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SUMBITTAL OF THE AREA 1, PHASE I REMEDIAL ACTION WORK PLAN RESPONSE TO COMMENTS DOCUMENT

10/09/96

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DOE-FN EPAS
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RESPONSES

Department of Energy

Ohio Field Office
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705
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OCT 0 9 1996

DOE-0037-97

Mr. James A. Saric, Remedial Project Director
U.S. Environmental Protection Agency
Region V - 5HSF-5J
77 W. Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

SUBMITTAL OF THE AREA 1, PHASE I REMEDIAL ACTION WORK PLAN RESPONSE TO COMMENTS DOCUMENT

The purpose of this letter is to transmit, for your review and approval, the Area 1, Phase I Remedial Action Work Plan Response to Comments Document. As per our agreement on September 17, 1996, the Department of Energy, Fernald Environmental Management Project (DOE-FEMP) committed to initially submitting only the Area 1, Phase I Remedial Action Work Plan Comment Response Document to the U. S. Environmental Protection Agency (U. S. EPA) and the Ohio Environmental Protection Agency (OEPA) in lieu of the revised work plan in an effort to hopefully expedite the resolution of all outstanding issues prior to the revision and finalization of the plan.

In order to help facilitate your review of the enclosed comment response package, the following paragraphs are provided to highlight DOE-FEMP's responses to two critical issues which were raised in your comments: (1) final certification should be complete in areas, such as the footprint of the On-site Disposal Facility (OSDF), before grading or construction activities begin and (2) certification units should be based on both the Final Remediation Level (FRL) and Benchmark Toxicity Value (BTV) with the lower value determining the certification unit designation and, further, remediation should ultimately achieve the lesser of the FRL or BTV.

DOE-FEMP's proposed approach in Area 1, Phase I recommends that construction activities be permitted to begin prior to the completion of certification in the footprint for the relocation of the North Entrance Road (Area A). This strategy is recommended to avoid schedule impacts to the North Entrance Road relocation and, in turn, on excavation

within the OSDF footprint. Efforts will be made to minimize the risk associated with construction in these areas by performing real-time analyses (precertification) and obtaining certification samples taken with as little delay as possible.

The enclosed certification unit design depicted for the five analyte groups are in draft form and will be re-evaluated for BTV impacts as part of the revised work plan submittal. However, DOE-FEMP recommends that soil remediation be directed towards achieving FRLs. Soil Benchmark Toxicity Values (BTVs) are concentrations of constituents in soil that are suspected of potentially adversely impacting an ecological receptor in a habitat. BTV values are obtained from a variety of sources and are updated on a regular basis. Until the type of final ecological habitats and receptors are known on a particular site, BTV values cannot be interpreted as action levels driving remediation. BTV information will be collected during the certification process at the FEMP so soil source terms can be calculated during and after remediation. This information can then be used to assess the acceptability of habitats planned for site final land use.

If you or your staff should have any questions, please contact Robert Janke at (513) 648-3124.

Sincerely,

Johnny Reising

Johnny Reising
Fernald Remedial Action
Project Manager

FEMP:R.J. Janke

Enclosure: As Stated

cc w/enc.:

S. Fauver, EM-425/GTN
R. L. Nace, EM-425/GTN
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R. Beaumier, TPSS/DERR, OEPA-Columbus
F. Bell, ATSDR
D. S. Ward, GeoTrans
R. Vandergrift, ODOH
S. McLellan, PRC
T. Hagen, FDF/65-2
J. Harmon, FDF/90
A. Hunt, FDF/52-5
G. Jones, FDF/52-2
C. Little, FDF/2
AR Coordinator/78
EDC, FDF/52-7

DOE RESPONSE DOCUMENT FOR THE U. S. EPA TECHNICAL REVIEW COMMENTS ON THE "DRAFT OPERABLE UNIT 5, AREA 1, PHASE I REMEDIAL ACTION WORK PLAN"

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

GENERAL COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #:1

Comment: The work plan does not clearly identify areas that will be certified as clean under the Area 1, Phase 1, scope of work. For example, Section 2.3 states that "Area B (in its entirety) and Area C will be certified"; however, in Section 3 the text indicates that only Area B Northwest will be certified. Table 3-1 suggests that none of the areas will be certified under the Area 1, Phase 1, scope of work. The concept that no areas within the Area 1, Phase 1 scope of work will be certified appears to conflict with the discussions in meetings between the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE). It was EPA's understanding that the scope of Area 1, Phase 1 RAWP included certification. The concept of delaying certification until a future date may not be acceptable. The scope of this RAWP must be clearly and consistently described and discrepancies must be corrected. In addition, a detailed schedule outlining the time frame for certification should be added to the RAWP.

Response: Agreed that further clarification of certification is desirable. The confusion is primarily due to two problems:

(1) The Area 1, Phase I Remedial Action Work Plan (RAWP) must address many areas with specific information on how these areas impact one another as well as any special information that applies to an individual area. That is complicated in any presentation.

(2) The funding necessary to certify all Area 1, Phase I areas within the next one and one-half years was not available at the time the RAWP was submitted and this precluded the ability to specifically designate when all areas addressed by the RAWP would be certified. The one area which was specifically scheduled (i.e. had a certification report submittal date) was the north end of the disposal facility footprint.

Please refer to the Action for a revised presentation of the areas within Area 1, Phase I. It is hoped that this presentation will be clearer than the current presentation in the RAWP. Recent schedule/budget analyses make revision of the

RAWP with specific certification dates now feasible and that revision is included in the Action. The text changes presented in the Action also incorporate information about specific portions of the areas within Area 1, Phase I that serves to clarify issues that have arisen since the draft RAWP was submitted in July.

Action: Revisions to the Area 1, Phase I RAWP text will be made as follows:

(1) The following text will be inserted after the first sentence in Section 2.3:

The steps encompassed by this work plan can be divided into two major efforts. The first is excavation; the second is certification. Section 4 of this document presents guidelines for excavation. The remaining sections of the document discuss various issues and steps in the certification process. The goal of the Area 1, Phase I effort is to excavate and certify (as meeting FRLs) certain specific portions of the FEMP site. Figure 2-3 presents those areas that are initially planned for excavation within the Area 1, Phase I scope. The term "initially planned" is used here because the certification process may drive the need for added shallow excavation that is not envisioned based on the current data on the areas to be certified. Figure 2-4 presents those areas that are to be certified as meeting FRLs within the Area 1, Phase I scope. Various areas within Area 1, Phase I have been designated on the figures and provided with simple codes for reference. It is important to understand the differences between the figures since those differences highlight the activities within the Area 1, Phase I scope. The table presented below presents an explanation of the areas and the associated activities.

