CERTIFICATION DESIGN LETTER FOR AREA 9, PHASE III ABANDONED OUTFALL LINE – PART TWO

FERNALD CLOSURE PROJECT
FERNALD, OHIO

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U.S. DEPARTMENT OF ENERGY

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LIST OF ACRONYMS AND ABBREVIATIONS

A1PII	Area 1, Phase II
A9PIII	Area 9, Phase III
ASCOC	area-specific constituent of concern
ASL	analytical support level
BTV	Benchmark Toxicity Value
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CRDL	contract required detection limit
CU	certification unit
DOE	U.S. Department of Energy
FCP	Fernald Closure Project
FMPC	Feed Material Production Center
FRL	final remediation level
IEMP	Integrated Environmental Monitoring Program
IRDP	Integrated Remedial Design Package
MDL	minimum detection level
mg/kg	milligrams per kilogram
OU5	Operable Unit 5
pCi/g	picoCuries per gram
ppb	parts per billion
ppm	parts per million
PSP	Project Specific Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SR	State Route
UCL	Upper Confidence Limit
VOC	volatile organic compound

EXECUTIVE SUMMARY

This Certification Design Letter (CDL) describes the certification approach for Area 9, Phase III – Part Two (A9PIII), which includes the west bank of the Great Miami River at the abandoned outfall line discharge structure. The following information is included in the CDL:

- The boundaries (Figure 1-1) and a description of the area to be certified under the guidance of this CDL;
- A presentation of historical data from the area proposed for certification;
- A discussion of the area-specific constituent of concern (ASCOC) selection process and list of ASCOCs assigned to A9PIII;
- A presentation of the certification unit (CU) boundaries and proposed sampling strategy;
- The analytical requirements and the statistical methodology that will be employed; and
- The proposed schedule for the certification activities.

This CDL covers the soil beneath the riprap and broken concrete lining the riverbank, which will be removed prior to sampling as well as the abandoned outfall line bedding material from approximately 38 feet west of the Great Miami River to the location that the abandoned outfall line exits the riverbank. Precertification real-time measurements will be completed for the surface CU once the riprap and broken concrete has been removed. For the abandoned outfall line trench, precertification real-time measurements will be completed in conjunction with certification sampling. Real-time scanning results from precertification activities of A9PIII Part Two will be presented in the certification report.

The certification design presented in this CDL follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (SEP, DOE 1998) and SEP Addendum (DOE 2001a). The selection of A9PIII ASCOCs was accomplished using constituent of concern (COC) lists in the Operable Unit 5 Record of Decision (DOE 1996). Two CUs have been established to cover the A9PIII Part Two certification area. The CU design for the surface CU was based on size of the impacted area in the proximity of the abandoned outfall line discharge. The design of the trench CU was based on the length and width of the trench.

1.0 INTRODUCTION

This Certification Design Letter (CDL) describes the certification approach for demonstrating that soil in Area 9, Phase III (A9PIII) meets the final remediation levels (FRLs) for all area-specific constituents of concern (ASCOCs). The format of this CDL follows guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998). Accordingly, this CDL consists of five sections:

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

2.0 Historical Data - Presentation and discussion of historical soil data from A9PIII

3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for A9PIII

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

5.0 Schedule

1.1 OBJECTIVES

The primary objectives of this document are to:

- Define the boundaries of the area to be certified under the guidance of this CDL;
- Present historical data collected from within the area proposed for certification;
- Define the ASCOC selection process and list the selected A9PIII ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Summarize the analytical requirements and the statistical methodology that will be employed; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

A9PIII is located offsite, stretching east from the eastern boundary of the Fernald Closure Project (FCP) to the Great Miami River. The scope of this CDL covers the soil beneath the riprap and broken concrete lining the riverbank, which will be removed prior to sampling, as well as the abandoned outfall line bedding material from approximately 38 feet west of the Great Miami River to the location that the abandoned outfall line exits the riverbank.. The location of A9PIII – Part Two is shown on Figure 1-1.

