

**PROJECT SPECIFIC PLAN FOR
PREDESIGN OF AREA 1, PHASE II -
DISSOLVED OXYGEN BUILDING AREA
(SUPPLEMENT TO 20300-PSP-0011)**

DEMOLITION, SOIL AND DISPOSAL PROJECT

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



MAY 2005

**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

**20710-PSP-0010
REVISION 0**

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BUILDING AREA
(SUPPLEMENT TO 20300-PSP-0011)**

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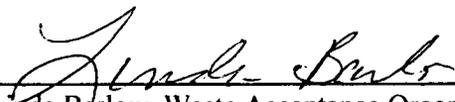
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FERNALD CLOSURE PROJECT

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LIST OF ACRONYMS AND ABBREVIATIONS

A1P2	Area 1, Phase II
ASCOC	area-specific constituent of concern
ASL	analytical support level
BTV	benchmark toxicity level
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
DOE	U.S. Department of Energy
EMS	Excavation Monitoring System
FCP	Fernald Closure Project
FRL	final remediation level
GC/MS	gas chromatograph/mass spectroscopy
GPC	gas proportional counter
HPGe	high-purity germanium (detector)
ICP-AES	inductively coupled plasma-atomic emission spectrometry
ICP/MS	inductively coupled plasma/mass spectrometry
LSC	liquid scintillation counter
MDL	minimum detection level
mg/kg	milligrams per kilogram
MSL	mean sea level
NaI	sodium iodide
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
PID	photoionization detector
ppm	parts per million
PSP	Project Specific Plan
QC	Quality Control
RCRA	Resource Conservation Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RSS	Radiation Scanning System
RTRAK	Real-Time Radiation Tracking System
RWP	Radiological Work Permit
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SEP	Sitewide Excavation Plan
TAL	Target Analyte List
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
VSL	validation support level
WAC	waste acceptance criteria

1.0 INTRODUCTION

This Project Specific Plan (PSP) describes the data collection activities necessary to support predesign of the Dissolved Oxygen Building and surrounding area within Area 1, Phase II (A1PII). The format of this PSP differs from that of previously submitted PSPs as this PSP only presents the specific information regarding this area. The general information that is routinely addressed in a PSP, can be found in 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*. While this PSP has section headings similar to a full-length PSP, where the information in the section is identical to the information in the General PSP, 20300-PSP-0011, a reference to this General PSP is made, and the information is not repeated.

1.1 PURPOSE

The purpose of this PSP is to provide specific direction regarding the predesign sampling of the Dissolved Oxygen Building and surrounding area within A1PII. This detailed information includes reasons for sample collection, sample locations, number of borings, depth intervals, and constituents of concern.

1.2 SCOPE

Remediation Area 1, Phase II lies on the east side of the site. The Dissolved Oxygen Building and surrounding area includes the Dissolved Oxygen Building, the Dissolved Oxygen Facility Substation, the Outfall Line Pit, and the area surrounding these structures (see Figure 1-1). The schedule for implementation of this PSP is Summer 2005.