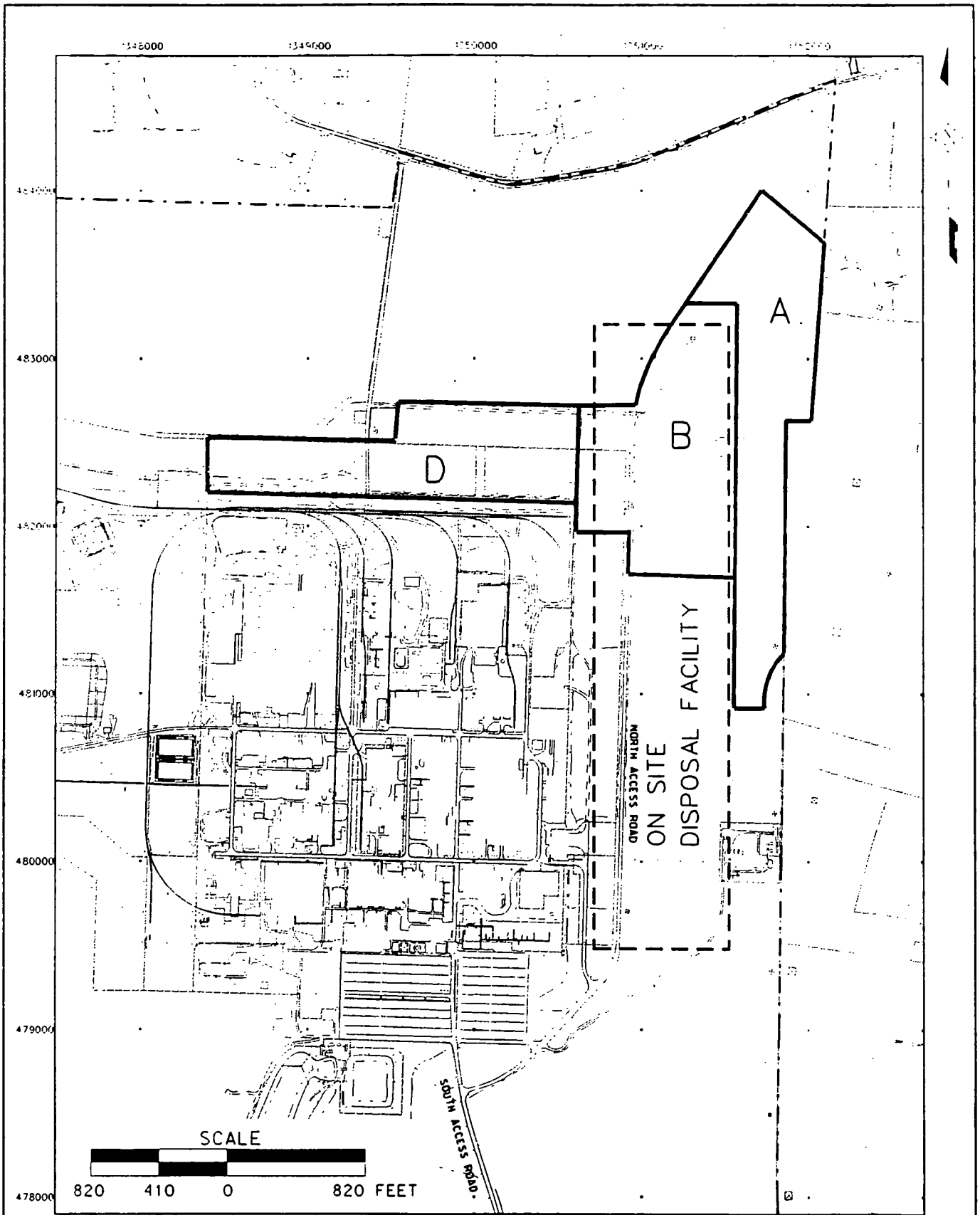
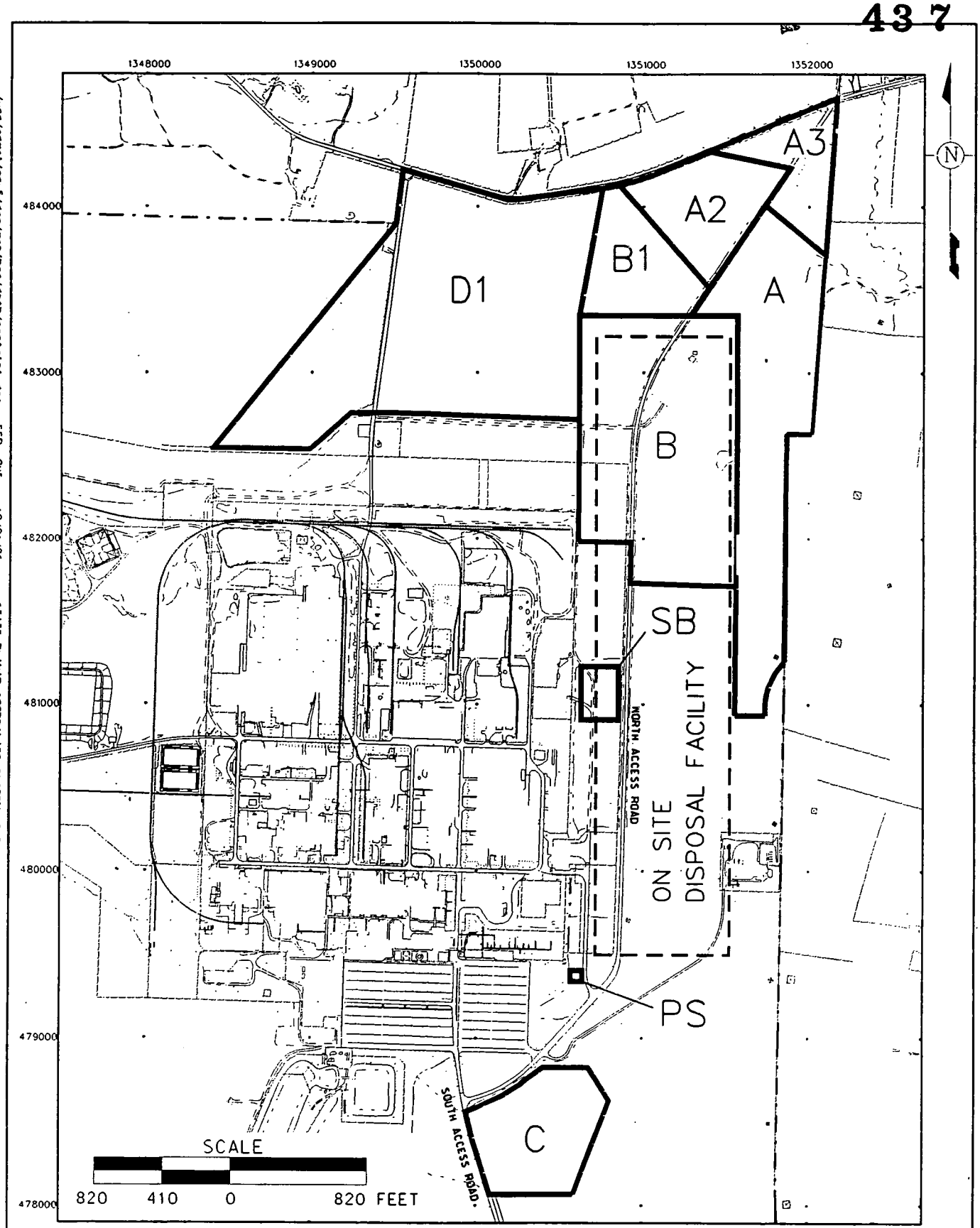


FIGURE 2-3. INITIAL EXCAVATION AREAS UNDER AREA 1 / PHASE I



LEGEND:

FEMP BOUNDARY

AREA BOUNDARY

FIGURE 2-4. AREAS BEING CERTIFIED UNDER AREA 1 / PHASE I

Area Description	Map/Text Designation	Activities under Area 1, Phase I RAWP	Special Circumstances
The footprint for the relocation of the North Entrance Road	A	Excavate and Certify	The road construction schedule results in the need to initiate construction before the certification report is complete and approved. That construction will begin after certification samples are collected, but prior to completion of certification analyses and reporting. Efforts will be made to minimize the risk associated with construction in this area by performing real-time analyses (precertification) and getting certification samples taken as rapidly as possible. At the southeast corner of Area A is an electrical tower. The region around this tower will be isolated from Area A by a diversion ditch. This region was designated in design drawings as being excavated. However, this region will not be excavated at this time, but will be addressed by the Area 1, Phase II IRDP (due to regulatory agencies on November 21, 1997). Eastern portion of Area A which receives runon from Area A1. Please see the Area A1 discussion in the next table. Any tiles impacting the OSDF (i.e. either entering or exiting the OSDF footprint) will be removed. However, the drain tile system associated with the swale at the northeastern corner of the site does not impact the OSDF. DOE does not currently plan to excavate that drain tile system because of the combination of (1) the desire of the neighboring property owner to not change the overall drainage patterns adjacent to his property and (2) low level of contamination in that area, DOE considers it inadvisable to excavate that drain tile system.
Northeast corner of FEMP	A2	No excavation expected; Certify	None.
North-northeast corner of FEMP	A3	No excavation expected; Certify	None.

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Area Description	Map/Text Designation	Activities under Area 1, Phase I RAWP	Special Circumstances
Northern end of the OSDF footprint	B	Excavate 6 inches from all but northwestern portion and the roadway; Certify all	The northwestern portion of this area is not expected to requre excavation prior to certification. The existing North Entrance Road goes through Area B and is removal is required for Phase I of the OSDF construction. It is proposed that the certification for this feature be based on the following: (I) Core samples through the pavement into the soil beneath it, and core samples of the adjoining ditched areas. (ii) From the core samples, analyze the native material (below the pavement and roadway aggregate) in 4 inch increments to determine to what depth the road area and the ditched area exceed FRLs. (iii) After the OSDF project excavates the roadway and adjoining ditched areas to the depth determined in step (ii), confirm the completeness of the removal with real-time monitoring equipment. This alternative certification strategy for the roadway will be detailed in the Project Specific Plan to be submitted for certification.
Runon area for OSDF footprint	B1	No excavation expected; Certify	None.
Initial portion of Borrow Area	C	No excavation expected; Certify	None.
North rail yard and area immediately to the north	D	OU1 is doing surface excavation per good management practices; Real-time scanning, but no certification	Will be certified later on the schedule of the Area 6 remediation.
North central portion of FEMP site	D1	No excavation expected; Certify	None.
Main leachate pump station for the OSDF	PS	No excavation expected; Certify	The area in the immediate vicinity of this pump station will be certified to allow its construction as a permanent feature.
OSDF Sediment basin	SB	No excavation expected; Certify	Certification of this area will allow material excavated from it to be used in OSDF construction.

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Certain other areas are worthy of discussion because of potential impacts on Area 1, Phase I. These are presented in Figure 2-5 and discussed in the table below.

Area Description	Map/Text Designation	Activities under Area 1, Phase I RAWP	Special Circumstances
Off-property area with potential runon to Area A	A1	Surface water from the southern portion of A1 will be isolated from Area A with a diversion ditch.	The eastern portion of Area A receives runon from Area A1. The northern portion cannot be isolated without extensive ditch construction. Since the known level of contamination in that area is low, the proposed plan in this area is as follows: (I) Monitor the regions immediately adjacent to the northern portion of Area A1 using real time equipment. (ii) Excavate Area A as currently proposed. (iii) If real-time monitoring reveals that the immediately adjacent parts of A1 are impacted in excess of FRLs, install silt fence along the edge of those parts. The purpose of this fence will be to allow the passage of water, but not solids, since the solids could potentially recontaminate portions of Area A. (iv) Proceed with the certification of Area A.
Area east and north of Area C	C1	None. Due to topography, this area does not impact Area C.	None.
Area east and south of Area C	C2	None. Due to topography, this area does not impact Area C.	None.
Fire training facility	D2	Not part of Area 1, Phase I; Isolated from a surface water stand point; will be addressed in the future with Area 3	None.

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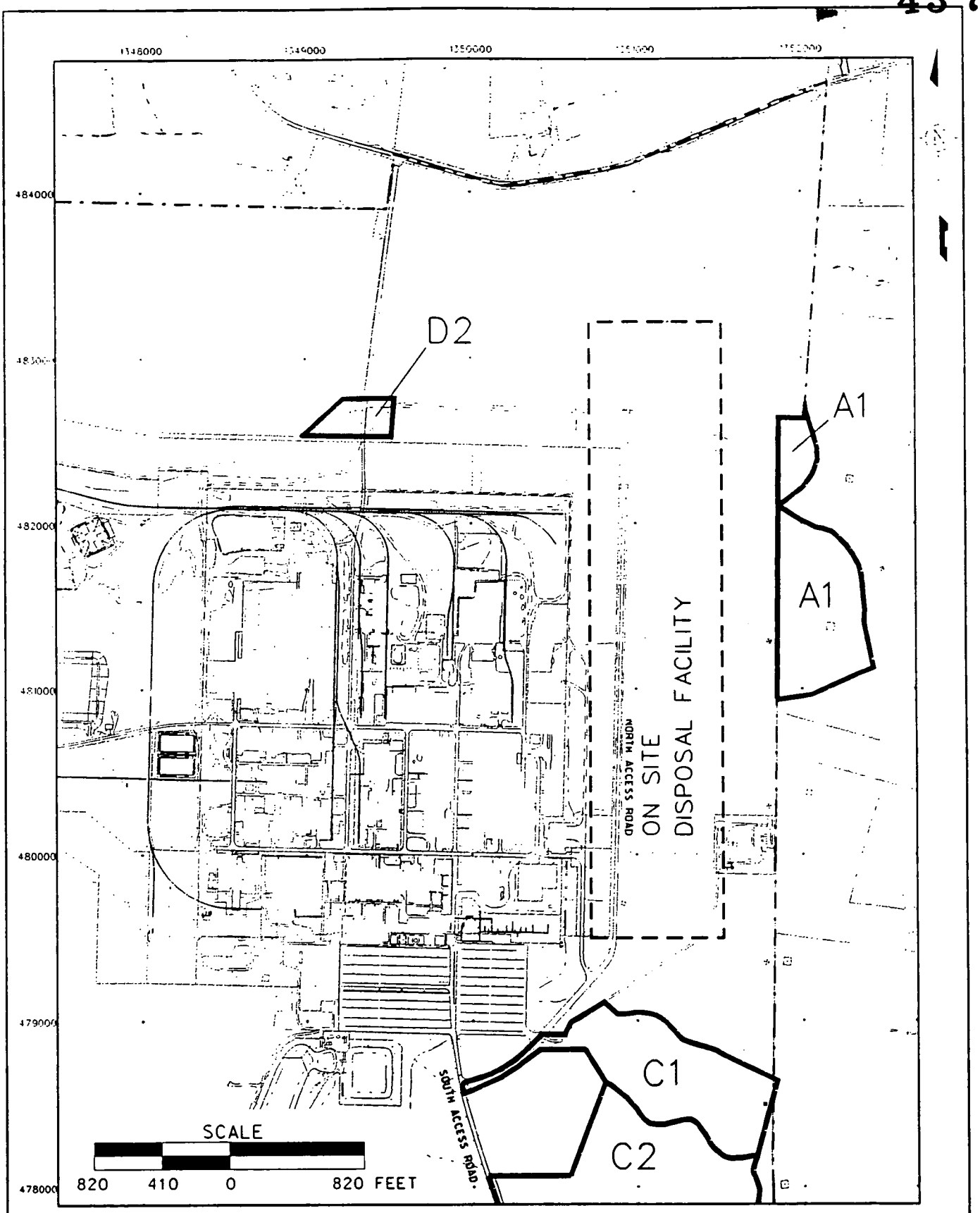


