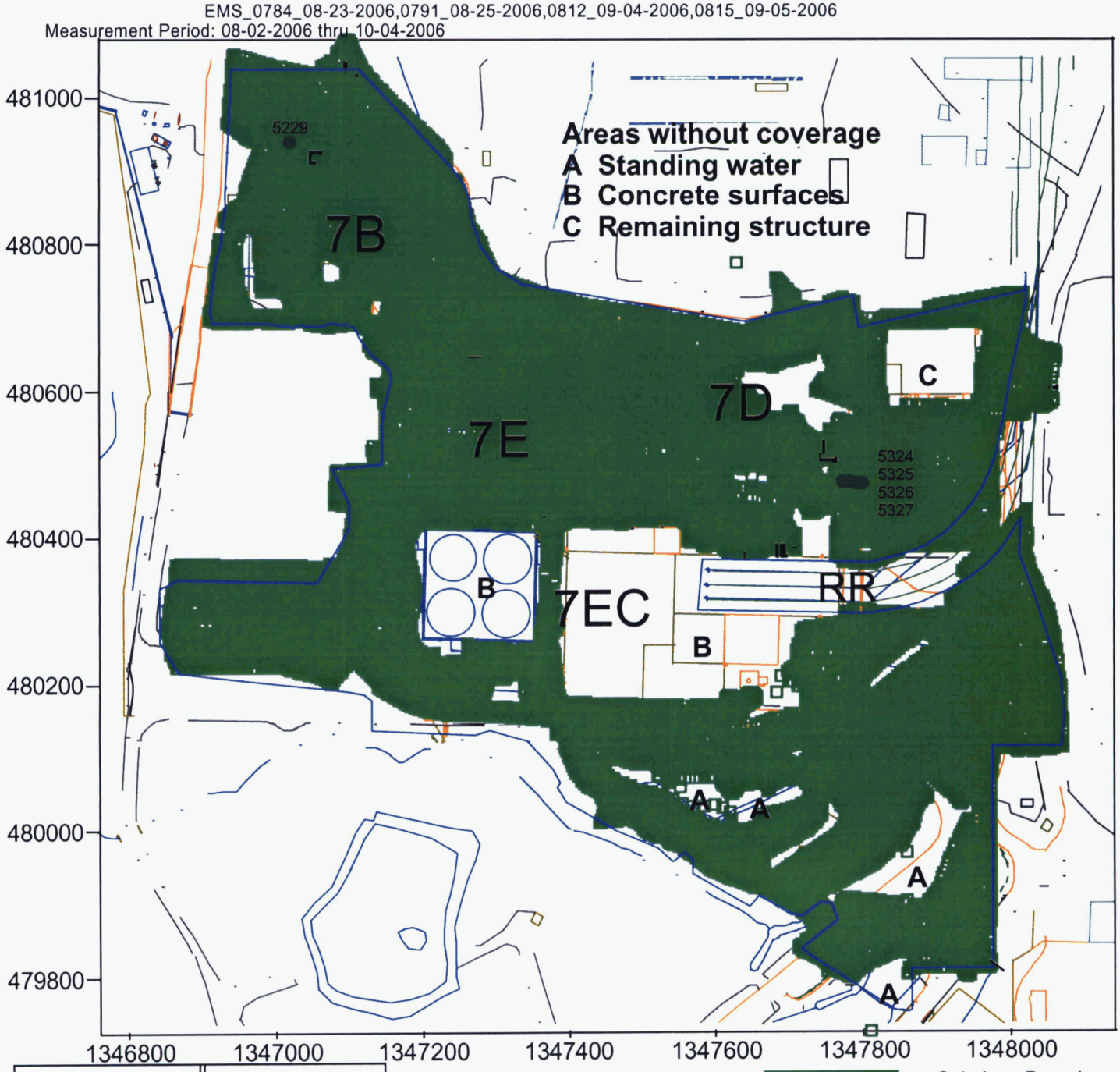


NaI Th-232 pCi/g	HPGe Th-232 pCi/g
-9999 to 4.5	-999 to 1.5
4.5 to 9999	1.5 to 4.5
	4.5 to 9999

RTIMP DWG Title: A7SILOS_P1_TH.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P1.xls

Figure A-4 Area 7 Silos and Support Areas-Phase 1 Moisture Corrected Total Uranium

Data Groups: RSS1_2761_08-09-2006,2826_09-06-2006,2827_09-06-2006,2836_09-08-2006,2872_09-20-2006
2877_09-21-2006,2878_09-21-2006,2884_09-26-2006,2885_09-26-2006,2894_09-29-2006
2893_09-29-2006,2905_10-02-2006
RSS2_1464_09-09-2006,1465_09-09-2006,1468_09-10-2006,1499_09-29-2006
RSS3_1615_08-09-2006,1688_09-08-2006,1709_09-21-2006,1723_09-29-2006,1736_10-02-2006
1740_10-03-2006,1743_10-04-2006
RSS4_1515_08-18-2006,1573_09-08-2006,1586_09-09-2006,1590_09-10-2006,1599_09-14-2006
1623_09-21-2006,1740_10-03-2006
GATOR_1087_09-13-2006,1093_09-27-2006
EMS_0835_09-15-2006,0836_09-15-2006,0841_09-26-2006,0847_09-29-2003
30687_09-25-2006,31265_09-19-2006
Design Grade Data: RSS1_2789_08-19-2006,2805_08-31-2006,2825_09-06-2006,RSS2-1443_08-19-2006,
RSS3_1536_07-09-2006,1685_09-07-2006,RSS4_1520_08-19-2006,1567_09-06-2006,1575_09-08-2006
EMS_0784_08-23-2006,0791_08-25-2006,0812_09-04-2006,0815_09-05-2006
Measurement Period: 08-02-2006 thru 10-04-2006



NaI TU ppm	HPGe TU ppm
-9999 to 246	-999 to 246
246 to 875	246 to 928
875 to 9999	928 to 9999

RTIMP DWG Title: A7SILOS_P1_TU.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P1.xls

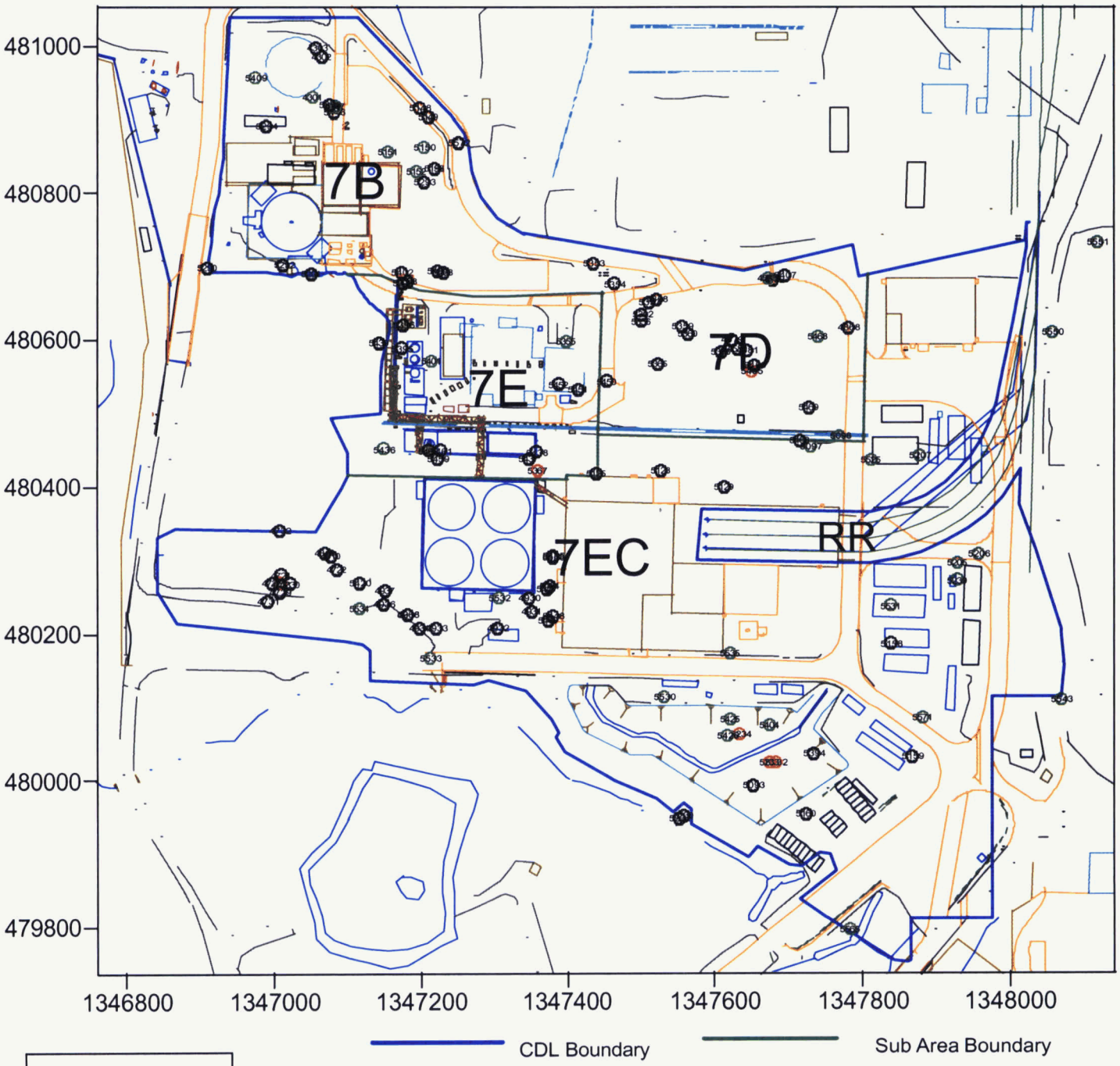
Figure A-5 Area 7 Silos and Support Areas - Phase 2 Moisture Corrected Radium-226 Includes all Phase 2 measurements

Data Groups: 40293_08-02-2006,08-18-2006,09-15-2006,09-18-2006,09-20-2006,09-26-2006,09-27-2006,10-03-2006
10-05-2006
40227_08-11-2006,10-02-2006
30687_08-17-2006,09-21-2006,09-26-2006,09-29-2006,09-30-2006
30699_09-06-2006,09-09-2006,09-13-2006,09-26-2006,09-29-2006,09-30-2006
31265_09-08-2006
31144_09-11-2006,09-14-2006

Design Grade Data: 31265_08-21-2006,30687_09-21-2006,40227_07-10-2006,31144_09-06-2006,40293_09-07-2006