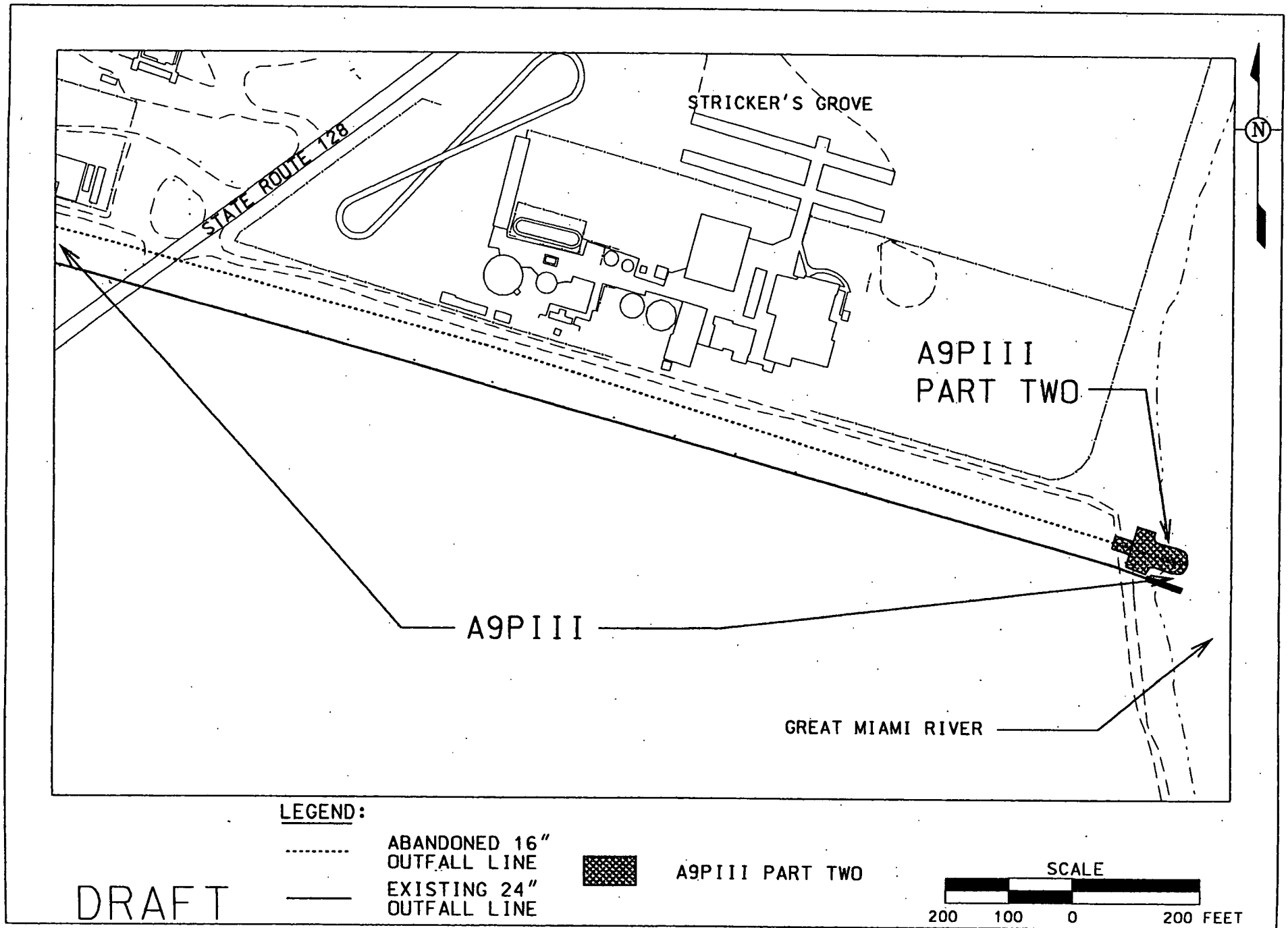

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FIGURE 1-1. AREA 9 PHASE III, PART TWO LOCATION MAP

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2.0 HISTORICAL AND PRECERTIFICATION DATA