LEGEND:

FEMP BOUNDARY

AREA BOUNDARY

FIGURE 2-5. OTHER AREAS WITH POTENTIAL IMPACTS TO AREA 1 / PHASE I

(2) A new section, "Section 3.1.7 Schedule" will be inserted. This section will contain the following:

"The activities within the Area 1, Phase I scope will be accomplished according to the following schedule:

AREA	Field Activity	Anticipated Completion Date
A, B, B1, PS, SB	Begin Mobilization for Excavation	4 September 1996
	Installation of runoff controls along A1	31 October 1996
	Excavation, Area A	22 November 1996
	Excavation, Area B	15 December 1996
	Certification Sampling	20 December 1996
A2, A3, C, D1	Certification Sampling	01 December 1997
Roadway within B	Certification Sampling	20 December 1996
	Roadway Removal	25 May 1997 (with OSDF construction)
	Final Check with Real-time Equipment	31 May 1997
D	Excavate upper 6 inches and place in stockpile west of North Access Road for eventual disposal in the OSDF	30 November 1996
	Certification to take place with remediation of Area 6	With Area 6

Note that the roadway within Area B is a special case because it is planned to be left in place until the relocated North Entrance Road is completed. The schedule reflects this and presents a special means for dealing with the certification of the roadway.

In preparation for these field activities, a number of supporting documents are being developed. These documents are described in Sections 6 and 7 and the schedule for their completion is presented below:

Document	Anticipated Completion Date
Project Specific Plan for Certification	October 31, 1996
Project Specific Plan for WAC Attainment	October 31, 1996
Procedure for R-TRAK Operation	October 31, 1996
Procedure for HPGe Detector Operation	October 31, 1996
Project Specific Plan for Comparability Study	October 31, 1996
Letter addenda (as described in Section 4) for unexpected excavations within the areas to be certified for Area 1, Phase I	As Needed

Reports for work under the Area 1, Phase I RAWP will be submitted to the U. S. EPA and Ohio EPA on the following schedule (please refer to Figure 2-4):

Description	Proposed Date, Submittal of Report
Certification Report for: Area A - Footprint for relocation of North Entrance Road Area B - North end of OSDF Area B1 - OSDF runon area Area PS - Main Leachate Pump Station for the OSDF Area SB - Initial Sediment Basin for the OSDF	01 March 1997
Comparability Study Report	14 March 1997
Certification Report for: Area A2 - North-Northeast corner of site Area A3 - Northeast corner of site Area C - Initial portion of Borrow Area Area D1 - North central portion of site	30 January 1998

As indicated in the above table, the Area 1, Phase I schedule is coordinated with the schedule for construction of the On-site Disposal Facility (OSDF) for excavation and certification. Under the Area 1, Phase I schedule, the certification report covering the OSDF footprint will be submitted to the regulatory agencies by March 1, 1997, which

provides 30 days for review before major construction activities begin at the OSDF footprint. Site preparation work for the OSDF may begin as early as March 1997, but liner excavation is not planned before early May 1997.

Construction for relocation of the North Entrance Road (in Area A) will begin after certification samples are collected, but prior to completion of certification analyses and reporting. Efforts will be made to minimize the risk associated with construction in this area by performing real-time analyses (precertification) and getting certification samples taken as rapidly as possible.

It is anticipated that the Operable Unit (OU) 1 North Rail Yard grading activities will be completed by about November 30, 1996. While this area is not being certified as part of Area 1, Phase I, the area to be graded will be monitored prior to grading with real-time equipment as a good management practice as discussed in Section 2.1.3.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2 Page #: NA Line #: NA
Original General Comment #: 2
Comment #: Several areas will be excavated under the scope of this project. However, certification for many of these areas will apparently be postponed until either funding is available or other phases of the Area 1 removal action are completed. The work plan should be amended to fully explain in the text the purpose for delaying certification. For example, the work plan states that Area D will be excavated as part of this removal action to prepare the area for construction of the Operable Unit (OU) 1 rail yard. However, the area must be adequately certified before the On-site Disposal Facility (OSDF) or other permanent structure construction activities begin.

Response: As noted in the response to U.S. EPA General Comment #1, the funding issue is no longer considered a constraint and the schedule has been revised accordingly. Please refer to the previous comment for detailed information on the revisions. However, as discussed in the September 17, 1996, meeting with the U.S. EPA and Ohio EPA, it is important to note that there are still certain areas where construction activities of some kind will be occurring prior to completion of certification. Specific areas are as follows:

- Construction for relocation of the North Entrance Road (in Area A) will begin after certification samples are collected, but prior to completion of certification analyses and reporting. Efforts will be made to minimize the risk associated with construction in this area by performing real-time analyses (precertification) and getting certification samples taken as rapidly as possible.

- As agreed at the September 17, 1996, meeting between EPA, OEPA and DOE, the Rail Yard area is not being certified as part of Area 1, Phase

I, but the area to be graded will be monitored prior to grading with real-time equipment as a good management practice as discussed in Section 2.1.3.

- Under the Area 1, Phase I schedule, the certification report covering the OSDF footprint will be submitted to the regulatory agencies by March 1, 1997, which provides 30 days for review before major construction activities begin at the OSDF footprint. Site preparation work for the OSDF may begin as early as March 1997, but liner excavation is not planned before early May 1997. The ability to complete the certification report covering Area B depends on being able to address the North Entrance Road properly since the existing North Entrance Road goes through Area B and its removal is required for Phase I of the OSDF construction. The proposal for the certification for this feature is described in the first table presented in the action for U. S. EPA General Comment #1.

Action: For the revised schedule, please refer to the action presented under U. S. EPA General Comment No. 1.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3 Page #: NA Line #: NA
Original General Comment #: 3

Comment #: The text refers to several types of "precertification" sampling. The use of the term "precertification" to identify several different types of sampling with different intended uses may lead to confusion during project implementation and data evaluation. The text should be revised to use a unique term for each type of precertification and final certification sampling based on the intended use of sampling data. Also, the term "certification" should be changed to "final certification" to more properly reflect the data's use.

Response: Agreed.

Action: The text will be clarified to reflect the functional descriptions of definitive tasks performed during precertification as follows:

The term **precertification** will be used to describe Waste Acceptance Criteria (WAC) Attainment Sampling, Run-on Evaluation, Target Level Attainment (75% of FRL), and Hot Spot Detection. Each one of these components will be used to describe the specific function.

The term **certification** will be used in its current context to describe FRL compliance.

The term **final certification** will be employed when approval is granted for the certification unit (CU) from the Regulatory Agencies.

This revised language will then be used through the document.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 4
Comment #: The schedule is discussed briefly in two portions of the work plan, Section 4.4 and Section 7.8. Both schedules appear outdated. Furthermore, the schedule should be more fully developed to show project milestones and related milestones from remedial actions at operable units (OU) that may impact this work schedule. For example, construction of the OSDF is driving the overall schedule for most of Area 1, Phase 1 excavation and certification. The OSDF time line should therefore be shown in relation to the intended schedule for remedial actions outlined in this work plan.

Response: See U. S. EPA General Comment #1 for a revised certification schedule and U. S. EPA Specific Comment #3 for a discussion of field activities and the OSDF construction effort.

Action: See action for U. S. EPA General Comment #1.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 5
Comment: The text contains numerous typographic errors. For example "global positioning satellite" should be corrected to "global positioning system." Also, the text contains numerous incorrect or incomplete cross-references. For example Page 5-2, Line 11 incorrectly refers to Figure E-1 instead of Figure E-2. As another example, the reference to "Nelson and others (1994)" on Page 5-3, Line 2 does not have a corresponding citation in the references listed. Typographic errors and other discrepancies in the text should be corrected.

Response: Agreed.

Action: Typographical errors will be corrected during preparation of the final A1 Area 1, Phase I RAWP.

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.3 Page #: 2-4 Line #: NA
Original Specific Comment #: 1

Comment: The text states that "only Areas B (in its entirety) and C will be certified as part of the Area 1, Phase 1 scope; due to budget constraints, Areas A and D and all adjacent areas ... will not be certified by this work plan." First, the statement concerning which areas will be fully certified is inconsistent with other portions of the document. For example, Section 3.1.1 indicates that only Area B Northwest will be certified, but Table 3-1 indicates that Areas B and C may not be certified under the scope of Area 1, Phase 1. Furthermore, the table indicates that certification will be conducted "prior to OSDF construction." Whether this is inclusive of the Phase 1, Area 1 scope of work is unclear. The text should be revised to consistently and accurately present certification information. Second, the funding issue and its relevance to the scope of work should be clarified. In addition, if funding will impact some or all of the scope of work, tasks should be prioritized in the RAWP.