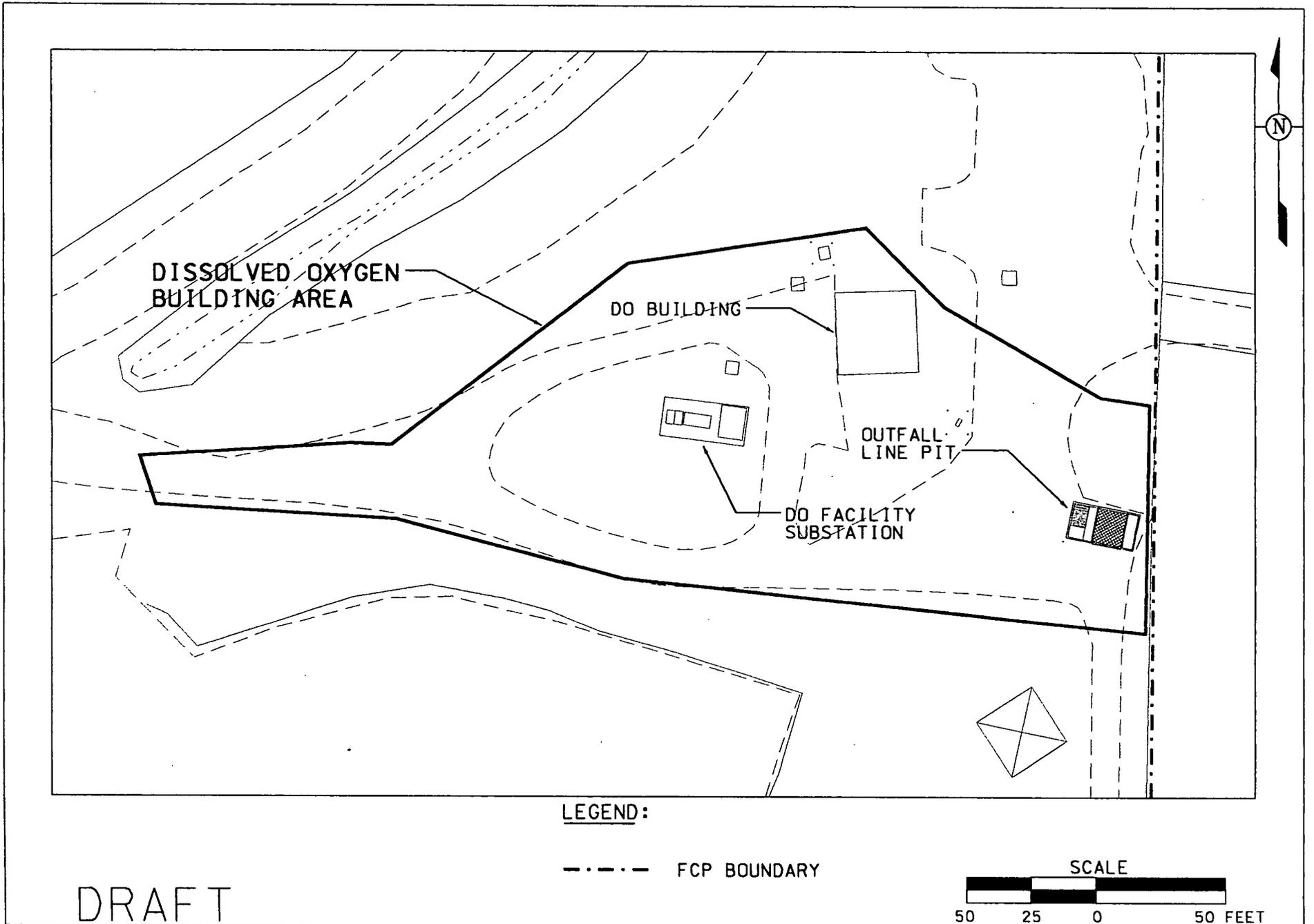
This PSP is not considered a work authorization document (for implementation of fieldwork) per SH-0021, Work Permits. Work authorization documents directing the implementation of fieldwork, per SH-0021, may include applicable Environmental Closure Project procedures, Fluor Fernald work permits, Radiological Work Permit (RWP), penetration permits, and other applicable permits.

1.3 VARIANCE/FIELD CHANGE NOTICE (V/FCN) DOCUMENTATION

Reference Section 7.5 of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*.

1.4 KEY PERSONNEL

Reference Section 1.4 of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*.



LEGEND:

- - - - FCP BOUNDARY

SCALE



50 25 0 50 FEET

DRAFT

FIGURE 1-1. AREA 1 PHASE II - DISSOLVED OXYGEN BUILDING AREA

2.0 AREA-SPECIFIC WORK

2.1 AREA 1, PHASE II DISSOLVED OXYGEN BUILDING AREA

2.1.1 History

The Dissolved Oxygen Area includes the Dissolved Oxygen Building, the Dissolved Oxygen Facility Substation, the Outfall Line Pit, also known as the Parshall Flume Building, and the area surrounding these structures. Blowers were installed within the Dissolved Oxygen Building to add oxygen to the site's treated wastewater effluent in the Dissolved Oxygen Tank prior to discharge to the Great Miami River via the Parshall Flume and Effluent Discharge Pipeline. However, the dissolved oxygen measurement in the water discharged from site through the Parshall Flume consistently fell within the site's permitted range without requiring the addition of oxygen. Therefore, the blowers were rarely used. The Dissolve Oxygen Tank was removed in 2004. Low-level uranium analysis for an EM-50 funded project was also performed in the Dissolved Oxygen Building.

2.1.2 Predesign

Predesign will be performed under the guidelines of Section 4.0 of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*.