Characterization data have been collected from A9PIII Part Two as part of the Project Specific Plan for the Great Miami Riverbank Characterization (DOE 1993a) and the Supplement to Project Specific Plan Great Miami Riverbank Characterization (DOE 1993c). The criteria identified for this removal action was 52 parts per million (ppm) total uranium and/or 46 ppm total thorium. These action levels were established and used prior to the development of the current Final Remediation Levels (FRL). When the historical data collected in 1993 were compared to the newly established FRLs, several FRL exceedances were identified. Confirmatory sampling was under Project Specific Plan for Area 9, Phase III Outfall Ditch Predesign Investigation (Supplement to 20300-PSP-0011)(DOE 2004) conducted to demonstrate whether or not the historical FRL exceedances still exist. The confirmatory sampling revealed that no FRL exceedances exist in this area. The following section further summarizes the data collection chronology.

2.1 HISTORICAL AND PRECERTIFICATION DATA SUMMARY

2.1.1 Historical Physical Sampling Data

Before initiating the certification process, all pertinent historical data relative to A9PIII were examined. This included the Project Specific Plan for the Great Miami Riverbank Characterization (DOE 1993a) and the Supplement to Project Specific Plan Great Miami Riverbank Characterization (DOE 1993c). The list of secondary ASCOCs was partially developed from these two sources of information as discussed in Section 3.2. All historical physical sampling data will be presented in Appendix B of the Excavation Control Project Specific Plan.

2.1.2 Precertification Real-Time Scanning

Precertification real-time scanning will occur following the excavation of the riprap in the surface CU, and in conjunction with certification sampling in the trench CU. Precertification results will be presented in the certification report for this area.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the Operable Unit 5 (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 COCs (total uranium, radium-226, radium-228, thorium-232, and thorium-228) will be retained as ASCOCs for certification in all areas of the site as well as off-property. 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 an ASCOC if:

- It was retained as an ASCOC in adjacent FCP soil remediation areas;
- 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 (Note: Table 2-7 does not include off-property Area 9);
- 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; and
- 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.

3.2 ASCOC SELECTION PROCESS FOR A9PIII

Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary COCs, and will be retained as ASCOCs for the A9PIII CUs. Cesium-137 and technetium-99 will be retained because of historical FRL exceedances. The remaining suite of ASCOCs to be analyzed during certification of the A9PIII – Part Two is based on the list of ASCOCs from the adjacent FCP soil remediation area as well as those constituents identified on the 1988 NPDES Permit Application that either have a FRL or are RCRA characteristic and were detected in the abandoned outfall line. If there are any detected results from the volatile organic compounds (VOCs) or technetium-99 samples, then additional subsurface samples will be collected by Geoprobe for the trench CU (surface samples will be collected from trench CU) for the entire CU and the samples will be analyzed for additional Sitewide secondary ASCOCs (identified in Table 3-1). The ASCOCs will be certified to the more stringent off-property soil FRLs identified in the OU5 ROD. The selected A9PIII ASCOCs that were sampled under A1PII are listed on Tables 3-1, along with their applicable FRLs.

Table 3-1 lists the ASCOCs that will be retained for sampling based on the above listed criteria. The reason for constituent retention is included in the table.