Confirmation of precertification data: 30699_09-29-2006

Measurement Period: 08-02-2006 thru 10-05-2006

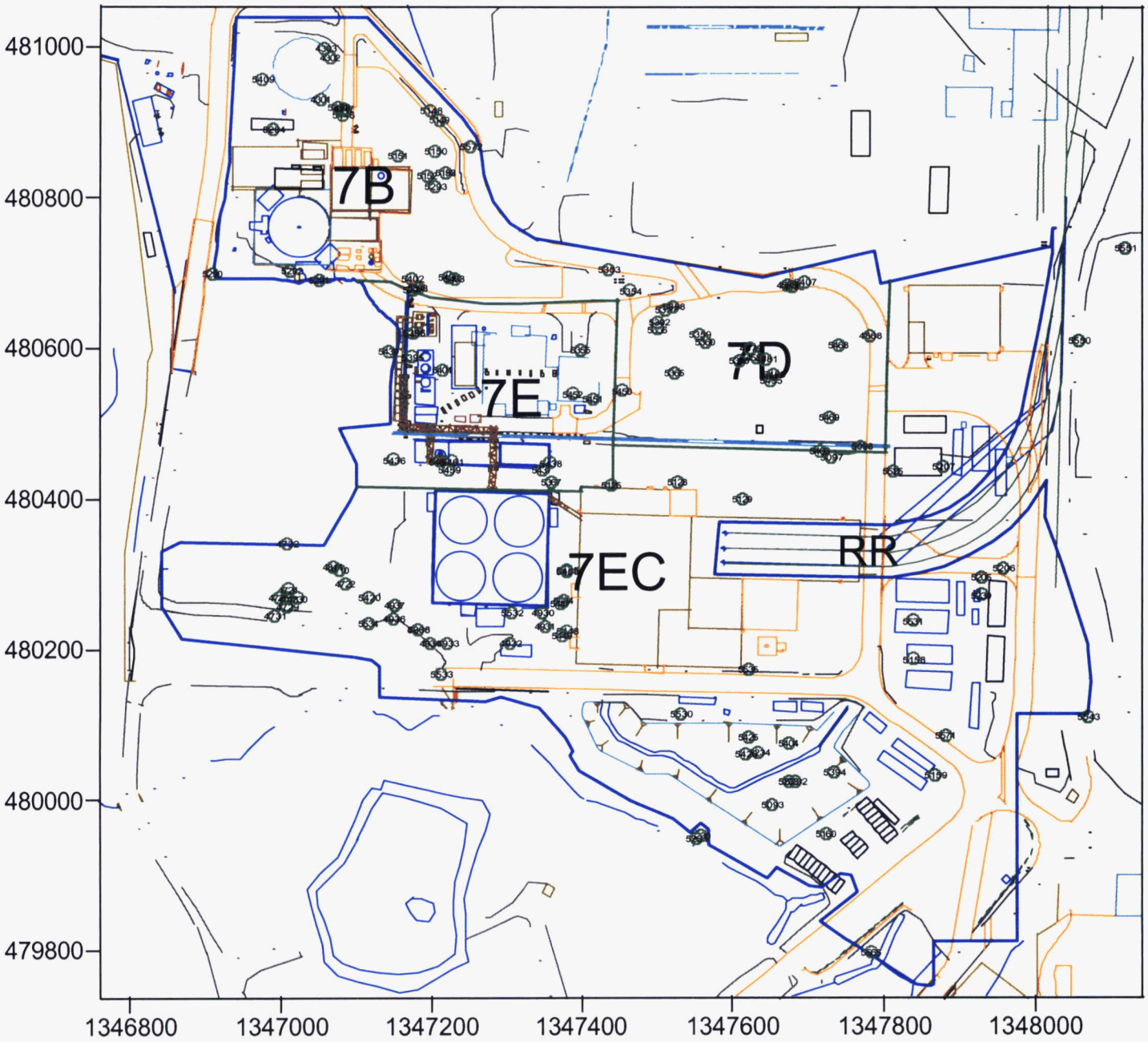


HPGe Ra-226 pCi/g
- -9999 to 1.7
- 1.7 to 5.1
- 5.1 to 9999

RTIMP DWG Title: A7SILOS_P2_RA.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P2.xls

Figure A-6 Area 7 Silos and Support Areas - Phase 2 Moisture Corrected Thorium-232 Includes all Phase 2 measurements

Data Groups: 40293_08-02-2006,08-18-2006,09-15-2006,09-18-2006,09-20-2006,09-26-2006,09-27-2006,10-03-2006
10-05-2006
40227_08-11-2006,10-02-2006
30687_08-17-2006,09-21-2006,09-26-2006,09-29-2006,09-30-2006
30699_09-06-2006,09-09-2006,09-13-2006,09-26-2006,09-29-2006,09-30-2006
31265_09-08-2006
31144_09-11-2006,09-14-2006
Design Grade Data: 31265_08-21-2006,30687_09-21-2006,40227_07-10-2006,31144_09-06-2006,40293_09-07-2006
Confirmation of precertification data: 30699_09-29-2006
Measurement Period: 08-02-2006 thru 10-05-2006



CDL Boundary

Sub Area Boundary

HPGe Th-232 pCi/g
- -9999 to 1.5
- 1.5 to 4.5
- 4.5 to 9999

RTIMP DWG Title: A7SILOS_P2_TH.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P2.xls

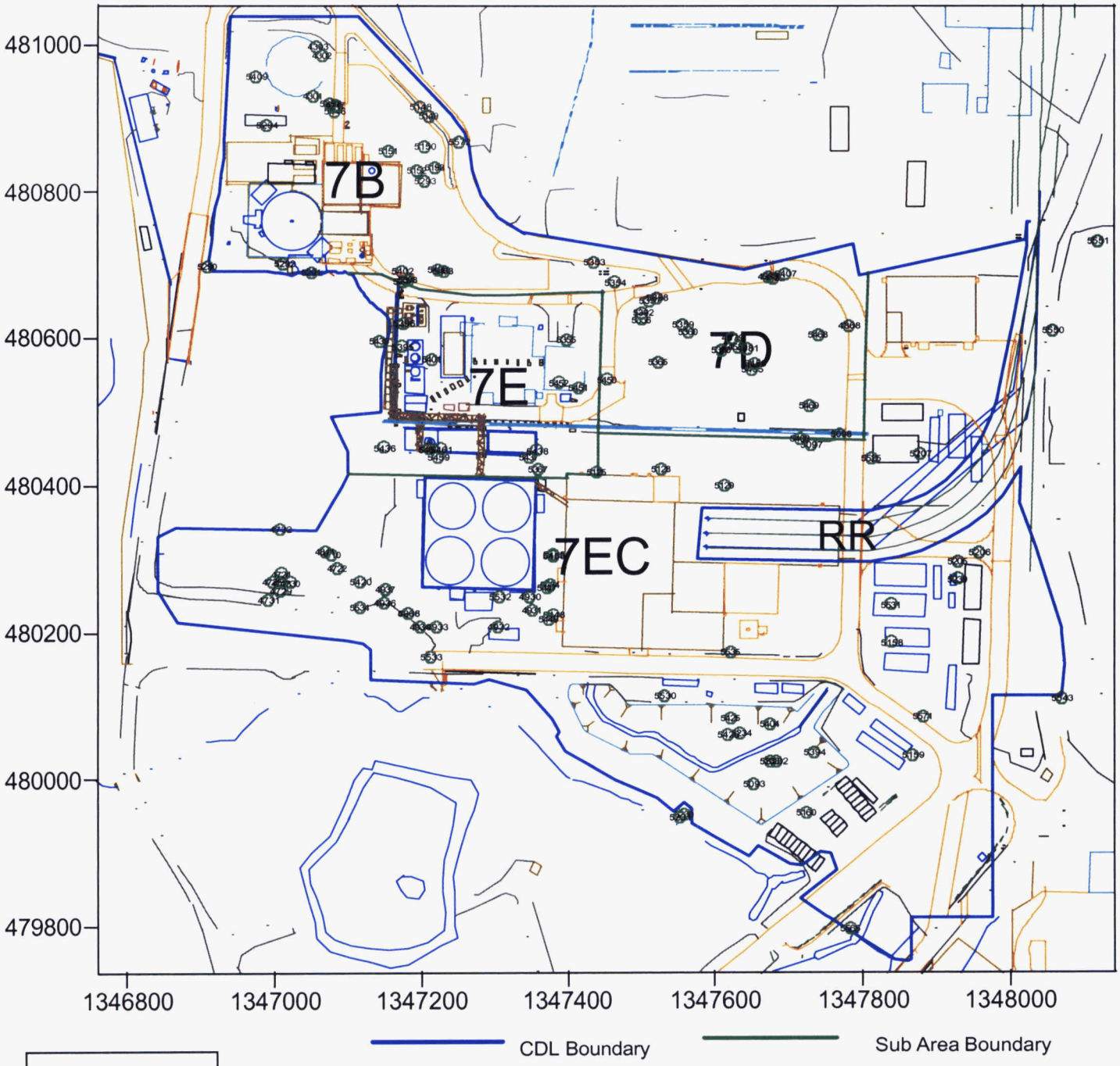
Figure A-7 Area 7 Silos and Support Areas-Phase 2 Moisture Corrected Total Uranium Includes all Phase 2 measurements

Data Groups: 40293_08-02-2006,08-18-2006,09-15-2006,09-18-2006,09-20-2006,09-26-2006,09-27-2006,10-03-2006
10-05-2006
40227_08-11-2006,10-02-2006
30687_08-17-2006,09-21-2006,09-26-2006,09-29-2006,09-30-2006
30699_09-06-2006,09-09-2006,09-13-2006,09-26-2006,09-29-2006,09-30-2006
31265_09-08-2006
31144_09-11-2006,09-14-2006

Design Grade Data: 31265_08-21-2006,30687_09-21-2006,40227_07-10-2006,31144_09-06-2006,40293_09-07-2006

Confirmation of precertification data: 30699_09-29-2006

Measurement Period: 08-02-2006 thru 10-05-2006



HPGe TU ppm
- -9999 to 246
- 246 to 928
- 928 to 9999

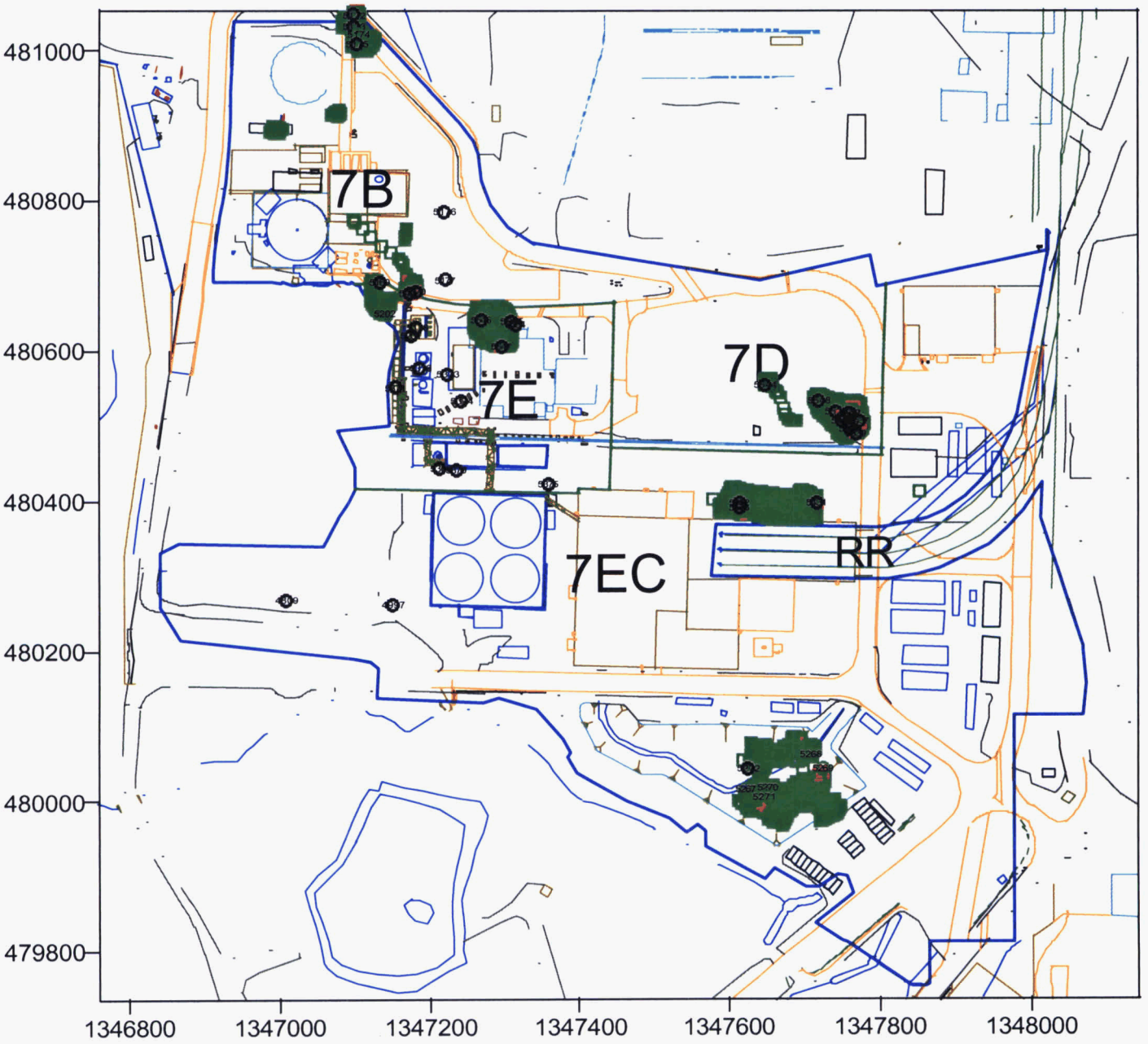
RTIMP DWG Title: A7SILOS_P2_TU.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P2.xls