2.1.2.1 Scope

This PSP covers data collection activities associated with predesign in the Dissolved Oxygen Building and surrounding area within A1PII. This PSP supplements previous investigations for A1PII and does not cover excavation control.

2.1.2.2 Determination of FRL COCs and WAC COCs

Using the Remedial Investigation/Feasibility Study (RI/FS) data for the area, Table 2-7 of the Sitewide Excavation Plan (SEP), and the ecological constituents of concern (COCs) from adjoining areas, a list of final remediation level (FRL) COCs was determined. The FRL COCs for this PSP are listed in Section 2.1.2.2.2.

2.1.2.2.1 WAC COCs

No above-waste acceptance criteria (WAC) locations exist in this area, therefore, no above-WAC locations require investigation.

2.1.2.2.2 FRL COCs

Within the scope of this PSP, the analyte list of FRL area-specific constituent of concern (ASCOC) for A1PII Dissolved Oxygen Building Area is given below.

Primary COCs

- Radium-226
- Radium-228
- Thorium-228
- Thorium-232
- Total Uranium

Secondary COCs

- Antimony
- Aroclor-1254
- Aroclor-1260
- Arsenic
- Beryllium
- Lead
- Molybdenum
- Technetium-99
- Tetrachloroethene

2.1.2.3 Sampling Strategy2.1.2.3.1 WAC Sampling Strategy

No known above-WAC locations exist in this area, therefore, no above-WAC locations require physical sampling.

2.1.2.3.2 FRL Sampling Strategy

One historical above-FRL result was obtained from this area. Boring 12321 had an above-FRL beryllium result of 2.04 milligrams per kilogram (mg/kg) from the 4.5 to 5-foot interval. Figure 2-1 provides this historical above-FRL boring location. This above-FRL beryllium result corresponds to depths displaying characteristics found in several adjacent areas. It is concluded that these levels are consistent with background conditions. This approach is more fully explained in Addendum to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)/Resource Conservation and Recovery Act (RCRA) Background Soil Study (where results in the 12 to 36-inch interval ranged from below the FRL to 3.05 mg/kg for beryllium). No further investigation for this COC, beryllium, is planned.

As shown in Figure 2-1, there is very little historical data available from within this area. Therefore, the majority of samples collected under this PSP will be for the purpose of filling this large data gap in support of the predesign investigation. A total of twelve sample locations were selected within this area. Eleven sample locations were randomly selected within this area and a bias sample location was placed within the existing Dissolved Oxygen Building. See Figure 2-2 for sample locations. See Appendix A for the Target Analyte Lists (TALs) and Appendix B for the boring table, which includes sample

identifiers and target sampling intervals. Table 2-1 addresses the physical sample volumes, preservation requirements, and analysis information.

Quality control (QC) sample requirements will include a duplicate field sample, a trip blank, and a container blank and/or rinsate, and will be collected per procedure SMPL-21, Collection of Field Quality Control Samples. All data collection activities will be consistent with the Sitewide CERCLA Quality Assurance Plan (SCQ) and Section 3.1 of the SEP. Per requirements of the SCQ, SEP, and Data Quality Objectives SL-052, Revision 3, the field quality control, analytical and data validation requirements are as follows:

- Field QC requirements include one field duplicate, as noted above and identified in Appendix B. For the duplicate field sample, twice the soil volume (a second core) will be collected at one location, and will not be homogenized with the original sample. The field duplicate sample will be analyzed for the same COCs as the other samples from which the field duplicate has been collected.

If "push tubes" are used for sample collection, one container blank will be collected before sample collection begins and one will be collected at the conclusion of sample collection for the entire area. The container blank sample will be analyzed for the same radiological and metals COCs as the other samples from which the container blank is being collected. 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 volatile organic compound (VOC) samples are being collected. The frequency for a trip blank is one per day, or one per batch of 20 VOC samples collected, or one per cooler to be shipped, whichever is more frequent.

- All analyses will be performed at Analytical Support Level (ASL) D or E, where E meets the minimum detection level 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. One hundred (100) percent of the laboratory data will be validated to Validation Support Level (VSL) D. 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.

2.1.3 Precertification

Precertification will be performed per 20300-PSP-0011, Section 3.0 and Section 6.0.

