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**CERTIFICATION DESIGN LETTER  
AREA 1, PHASE I - SEDIMENT TRAPS 2 & 3**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT  
FERNALD, OHIO**



**INFORMATION  
ONLY**

**JULY 1998**

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

**20701-RP-0007  
REVISION C  
DRAFT**

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ACRONYMS AND ABBREVIATIONS

A1PI	Area 1, Phase I
A1PI-ST-2	Area 1, Phase I Sediment Trap 2
A1PI-ST-3	Area 1, Phase I Sediment Trap 3
ASCOC	area-specific constituent of concern
ASL	analytical support level
BTV	benchmark toxicity value
CDL	Certification Design Letter
COC	constituent of concern
CRDL	contract required detection limit
CU	certification unit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FEMP	Fernald Environmental Management Project
FRL	final remediation level
Kg	kilogram
mg	milligram
OEPA	Ohio Environmental Protection Agency
OU5	Operable Unit 5
pCi	picocuries per gram
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
SEP	Sitewide Excavation Plan
UCL	upper confidence limit

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**EXECUTIVE SUMMARY**

This Certification Design Letter (CDL) describes the certification approach for the Area 1, Phase I (A1PI) Sediment Traps 2 & 3. The following information is included:

- A definition of the boundaries of the areas to be certified under the guidance of this CDL
- A review of relevant historical data, including A1PI certification results
- A discussion of the area-specific constituents of concern (ASCOC) selection process and list of ASCOCs assigned to the A1PI Sediment Traps 2 & 3
- A presentation of the certification unit (CU) boundaries and proposed sampling strategy
- The analytical requirements and the statistical methodology that will be employed
- The proposed schedule for the certification activities.

The scope of this CDL is limited to two sediment traps located in A1PI, in the northeastern portion of the Fernald Environmental Management Project (FEMP). Historical data and certification data collected from A1PI indicate no widespread contamination in the area of these sediment traps. Based on these data and scheduling limitations, no precertification scanning activities were conducted in A1PI Sediment Traps 2 & 3, and certification sampling will begin without conducting remedial excavations.

The certification design in this CDL follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (SEP) (DOE 1998) and incorporates revisions based on U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (OEPA) comments. Three certification units (CUs) have been established in each sediment trap. The selection of A1PI ASCOCs was accomplished using the constituents of concern (COCs) listed in the Operable Unit 5 (OU5) Record of Decision (ROD), process knowledge of the site COCs and release history, and by comparing contract required detection limits (CRDLs) with final remediation levels (FRLs). The sitewide primary radiological COCs (total uranium, thorium-228, thorium-232, radium-226, radium-228) will be considered ASCOCs in every CU, as will three secondary COCs (arsenic, beryllium and aroclor-1260). Field work is scheduled to begin July 27, 1998, and the Certification Report will be issued November 2, 1998.

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## 1.0 INTRODUCTION

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This CDL describes the certification approach that will be used to certify the two sediment traps in A1PI. A1PI Sediment Trap 2 (A1PI-ST-2) and A1PI Sediment Trap 3 (A1PI-ST-3) are shown in Figure 1. The format of this CDL follows the guidance proposed in the SEP (DOE 1998).

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Accordingly, this CDL consists of six sections:

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1.0 Introduction - Presentation of the objectives, scope, and current certification status of this CDL

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2.0 Historical and Precertification Data - Presentation and discussion of historical and precertification scanning data

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3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for A1PI Sediment Traps

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4.0 Certification Approach - Presentation of design, sampling and analytical methodologies and analysis

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5.0 Schedule

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6.0 References

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### 1.1 OBJECTIVES

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The primary objectives of this CDL are to:

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- Define the boundaries of the areas to be certified under the guidance of this CDL
- Present historical data relevant to the planned certification areas under this CDL
- Define the ASCOCs assigned to the certification areas under the scope of this CDL
- Present the CU boundaries and proposed sampling strategy
- Summarize the analytical requirements and the statistical methodology that will be employed
- Present the proposed schedule for the certification activities.