Figure A-8 Area 7 Silos and Support Areas - Phase 3 Moisture Corrected Radium-226

Data Groups: RSS1_2845_09-11-2006,2897_09-30-2006,2899_09-30-2006
RSS2_1463_09-09-2006,1505_10-01-2006
RSS3_1734_10-02-2006,1735_10-02-2006,1739_10-03-2006
RSS4_1589_09-10-2006,1596_09-11-2006
EMS_0837_09-15-2006,0838_09-15-2006,0844_09-27-2006
30687_08-17-2006,09-21-2006,09-25-2006,09-29-2006
30699_09-11-2006,09-30-2006
31265_09-16-2006
40293_10-03-2006

Data superceeded by subsequent excavation: 30687_09-30-2006

Measurement Period: 08-17-2006 thru 10-03-2006



NaI Ra-226 pCi/g	HPGe Ra-226 pCi/g
-9999 to 5.1	0 to 1.7
5.1 to 9999	1.7 to 5.1
	5.1 to 9999

CDL Boundary

Sub Area Boundary

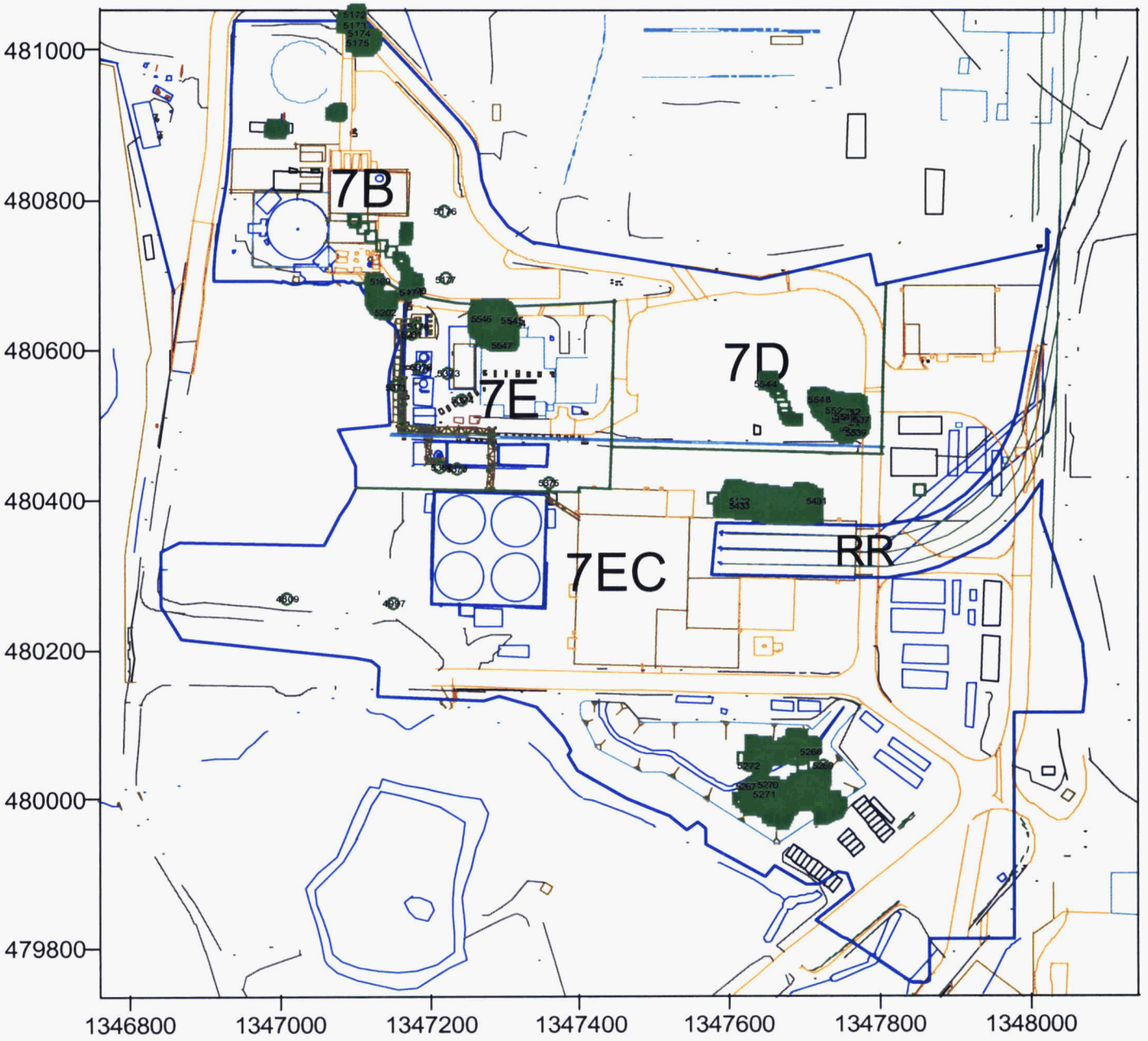
RTIMP DWG Title: A7SILOS_P3_RA.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P3.xls

Figure A-9 Area 7 Silos and Support Areas - Phase 3 Moisture Corrected Thorium-232

Data Groups: RSS1_2845_09-11-2006,2897_09-30-2006,2899_09-30-2006
RSS2_1463_09-09-2006,1505_10-01-2006
RSS3_1734_10-02-2006,1735_10-02-2006,1739_10-03-2006
RSS4_1589_09-10-2006,1596_09-11-2006
EMS_0837_09-15-2006,0838_09-15-2006,0844_09-27-2006
30687_08-17-2006,09-21-2006,09-25-2006,09-29-2006
30699_09-11-2006,09-30-2006
31265_09-16-2006
40293_10-03-2006

Data superceeded by subsequent excavation: 30687_09-30-2006

Measurement Period: 08-17-2006 thru 10-03-2006



NaI Th-232 pCi/g	HPGe Th-232 pCi/g
-9999 to 4.5	0 to 1.5
4.5 to 9999	1.5 to 4.5
	4.5 to 9999

CDL Boundary

Sub Area Boundary

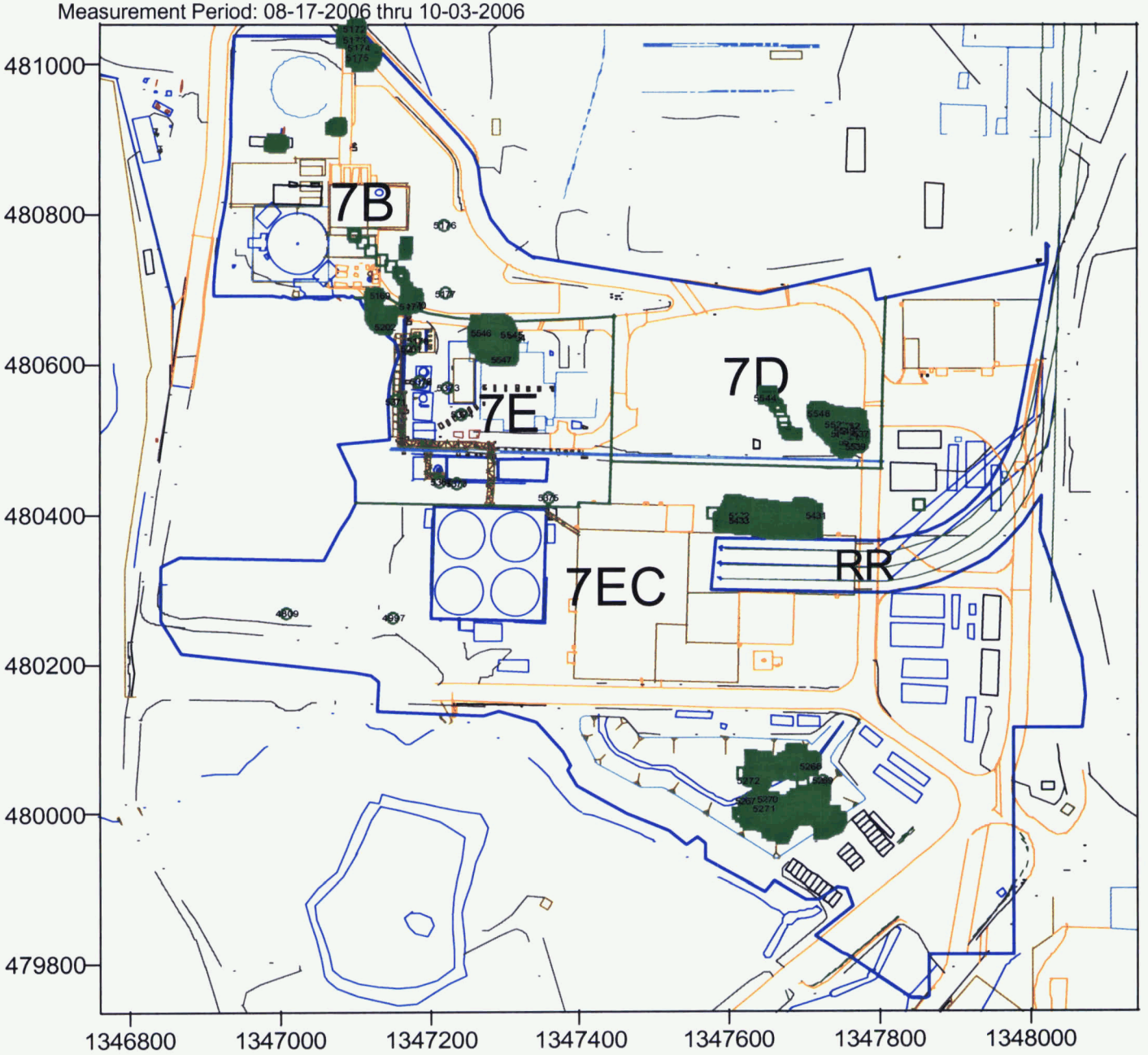
RTIMP DWG Title: A7SILOS_P3_TH.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P3.xls

Figure A-10 Area 7 Silos and Support Areas-Phase 3 Moisture Corrected Total Uranium

Data Groups: RSS1_2845_09-11-2006,2897_09-30-2006,2899_09-30-2006
RSS2_1463_09-09-2006,1505_10-01-2006
RSS3_1734_10-02-2006,1735_10-02-2006,1739_10-03-2006
RSS4_1589_09-10-2006,1596_09-11-2006
EMS_0837_09-15-2006,0838_09-15-2006,0844_09-27-2006
30687_08-17-2006,09-21-2006,09-25-2006,09-29-2006
30699_09-11-2006,09-30-2006
31265_09-16-2006
40293_10-03-2006

Data superceeded by subsequent excavation: 30687_09-30-2006

Measurement Period: 08-17-2006 thru 10-03-2006



Nal TU ppm	HPGe TU ppm
-9999 to 246	0 to 246
246 to 875	246 to 928
875 to 9999	928 to 9999