Response: Please refer to General U. S. EPA Comment #1 for a discussion of schedule revisions.

Action: Please refer to the action for General U. S. EPA Comment #1.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.1.4 Page #: 3-2 Line #: NA
Original Specific Comment #: 2

Comment: The text states that soil contamination is expected in the top 6 inches of soil. This statement is inconsistent with Figure 2-2 which shows anticipated contamination in Area D at depths up to 5 feet below ground surface. The text and/or figure should be revised to present consistent and correct information.

Response: This inconsistency in no longer applicable to Area 1, Phase I. Due to the revision of the scope of Area 1, Phase I, the figures are no longer pertinent to Area 1, Phase I.

Action: The figure will be removed from the Area 1, Phase I RAWP.

Commenting Organization: U.S. EPA Commentor: Saric
Section#:4.4 Page #: 4-16 Line #: NA
Original Specific Comment #: 3

Comment: The proposed project schedule indicates a start date for soil remediation in August 1996. It appears that this schedule is incorrect. It is unlikely that work will start in August, based on the date of this submittal. This date should be revised if

incorrect. Also, the schedule should be expanded to include deliverables, an approximate time line of activities including the estimated start and finish date for Area 1, Phase 1 activity and other related tasks such as the construction of the OSDF.

Response: The subcontractor to perform the soil excavation was mobilized in September, 1996 and is expected to start the actual excavation in October, 1996. It is anticipated that the excavation will be complete by early December and certification sampling will be complete by mid December. The approximate start date for construction of the OSDF liner is May, 1997. Please see the lists of activities and deliverables in the action for U. S. EPA General Comment #1.

Action: The schedule will be expanded to include the start date and approximate end dates of the Area 1, Phase I work and the start of construction of the OSDF by including them in the action for U. S. EPA General Comment No.1.

Commenting Organization: U.S. EPA Commentor: Saric
Table #: 5-1 Page #: 5-8 Line #: NA
Original Specific Comment #: 4

Comment: This flow chart states that there are 16 contaminants of concern (COC) identified in the ecological risk assessment; however, the text on Page 5-3 state that 17 COCs result from the ecological risk assessment. The numbers should be consistent.

Response: Agreed.

Action: Figure 5-1 has been edited to reflect the correct number of constituents of concern (COCs).

Commenting Organization: U.S. EPA Commentor: Saric
Table #: 5-3 Page #: 5-12 Line #: NA
Original Specific Comment #: 5

Comment: Lead is identified as an area-specific COC in Table 5-3, but it is not listed as such in Table E-1. Table E-1 should be revised to include lead as an area-specific COC.

Response: Lead was incorrectly included in Table 5-3. Figure E-51 depicts the sitewide locations of lead samples in excess of the BTV (200 mg/kg). As shown in this figure, based on existing characterization data and process knowledge lead is not an issue within Area 1, Phase I.

Action: Lead will be removed as a COC from Table 5-3.

Commenting Organization: U.S. EPA Commentor: Saric
Table #: 6-2 Page #: 6-14 Line #: NA
Original Specific Comment #: 6
Comment: Table 6-2 omits lead, which is included in Table 5-3. Lead must therefore also be included in Table 6-2 and in the sampling and analysis scheme.

Response: Lead was incorrectly included in Table 5-3. Figure E-51 depicts the sitewide locations of lead samples in excess of the benchmark toxicity value (BTV) (200 mg/kg). As shown in this figure, lead is not an issue within Area 1, Phase I.

Action: Lead will be removed from Table 5-3.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 6.5.1 Page #: 6-11 Line #: 12
Original Specific Comment #: 7
Comment: The text states that the global positioning system (GPS) will be used to define the areas covered by the R-TRACK system. However, the selective availability features of the GPS produce considerable random variation of the GPS signals (dithering); therefore, position accuracy is 100 meters for 95 percent of the time, with a greater margin of error the rest of the time. Furthermore, the dithering is rapid enough to degenerate precision so that an apparent position may change as much as 100 meters within a minute or so. It is recommended that the DOE either discuss procurement of "precise positioning service" (PPS) receivers from the U.S. Department of Defense (DoD) or set-up and operate a differential GPS system.

Response: It was not clearly stated in the text, but the Trimble GPS system that is attached to the R-TRAK instrument package is coupled with a base station that resolves signal accuracy to within 1-2 feet. (The R-TRAK instrumentation procedure will discuss this in more detail.)

Action: Text in the document will be expanded to clarify the GPS capabilities.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 7.4.1 Page #: 7-5 Line #: 8
Original Specific Comment #: 8
Comment: The text states that DOE will alter the size of a Class I certification unit (CU) as necessary to complete area coverage. The text implies that size will increase or decrease and does not mention shape changes. The CU system described here would be more appropriate if the policy for complete area coverage is to adjust the shape of the CU and then, if necessary, decrease the CU area. This policy seems to be the only one implemented, as shown by CU 51 in Figure 7-1. The RAWP should be revised to present this policy for all three classes of CU.

Response: Agree. The CUs will have been reevaluated and will in the future be based on a consistent sitewide numbering system. The new system will provide accountability for all areas, flexibility in size and shape. Due to some irregular portions of the site, shape and size adjustments will be made, but individual CUs will not exceed specified sizes.

CU1 ≈.92 acre
CU2 ≈3.68 acres
CU3 ≈14.82 acres

Action: Redelineate CUs.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 7.7 Page #: 7-9 Line #: 9
Original Specific Comment #: 9

Comment: Section 7.7 presents the statistical testing formula. In this section, the term "b" (assumed to mean "β") is not relevant for looking up the critical value; therefore, this term should be deleted from this sentence. The actual β value of the results should be calculated as part of the data assessment and included in the certification report to verify that an adequate number of samples was collected. In addition, the "a" value (assumed to mean "α") should be identified as the value for the one-sided distribution of t, as implied in the null hypothesis in Line 10.

Response: Agree. Inclusion of the β term was an error. Additionally, we agree that the α value should be for a one-sided t-test.

Action: The β term will be eliminated and the text will be revised to reflect that this test is a one-sided t-test. The text in Section 7.7 will be replaced with the text presented below to clarify this concern.

7.7 STATISTICAL TESTING

In order to statistically determine if a CU can be designated as 'clean' (to pass certification) the average soil sample value will be compared to the remedial goal. Since the burden is on the FEMP to prove that the remedial goals have been achieved, the hypothesis is formulated as:

H_0 = the i_{th} CU is assumed to be out of compliance (i.e. the average concentration for a given analyte is equal to or greater than the remedial goal.

H_A = there is significant evidence to indicate that the average concentration of the given analyte in the i_{th} CU is less than the remedial goal and therefore we reject the null hypothesis and deem the CU clean.

The following statistical test will be used to determine if the average concentration in the i_{th} CU is less than the remedial goal:

$$t = \frac{RG - \bar{x}_i}{\sqrt{S_i^2/n_i}}$$

where:

RG = *the remedial goal*
$\bar{x}_i$ = *the mean concentration for the* i_{th} *CU*
S_i^2 = *the sample variance for the* i_{th} *CU*
n_i = *the number of samples the* i_{th} *CU*

If the computed value (t) exceeds the critical value of a t-distribution with σ = 0.05 at n-1 degrees of freedom then the null hypothesis is rejected in favor of the alternative. Thus, if the average concentration of the given analyte is significantly less than the remedial goal the test statistic (t) becomes large. If the test statistic exceeds the critical value then there is significant evidence that the average concentration for the given analyte is less than the remedial goal and, therefore, the hypothesis that the CU is out of compliance can be rejected and the CU can be deemed clean.

Commenting Organization: U.S. EPA Commentor: Saric
Section#: 7.8 Page #: 7-10 Line #:NA
Original Specific Comment #: 10

Comment: It is recommended that the proposed schedule for submittal of certification reports be combined with the schedule in Section 4.4. Certification reports for Areas A and C are scheduled for submittal with Area I, Phase II reports. This submittal schedule is inconsistent with discussion in Sections 2 and 3. Also, the schedule includes a submittal for the "OSDF footprint" dated January 31, 1996. U.S. EPA is unaware of any certification reports submitted on this date. This date therefore appears to be a typographic error. The work plan schedule should be revised to accurately reflect submittal dates consistent with the dates discussed in other sections.

Response: Agree that the schedule needs clarification and that the schedule information presented in Sections 4.4 and 7.8 should be combined.

January 31, 1996, date is indeed a typographic error. Given the current progress on Area 1, Phase I, the document will be revised to reflect a certification report submittal date for the north end of the OSDF footprint of March 1, 1997.

Action: Section 4.4 and the schedule information within Section 7.8 (page 7-10, lines 10 through 26 of the July Area 1, Phase I RAWP submittal) will be deleted. A new

schedule section, 3.1.7, has been developed. Please see the action for U. S. EPA General Comment #1.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Appendix C, C.1.3 Page #: C.1-3 Line #: 9
Original Specific Comment #: 11

Comment: This text notes correctly (see Table 7-1) that the cleanup level for aluminum is 16,100 milligrams per kilogram (mg/kg) as derived from the background concentrations. However, on Line 11 Table C.1-2 is cited and presents an aluminum cleanup level of 10,103 mg/kg as derived from ecotoxicity effects. Table C.1-4 on Page C.1-11 gives the value of 16,100 mg/kg but ascribes it to ecotoxicity effects. The appendix should be revised to present consistent aluminum cleanup levels and sources for these levels.

Response: Agreed. Aluminum will be retained in the certification analytical suite, however the BTV will not drive soil remediation or excavation. Data will be collected during certification and evaluated to assess potential post-remedial ecological risk impacts to ecological habitats considered in the final land use plan.

Action: The text will be revised to reflect this point.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Appendix C, C.1.3 Page #: C.1-3 Line #: 18
Original Specific Comment #: 12

Comment: This text says Aroclors will be analyzed by using the "SW 846 Method 8270" to assure a cleanup level of 0.13 mg/kg. It should be noted that this level is near the method detection limit for Method 8270. It is recommended that DOE verify whether a sample detection level of 0.04 mg/kg or less can be obtained by the selected laboratory using Method 8270. If this detection limit can not be met, then it is recommended that SW-846 Method 8080 be used for analysis of Aroclors.