**TABLE 2-1
PHYSICAL SAMPLE ANALYTICAL REQUIREMENTS**

Analyte ^a	Method	Matrix	ASL	Preservative	Holding Time	Container ^b	Minimum Mass
Radiological (TAL A)	Gamma Spec, Alpha Spec, LSC, or GPC	Solid	D/E ^a	Cool, 4° C	12 months	Appropriate size glass with Teflon-lined lid	500 g (1500 g) ^c
Metals (TAL A)	ICP-AES or ICP/MS				6 months		
PCBs (TAL A)	GC				14 days		
Radiological (TAL A)	Gamma Spec, Alpha Spec, LSC, or GPC	Liquid (rinsate ^d)	D/E ^a	HNO ₃ pH<2	6 months	Polyethylene	4 liters
Metals (TAL A)	ICP-AES or ICP/MS	Liquid (rinsate ^d)	D/E ^a	HNO ₃ pH<2	6 months	Polyethylene	500 milliliter
VOCs (TAL B)	GC/MS	Solid	D/E ^a	Cool, 4° C	48 hours	3 x 1-Encore Sampler ^c or equivalent plus a 1 x 1-oz jar for % moisture ^c	Each full Encore Sampler will hold approx. 5 g of soil ^c
VOCs (TAL B)	GC/MS	Liquid (Trip blank)	D/E ^a	H ₂ SO ₄ pH<2 Cool, 4° C	14 days	3 x 40-mL glass with Teflon-lined septa	120 mL ^c (no headspace)

^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 per release 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.