CDL Boundary

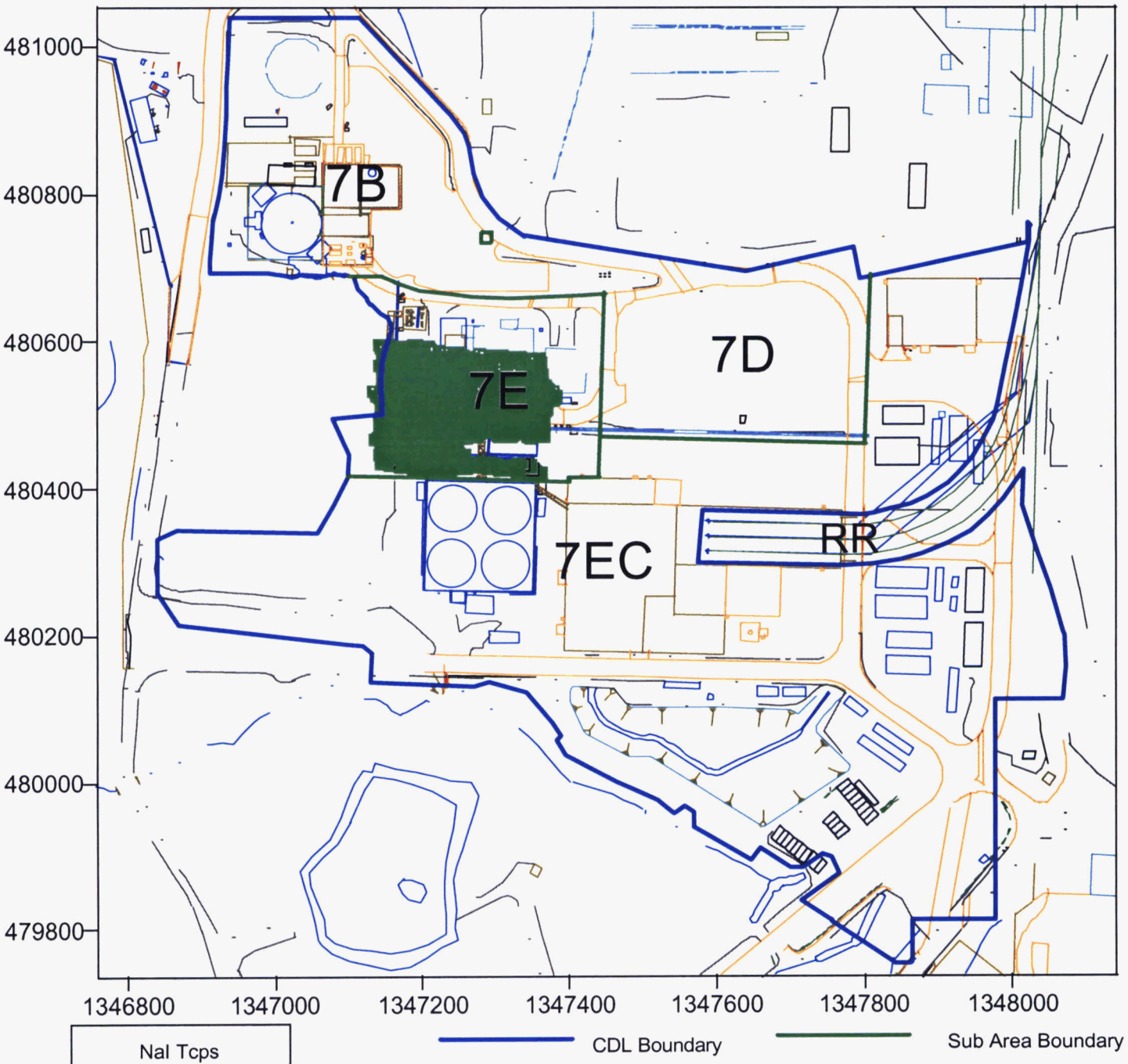
Sub Area Boundary

RTIMP DWG Title: A7SILOS_P3_TU.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_P3.xls

Figure A-11 Area 7 Silos and Support Areas - Confirmation of Precertification Phase 1 Total Gross Counts per Second

Data Groups:RSS2_1496_09-27-2006
RSS4_1627_09-27-2006

Measurement Period: 09-27-2006 thru 09-27-2006

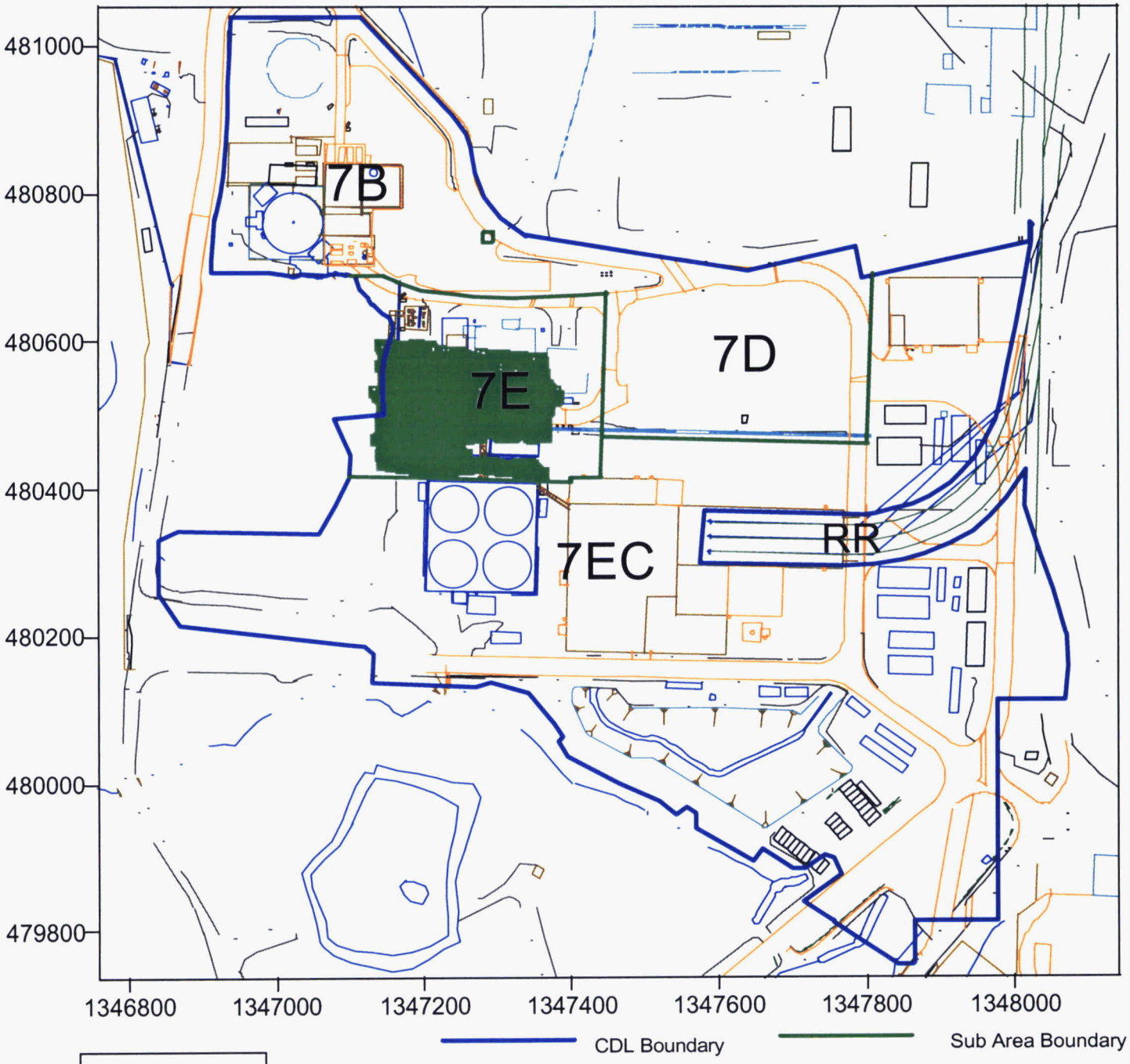


RTIMP DWG Title: A7SILOS_CONF_P1_TC.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_CONF_P1.xls

Figure A-12 Area 7 Silos and Support Areas - Confirmation of Precertification Phase 1 Moisture Corrected Radium - 226

Data Groups:RSS2_1496_09-27-2006
RSS4_1627_09-27-2006

Measurement Period: 09-27-2006 thru 09-27-2006



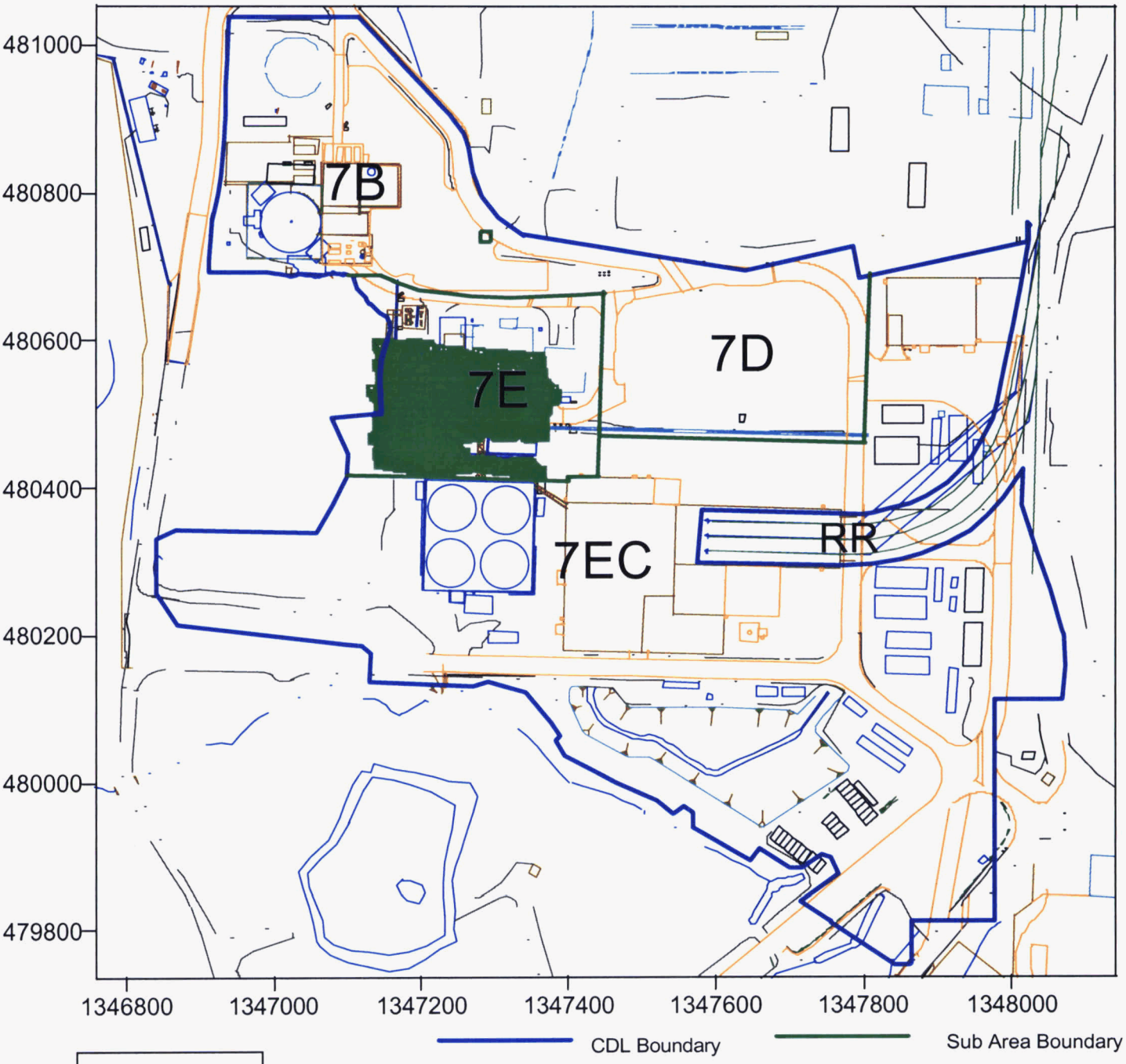
Nal Ra-226 pCi/g
-9999 to 5.1
5.1 to 9999