TABLE 3-1

ASCOC LIST FOR A9PIII – PART TWO CERTIFICATION UNITS EAST OF A1PII

ASCOC	Off-Property FRL	Reason Retained
Total Uranium	50 mg/kg	Retained as a primary ASCOC Sitewide
Radium-226	1.5 pCi/g	Retained as a primary ASCOC Sitewide
Radium-228	1.4 pCi/g	Retained as a primary ASCOC Sitewide
Thorium-228	1.5 pCi/g	Retained as a primary ASCOC Sitewide
Thorium-232	1.4 pCi/g	Retained as a primary ASCOC Sitewide
Cesium-137	0.82 pCi/g	Above-FRL concentration
Technetium-99	1.0 pCi/g	Above-FRL concentration
Antimony	0.61 mg/kg	ASCOC for A1PII*
Arsenic	9.6 mg/kg	ASCOC for A1PII
Beryllium	0.62 mg/kg	ASCOC for A1PII
Boron	4.0 mg/kg	NPDES Permit Application
Cadmium	0.91 mg/kg	NPDES Permit Application
Hexavalent Chromium	11 mg/kg (0.05 mg/kg)	NPDES Permit Application
Lead	400 mg/kg (200 mg/kg)	ASCOC for A1PII*
Molybdenum	13 mg/kg (10 mg/kg)	ASCOC for A1PII*
Silver	1.0 mg/kg	NPDES Permit Application
1,1-dichloroethene	0.059 mg/kg	NPDES Permit Application
Aroclor-1254	0.04 mg/kg	ASCOC for A1PII
Aroclor-1260	0.04 mg/kg	ASCOC for A1PII
Benzo(a)pyrene	0.09 mg/kg	Retained as a secondary ASCOC Sitewide[1]
Benzo(b)fluoranthene	0.16 mg/kg	Retained as a secondary ASCOC Sitewide[1]
Dibenzo(a,h)anthracene	0.0016 mg/kg	Retained as a secondary ASCOC Sitewide[1]
Dieldrin	0.0088 mg/kg	Retained as a secondary ASCOC Sitewide[1]
Indeno(1,2,3-cd)pyrene	0.016 mg/kg	Retained as a secondary ASCOC Sitewide[1]
1,1,1-trichloroethane	0.19 mg/kg	NPDES Permit Application
Bromodichloromethane	0.18 mg/kg	Retained as a secondary ASCOC Sitewide[1]
Trichloroethene	1.5 mg/kg	Retained as a secondary ASCOC Sitewide[1]
Tetrachloroethene	1.0 mg/kg	ASCOC for A1PII/NPDES Permit Application

* Ecological COC
BTV - benchmark toxicity value

[1]If there are any detected results from the volatile organic compounds (VOCs) samples, then additional samples will be collected by Geoprobe for the entire CU and the samples will be analyzed for these additional ASCOCs.

4.0 CERTIFICATION APPROACH

4.1 CERTIFICATION DESIGN

The certification design for A9PIII Part Two follows the general approach outlined in Section 3.4 of the SEP and encompasses the riverbank around the abandoned outfall line discharge. The CU design is depicted in Figure 4-1 and the sample locations are depicted in Figures 4-2 and 4-3.

Two CUs have been designed for this certification effort. The CU numbering sequence, which started in A9PIII Part One, will continue into A9PIII Part Two. Therefore, the CUs for A9PIII Part Two will be numbered CU 5 and CU 6. CU 5 represents the surface CU and CU 6 represents the trench CU. The certification design for A9PIII - Part Two CU 6 follows the same approach described in the CDL For A9PIII – Part One. The points were laid out in the planned trench excavation that overlays the eastern section of the abandoned outfall line near the riverbank. Since the size of the excavation was predetermined, the certification sampling locations were spaced evenly across the excavation with one location falling within each of the 16 sub-CUs. This will allow for more concentrated sampling (i.e., the samples are spaced 4.23 feet apart) and ensure the excavation activities had no effect on the soil in A9PIII. The CUs are shown on Figures 4-1.