ICP-AES - inductively coupled plasma-atomic electron spectrometry

GC/MS - gas chromatography/mass spectroscopy

GPC - gas proportional counter

ICP/MS - inductively coupled plasma/mass spectroscopy

LSC - liquid scintillation counter

PCB - polychlorinated biphenyl

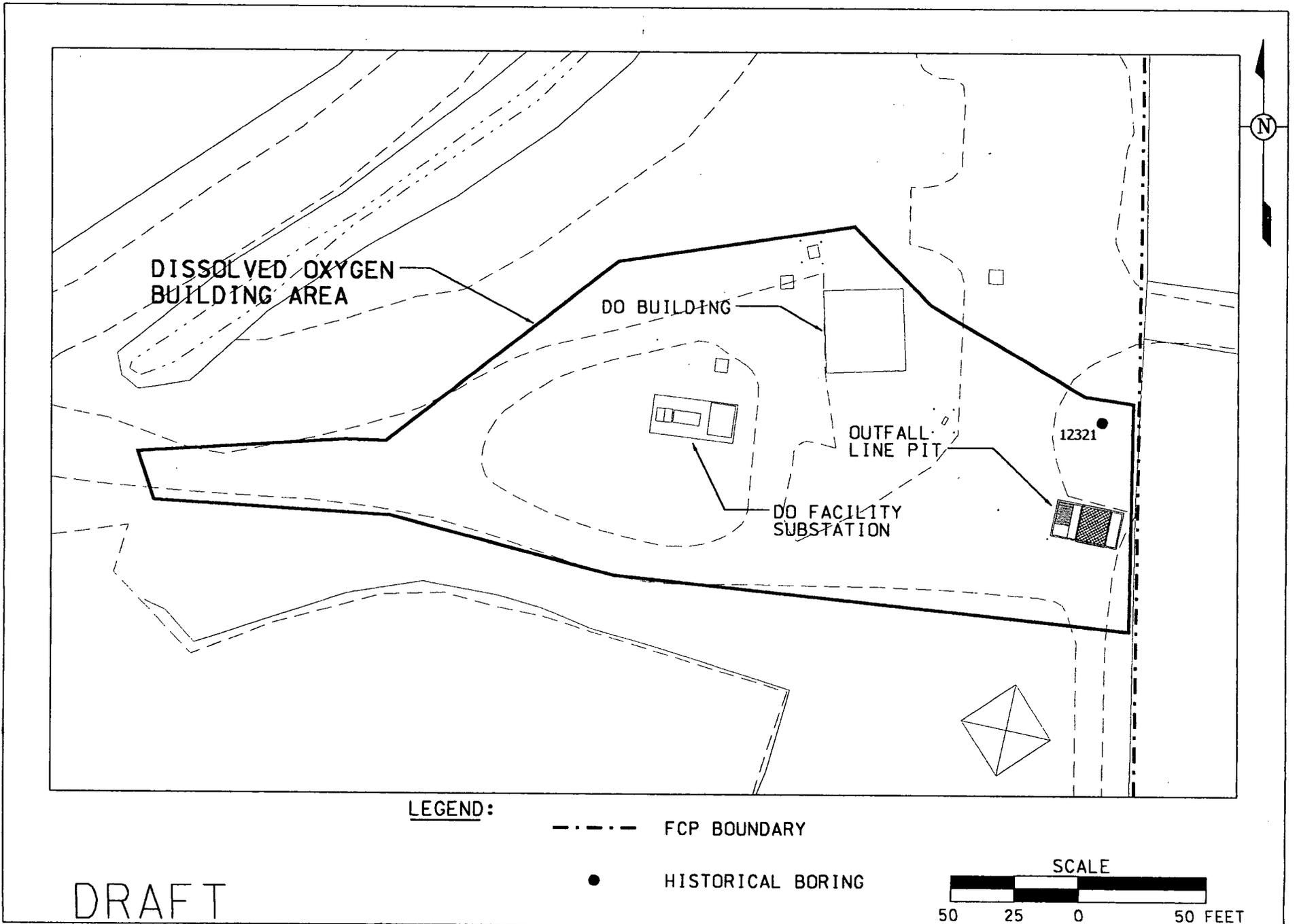
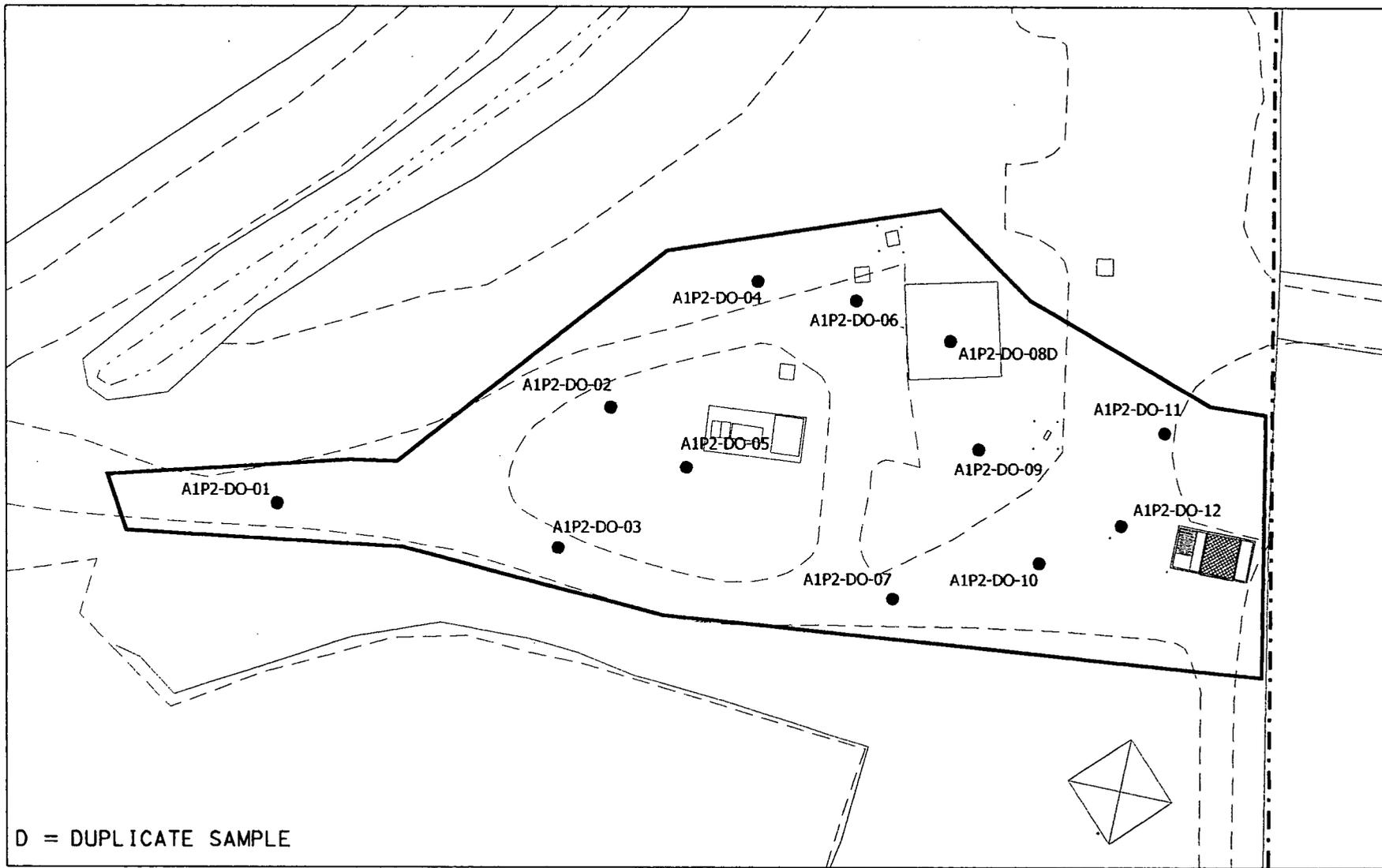