RTIMP DWG Title: A7SILOS_CONF_P1_RA.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_CONF_P1.xls

Figure A-13 Area 7 Silos and Support Areas - Confirmation of Precertification Phase 1 Moisture Corrected Thorium - 232

Data Groups:RSS2_1496_09-27-2006
RSS4_1627_09-27-2006

Measurement Period: 09-27-2006 thru 09-27-2006



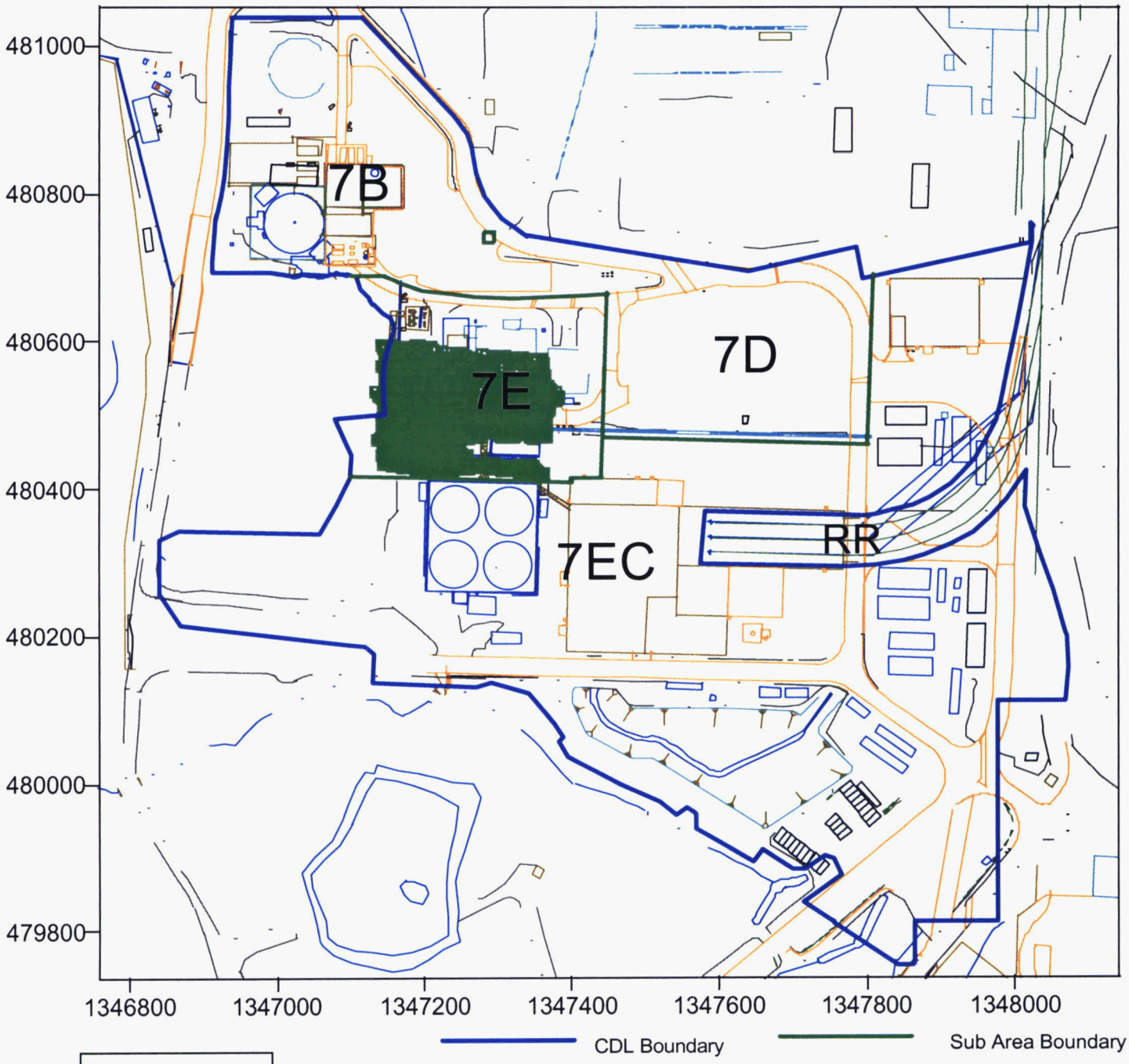
NaI Th-232 pCi/g
-9999 to 4.5
4.5 to 9999

RTIMP DWG Title: A7SILOS_CONF_P1_TH.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_CONF_P1.xls

Figure A-14 Area 7 Silos and Support Areas - Confirmation of Precertification Phase 1 Moisture Corrected Total Uranium

Data Groups:RSS2_1496_09-27-2006
RSS4_1627_09-27-2006

Measurement Period: 09-27-2006 thru 09-27-2006



NaI TU ppm
- -9999 to 246
- 246 to 875
- 875 to 9999

RTIMP DWG Title: A7SILOS_CONF_P1_TU.srf
Project ID: Gen Char for Site Soil Remediation 20300-PSP-0011
Prepared: D.Seiller 10-05-2006
Support Data: A7SILOS_CONF_P1.xls

APPENDIX B

DATA QUALITY OBJECTIVES SL-052, REV. 3

Control Number _____

Fernald Environmental Management Project

Data Quality Objectives

Title: Sitewide Certification Sampling and Analysis

Number: SL-052

Revision: 3

Effective Date: March 13, 2000

Contact Name: Mike Rolfes

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

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

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

DATA QUALITY OBJECTIVES
Sitewide Certification Sampling and Analysis

Members of Data Quality Objectives (DQO) Scoping Team

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

Conceptual Model of the Site

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

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

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

1.0 Statement of Problem

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

Exposure to Soil

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

Available Resources

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

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

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

2.0 Identify the Decision

Decision

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

Possible Results

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

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

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

3.0 Inputs That Affect the Decision

Required Information

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

Source of Information

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

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

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

4.0 The Boundaries of the Situation

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

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

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

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

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

5.0 Decision Rule

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

Parameters of Interest

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

Action Levels

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

Decision Rules

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

6.0 Limits on Decision Errors

Types of Decision Errors and Consequences

Definition

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

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

True State of Nature for the Decision Errors

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

Null Hypothesis

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

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

False Positive and False Negative Errors

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

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

7.0 Design for Obtaining Quality Data

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

Soil Sample Locations

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

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

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

Physical Samples

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

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

Laboratory Analysis

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

Validation

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

8.0 Use of Data to Test Null Hypothesis

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

Data Quality Objectives
Sitewide Certification Sampling and Analysis

1A. Task Description:

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

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

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

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

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

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

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

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

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

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5. Site Information (Description):

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

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

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

• As identified in the area certification PSP

6.B. Equipment Selection and SCQ Reference:

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

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

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

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

Background samples: OU5 RI

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

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

8A. Field Quality Control Samples:

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

Other (specify) _____

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

8B. Laboratory Quality Control Samples:

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

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

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

APPENDIX C

AREA 7 SILOS AND SUPPORT AREA
CU SAMPLE LOCATIONS AND IDENTIFIERS

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C01	01-1	0.0 - 0.5'	A7SSA-C01-1^1-RMP	A/B/C/E/F	480303.49	1346893.27
		TBD	A7SSA-C01-1^*x*-RMP*	A/B/C/D/E		
	01-2	0.0 - 0.5'	A7SSA-C01-2^1-RMP	A/B/C/E/F	480287.95	1346904.52
		TBD	A7SSA-C01-2^*x*-RMP*	A/B/C/D/E		
	01-3D	0.0 - 0.5'	A7SSA-C01-3^1-RMP	A/B/C/E/F	480303.34	1346941.55
		0.0 - 0.5'	A7SSA-C01-3^1-RMP-D			
		TBD	A7SSA-C01-3^*x*-RMP*	A/B/C/D/E		
		TBD	A7SSA-C01-3^*x*-RMP-D*			
	01-4	0.0 - 0.5'	A7SSA-C01-4^1-RMP	A/B/C/E/F	480288.48	1346959.69
		TBD	A7SSA-C01-4^*x*-RMP*	A/B/C/D/E		
	01-5	0.0 - 0.5'	A7SSA-C01-5^1-RMP	A/B/C/E/F	480318.5	1346989.58
		TBD	A7SSA-C01-5^*x*-RMP*	A/B/C/D/E		
	01-6	0.0 - 0.5'	A7SSA-C01-6^1-RMP	A/B/C/E/F	480288.41	1347010.53
		TBD	A7SSA-C01-6^*x*-RMP*	A/B/C/D/E		
	01-7	0.0 - 0.5'	A7SSA-C01-7^1-RMP	A/B/C/E/F	480315.22	1347042.95
		TBD	A7SSA-C01-7^*x*- RMP*	A/B/C/D/E		
	01-8	0.0 - 0.5'	A7SSA-C01-8^1-RMP	A/B/C/E/F	480288.03	1347080.97
		TBD	A7SSA-C01-8^*x*-RMP*	A/B/C/D/E		
	01-9	0.0 - 0.5'	A7SSA-C01-9^1-RMP	A/B/C/E/F	480244.99	1346886.65
		TBD	A7SSA-C01-9^*x*-RMP*	A/B/C/D/E		
	01-10	0.0 - 0.5'	A7SSA-C01-10^1-RMP	A/B/C/E/F	480258.54	1346911.95
		TBD	A7SSA-C01-10^*x*-RMP*	A/B/C/D/E		
	01-11	0.0 - 0.5'	A7SSA-C01-11^1-RMP	A/B/C/E/F	480258.89	1346942.74
		TBD	A7SSA-C01-11^*x*-RMP*	A/B/C/D/E		
	01-12	0.0 - 0.5'	A7SSA-C01-12^1-RMP	A/B/C/E/F	480249.68	1346972.79
		TBD	A7SSA-C01-12^*x*-RMP*	A/B/C/D/E		
	01-13	0.0 - 0.5'	A7SSA-C01-13^1-RMP	A/B/C/E/F	480268.97	1346998.19
		TBD	A7SSA-C01-13^*x*-RMP*	A/B/C/D/E		
	01-14	0.0 - 0.5'	A7SSA-C01-14^1-RMP	A/B/C/E/F	480251.1	1347021.13
		TBD	A7SSA-C01-14^*x*-RMP*	A/B/C/D/E		
	01-15	0.0 - 0.5'	A7SSA-C01-15^1-RMP	A/B/C/E/F	480242.75	1347057.18
		TBD	A7SSA-C01-15^*x*- RMP*	A/B/C/D/E		
	01-16	0.0 - 0.5'	A7SSA-C01-16^1-RMP	A/B/C/E/F	480263.31	1347073.87
		TBD	A7SSA-C01-16^*x*-RMP*	A/B/C/D/E		

* Where *x* corresponds to 1/2 the depth below surface bored to reach target depth. For this group of samples the target depth is of the native soil beneath the clay liner (~560').