Response: The 0.13 mg/kg FRL for aroclors was a result of defaulting to instrumentation minimum detection limit (MDL). The on-site laboratory staff is currently evaluating use of HPLC Method 8080 for analysis of aroclors. Resolution of this study will be included in the final submission of the Area 1, Phase I RAWP.

Action: None.

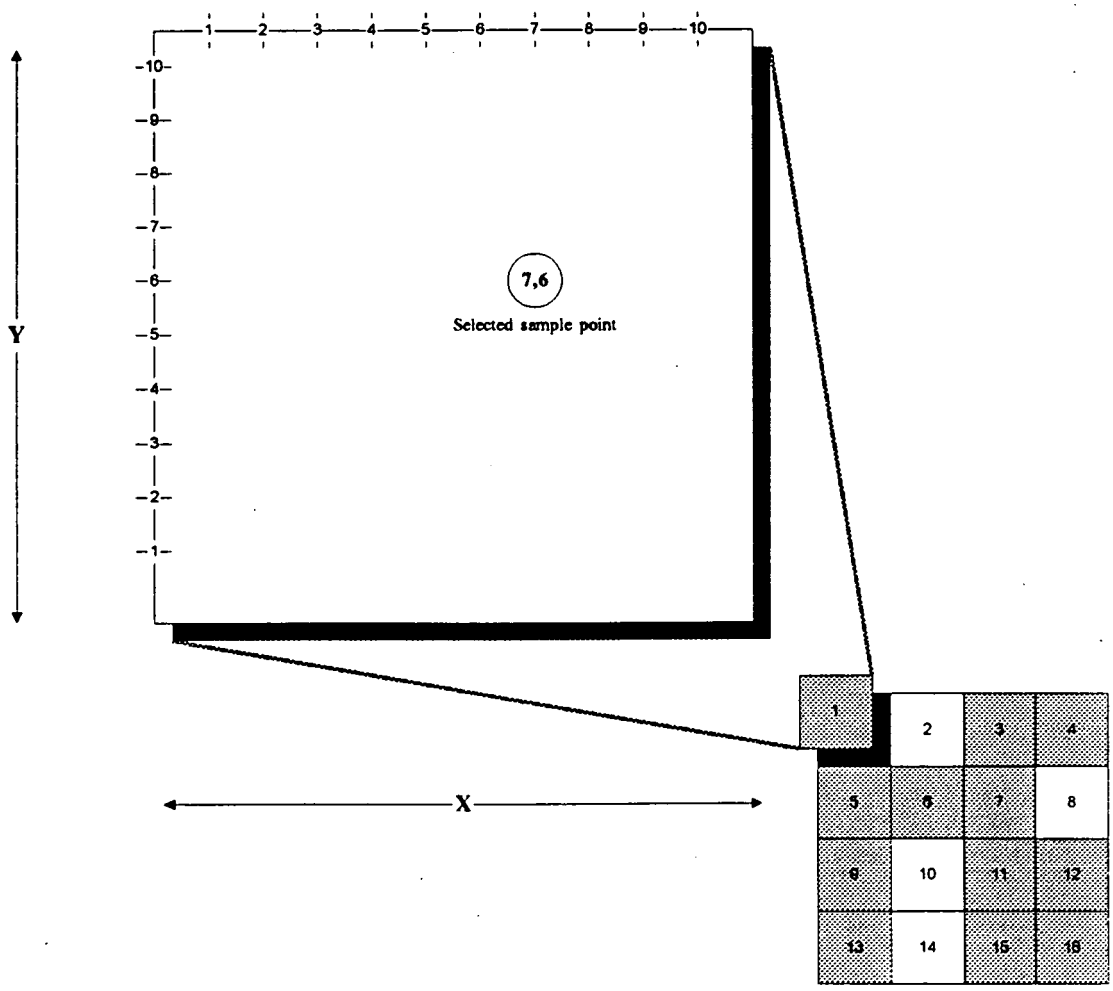
Commenting Organization: U.S. EPA Commentor: Saric
Section #: Appendix C, C.1.7 Page #: C.1-6 Line #: 15
Original Specific Comment #: 13

Comment: The validity of the sample design requires random selection of both the grid cells to be sampled and the actual sampling location within each grid cell. The work plan should be revised to present a standard operating procedure (SOP) for these

selections. This SOP should be cited in the appendix here and in the sampling plan in Section 7.6. Also, because randomness is critical to certification results, the SOP should be reviewed by regulators before it is used for certification.

Response: The SOP for certification sampling design as it will appear in the Certification PSP is summarized as follows:

Each CU, regardless of size [i.e., CU-1, 2, 3 (homogenous)] will be divided into 16 blocks of approximately equal demension. Depending on the number of samples taken within the CU (12 samples for primary COCs and 9 for secondary COCs), blocks will be selected for sampling. Each block selected for sampling will be given an X and a Y and the sample point will be selected at random from within the block.



The actual sampling location within each selected block will then be selected as a random function of this grid. If the CU is irregular, by necessity, attempts will be made to ensure consistency of dimensions of the blocks.

Copies of the certification PSP will be available prior to performance of certification sampling.

Action: This summarized version of the SOP will be included in the RAWP. PSPs will be submitted when completed. Refer to schedule included within the Action for U. S. EPA General Comment #1.

The references for these procedures will be added to the text of the Area 1, Phase I RAWP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Apx C, C.1.7 Page #: C.1-7 Line #: 3
Original Specific Comment #: 14
Comment: In addition, this section should provide more information on how FEMP will use the data assessment process to verify that the actual sample results provide the desired "β" level.

Response: Comment Acknowledged.

Two assumptions were made when determining the number of physical samples required to pass certification at the level of confidence and within the alpha and beta errors determined to be acceptable. These two assumptions are:

1) Variability of Residual Contaminant Concentrations - There is no soil data at this time reflecting post remedial conditions that will be encountered during certification sampling. In order to make an assumption of variability of data anticipated in residual soil, data from areas that were impacted with area specific constituents of concern (ASCOCs) below their respective FRLs were analyzed and data variability calculated. This variability was then used as one assumption for calculating the number of samples needed.

2) Post-Remedial Concentrations - The number of certification samples is also dependent on the assumed average concentration of ASCOCs in the post-remedial soils. Several of our major ASCOCs, including thorium and radium, have high natural background concentrations with respect to their FRLs. For this reason setting target levels of ASCOCs at 75% of the FRLs was determined to be as low as practically achievable.

Existing data indicates both of the above assumptions trend to the conservative in the designated Area 1, Phase I certification units. Only when certification sample

results are returned can these design assumptions be verified. When certification sample results are available, results from each CU will be compared to these assumptions. Evaluation of certification results in Area 1, Phase I will determine if subsequent RAWPs can use these assumptions or if these factors require reevaluation.

Action: This detail will be incorporated in the final Area 1, Phase I RAWP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Appendix C, C.3 Page #: C.3-1 Line #: NA
Original Specific Comment #: 15

Comment: The study discussed here is a reasonable method of determining whether the innovative high-purity germanium (HPGe) detector produces results comparable to standard methods. A potential limitation to the HPGe study is the possibility that Phase I of Area 1 will not contain an adequate range of target concentrations. It is recommended that another area of the site should be used to furnish soil samples containing contamination at concentrations near the waste acceptance criteria (WAC) level. This comment also applies to Section C.4, which discusses the comparability study for the R-TRACK.

Response: Agreed.

Action: The forthcoming comparability study will incorporate HPGe readings taken at on-site locations with variations in radiological contaminant levels. The goal of this study is to demonstrate response of the HPGe detector system under widely variable levels of contamination and environmental conditions. This will be accomplished by reviewing existing soil data and characterization information in order to locate test areas with the required range of contamination. Previous review of this data identified areas of soil contamination on-site that ranged from background (for radiological primary ASCOCs) to levels exceeding the WAC for total uranium in soil. It is in this range of radiological conamination of FEMP soil (background to greater than WAC for total uranium) that the HPGe detection must be assessed for comparability. Location coordinates and sampling schedule for the HPGe comparability study will be included in the HPGe comparability study Project Specific Plan scheduled for completion by October 25, 1996.

DOE RESPONSE DOCUMENT FOR THE OHIO EPA TECHNICAL REVIEW COMMENTS ON THE "DRAFT OPERABLE UNIT 5, AREA 1, PHASE I REMEDIAL ACTION WORK PLAN"

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

General Comments

1) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: General Comment Pg #: Line #: Code: M
Original Comment #:
Comment: The document does not include an acceptable level of schedule detail or deliverable list. The document should include a summary table with dates for PSP submittals, excavation start, excavation complete, and submittal of the certification package for each area or CU addressed within the RAWP.

Response: Please refer to U. S. EPA General Comment #1.

Action: Please refer to action specified for U. S. EPA General Comment #1.

2) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: General Comment Pg #: Line #: Code: M
Original Comment #:
Comment: The document does not address in sufficient detail the method for evaluating WAC attainment prior to initiating excavation. Data from Ohio EPA's initial split sampling in Area D suggests the HPGe does not adequately characterize for WAC attainment and thus it is not likely the R-TRAK could attain an acceptable level of confidence that WAC is being met.

In addition, the document does not address the use of field instruments during excavation to determine soils needing treatment for organics. As agreed during the OU5 FS/PP, soil exhibiting an above background level of organics by field measurements (OVA) would be treated prior to disposal in the OSDF.

Further actions to resolve these issues are necessary prior to initiating excavation activities.

Response: a) In Area 1, Phase I, existing data indicated exceedance of WAC in the "triangle area" of Area D. In agreement between OEPA and Operable Unit 1 construction the material exceeding WAC was excavated and placed in the off-site disposal stockpile. No additional soil exceed the WAC for uranium has been demonstrated in Area 1, Phase I. In order to assure compliance with the uranium WAC for soil dispositioned to the temporary stockpiles in the OSDF, three characterization and

final placement parameters are utilized to ensure WAC compliance for total uranium going into the OSDF:

1) Existing characterization data - areas with a high probability of exceeding WAC are investigated further with real-time instruments. Current characterization data in most areas is not sufficient to delineate boundaries of material exceeding the WAC.

2) Real-time analysis - the R-TRAK mobile platform allows total coverage for primary COCs in $12m^2$ pixels. The R-TRAK data is compiled and reviewed and the highest points of R-TRAK activity are selected for germanium (HPGe) analysis. The HPGe readings are able to establish boundaries of uranium WAC limits within agreeable confidence.