The certification design for CU 5 follows the general approach outlined in Section 3.4 of the SEP. Within CU 5, 16 random sampling locations have been identified to provide comprehensive coverage of the CU. To accomplish this, CU 5 was divided into 16 approximately equal sub-CUs; and within each sub-CU, a random sampling location was generated. Also, all sample locations within CU 5 are separated by a prescribed minimum distance, which is calculated as a function of the CU size. All sub-CUs and planned A9PIII certification sampling locations are shown on Figures 4-2

Certification sampling locations will be surveyed in the field, offset, and flagged on the northern excavation fence for CU 6. If there is evidence of leakage from the outfall line (e.g. broken, cracked, or disjointed piping), then a biased sample location will be flagged on the fence line, and samples will be collected from the floor and both the north and south sidewalls approximately one foot from the floor of the excavation. For CU 5, sampling locations will be surveyed and flag in the field. Sampling location offsets should not be necessary with the exception of samples that may fall under water along the riverbank where riprap and broken concrete have been excavated. Locations may be moved if a subsurface obstacle such as a rock or tree root prevent collection. Requirements for moving a certification sample location will be discussed in the PSP for A9PIII Certification Sampling.

All sampling locations in the trench CU (CU 6) will be collected from the bottom of the excavation from the bucket of an excavator after the piping, bedding material, and roughly six inches of underlying soil have been removed. The goal will be to collect the top six inches of soil from the bottom of the excavation. For CU 5, the sampling interval will be from 0-0.5 feet. Twelve samples will be collected from the CUs for analysis. It may be necessary to collect samples using the bucket of an excavator for those sampling locations that fall under the water along the riverbank. The four samples designated as "archive" will be collected and stored in the event they are needed for additional analysis.

4.2 ANALYTICAL METHODOLOGY

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. The minimum detection level (MDL) will be set at 10 percent of the FRL but the low off-property FRLs may result in difficulties for laboratories to meet 10 percent of the FRL for some analytes. In those instances, the MDL will be set as low as reasonable below the FRL. Analyses will be conducted to Analytical Support Level (ASL) D or E, where the MDL of the FRL is above the SCQ ASL detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for all of the analytical data. Because results are batched or grouped by CU, all results from a minimum of one of the four CUs will be validated to validation support level (VSL) D. Samples rejected during the validation process will be re-analyzed, or an archive sample may be substituted if there is insufficient material available from the initial sample. Once data are validated as required, results will be entered into the SED.

4.3 STATISTICAL ANALYSIS

Once data are entered into the SED, a statistical analysis will be performed to evaluate the pass/fail criteria for this 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.

When both CUs 5 and 6 have passed certification, a Certification Report will be issued. The Certification Report will be submitted to the regulatory agencies to receive acknowledgment that the pertinent operable unit remedial actions were completed, and the individual CUs are certified and may be released for interim or final land use. Section 7.4 of the SEP provides additional details and describes the required content of the Certification Report.

4.3.1 Surface Samples (0 to 6-inch)

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 for primary ASCOCs (or 90 percent UCL for secondary COCs) that are above the FRL results in that CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the second criterion. The second criterion is the hot spot 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 hot spot criterion is met, the CU will be considered certified.

In the event that a 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.