NOTE: If the current elevation is equal to or lower than the target elevation and the surface is soil (greater than 50%), only collect one sample. This sample be analyzed for TALs A/B/C/D/E.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C02	02-1	0.0 - 0.5'	A7SSA-C02-1^1-RMP	A/B/C/E/F	480335.13	1346883.65
		TBD	A7SSA-C02-1^*y*- RMP*	A/B/C/D/E		
	02-2	0.0 - 0.5'	A7SSA-C02-2^1-RMP	A/B/C/E/F	480329.08	1346983.55
		TBD	A7SSA-C02-2^*y*- RMP*	A/B/C/D/E		
	02-3	0.0 - 0.5'	A7SSA-C02-3^1-RMP	A/B/C/E/F	480329.84	1347094.05
		TBD	A7SSA-C02-3^*y* -RMP	A/B/C/D/E		
	02-4	0.0 - 0.5'	A7SSA-C02-4^1-RMP	A/B/C/E/F	480306.76	1347136.06
		TBD	A7SSA-C02-4^*y*- RMP*	A/B/C/D/E		
	02-5	0.0 - 0.5'	A7SSA-C02-5^1-RMP	A/B/C/E/F	480279.14	1347115.25
		TBD	A7SSA-C02-5^*y*- RMP*	A/B/C/D/E		
	02-6	0.0 - 0.5'	A7SSA-C02-6^1-RMP	A/B/C/E/F	480254.92	1347109.57
		TBD	A7SSA-C02-6^*y*- RMP*	A/B/C/D/E		
	02-7	0.0 - 0.5'	A7SSA-C02-7^1-RMP	A/B/C/E/F	480225.02	1347125.09
		TBD	A7SSA-C02-7^*y*- RMP*	A/B/C/D/E		
	02-8	0.0 - 0.5'	A7SSA-C02-8^1-RMP	A/B/C/E/F	480222.37	1347071.35
		TBD	A7SSA-C02-8^*y*- RMP*	A/B/C/D/E		
	02-9D	0.0 - 0.5'	A7SSA-C02-9^1-RMP	A/B/C/E/F	480190.96	1347116.38
			A7SSA-C02-9^1-RMP-D			
		TBD	A7SSA-C02-9^*y*- RMP*	A/B/C/D/E		
			A7SSA-C02-9^*y*- RMP-D*			
	02-10	0.0 - 0.5'	A7SSA-C02-10^1-RMP	A/B/C/E/F	480230.32	1347034.26
		TBD	A7SSA-C02-10^*y*- RMP*	A/B/C/D/E		
	02-11	0.0 - 0.5'	A7SSA-C02-11^1-RMP	A/B/C/E/F	480223.51	1347010.04
		TBD	A7SSA-C02-11^*y*- RMP*	A/B/C/D/E		
	02-12	0.0 - 0.5'	A7SSA-C02-12^1-RMP	A/B/C/E/F	480211.02	1346986.58
		TBD	A7SSA-C02-12^*y*- RMP*	A/B/C/D/E		
	02-13	0.0 - 0.5'	A7SSA-C02-13^1-RMP	A/B/C/E/F	480231.83	1346927.55
		TBD	A7SSA-C02-13^*y*- RMP*	A/B/C/D/E		
	02-14	0.0 - 0.5'	A7SSA-C02-14^1-RMP	A/B/C/E/F	480220.1	1346875.33
		TBD	A7SSA-C02-14^*y*- RMP*	A/B/C/D/E		
	02-15	0.0 - 0.5'	A7SSA-C02-15^1-RMP	A/B/C/E/F	480258.7	1346850.73
		TBD	A7SSA-C02-15^*y*- RMP*	A/B/C/D/E		
	02-16	0.0 - 0.5'	A7SSA-C02-16^1-RMP	A/B/C/E/F	480314.33	1346860.57
		TBD	A7SSA-C02-16^*y*- RMP*	A/B/C/D/E		

* Where *y* corresponds to 1/2 the depth below surface bored to reach target depth. For this group of samples the target depth is of the native soil beneath the clay liner where present. This depth should not exceed 1.0 foot in depth.

NOTE: If the current elevation is equal to or lower than the target elevation and the surface is soil (greater than 50%), only collect one sample. This sample be analyzed for TALs A/B/C/D/E.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)**	Sample ID	TAL	Northing	Easting
C03	03-1	0.0 - 0.5'	A7SSA-C03-1^RMPS	A/B/C/H/I/J	480406.7	1347262.76
	03-2	0.0 - 0.5'	A7SSA-C03-2^RMPS	A/B/C/H/I/J	480407.6	1347318.11
	03-3	0.0 - 0.5'	A7SSA-C03-3^RMPS	A/B/C/H/I/J	480385.68	1347221.61
	03-4	0.0 - 0.5'	A7SSA-C03-4^RMPS	A/B/C/H/I/J	480384.19	1347321.85
	03-5	0.0 - 0.5'	A7SSA-C03-5^RMPS	A/B/C/H/I/J	480360.45	1347252.84
	03-6D	0.0 - 0.5'	A7SSA-C03-6^RMPS	A/B/C/H/I/J	480360.54	1347307.01
			A7SSA-C03-6^RMPS-D			
	03-7	0.0 - 0.5'	A7SSA-C03-7^RMPS	A/B/C/H/I/J	480338.89	1347253.31
	03-8	0.0 - 0.5'	A7SSA-C03-8^RMPS	A/B/C/H/I/J	480344.19	1347345.01
	03-9	0.0 - 0.5'	A7SSA-C03-9^RMPS	A/B/C/H/I/J	480327.61	1347213.62
	03-10	0.0 - 0.5'	A7SSA-C03-10^RMPS	A/B/C/H/I/J	480328.52	1347296.5
	03-11	0.0 - 0.5'	A7SSA-C03-11^RMPS	A/B/C/H/I/J	480315.17	1347251.04
	03-12	0.0 - 0.5'	A7SSA-C03-12^RMPS	A/B/C/H/I/J	480310.38	1347327.1
	03-13	0.0 - 0.5'	A7SSA-C03-13^RMPS	A/B/C/H/I/J	480278.54	1347255.67
	03-14	0.0 - 0.5'	A7SSA-C03-14^RMPS	A/B/C/H/I/J	480283.46	1347296.62
	03-15	0.0 - 0.5'	A7SSA-C03-15^RMPS	A/B/C/H/I/J	480268.76	1347217.38
	03-16	0.0 - 0.5'	A7SSA-C03-16^RMPS	A/B/C/H/I/J	480266.33	1347343.99
	03-17	0.0 - 0.5'	A7SSA-C03-17^RMPS	A/B/C/H/I/J	480196.41	1347322.51
C04	04-1	0.0 - 0.5'	A7SSA-C04-1^RMPS	A/B/C/H/I/J	480392.89	1347454.08
	04-2	0.0 - 0.5'	A7SSA-C04-2^RMPS	A/B/C/H/I/J	480400.91	1347516.05
	04-3	0.0 - 0.5'	A7SSA-C04-3^RMPS	A/B/C/H/I/J	480369.56	1347432.92
	04-4	0.0 - 0.5'	A7SSA-C04-4^RMPS	A/B/C/H/I/J	480353.53	1347454.52
	04-5	0.0 - 0.5'	A7SSA-C04-5^RMPS	A/B/C/H/I/J	480366.78	1347521.41
	04-6	0.0 - 0.5'	A7SSA-C04-6^RMPS	A/B/C/H/I/J	480331.58	1347515.49
	04-7	0.0 - 0.5'	A7SSA-C04-7^RMPS	A/B/C/H/I/J	480318.68	1347475.42
	04-8	0.0 - 0.5'	A7SSA-C04-8^RMPS	A/B/C/H/I/J	480301.95	1347508.53
	04-9	0.0 - 0.5'	A7SSA-C04-9^RMPS	A/B/C/H/I/J	480322.51	1347407.48
	04-10	0.0 - 0.5'	A7SSA-C04-10^RMPS	A/B/C/H/I/J	480288.01	1347419.68
	04-11	0.0 - 0.5'	A7SSA-C04-11^RMPS	A/B/C/H/I/J	480292.89	1347463.93
	04-12	0.0 - 0.5'	A7SSA-C04-12^RMPS	A/B/C/H/I/J	480245.14	1347402.96
	04-13	0.0 - 0.5'	A7SSA-C04-13^RMPS	A/B/C/H/I/J	480253.85	1347448.95
	04-14	0.0 - 0.5'	A7SSA-C04-14^RMPS	A/B/C/H/I/J	480239.91	1347481.36
	04-15D	0.0 - 0.5'	A7SSA-C04-15^RMPS	A/B/C/H/I/J	480190.43	1347404.94
			A7SSA-C04-15^RMPS-D			
	04-16	0.0 - 0.5'	A7SSA-C04-16^RMPS	A/B/C/H/I/J	480219.81	1347467.97
	04-17	0.0 - 0.5'	A7SSA-C04-17^RMPS	A/B/C/H/I/J	TBD	TBD
	04-18	0.0 - 0.5'	A7SSA-C04-18^RMPS	A/B/C/H/I/J	TBD	TBD
	04-19	0.0 - 0.5'	A7SSA-C04-19^RMPS	A/B/C/H/I/J	TBD	TBD

** Where the sample is collected from the first interval of soil under the concrete pad.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)**	Sample ID	TAL	Northing	Easting
C05	05-1	0.0 - 0.5'	A7SSA-C05-1^RMPS	A/B/C/H/I/J	480361.05	1347574.51
	05-2	0.0 - 0.5'	A7SSA-C05-2^RMPS	A/B/C/H/I/J	480326.35	1347555.21
	05-3	0.0 - 0.5'	A7SSA-C05-3^RMPS	A/B/C/H/I/J	480342.14	1347621.29
	05-4	0.0 - 0.5'	A7SSA-C05-4^RMPS	A/B/C/H/I/J	480305.09	1347541.98
	05-5	0.0 - 0.5'	A7SSA-C05-5^RMPS	A/B/C/H/I/J	480361.91	1347665.1
	05-6	0.0 - 0.5'	A7SSA-C05-6^RMPS	A/B/C/H/I/J	480335.2	1347762.32
	05-7	0.0 - 0.5'	A7SSA-C05-7^RMPS	A/B/C/H/I/J	480312.23	1347667.77
	05-8	0.0 - 0.5'	A7SSA-C05-8^RMPS	A/B/C/H/I/J	480298.34	1347735.08
	05-9	0.0 - 0.5'	A7SSA-C05-9^RMPS	A/B/C/H/I/J	480304.75	1347613.81
	05-10	0.0 - 0.5'	A7SSA-C05-10^RMPS	A/B/C/H/I/J	480278.57	1347563.06
	05-11	0.0 - 0.5'	A7SSA-C05-11^RMPS	A/B/C/H/I/J	480244.39	1347629.3
	05-12D	0.0 - 0.5'	A7SSA-C05-12^RMPS	A/B/C/H/I/J	480256.14	1347669.9
			A7SSA-C05-12^RMPS-D			
	05-13	0.0 - 0.5'	A7SSA-C05-13^RMPS	A/B/C/H/I/J	480264.31	1347516.9
	05-14	0.0 - 0.5'	A7SSA-C05-14^RMPS	A/B/C/H/I/J	480225.15	1347548.11
	05-15	0.0 - 0.5'	A7SSA-C05-15^RMPS	A/B/C/H/I/J	480188.83	1347510.18
	05-16	0.0 - 0.5'	A7SSA-C05-16^RMPS	A/B/C/H/I/J	480202.18	1347595.12
	05-17	0.0 - 0.5'	A7SSA-C05-17^RMPS	A/B/C/H/I/J	480196.35	1347652.25