3) Physical WAC attainment samples - until HPGe performance standards are established to the confidence of the regulators, biased physical WAC attainment samples at the density of 1 per CU will be obtained using R-TRAK data. These physical samples will validate HPGe readings. This practice has already been initiated for Area 1, Phase I for soil stored in east and west stockpiles awaiting OSDF placement.

b) It is assumed that the second paragraph of the comment refers to a component of the selected remedy which establishes that "a best management approach" will be applied during all excavation activities to identify, segregate, (and treat as necessary) soil containing concentrations of organic compounds at levels that potentially adversely impact the integrity of the earthen liners of the OSDF (i.e. the OSDF WAC). Please see page 9-6, first and second bullet items, and Table 9-1 of the OU5 ROD. In future design efforts where VOCs are established as ASCOCs, procedures will be developed for utilizing field measurements to segregate soil containing adverse levels of organic compounds. However, VOCs were not identified as ASCOCs within Area 1, Phase I due to process knowledge and existing data which do not establish their presence in or near this area.

Action: No action required at this time.

Specific Comments

3) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.1.2 Pg #: 2-2 Line #: 4-5 Code: C
Original Comment #:

Comment: ALARA principles are applied through the use of fugitive dust controls, surface water management controls, etc. and demonstrated as effective through the use of hand-held instruments. The use of hand-held instruments is not an application of ALARA principles.

Response: Agree that clarification the application of ALARA principles to monitor environmental media during remediation is appropriate.

Action: The second bullet item on page 2-2 will be clarified by replacing it with the following text from the OU5 ROD:

"Application of DOE as low as reasonably achievable (ALARA) principles through the use of hand-held instruments to support verification sampling and excavation processes."

4) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.1.3 Pg #: 2-2 Line #: 33-37 Code: C
Original Comment #:
Comment: If/when soils are stockpiled, specifically where and how long will the OSDF segregated soils be stockpiled, and where and how long will the greater than WAC soils be stockpiled?

Response: For Area 1, Phase I, the OSDF-segregated soils will be stored in one of two stockpiles discussed in Section 4 and presented in the design in Appendix A of the Area 1, Phase I RAWP. Those soils will be stockpiled until the OSDF is accepting waste, which is currently planned to be in the fall of 1997. The soils segregated for off-site disposal will be stored in the OU1 stockpile and dispositioned according to the OU1 schedule.

Action: The following sentence will be added to the second bullet item under Section 2.1.3:

"The OSDF-segregated soils from Area 1, Phase I will be stored in one of two stockpiles discussed in Section 4 and presented in the design in Appendix A of this work plan. Those soils will be stockpiled until the OSDF is accepting waste, which is currently planned for fall 1997. The soils segregated for off-site disposal will be stored in an OU1 stockpile and dispositioned according to the OU1 schedule."

5) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.1.3 Pg #: 2-2 Line #: 39-42 Code: C

Original Comment #:
Comment: Engineering controls should be implemented to prevent recontamination of remediated areas, or the source of storm water run-off should be evaluated prior to remediation activities in downstream area. Recontamination should be prevented.

Response: All areas, except one, which drain on to Area 1, Phase I are either being certified as part of the current work or are being isolated via engineering controls. The one exception is the northern portion of Area A1. This area is off-property. Isolating it with engineering controls would require extensive ditch construction. Since the known level of contamination in that area is low, the proposed plan is to avoid ditch construction by doing the following:

- Monitor the regions immediately adjacent to the northern portion of Area A1 using real time equipment;
- Excavate Area A as currently proposed;
- In the unlikely event that real-time monitoring reveals that the immediately adjacent parts of A1 are impacted in excess of FRLs, install silt fence along the edge of those parts. The purpose of this fence will be to allow the passage of water, but not solids, since the solids could potentially recontaminate portions of Area A;
- Proceed with the certification of Area A.

Action: The plan proposed above is included within the text in the action for U. S. EPA General Comment No.1.

6) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.3 Pg #: 2-4 Line #: 7-15 Code: M
Original Comment #:
Comment: It does not seem prudent to conduct excavation to meet FRL/BTVs in areas where DOE does not intend to immediately follow up with certification. As no grading or filling may occur prior to completion of certification, such excavations will lead to unacceptable conditions for erosion and fugitive emissions. DOE should revise the document such that no excavation for FRL/BTV attainment will be initiated in areas not receiving immediate certification following excavation. The work plan should only address those areas to be remediated and certified under this scope of work.

Response: All zones of Area 1, Phase I undergoing excavation for purposes of remediation or construction preparation will be certified directly following excavation. (See revised certification schedule). This reflects the latest agreement with U.S. EPA and Ohio EPA.

Action: Please refer to U. S. EPA General Comment #1 for an explanation of the revised certification schedule.

7) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 2.3.1 Pg #: 2-5 Line #: 10 Code:
Original Comment #:
Comment: This seems an appropriate place to explain why section D is divided into north and south.

Response: This separation was defined in Section 2.3 on page 2-3 where the text provides a description of areas and subareas within the scope of the Area 1, Phase I RAWP, including Area D north and south. However, the last sentence of 2.3.1 will be modified to clarify the separation.

Action: The last sentence in Section 2.3.1 will be changed from

"Excavating impacted soil from Area D will support construction of the north rail yard."

to

"Excavating impacted soil from Area D South (as shown on Figure 2-1) will directly support construction of the OU1 rail yard while excavation from Area D North will remove impacted soil that might provide a source of recontamination to Area D South."

8) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.3.2 Pg #: 2-5 Line #: 17-21 Code: C
Original Comment #:
Comment: Storm water should be rerouted unless it is demonstrated that contamination is NOT present. Recontamination of remediated areas could cause costly delays.

Response: Agree.

Action: The last sentence in the first paragraph of Section 2.3.2 will be rewritten as follows:

"Runoff from these areas will be controlled and rerouted to prevent potential recontamination of remediated areas unless it is demonstrated that contamination is not present in these upgradient areas."

9) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 2.3.2 Pg #: 2-5 Line #: 20-21 Code:
Original Comment #:
Comment: The statement in this section "if contamination is demonstrated" seems incongruous with the statement on page 2-4 lines 11-13 that the adjacent areas will not be certified. Is the process to demonstrate contamination or lack of contamination different than the process for certification and if so what is the process that will be used for demonstration of contamination?

Response: This statement was based on the assumption that zones upgradient from areas undergoing excavation would be certified at a later time. All areas in Area 1, Phase I will be certified except Subareas D and D2, these areas will be certified in conjunction with Areas 3 and 6, respectively. Due to the revised schedule this applies only as described in the response to Ohio EPA comment #5.

Action: See action for U. S. EPA General Comment #1.

10) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.3.2 Pg #: 2-7 Line #: 1-5 Code: C
Original Comment #:
Comment Part 1: Will FTF surface water drainage be isolated from Area D?

Response: Yes, as discussed in Section 2.1.3 (page 2-2, lines 39-42), Section 2.3.2 (page 2-6, lines 29-33), and in Comment Response #8 above.

Action: None.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: Figure 2-2 & 2-3 Pg #: Line #: Code:
Original Comment #:
Comment Part 2: There appears to be a discrepancy between what's shown in Figures 2-2 and 2-3. Figure 2-3 shows all of area D as a 6" removal area, Figure 2-2 shows part of area D as a 2.5'-5' removal.
Response: This inconsistency in no longer applicable to Area 1, Phase I. Due to the revision of the scope of Area 1, Phase I, the figures are no longer pertinent to Area 1, Phase I.

Action: The figure will be removed from the Area 1, Phase I RAWP.

11) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1.5 Pg #:3-2 Line #: Code: C
Original Comment #:
Comment: In areas where DOE proposes not to conduct excavation activities prior to certification will the basis for that decision still be the 75% of the FRL/BTV? It would seem to be the necessary decision criteria for these areas as well due to the same statistical issues that effect excavated areas.

Response: All areas to be certified will undergo precertification testing with the goal of achieving the target of 75% of the FRL for ASCOCs. This precertification step will instill confidence that certification testing to follow will be successful. Additionally, the BTVs will not drive soil remediation or excavation at the FEMP. The BTVs will be reviewed during remediation in order to assess potential impacts to future ecological habitat(s).