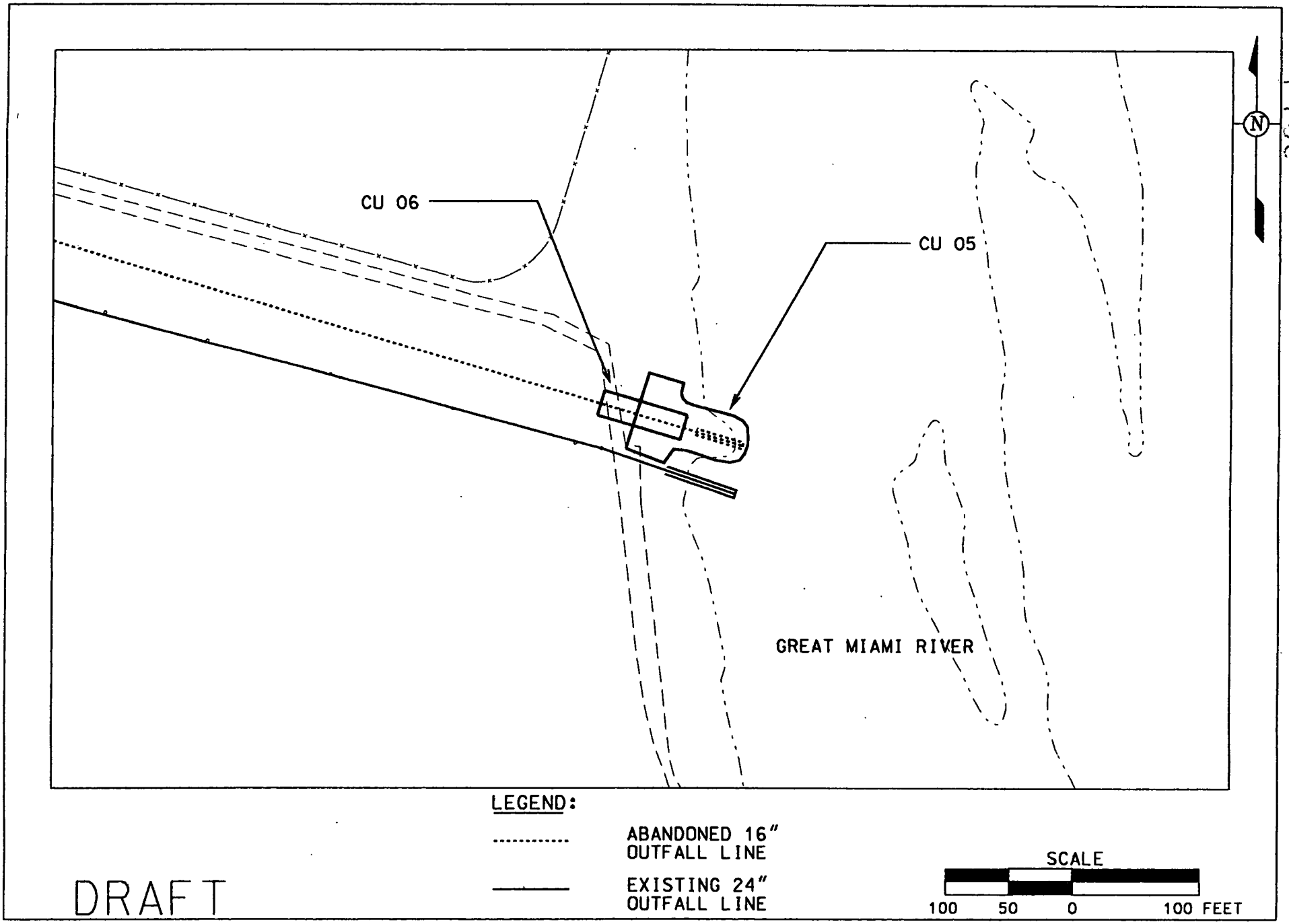

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FIGURE 4-1. AREA 9 PHASE