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### 1.2 SCOPE

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The scope of this CDL includes certification of two A1PI sediment traps located in the northeast corner of the FEMP site, to the east of the North Access Road. The two traps (A1PI-ST-2 and A1PI-ST-3)

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were constructed in Summer 1996 for storm water control during A1PI remedial activities. As part of the A1PI design, six inches of topsoil were removed prior to certification; however, these sediment traps were constructed prior to performing the A1PI excavation. The soil that was removed to form the sediment trap area was placed along the trap edges to form the berms.

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A1PI-ST-2, the northern sediment trap, is approximately 1.02 acres in size with the berm located on the eastern side. The berm contains approximately 30,060 cubic feet of soil. A1PI-ST-3, the southern sediment trap, is approximately 0.4 acres in size with a berm surrounding the trap. The soil volume of this berm is approximately 30,766 cubic feet. This CDL documents the strategy for certifying the sediment collection areas, the berms, and the soil beneath the berms for both of these sediment traps.

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Upon completion of certification and approval of the Certification Report by the EPA and OEPA, these areas will be released for future land use, including the development of a wetland mitigation area.

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1.3 CURRENT CERTIFICATION STATUS

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Figure 2 shows the current status of FEMP soil certification areas. This map will be updated and included in all future CDLs.

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## 2.0 HISTORICAL AND PRECERTIFICATION DATA

In accordance with the SEP, all soil demonstrated to contain ASCOC contamination above the established FRLs must be evaluated for remedial actions prior to conducting precertification and certification activities. The OU5 ROD also commits U.S. Department of Energy (DOE) to removing any man-made objects, including debris, building foundations, and drainage systems, before a remediation area can be certified. There are no such man-made objects within the areas planned for certification under this CDL.

Based on historical data, none of the areas within the scope of this CDL requires remedial action.

While historical data in this area are limited, a review of existing remedial investigation/feasibility study (RI/FS) data indicates that contamination exceeding the FRLs is not anticipated. Furthermore, the certification activities in the surrounding areas performed as part of A1PI showed no widespread contamination above the FRL. Therefore, these traps will be certified without conducting remedial activities. Based on A1PI certification data, radiological contamination is not anticipated at above-FRL concentrations.

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**3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN**

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Since the ASCOC selection process for A1PI included A1PI-ST-2 and A1PI-ST-3, these areas will be certified using the A1PI ASCOC list, except for thorium-230 and cesium-137. While both of these analytes were part of the A1PI ASCOC list, further review of historical data shows no above-FRL concentrations for thorium-230 or cesium-137 in the subject areas. Furthermore, in all A1PI CUs, both of these analytes passed all the certification criteria. Benchmark toxicity value (BTV) analytes in this area are not a concern per Appendix C of the SEP (DOE 1998).

**TABLE 1  
ASCOC LIST**

Primary ASCOC	FRL	Secondary ASCOCs	FRL
Total Uranium	82 mg/Kg	Arsenic	12.0 mg/Kg
Thorium-232	1.5 pCi/g	Beryllium	1.5 mg/Kg
Thorium-228	1.7 pCi/g	Aroclor-1260	0.13 mg/Kg
Radium-226	1.7 pCi/g		
Radium-228	1.8 pCi/g		

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#### 4.0 CERTIFICATION APPROACH

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#### 4.1 CERTIFICATION DESIGN

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The certification design follows the general approach outlined in Section 3.4 of the SEP (DOE 1998).  
 The areas requiring certification for both A1PI-ST-2 and A1PI-ST-3 include the sediment trap areas,  
 the berms, and the soil beneath the berms. Therefore, three CUs will be established within each  
 sediment trap: one to cover the sediment trap area, one to cover the berm, and one to cover the soil  
 beneath the berm (established directly beneath the CU that covers the berm).

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Since the berm CUs are established directly over the CUs representing the area beneath the berms, one  
 set of sample locations has been established for both CUs. During sample collection, the berm  
 certification samples will be taken at the 0 to 6-inch interval, while the certification samples for the  
 CUs below the berms will be collected from the top 0 to 6 inches of native soil beneath the berms. The  
 depth of the native soil will be confirmed by a field geologist and by historical (pre-excavation)  
 elevation data. This sampling will be conducted using the Geoprobe® method. The sample locations  
 for all the CUs within the scope of this CDL are also shown in Figure 3, and were selected per  
 Section 3.4.2.1 of the SEP (DOE 1998). Prior to sampling, the surveyed sample locations will be  
 walked over to ensure the samples are representative and can be taken safely.