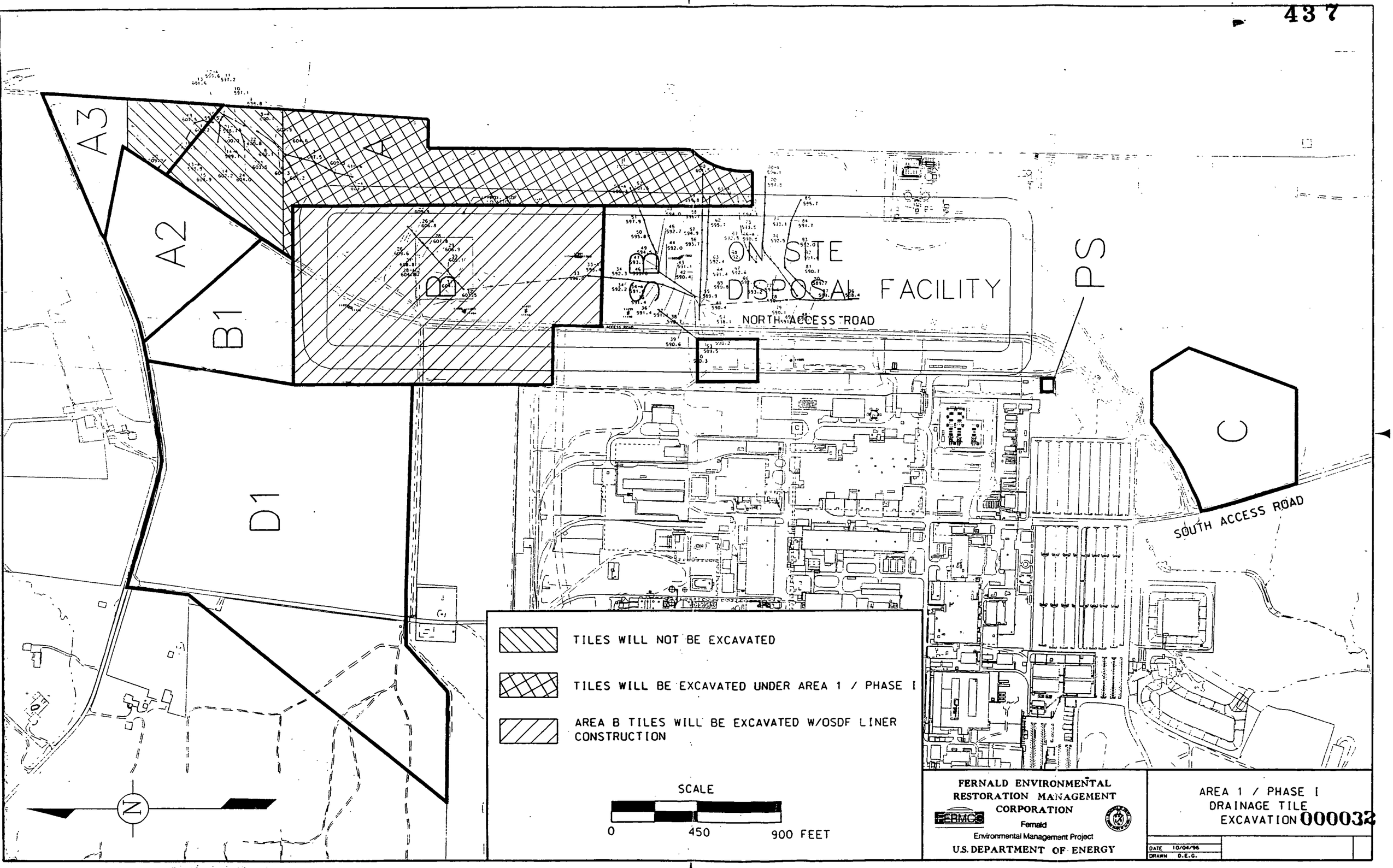
Action: None

12) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1.5 Pg #: 3-2 Line #: 9-11 Code: C
Original Comment #:
Comment: As previously noted, Figure 2-2 shows contamination extending to at least 2.5' within Area D. It is not acceptable to limit excavation to 0.5' in this area.

Response: This inconsistency in no longer applicable to Area 1, Phase I. Due to the revision of the scope of Area 1, Phase I, the figures are no longer pertinent to Area 1, Phase I.

Action: The figure will be removed from the Area 1, Phase I RAWP.

13) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3 Pg. #: 3-3 Line #: 17 Code: M
Comment: The in situ radiological methods (R-TRAK and HPGe methods) are proposed for use in precertification sampling. The RAWP should include instrument calibration procedures, quality assurance/quality control (QA/QC) procedures, and operation standards for these devices or should reference the appropriate document [e.g., Sitewide CERCLA Quality Assurance Project Plan (SCQ)] where this information is provided.


A3
A2
B1
D1
C
ON SITE DISPOSAL FACILITY
NORTH ACCESS ROAD
SOUTH ACCESS ROAD
PS
TILES WILL NOT BE EXCAVATED
TILES WILL BE EXCAVATED UNDER AREA 1 / PHASE I
AREA B TILES WILL BE EXCAVATED W/OSDF LINER CONSTRUCTION
SCALE
0
450
900 FEET
N
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald
Environmental Management Project
U.S. DEPARTMENT OF ENERGY
AREA 1 / PHASE I
DRAINAGE TILE
EXCAVATION
000032
DATE 10/04/96
DRAWN D.E.G.
FILE NAME: /cru5/dgn/map/hor/dpth/pat_r1.dgn

Response: Instrument calibration, QA/QC, and operation standards for the R-TRAK and HPGe analysis are included in the specific procedures for the R-TRAK instrument package. Some minor calibrations and adjustments to the instrumentation are being concluded and completion of the procedure is forthcoming. U. S. and Ohio EPA will be provided a copy of the procedure when the document is completed.

Action: The references for these procedures will be added to the text of the Area 1, Phase I RAWP.

14) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.3 Pg #: 4-1 Line #: 30-32 Code: C
Original Comment #:
Comment: DOE should remove all field tiles in the areas proposed for excavation within this RAWP. The need for excavation of these tiles is based upon their potential as pathways for contaminant and water transport. Elimination of the tiles will prevent unwanted migration of water into remediated areas as well as the area of the OSDF.

Response: Any tiles impacting the OSDF (i.e. either entering or exiting the OSDF footprint) will be removed. However, there is a drain tile system associated with the swale at the northeastern corner of the site which does not impact the OSDF. While excavation of 6 inches of soil is planned in portions of this drainage area, DOE does not currently plan to excavate that drain tile system at this time. Because of the combination of (1) the desire of the neighboring property owner to not change the overall drainage patterns adjacent to his property and (2) low level of contamination in that area, DOE considers it inadvisable to excavate that drain tile system. Drainage tile excavation is delineated in the figure on the following page.

Action: The text in Section 4 will be modified by adding the following:

"Any tiles impacting the OSDF (i.e. either entering or exiting the OSDF footprint) will be removed. Any other drain tiles will not be removed as part of the Area 1, Phase I effort."

15) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.3 Pg #: 4-2 Line #: 4-8 Code: C
Original Comment #:
Comment: During remediation activities along the east fence line, will access to air monitors be maintained, as well as power? Ohio will have an air monitor along the east fence line during this time period, access to this location will have to be maintained. The ability to get samples off site will also have to be maintained.

MAP

Response: Agreed that access to air monitors will be maintained. Existing power to monitors should not be impacted by the current work.

Action: The applicable Health and Safety Plan has been revised to allow Ohio EPA access to the fence line.

16) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.5.3 Pg #: 4-4 Line #: 20 Code: c
Original Comment #:
Comment: DOE has incorrectly cited Ohio Administrative Code (OAC) 3745-17-07 (B) (4), (5),(6) as the governing regulations for the particulate emissions from paved roads, unpaved roads and material storage piles. OAC 3745-17-07 is applicable to "old" sources that were in existence prior to February 15, 1972. OAC 3745-31-05(A)(3) (please see page B.3-18 of the OU5 ROD) requires that new sources employ the best available technology (BAT). The BAT determination is made on a case-by-case basis. However, activities such as controlling fugitive dusts from paved and unpaved roads have time and again resulted in standards that are more stringent than the standards cited in OAC 3745-17-07. The following examples have been taken from the Administrative Code for activities similar to those proposed in this Work Plan.

paved roadways	OAC 3745-17-12(F)(2)	1 minute exceedence in any 60-minute period
unpaved roadways	3745-17-12(F)(1)	3 minute exceedence in any 60-minute period
material storage piles	3745-17-12(C)(2)	1 minute exceedence in any 60-minute period

The Ohio EPA has consistently maintained the position that the remedial activities at the FEMP should employ BAT and ALARA goals whenever feasible. Because the emissions of concern are from a Superfund action and the methods to comply with BAT do not require expensive, innovative or burdensome requirements, the Ohio EPA will not entertain any less stringent standards than those that apply to quarrying operations.

Response: The referenced citation given in the Area 1, Phase I RAWP is the OU2 and OU5 ROD-determined ARAR, OAC 3745-17-07(B)(4) through (6). This are the ARAR determined in the RODs by U. S. EPA and Ohio EPA for excavation and placement of impacted materials. DOE will follow the ROD-determined ARARs.

In addition, the OAC 3745-17-12 citations noted in the comment pertain specifically to quarrying activities in Cuyahoga County, which is an urban area in nonattainment for particulate matter. However, the FEMP is located in a rural area that is in attainment for particulate matter. Moreover, planned FEMP earthwork activities are consistent with standard industrial excavations of foundation construction and fill borrow areas rather than quarrying operations.. The earthen materials at the FEMP are also significantly different from the rock or gravel quarrying operations in Cuyahoga County. Therefore, the OAC 3745-17-12(F) examples cited in the comment are not relevant or appropriate, or applicable for the FEMP.

Notwithstanding the above, DOE has specified an aggressive moisture conditioning program to minimize the generation of fugitive dust. The application of water in excavated areas and the use of crusting agents to stabilize stockpile slopes until grass is established is the best available technology to minimize impact to ambient air quality for the proposed remedial actions. The application of ALARA in this circumstance is interpreted to use the action levels specified to comply with the appropriate regulatory standards. DOE would like to work with Ohio EPA to develop consensus on the specific methods and/or frequency of dust suppression to be employed.

Action: DOE will comply with the roadway and material storage pile fugitive emission limits/ceilings stated in OAC 3745-17-07(B)(4)-(6), as designated in the OU2 and OU5 RODs. A meeting or telephone conference call will be scheduled at your convenience to receive Ohio EPA input on the methods/frequency of dust suppression to be utilized to ensure minimal impact to ambient air quality.

17) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.5.3 Pg #: 4-5 Line #: 31-32 Code: C
Original Comment #:

Comment: This sentence implies that air monitoring minimizes fugitive emissions. Air monitoring may be a tool to demonstrate that fugitive emission controls are effective.

Response: Agree that this sentence requires clarification.

Action: The last sentence of Section 4.1.5.3 will be restated, as follows:

"The applicable standard abatement procedures will be utilized to minimize the potential for fugitive dust to be emitted. The air monitoring discussed earlier in this section will be used to measure the efficiency of these procedures.

18) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 4.1.5.9 Pg #: 4-8 Line #: 10-14 Code: M
Original Comment #:

Comment: This refers to the Stormwater Pollution Prevention Plan (SWPPP) for monitoring requirements with respect to the sediment ponds/traps. The SWPPP plan refers to individual OU Remedial Design Work Plans, which, for OU5, does not contain any specific monitoring parameters or frequency. The SWPPP does state that "sampling parameters will include those identified in the NPDES Permit for Outfalls *4003, *4004, *4005, and *4006 as well as any other contaminants of concern in the area of activity which can reasonably be expected to appear in stormwater." The intent of this sampling is to monitor the effectiveness of the erosion/stormwater controls by monitoring the water quality associated with each remedial activity. The RAWP should include a monitoring schedule for ASCOC's in addition to the specific parameters listed in the SWPPP.

Response: The Stormwater Pollution Prevention Plan (SWPPP), Section 6.3, which the commentor is referencing is not applicable to monitor effectiveness of the erosion/sediment controls. Monitoring a sediment basin or sediment trap for effectiveness really refers to a measurement of how much sediment is removed between the influent and effluent. These devices do not provide treatment per se. They allow a quiescent settling period for heavy solids to fall out of the water prior to discharge. While it is true that pollutant removal can occur, it is expected only to the extent that the pollutant of concern adheres to sediment particles.