** Where the sample is collected from the first interval of soil under the concrete pad.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C06	06-1	0.0 - 0.5'	A7SSA-C06-1^RMPS	A/B/C/H/I/J	480992.93	1346946.64
	06-2	0.0 - 0.5'	A7SSA-C06-2^RMPS	A/B/C/H/I/J	481032.96	1346999.84
	06-3	0.0 - 0.5'	A7SSA-C06-3^RMPS	A/B/C/H/I/J	480943.07	1346990.98
	06-4	0.0 - 0.5'	A7SSA-C06-4^RMPS	A/B/C/H/I/J	480941.19	1347039.99
	06-5	0.0 - 0.5'	A7SSA-C06-5^RMPS	A/B/C/H/I/J	481029.06	1347080.03
	06-6	0.0 - 0.5'	A7SSA-C06-6^RMPS	A/B/C/H/I/J	481008.04	1347125.65
	06-7D	0.0 - 0.5'	A7SSA-C06-7^RMPS	A/B/C/H/I/J	480961.81	1347106.44
			A7SSA-C06-7^RMPS-D			
	06-8	0.0 - 0.5'	A7SSA-C06-8^RMPS	A/B/C/H/I/J	480945.64	1347136.03
	06-9	0.0 - 0.5'	A7SSA-C06-9^RMPS	A/B/C/H/I/J	480904.39	1346958.42
	06-10	0.0 - 0.5'	A7SSA-C06-10^RMPS	A/B/C/H/I/J	480897.38	1347003.8
	06-11	0.0 - 0.5'	A7SSA-C06-11^RMPS	A/B/C/H/I/J	480846.04	1346979.24
	06-12	0.0 - 0.5'	A7SSA-C06-12^RMPS	A/B/C/H/I/J	480870.44	1347053.19
	06-13	0.0 - 0.5'	A7SSA-C06-13^RMPS	A/B/C/H/I/J	480917.61	1347078.31
	06-14	0.0 - 0.5'	A7SSA-C06-14^RMPS	A/B/C/H/I/J	480897.53	1347121.13
	06-15	0.0 - 0.5'	A7SSA-C06-15^RMPS	A/B/C/H/I/J	480848.34	1347092.69
	06-16	0.0 - 0.5'	A7SSA-C06-16^RMPS	A/B/C/H/I/J	480858.58	1347125.32
C07	07-1	0.0 - 0.5'	A7SSA-C07-1^RMPS	A/B/C/H/I/J	480811.67	1346951.4
	07-2	0.0 - 0.5'	A7SSA-C07-2^RMPS	A/B/C/H/I/J	480816.53	1347016.09
	07-3	0.0 - 0.5'	A7SSA-C07-3^RMPS	A/B/C/H/I/J	480779.73	1346972.62
	07-4	0.0 - 0.5'	A7SSA-C07-4^RMPS	A/B/C/H/I/J	480783.35	1347015.14
	07-5	0.0 - 0.5'	A7SSA-C07-5^RMPS	A/B/C/H/I/J	480812.22	1347056.49
	07-6	0.0 - 0.5'	A7SSA-C07-6^RMPS	A/B/C/H/I/J	480800.64	1347144.7
	07-7	0.0 - 0.5'	A7SSA-C07-7^RMPS	A/B/C/H/I/J	480773.14	1347089.35
	07-8	0.0 - 0.5'	A7SSA-C07-8^RMPS	A/B/C/H/I/J	480767.62	1347136.89
	07-9	0.0 - 0.5'	A7SSA-C07-9^RMPS	A/B/C/H/I/J	480754.39	1346956.42
	07-10	0.0 - 0.5'	A7SSA-C07-10^RMPS	A/B/C/H/I/J	480734.05	1346996.22
	07-11	0.0 - 0.5'	A7SSA-C07-11^RMPS	A/B/C/H/I/J	480696.04	1346931.44
	07-12	0.0 - 0.5'	A7SSA-C07-12^RMPS	A/B/C/H/I/J	480720.3	1347041.68
	07-13	0.0 - 0.5'	A7SSA-C07-13^RMPS	A/B/C/H/I/J	480748.75	1347112.39
	07-14	0.0 - 0.5'	A7SSA-C07-14^RMPS	A/B/C/H/I/J	480714.49	1347155.82
	07-15D	0.0 - 0.5'	A7SSA-C07-15^RMPS	A/B/C/H/I/J	480699.42	1347108.31
			A7SSA-C07-15^RMPS-D			
	07-16	0.0 - 0.5'	A7SSA-C07-16^RMP	A/B/C/H/I/J	480661.37	1347141.38

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)***	Sample ID	TAL	Northing	Easting
C08	08-1	0.0 - 0.5'	A7SSA-C08-1^RMP	A/C/E/F	480143.44	1347649.43
	08-2	0.0 - 0.5'	A7SSA-C08-2^RMP	A/C/E/F	480253.03	1347869.16
	08-3	0.0 - 0.5'	A7SSA-C08-3^RMP	A/C/E/F	480187.53	1347777.85
	08-4	0.0 - 0.5'	A7SSA-C08-4^RMP	A/C/E/F	480122.7	1347728.12
	08-5	0.0 - 0.5'	A7SSA-C08-5^RMP	A/C/E/F	480292.8	1347965.94
	08-6	0.0 - 0.5'	A7SSA-C08-6^RMP	A/C/E/F	480350.7	1348004.57
	08-7	0.0 - 0.5'	A7SSA-C08-7^RMP	A/C/E/F	480210.72	1347911.66
	08-8	0.0 - 0.5'	A7SSA-C08-8^RMP	A/C/E/F	480124.48	1348042.2
	08-9	0.0 - 0.5'	A7SSA-C08-9^RMP	A/C/E/F	480122.31	1347834.05
	08-10	0.0 - 0.5'	A7SSA-C08-10^RMP	A/C/E/F	479984.84	1347784.46
	08-11	0.0 - 0.5'	A7SSA-C08-11^RMP	A/C/E/F	480047.25	1347954.38
	08-12	0.0 - 0.5'	A7SSA-C08-12^RMP	A/C/E/F	479916.78	1347716.33
	08-13D	0.0 - 0.5'	A7SSA-C08-13^RMP	A/C/E/F	479976.36	1347917.58
			A7SSA-C08-13^RMP-D			
	08-14	0.0 - 0.5'	A7SSA-C08-14^RMP	A/C/E/F	479853.17	1347761.42
	08-15	0.0 - 0.5'	A7SSA-C08-15^RMP	A/C/E/F	479855.75	1347918.92
	08-16	0.0 - 0.5'	A7SSA-C08-16^RMP	A/C/E/F	479815.71	1347841.47

*** Where gravel/overburden exists, samples shall be collected from the first interval of native soil.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)***	Sample ID	TAL	Northing	Easting
C09	09-1	0.0 - 0.5'	A7SSA-C09-1^RMPS	A/B/C/H/I/J	480105.01	1347386.83
	09-2	0.0 - 0.5'	A7SSA-C09-2^RMPS	A/B/C/H/I/J	480130.22	1347455.55
	09-3	0.0 - 0.5'	A7SSA-C09-3^RMPS	A/B/C/H/I/J	480077.12	1347476.21
	09-4	0.0 - 0.5'	A7SSA-C09-4^RMPS	A/B/C/H/I/J	480017.29	1347481.13
	09-5	0.0 - 0.5'	A7SSA-C09-5^RMPS	A/B/C/H/I/J	480092.63	1347545
	09-6	0.0 - 0.5'	A7SSA-C09-6^RMPS	A/B/C/H/I/J	480091.42	1347606.6
	09-7	0.0 - 0.5'	A7SSA-C09-7^RMPS	A/B/C/H/I/J	480046	1347530.02
	09-8D	0.0 - 0.5'	A7SSA-C09-8^RMPS	A/B/C/H/I/J	479969.18	1347565.49
			A7SSA-C09-8^RMPS-D			
	09-9	0.0 - 0.5'	A7SSA-C09-9^RMPS	A/B/C/H/I/J	480016.49	1347615.26
	09-10	0.0 - 0.5'	A7SSA-C09-10^RMPS	A/B/C/H/I/J	480084.29	1347707.57
	09-11	0.0 - 0.5'	A7SSA-C09-11^RMPS	A/B/C/H/I/J	480035.63	1347670.1
	09-12	0.0 - 0.5'	A7SSA-C09-12^RMPS	A/B/C/H/I/J	480089.82	1347742.8
	09-13	0.0 - 0.5'	A7SSA-C09-13^RMPS	A/B/C/H/I/J	479967.71	1347638.31
	09-14	0.0 - 0.5'	A7SSA-C09-14^RMPS	A/B/C/H/I/J	479923.64	1347620.06
	09-15	0.0 - 0.5'	A7SSA-C09-15^RMPS	A/B/C/H/I/J	479959.9	1347683.76
	09-16	0.0 - 0.5'	A7SSA-C09-16^RMPS	A/B/C/H/I/J	480022.17	1347769.65

*** Where gravel/overburden exists, samples shall be collected from the first interval of native soil.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)***	Sample ID	TAL	Northing	Easting
C10	10-1	0.0 - 0.5'	A7SSA-C10-1^RMPS	A/B/C/H/I/J	480926.79	1347201.04
	10-2	0.0 - 0.5'	A7SSA-C10-2^RMPS	A/B/C/H/I/J	480869.39	1347219.91
	10-3	0.0 - 0.5'	A7SSA-C10-3^RMPS	A/B/C/H/I/J	480833	1347246.08
	10-4	0.0 - 0.5'	A7SSA-C10-4^RMPS	A/B/C/H/I/J	480777.47	1347187.83
	10-5	0.0 - 0.5'	A7SSA-C10-5^RMPS	A/B/C/H/I/J	480790.28	1347278.64
	10-6	0.0 - 0.5'	A7SSA-C10-6^RMPS	A/B/C/H/I/J	480747.29	1347270.31
	10-7	0.0 - 0.5'	A7SSA-C10-7^RMPS	A/B/C/H/I/J	480701.33	1347187.05
	10-8	0.0 - 0.5'	A7SSA-C10-8^RMPS	A/B/C/H/I/J	480689.2	1347236.88
	10-9D	0.0 - 0.5'	A7SSA-C10-9^RMPS	A/B/C/H/I/J	480682.2	1347308.3
			A7SSA-C10-9^RMPS-D			
	10-10	0.0 - 0.5'	A7SSA-C10-10^RMPS	A/B/C/H/I/J	480703.3	1347336.31
	10-11	0.0 - 0.5'	A7SSA-C10-11^RMPS	A/B/C/H/I/J	480732.21	1347390.62
	10-12	0.0 - 0.5'	A7SSA-C10-12^RMPS	A/B/C/H/I/J	480713.22	1347465.73
	10-13	0.0 - 0.5'	A7SSA-C10-13^RMPS	A/B/C/H/I/J	480663.36	1347507.84
	10-14	0.0 - 0.5'	A7SSA-C10-14^RMPS	A/B/C/H/I/J	480685.61	1347604.01
	10-15	0.0 - 0.5'	A7SSA-C10-15^RMPS	A/B/C/H/I/J	480693.43	1347711.55
	10-16	0.0 - 0.5'	A7SSA-C10-16^RMPS	A/B/C/H/I/J	480651.8	1347775.39
C11	11-1	0.0 - 0.5'	A7SSA-C11-1^RMPS	A/B/C/H/I/J	480639.2	1347204.77
	11-2	0.0 - 0.5'	A7SSA-C11-2^RMPS	A/B/C/H/I/J	480644.87	1347294.5
	11-3	0.0 - 0.5'	A7SSA-C11-3^RMPS	A/B/C/H/I/J	480612.52	1347194.28
	11-4	0.0 - 0.5'	A7SSA-C11-4^RMPS	A/B/C/H/I/J	480586.92	1347252.65
	11-5	0.0 - 0.5'	A7SSA-C11-5^RMPS	A/B/C/H/I/J	480636.93	1347382.49
	11-6	0.0 - 0.5'	A7SSA-C11-6^RMPS	A/B/C/H/I/J	480656.88	1347419.74
	11-7	0.0 - 0.5'	A7SSA-C11-7^RMPS	A/B/C/H/I/J	480597.04	1347343.72
	11-8	0.0 - 0.5'	A7SSA-C11-8^RMPS	A/B/C/H/I/J	480607.16	1347455.64
	11-9	0.0 - 0.5'	A7SSA-C11-9^RMPS	A/B/C/H/I/J	480542.03	1347185.16
	11-10	0.0 - 0.5'	A7SSA-C11-10^RMPS	A/B/C/H/I/J	480555.25	1347292.87
	11-11	0.0 - 0.5'	A7SSA-C11-11^RMPS	A/B/C/H/I/J	480523.98	1347221.11
	11-12	0.0 - 0.5'	A7SSA-C11-12^RMPS	A/B/C/H/I/J	480526.69	1347319.12
	11-13	0.0 - 0.5'	A7SSA-C11-13^RMPS	A/B/C/H/I/J	480543.54	1347380.03
	11-14D	0.0 - 0.5'	A7SSA-C11-14^RMPS	A/B/C/H/I/J	480569.9	1347442.69
			A7SSA-C11-14^RMPS-D			
	11-15	0.0 - 0.5'	A7SSA-C11-15^RMPS	A/B/C/H/I/J	480499.47	1347346.77
	11-16	0.0 - 0.5'	A7SSA-C11-16^RMPS	A/B/C/H/I/J	480506.08	1347437.32