FIGURE 2-1. AREA 1 PHASE II - DO BUILDING AREA,
HISTORICAL BORING LOCATION

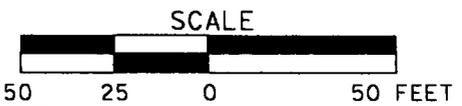


D = DUPLICATE SAMPLE

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● SAMPLE LOCATION



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FIGURE 2-2. AREA 1 PHASE II - DO BUILDING AREA PROPOSED BORING LOCATIONS

3.0 INSTRUMENTATION AND TECHNIQUES

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

3.1 MEASUREMENT INSTRUMENTATION AND TECHNIQUES

3.1.1 Real-Time

3.1.1.1 Sodium Iodide Data Acquisition (RTRAK, RSS, GATOR, EMS)

3.1.1.2 HPGe Data Acquisition

3.1.1.3 Excavation Monitoring System

3.1.1.4 Radon Monitor

3.1.2 Surface Moisture Measurements

3.2 REAL-TIME MEASUREMENT IDENTIFICATION

3.3 REAL-TIME DATA MAPPING

3.4 REAL-TIME SURVEYING

4.0 PREDESIGN

4.1 REAL-TIME ACTIVITIES

Refer to Section 4.1 of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*.

4.2 SAMPLE COLLECTION METHODS

4.3 PHYSICAL SAMPLE IDENTIFICATION

4.4 BOREHOLE ABANDONMENT

5.0 EXCAVATION CONTROL MEASURES

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

5.1 EXCAVATION DESIGN CONTROL REQUIREMENTS

- 5.1.1 Contamination Zone
- 5.1.2 Floors, Roads and Foundations
- 5.1.3 Real-Time Lift Scans
- 5.1.4 Above-WAC Lift Scans

5.2 ORGANIC SCREENING AND PHYSICAL SAMPLING REQUIREMENTS

- 5.2.1 Above-WAC Photoionization Detector (PID)/Gas Chromatograph (GC) Screening
- 5.2.2 All Other Physical Sample Requirements
- 5.2.3 PID Screening and Physical Sampling Procedures
- 5.2.4 Physical Sample Identification

6.0 PRECERTIFICATION

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

- 6.1 INITIAL PRECERTIFICATION NaI SCAN AT BASE OF DESIGN GRADE
- 6.2 PRECERTIFICATION HPGe MEASUREMENTS IN 20 PPM FRL (URANIUM) AREAS
- 6.3 PRECERTIFICATION HPGe MEASUREMENTS IN 82 PPM FRL (URANIUM) AREAS
- 6.4 DELINEATING HOT SPOTS FOLLOWING PRECERTIFICATION HPGe MEASUREMENTS

7.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

7.1 QUALITY CONTROL SAMPLES - REAL-TIME MEASUREMENTS AND PHYSICAL SAMPLES

7.2 DATA VALIDATION

7.2.1 Physical Sample Data Validation

See Section 2.1.2.3 within this PSP.

7.2.2 Real-Time Data Verification/Validation

7.3 APPLICABLE DOCUMENTS, METHODS AND STANDARDS

7.4 SURVEILLANCES

7.5 IMPLEMENTATION AND DOCUMENTATION OF V/FCNs

8.0 SAFETY AND HEALTH

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for this section.

9.0 EQUIPMENT DECONTAMINATION

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for this section.

10.0 DISPOSITION OF WASTES

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for this section.