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Note: Sample 7 in the sediment basin of A1PI-ST-2 has been relocated approximately four feet to  
 the south, since the original location fell on the check dam for the sediment trap. No other  
 sample locations will be moved without concurrence from the regulatory agencies.

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Per the SEP, 16 discrete soil samples will be collected from random locations as discussed above.  
 Each sample will be collected from the 0 to 6-inch soil interval at the designated and surveyed sample  
 point. Samples 1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15, and on Figure 3 in each CU will be submitted  
 for analysis for the appropriate ASCOCs, while the remaining four (4, 8, 12, 16) will be archived.

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#### 4.2 ANALYTICAL METHODOLOGY AND STATISTICAL ANALYSIS

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Laboratory analysis of certification samples will be conducted using Analytical Support Level D (ASL)  
 data with a full ASL D package. The detection limits for the radionuclides will be ASL E and will be  
 set at 10 percent of the FRL. Ten percent of the data will be validated to validation level D, in which

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the raw data will be reviewed and results will be recalculated; the remaining data will not be validated. 1  
Samples failing validation will be reanalyzed, or an archive sample may be substituted if there is 2  
insufficient material available from the initial sample. Once all data are validated, results will be 3  
entered into the Sitewide Environmental Database and a statistical analysis will be performed to 4  
evaluate the pass/fail criteria for the each CU. The statistical approach is discussed in Section 3.4.3 5  
and Appendix G of the SEP (DOE 1998). 6

Two criteria must be met for the CU to be certified as passing. First, if the data distribution is normal 7  
or lognormal, the first criterion compares the 95 percent upper confidence limit (UCL) of the mean of 8  
each primary COC to its FRL, and the 90 percent UCL on the mean of the secondary ASCOCs to their 9  
respective FRLs, resulting in the pass/fail decision on each individual CU. If the data distribution in 10  
not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP 11  
(DOE 1998) will be used to evaluate the second criterion. The second criterion is the hot spot criterion 12  
for radiological and non-radiological ASCOCs, which requires that if an analytical result exceeds a 13  
concentration of 2x FRL, further investigation is required. When the given UCL on the mean for each 14  
COC is less than its FRL, and the hot spot criterion is met, the CU has met both criteria and will be 15  
considered certified. 16

When all CUs within the scope of this CDL have passed certification, a Certification Report will be 17  
issued to indicate that the pertinent operable unit remedial actions were completed and the individual 18  
CUs are certified to be released for interim or final land use. When the Certification Report is 19  
approved by EPA and OEPA, the area will only be disturbed to begin construction activities for 20  
wetland mitigation. Since this area receives no storm water run-on from impacted areas, no erosion 21  
and/or sediment controls are necessary during certification. 22

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**5.0 SCHEDULE**

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The following draft schedule shows key activities for the completion of the work within the scope of this CDL. The primary driver for this schedule is the development of the wetland mitigation area in A1PI.

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**ACTIVITY**

**TARGET DATE**

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Submittal of Certification Design Letter

July 21, 1998

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Start of Field Work

July 27, 1998

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Complete Field Work

August 10, 1998

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Complete Analytical Work

September 28, 1998

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Complete Statistical Analysis

October 12, 1998

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Submit Certification Report

November 2, 1998

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These dates are projected completion dates and are not enforceable milestones subject to the provisions of the Amended Consent Agreement.