III, PART TWO CERTIFICATION UNITS

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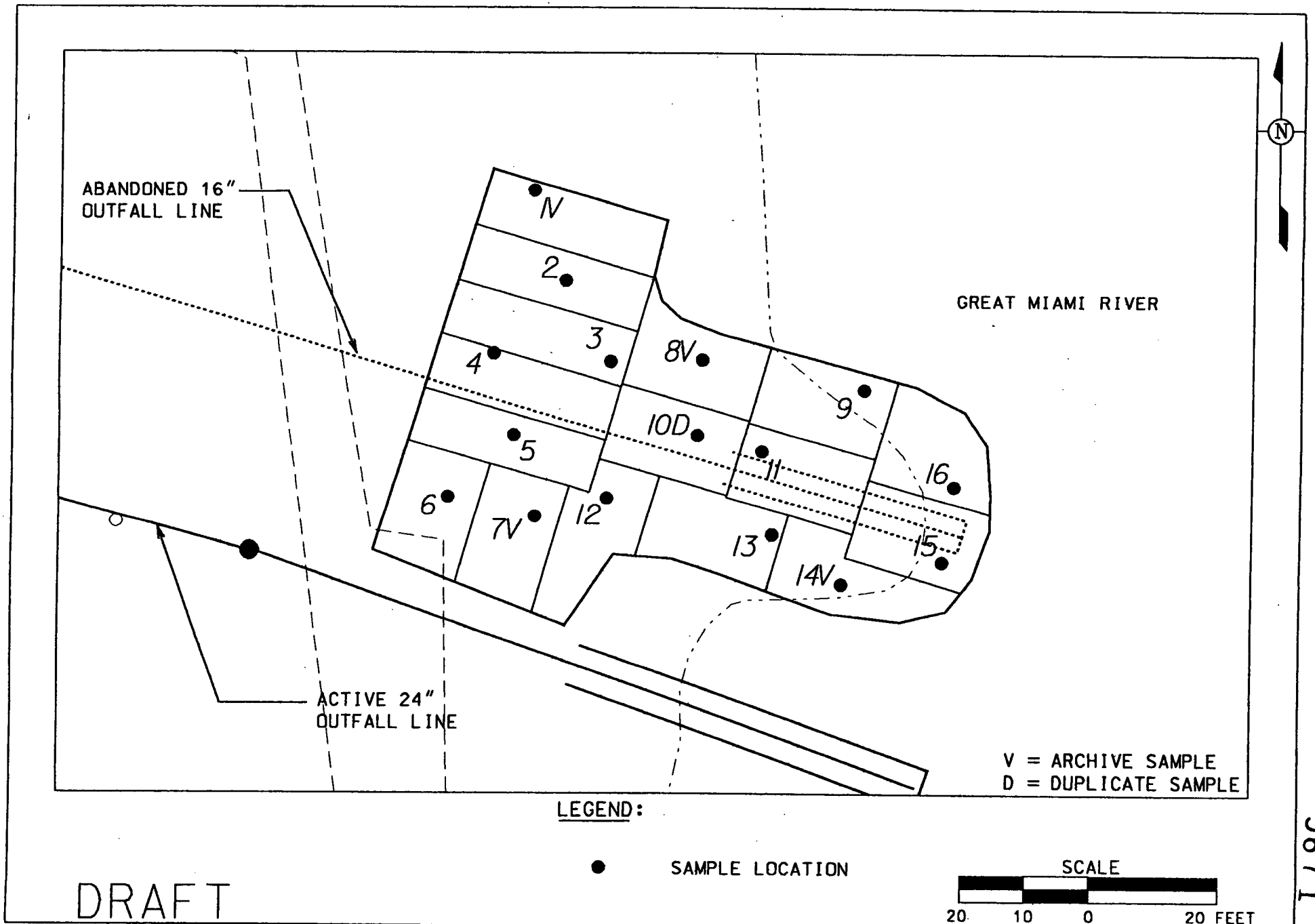