11.0 DATA AND RECORDS MANAGEMENT

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

11.1 REAL-TIME

11.2 PHYSICAL SAMPLES

APPENDIX A

**TARGET ANALYTE LISTS FOR PREDESIGN OF
A1PII - DISSOLVED OXYGEN BUILDING AREA**

**APPENDIX A
 TARGET ANALYTE LISTS FOR PREDESIGN
 OF A1PII - DISSOLVED OXYGEN BUILDING**

**TAL A
 Soil Analysis, Off-site, (ASL D/E)**

Analyte (Rad)	WAC	FRL (BTV)	Requested MDL
Radium-226	NA	1.7 pCi/g	0.17 pCi/g
Radium-228	NA	1.8 pCi/g	0.18 pCi/g
Thorium-228	NA	1.7 pCi/g	0.17 pCi/g
Thorium-232	NA	1.5 pCi/g	0.15 pCi/g
Total Uranium	1030 mg/kg	82 mg/kg	8.2 mg/kg
Antimony ¹	NA	96 mg/kg (10 mg/kg)	9.6 mg/kg
Aroclor-1254	NA	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	NA	0.13 mg/kg	0.013 mg/kg
Arsenic	NA	12.0 mg/kg	1.20 mg/kg
Beryllium	NA	1.50 mg/kg	0.150 mg/kg
Lead ¹	NA	400 mg/kg (200 mg/kg)	40 mg/kg
Molybdenum ¹	NA	2900 mg/kg (10 mg/kg)	290 mg/kg
Technetium-99 ²	29.1 pCi/g	30 pCi/g	2.91 pCi/g

¹ Ecological COC

² If the WAC is lower than the established FRL, the MDL will be set at 10 percent of the On-Site Disposal Facility WAC.

**TAL B
 Soil Analysis, Off-site, (ASL D/E)**

Analyte (Rad)	WAC	FRL	Requested MDL
Tetrachloroethene (PCE)	128 mg/kg	3.6 mg/kg	0.36 mg/kg

BTV - benchmark toxicity value

MDL - minimum detection level

pCi/g - picoCuries per gram

APPENDIX B

**BORING TABLE AND SAMPLE IDENTIFIERS FOR
PREDESIGN OF A1PII - DISSOLVED OXYGEN BUILDING AREA**

APPENDIX B
BORING TABLE AND SAMPLE IDENTIFIERS FOR
A1P11 - DISSOLVED OXYGEN BUILDING AREA PREDESIGN

Boring	Northing	Easting	Depth (feet)	Depth Identifier	Sample ID	TAL
A1P2-DO-01	479448.6	1351487.1	0-0.5	1	A1P2-DO-01^1-RMP	A
					A1P2-DO-01^1-L	B
A1P2-DO-02	479480.25	1351598.81	0-0.5	1	A1P2-DO-02^1-RMP	A
					A1P2-DO-02^1-L	B
A1P2-DO-03	479433.76	1351581.01	0-0.5	1	A1P2-DO-03^1-RMP	A
					A1P2-DO-03^1-L	B
A1P2-DO-04	479521.79	1351648.24	0-0.5	1	A1P2-DO-04^1-RMP	A
					A1P2-DO-04^1-L	B
A1P2-DO-05	479460.47	1351624.02	0-0.5	1	A1P2-DO-05^1-RMP	A
					A1P2-DO-05^1-L	B
A1P2-DO-06	479515.36	1351681.35	0-0.5	1	A1P2-DO-06^1-RMP	A
					A1P2-DO-06^1-L	B
A1P2-DO-07	479416.95	1351693.22	0-0.5	1	A1P2-DO-07^1-RMP	A
					A1P2-DO-07^1-L	B
A1P2-DO-08D	479502.01	1351712.99	0-0.5	1	A1P2-DO-08^1-RMP	A
					A1P2-DO-08^1-L	B
					A1P2-DO-08^1-RMP-D	A
					A1P2-DO-08^1-L-D	B
A1P2-DO-09	479466.4	1351722.38	0-0.5	1	A1P2-DO-09^1-RMP	A
					A1P2-DO-09^1-L	B
A1P2-DO-10	479428.82	1351742.65	0-0.5	1	A1P2-DO-10^1-RMP	A
					A1P2-DO-10^1-L	B
A1P2-DO-11	479471.84	1351785.15	0-0.5	1	A1P2-DO-11^1-RMP	A
					A1P2-DO-11^1-L	B
A1P2-DO-12	479441.18	1351770.32	0-0.5	1	A1P2-DO-12^1-RMP	A
					A1P2-DO-12^1-L	B