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## 6.0 REFERENCES

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

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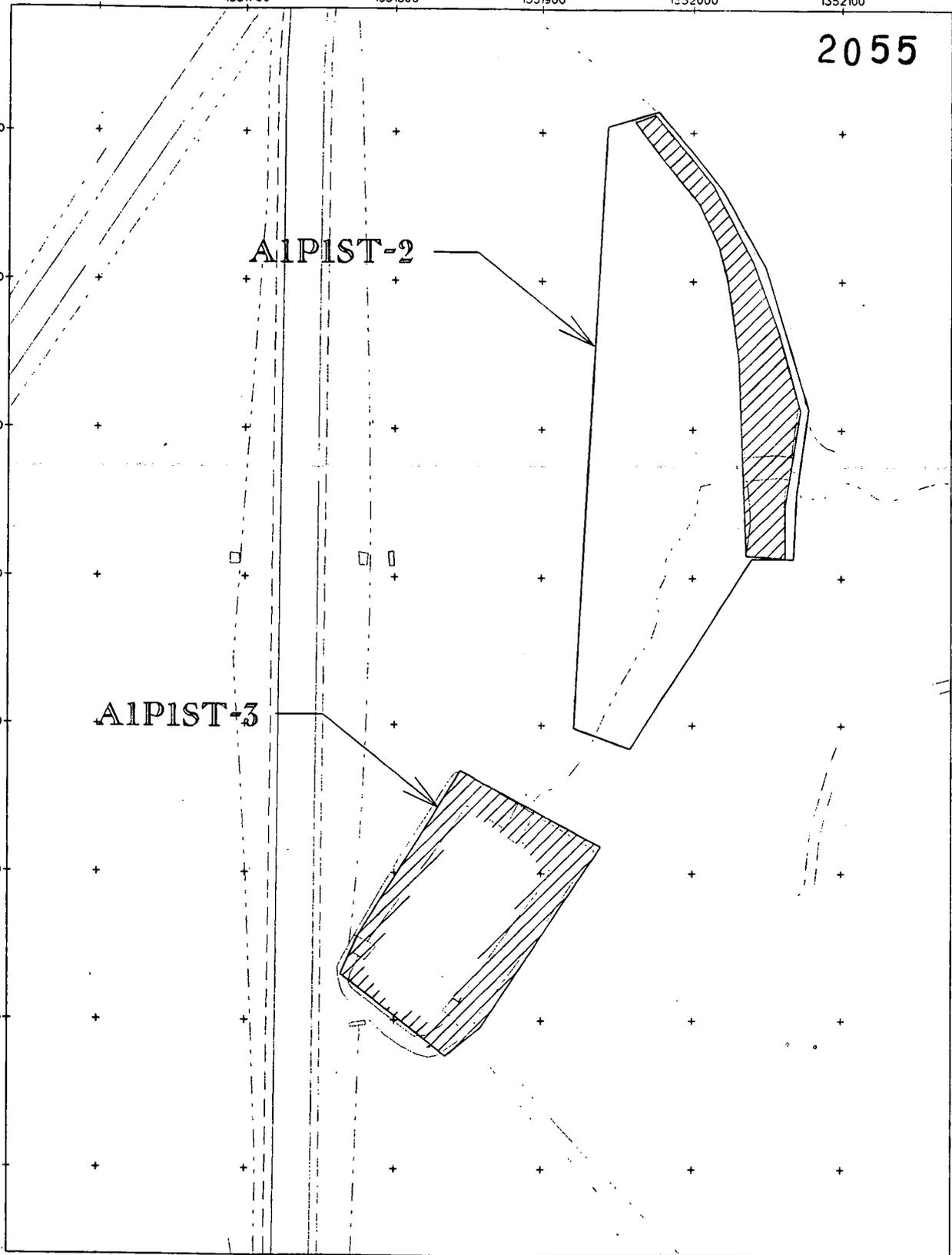
STATE PLANAR COORDINATE SYSTEM 1983

17-JUL-1998

1351600 1351700 1351800 1351900 1352000 1352100

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LEGEND:

--- FEMP BOUNDARY

 BERM AREAS

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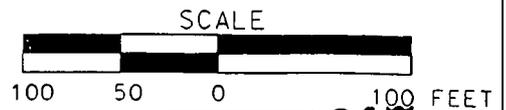
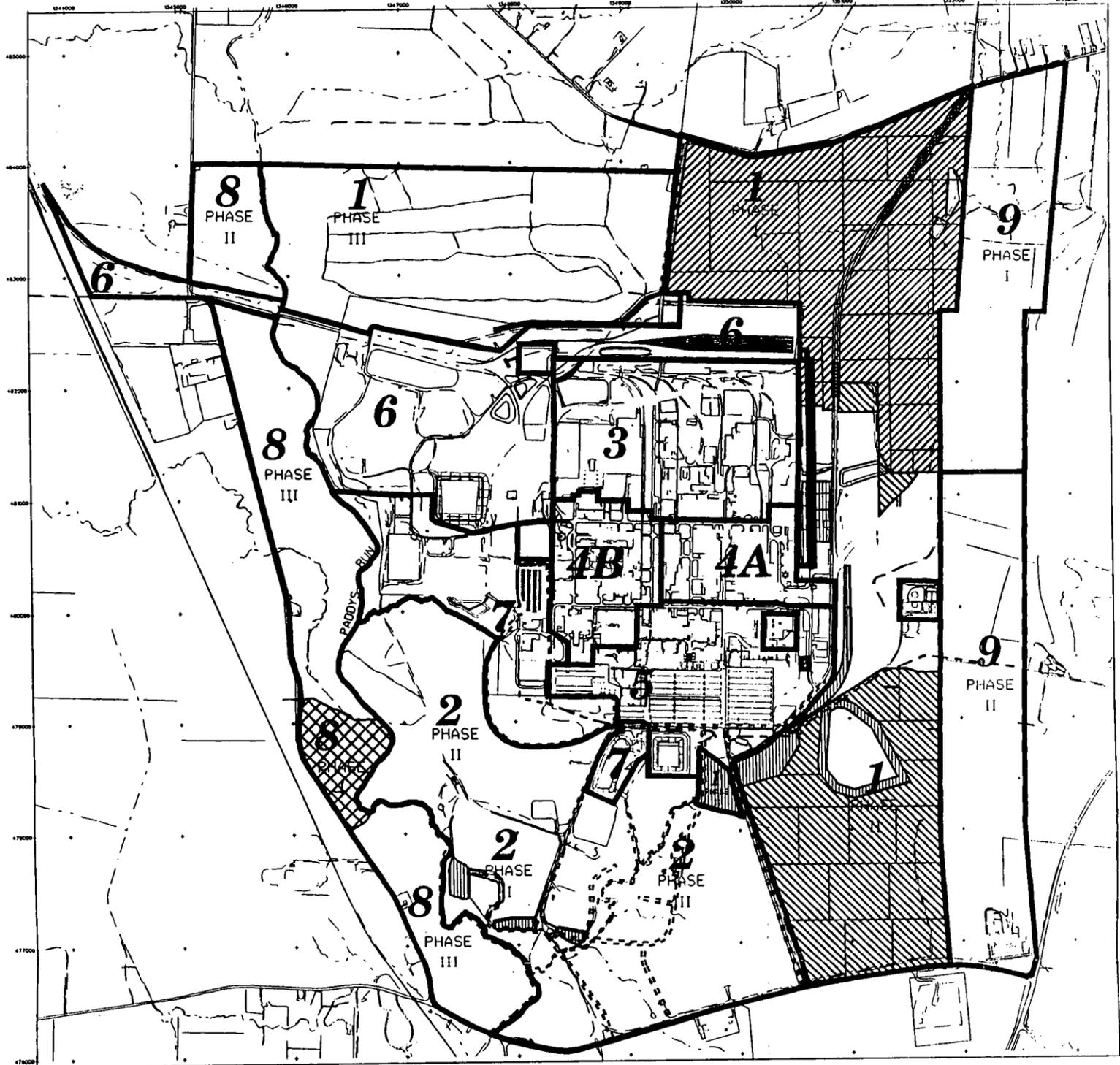


FIGURE 1. AIP1 SEDIMENT TRAPS

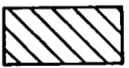
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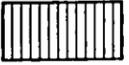
CONTROL DATE MAY 28, 1998



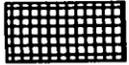
LEGEND:



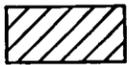
A1P11 CERTIFIED AREAS (PENDING AGENCY APPROVAL)



CHARACTERIZATION FOR REUSE AREAS



AREAS EXCLUDED FROM A1P1



A1P1 CERTIFIED AREAS (PENDING AGENCY APPROVAL)



A8P1 AREAS (CERTIFICATION SAMPLES COLLECTED)

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FIGURE 2. CERTIFICATION STATUS MAP