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FIGURE 4-2. CERTIFICATION SAMPLING LOCATIONS FOR CU 05

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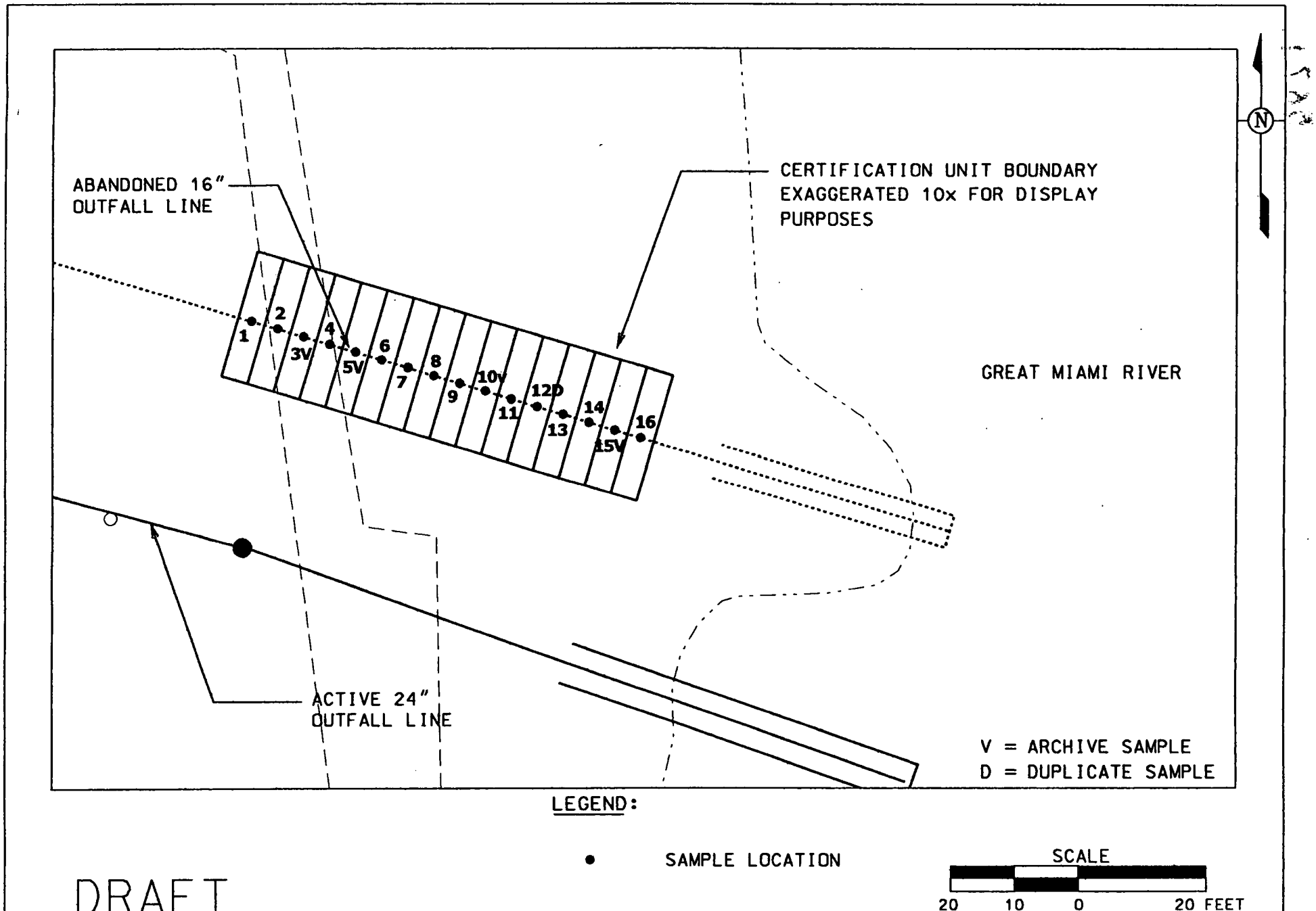

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FIGURE 4-3. CERTIFICATION SAMPLING LOCATIONS FOR CU 06

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5.0 SCHEDULE

The following draft schedule shows key activities for the completion of the work within the scope of this CDL. Implementation of this schedule is pending funding availability and property access. If necessary, an extension will be requested.

Activity	Target Date
Submittal of Certification Design Letter	September 3, 2004
Start of Certification Sampling	October 4, 2004
Complete Field Work	October 6, 2004
Complete Analytical Work	November 8, 2004
Complete Data Validation and Statistical Analysis	November 15, 2004
Submit Certification Report	December 9, 2004[a]

[a]Only the date for submittal of the Certification Report is a commitment to the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency. Other dates are internal target completion dates.

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