*** Where gravel/overburden exists, samples shall be collected from the first interval of native soil.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)***	Sample ID	TAL	Northing	Easting
C12	12-1	0.0 - 0.5'	A7SSA-C12-1^RMPS	A/B/C/H/I/J	480650.82	1347476.69
	12-2	0.0 - 0.5'	A7SSA-C12-2^RMPS	A/B/C/H/I/J	480666.87	1347600.18
	12-3	0.0 - 0.5'	A7SSA-C12-3^RMPS	A/B/C/H/I/J	480605.54	1347474.97
	12-4D	0.0 - 0.5'	A7SSA-C12-4^RMPS	A/B/C/H/I/J	480605.69	1347587.03
			A7SSA-C12-4^RMPS-D			
	12-5	0.0 - 0.5'	A7SSA-C12-5^RMPS	A/B/C/H/I/J	480639.92	1347647.23
	12-6	0.0 - 0.5'	A7SSA-C12-6^RMPS	A/B/C/H/I/J	480660.41	1347706.27
	12-7	0.0 - 0.5'	A7SSA-C12-7^RMPS	A/B/C/H/I/J	480608.79	1347644.45
	12-8	0.0 - 0.5'	A7SSA-C12-8^RMPS	A/B/C/H/I/J	480609.07	1347746.77
	12-9	0.0 - 0.5'	A7SSA-C12-9^RMPS	A/B/C/H/I/J	480571.98	1347487.96
	12-10	0.0 - 0.5'	A7SSA-C12-10^RMPS	A/B/C/H/I/J	480562.7	1347617.55
	12-11	0.0 - 0.5'	A7SSA-C12-11^RMPS	A/B/C/H/I/J	480498.68	1347529.49
	12-12	0.0 - 0.5'	A7SSA-C12-12^RMPS	A/B/C/H/I/J	480502.73	1347600.84
	12-13	0.0 - 0.5'	A7SSA-C12-13^RMPS	A/B/C/H/I/J	480543.14	1347665.53
	12-14	0.0 - 0.5'	A7SSA-C12-14^RMPS	A/B/C/H/I/J	480560.12	1347755.97
	12-15	0.0 - 0.5'	A7SSA-C12-15^RMPS	A/B/C/H/I/J	480506.11	1347686.38
	12-16	0.0 - 0.5'	A7SSA-C12-16^RMPS	A/B/C/H/I/J	480494.79	1347750.22
C13	13-1	0.0 - 0.5'	A7SSA-C13-1^RMPS	A/B/C/H/I/J	480636.83	1347161.41
	13-2	0.0 - 0.5'	A7SSA-C13-2^RMPS	A/B/C/H/I/J	480587.7	1347166.04
	13-3	0.0 - 0.5'	A7SSA-C13-3^RMPS	A/B/C/H/I/J	480558.32	1347164.24
	13-4D	0.0 - 0.5'	A7SSA-C13-4^RMPS	A/B/C/H/I/J	480507.13	1347148.62
			A7SSA-C13-4^RMPS-D			
	13-5	0.0 - 0.5'	A7SSA-C13-5^RMPS	A/B/C/H/I/J	480489.13	1347174.79
	13-6	0.0 - 0.5'	A7SSA-C13-6^RMPS	A/B/C/H/I/J	480481.93	1347214.66
	13-7	0.0 - 0.5'	A7SSA-C13-7^RMPS	A/B/C/H/I/J	480492.21	1347276.73
	13-8	0.0 - 0.5'	A7SSA-C13-8^RMPS	A/B/C/H/I/J	480489.89	1347311.55
	13-9	0.0 - 0.5'	A7SSA-C13-9^RMPS	A/B/C/H/I/J	480483.43	1347365.03
	13-10	0.0 - 0.5'	A7SSA-C13-10^RMPS	A/B/C/H/I/J	480478.58	1347437.56
	13-11	0.0 - 0.5'	A7SSA-C13-11^RMPS	A/B/C/H/I/J	480478.46	1347476.07
	13-12	0.0 - 0.5'	A7SSA-C13-12^RMPS	A/B/C/H/I/J	480472.94	1347549.33
	13-13	0.0 - 0.5'	A7SSA-C13-13^RMPS	A/B/C/H/I/J	480474.96	1347589.82
	13-14	0.0 - 0.5'	A7SSA-C13-14^RMPS	A/B/C/H/I/J	480482.25	1347635.5
	13-15	0.0 - 0.5'	A7SSA-C13-15^RMPS	A/B/C/H/I/J	480471.34	1347707.35
	13-16	0.0 - 0.5'	A7SSA-C13-16^RMPS	A/B/C/H/I/J	480472.56	1347760.91

*** Where gravel/overburden exists, samples shall be collected from the first interval of native soil.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)***	Sample ID	TAL	Northing	Easting
C14	14-1	0.0 - 0.5'	A7SSA-C14-1^RMP	A/C/E/F	480657.87	1347812.42
	14-2	0.0 - 0.5'	A7SSA-C14-2^RMP	A/C/E/F	480675.66	1347906.66
	14-3	0.0 - 0.5'	A7SSA-C14-3^RMP	A/C/E/F	480708.69	1348007.21
	14-4	0.0 - 0.5'	A7SSA-C14-4^RMP	A/C/E/F	480665.7	1347951.54
	14-5	0.0 - 0.5'	A7SSA-C14-5^RMP	A/C/E/F	480615.68	1347790.78
	14-6	0.0 - 0.5'	A7SSA-C14-6^RMP	A/C/E/F	480563.3	1347844.52
	14-7	0.0 - 0.5'	A7SSA-C14-7^RMP	A/C/E/F	480516.22	1347801.55
	14-8	0.0 - 0.5'	A7SSA-C14-8^RMP	A/C/E/F	480492.51	1347849.78
	14-9	0.0 - 0.5'	A7SSA-C14-9^RMP	A/C/E/F	480603.29	1347904.31
	14-10	0.0 - 0.5'	A7SSA-C14-10^RMP	A/C/E/F	480570.28	1347976.34
	14-11	0.0 - 0.5'	A7SSA-C14-11^RMP	A/C/E/F	480532.27	1347901.52
	14-12	0.0 - 0.5'	A7SSA-C14-12^RMP	A/C/E/F	480544	1347947.78
	14-13	0.0 - 0.5'	A7SSA-C14-13^RMP	A/C/E/F	480446.56	1347851.39
	14-14	0.0 - 0.5'	A7SSA-C14-14^RMP	A/C/E/F	480463.54	1347905.65
	14-15D	0.0 - 0.5'	A7SSA-C14-15^RMP	A/C/E/F	480376.48	1347830.36
			A7SSA-C14-15^RMP-D			
	14-16	0.0 - 0.5'	A7SSA-C14-16^RMP	A/C/E/F	480415.56	1347900.78

*** Where gravel/overburden exists, samples shall be collected from the first interval of native soil.

APPENDIX C
AREA 7 SILOS AND SUPPORT AREA CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)***	Sample ID	TAL	Northing	Easting
C15	15-1D	0.0 - 0.5'	A7SSA-C15-1^RMPS	A/B/C/H/I/J	480447.29	1347106.72
			A7SSA-C15-1^RMPS-D			
	15-2	0.0 - 0.5'	A7SSA-C15-2^RMPS	A/B/C/H/I/J	480470.74	1347151.03
	15-3	0.0 - 0.5'	A7SSA-C15-3^RMPS	A/B/C/H/I/J	480403.22	1347101.37
	15-4	0.0 - 0.5'	A7SSA-C15-4^RMPS	A/B/C/H/I/J	480380.85	1347175.33
	15-5	0.0 - 0.5'	A7SSA-C15-5^RMPS	A/B/C/H/I/J	480422.37	1347226.83
	15-6	0.0 - 0.5'	A7SSA-C15-6^RMPS	A/B/C/H/I/J	480459.84	1347277
	15-7	0.0 - 0.5'	A7SSA-C15-7^RMPS	A/B/C/H/I/J	480450.55	1347379.47
	15-8	0.0 - 0.5'	A7SSA-C15-8^RMPS	A/B/C/H/I/J	480380.47	1347366.4
	15-9	0.0 - 0.5'	A7SSA-C15-9^RMPS	A/B/C/H/I/J	480450.02	1347468.43
	15-10	0.0 - 0.5'	A7SSA-C15-10^RMPS	A/B/C/H/I/J	480424.15	1347515.74
	15-11	0.0 - 0.5'	A7SSA-C15-11^RMPS	A/B/C/H/I/J	480456.23	1347564.47
	15-12	0.0 - 0.5'	A7SSA-C15-12^RMPS	A/B/C/H/I/J	480403.41	1347616.28
	15-13	0.0 - 0.5'	A7SSA-C15-13^RMPS	A/B/C/H/I/J	480427.8	1347660.42
	15-14	0.0 - 0.5'	A7SSA-C15-14^RMPS	A/B/C/H/I/J	480443.72	1347771.84
	15-15	0.0 - 0.5'	A7SSA-C15-15^RMPS	A/B/C/H/I/J	480377.27	1347675.87
	15-16	0.0 - 0.5'	A7SSA-C15-16^RMPS	A/B/C/H/I/J	480413.26	1347735.77
C16	16-1	0.0 - 0.5'	A7SSA-C16-1^RMPS	A/B/C/H/I/J	480352.54	1347075.01
	16-2	0.0 - 0.5'	A7SSA-C16-2^RMPS	A/B/C/H/I/J	480292.98	1347171.48
	16-3	0.0 - 0.5'	A7SSA-C16-3^RMPS	A/B/C/H/I/J	480266.03	1347185.9
	16-4	0.0 - 0.5'	A7SSA-C16-4^RMPS	A/B/C/H/I/J	480197.84	1347171.15
	16-5	0.0 - 0.5'	A7SSA-C16-5^RMPS	A/B/C/H/I/J	480226.95	1347216.14
	16-6	0.0 - 0.5'	A7SSA-C16-6^RMPS	A/B/C/H/I/J	480161.18	1347150.32
	16-7D	0.0 - 0.5'	A7SSA-C16-7^RMPS	A/B/C/H/I/J	480164.29	1347214.96
			A7SSA-C16-7^RMPS-D			
	16-8	0.0 - 0.5'	A7SSA-C16-8^RMPS	A/B/C/H/I/J	480184.65	1347301.41
	16-9	0.0 - 0.5'	A7SSA-C16-9^RMPS	A/B/C/H/I/J	480233.83	1347274.23
	16-10	0.0 - 0.5'	A7SSA-C16-10^RMPS	A/B/C/H/I/J	480243.41	1347349.57
	16-11	0.0 - 0.5'	A7SSA-C16-11^RMPS	A/B/C/H/I/J	480214.84	1347376.06
	16-12	0.0 - 0.5'	A7SSA-C16-12^RMPS	A/B/C/H/I/J	480324.14	1347391.98
	16-13	0.0 - 0.5'	A7SSA-C16-13^RMPS	A/B/C/H/I/J	480139.23	1347343.45
	16-14	0.0 - 0.5'	A7SSA-C16-14^RMPS	A/B/C/H/I/J	480169.97	1347426.63
	16-15	0.0 - 0.5'	A7SSA-C16-15^RMPS	A/B/C/H/I/J	480168.9	1347503.04
	16-16	0.0 - 0.5'	A7SSA-C14-16^RMPS	A/B/C/H/I/J	480149.5	1347602.3

*** Where gravel/overburden exists, samples shall be collected from the first interval of native soil.