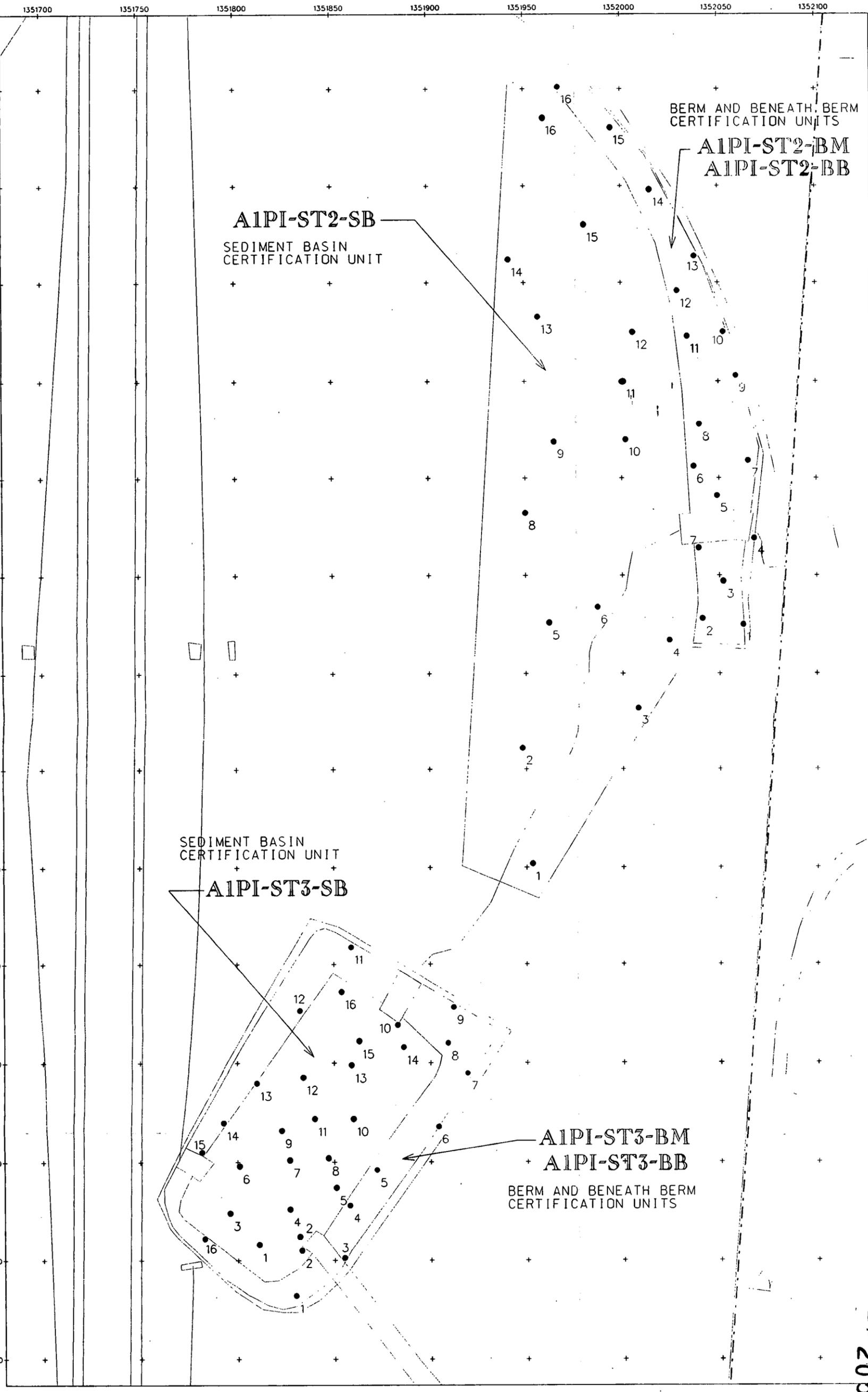
15-JUN-1998

STATE PLANNING COORDINATE SYSTEM 1983

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STATE PLANNED COORDINATE SYSTEM 1983

17-JUL-1988

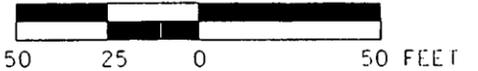


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LEGEND:

- SAMPLE LOCATION
- - - FEMP BOUNDARY

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FIGURE 3. CU DESIGN AND SAMPLE LOCATIONS