A properly designed, installed, and maintained sediment basin or sediment trap can achieve 50% - 80% removal efficiency. To monitor this efficiency DOE proposes to collect samples during storm events of 0.5 inch rainfall or greater in the spring and in the fall corresponding to the typical wet seasons. The samples will be analyzed for TSS and the resulting data used in conjunction with the storm-specific data to determine the total mass loading to and from the devises. Removal efficiency will then be calculated from this data. Actions to improve efficiency will be evaluated when this efficiency is less than 50%.

Action: The Water/Runoff Monitoring text in the Area 1, Phase I RAWP (Section 4.1.5.9) will be replaced by the following:

Project-specific monitoring will be limited to total suspended solids for the purpose of checking the efficiency of sediment and erosion control measures. Chemical-specific monitoring will be left to the IEMP and not be performed on a project-specific basis. Total suspended solids monitoring will be performed on the influent and effluent for the main sediment control structure in each project

drainage area. The sampling will be performed for major storm events (greater than 0.5 inches of rainfall), but no more frequently than once per month.

19) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.5.4 Pg #: General Line #: n/a Code: C
Original Comment #:
Comment: The IEMP is not yet finalized. Special modifications to the IEMP may be necessary to reflect changing conditions at the FEMP. Construction activities near the FEMP fence line, yielding a potential for increased fugitive emissions, may necessitate a more comprehensive sampling and/or analysis of IEMP air filters for the air sampling stations located in close proximity to the construction activities. Thorium and/or radium analysis may be necessary at an increased frequency than what is currently performed.

Response: The IEMP was developed as a living document with built in review and revision provisions to ensure that monitoring activities align with the current mix of remediation activities and adequately address sitewide monitoring needs as remediation progresses. The Uranium and TSP data collected from air monitors in the vicinity of construction activities in conjunction with project-specific information on visible emissions and area-specific COCs will be used to evaluate the monitoring approach and provide the basis for any recommended changes to the program.

Analytical data for Area 1, Phase I indicates the soil to be excavated does not contain sufficient thorium or radium contamination to result in airborne concentrations that can exceed regulatory levels.

Action: None.

20) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.3 Pg #: 4-11 Line #: 37-39 Code: C
Original Comment #:
Comment: If vehicles must traverse remediated areas, what control measures will be used to prevent recontamination of remediated areas? OAC 3745-17-08(B)(9) states "The covering, at all times, of open bodied vehicles when transporting materials likely to become airborne;" as a means to minimize or eliminate visible fugitive emissions. Will vehicles be covered when transporting soils to stockpile areas?

Response: The equipment used in the remediation activities will not be allowed to traverse areas following certification sampling. Access to the remediated areas will be restricted to vehicles with prior approval from the project manager.

DOE fully agrees with the goal of minimizing or eliminating visible dust. While the tarping of haul vehicles to control dust is normally applied when those vehicles are to be operated at highway speeds, speeds will be limited to a maximum of 15 mph in Area 1, Phase I; hence tarps should not be needed and are not planned to be used. Instead, the following methods will be utilized by construction personnel to achieve the goal of minimizing or eliminating visible dust:

- Moisture adjustment of material being placed on haul vehicles
- Requiring that equipment be operated at speeds even lower than 15 mph
- Applying surfactants to the hauled material
- Temporarily shutting down the job during high wind events

Action: A copy of the Dust Suppression Plan will be provided for information purposes as noted in OEPA Specific Comment #34 response.

21) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.2 Pg #:5-3 Line #: 15-20 Code: C
Original Comment #:
Comment: Additional discussion of how 17 COCs were derived versus the numerous contaminants for which BTVs are provided in Table 5.1 should be included in the section. In addition a discussion of what "Failed Ecological Risk Screening" from Table 5.1 should be included in this section.

Response: Agreed.

Action: The following clarifications have been added to the discussion in section 5.2:

...the ERA identified 17 constituents as constituents of ecological concern. The constituents identified as an ecological concern were those which failed the ecological risk screening conducted during the OU5 ERA. The 17 constituents which failed were demonstrated to have a sufficient source term that may present a current and future risk to ecological risk receptors in the FEMP and surrounding areas, including the Great Miami River. These 17 include two constituents which do not have published FRLs: aluminum and benzo(g,h,i)perylene. With the exception of total uranium, all constituents identified as ecological concerns in the Operable Unit 5 ERA have BTVs less than the FRLs for the same constituents. In the two cases where the constituents failed ecological risk screening, and corresponding BTVs do not appear as soil FRLs, data for these COCs will be collected during the certification sampling efforts. In cases where a BTV is more stringent than the corresponding FRL, analytical testing performed on

certification samples will direct the laboratory to resolve to the level of the BTV(s). Data for these BTV constituents will be collected during certification and evaluated to assess potential post-remedial ecological risk impacts to ecological habitats considered in the final land use plan. FRLs provide remedial levels for soils and BTVs are levels that will be reviewed during remediation in order to assess potential impacts to future ecological habitat(s). The BTVs will not drive soil remediation or excavation at the FEMP.

22) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.2 Pg #:5-3 Line #: 15-20 Code: C
Original Comment #:

Comment: In general the document is confusing as to whether in a particular section it is referring to just the FRL or the lesser of the FRL & BTV. The document should be revised regarding discussions of FRL attainment. The use of text, such as "FRL/BTV", to designate when the lesser of the two is being used is requested.

Response: Soil benchmark toxicity values (BTVs) are concentrations of constituents in soil that are suspected of potentially adversely impacting an ecological receptor in a habitat. BTV values are obtained from a variety of sources and are updated on a regular basis. Until the type of final ecological habitats and receptors are known on a particular site, BTV values cannot be interpreted as action levels driving remediation. BTV information will be collected during the certification process at the FEMP so soil source terms can be calculated during and after remediation. This information can then be used to assess the acceptability of habitats planned for site final land use. The sole impetus for soil remediation and excavation in Area I Phase I lies with the Final Remediation Levels (FRLs) as published in the OU5 Record of Decision (ROD). BTVs for ecological COCs do not drive soil remediation or excavation at the FEMP.

This list of ecological COCs includes 17 constituents:

- 14 COCs have Benchmark Toxicity Values (BTVs) lower than corresponding FRLs;
- two COCs do not have FRLs (aluminum and benzo(g,h,i)perylene); and
- total uranium which has a FRL of 82 mg/kg and a BTV of 230 mg/kg.

On the basis of COC selection, the inclusion of BTVs as a selection parameter is based upon the evaluation of the concentrations of these COCs in the post-remediated soil. Data will be collected for the ecological COCs during certification sampling activities if the corresponding BTV is less than the FRL, or does not have a corresponding FRL. The data will be evaluated to assess the post-

remedial ecological risk impact to the final ecological habitats incorporated in the final land use plan.

Action: The suggested nomenclature "FRL/BTV" will be replaced with FRL or BTV which ever term is appropriate for a given situation. FRLs provide remedial levels for soils and will drive excavation. BTVs are levels that will be considered during remediation in order to assess potential impacts to future ecological habitat(s) that will be considered in the final land use plan. BTVs will not drive remediation or excavation. The text to be added to the RAWP in the action for OEPA Comment #21 will clarify this issue.

23) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.2 Pg #: 5-3 Line #: 22-26 Code: C
Original Comment #:
Comment: The table should be revised to include detections above the BTVs. The number and percent of samples detected above the FRL column should include detects above the BTV where it is lower than the FRL.

Response: The requested additional information will be provided in Table 5.1. The BTV's are not driving soil remediation or excavation as described in response to comment # 22.

Action: Table 5.1 will be revised to include the number and percentages of samples detected above the BTV when the BTV is less than the FRL.

24) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 5.2 Pg #: 5-4 Line #: 25 Code: E
Original Comment #:
Comment: (f) is used in Table 5.1 to depict product of weapons fallout, not (w) as stated.

Response: Agreed.

Action: "w" has been omitted and replaced with "f" in the discussion to achieve consistency with Table 5.1 .

25) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.4 Pg #: 5-5 Line #: Code: C
Original Comment #:
Comment: The maps for those COCs with BTVs lower than their respective FRLs should be revised to include detects and non-detects which exceed the BTV.

Response: Agree.

Action: The individual spatial maps of the contaminants (Appendix E) will be reviewed and modified to reflect exceedances of the FRL, and the BTVs if it is less than the FRL. If the COC does not have a corresponding FRL, the exceedances of the BTV will be reflected.

26) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.6 Pg #: 5-6&7 Line #: 33, 1 Code: C
Original Comment #:
Comment: Based upon Figure E-11 and the fact that the Tc-99 WAC is equivalent to or less than the FRL, significant areas exceed the Tc-99 WAC.

Response: Figure E-11 does not correctly depict the Technetium-99 data.

Action: Figure E-11 will be revised to depict the most current spatial representation of Tc-99 soil data on site.

27) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 5.1 Pg #: Line #: Code: C
Original Comment #:
Comment:
a) Why is a FRL of 250 mg/kg used for Total Uranium rather than that specified in the OU5 ROD of 82 mg/kg?
b) The table should be revised to include aluminum.
c) Provide a footnote to explain "Failed Ecological Risk Screening."
d) Footnote "n" is not used within the table.

Response: Agreed.

Action: The following modifications will be made:
1) FRL for Total Uranium = 82 mg/kg
2) The table will include information regarding aluminum
3) An explanation footnote for "Failed Ecological Risk Screening" will be added
4) Footnote "n" will be removed

28) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Figure 5-1 Pg #: Line #: 2nd process step Code: E
Original Comment #:
Comment: Spelling error, Quatitative should read Quantitative.

Response: Agreed.

Action: Figure 5-1 will be edited accordingly.

29) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Figure 5-1 Pg #: Line #: Between the third and fourth process steps Code:
Original Comment #:
Comment: It appears as though there should be 17 COC's under Ecological Concern, not 16 as shown.

Response: Agreed.

Action: Figure 5-1 has been corrected.

30) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6 Pg #: General Line #: n/a Code: C
Original Comment #:
Comment: What methods will be used with the HPGe detector to determine if a "hot spot" (3 X FRL) is present within a 12 m^2 area? The methods in this section do not appear to adequately address the detection of hot spots.

Response: A "hot spot has been defined as post remedial areas of $\geq$ 12 m^2 that are three times above the FRL. The R-TRAK scans in 12 m^2 pixels, and the HPGe (at 1ft.) also reads an equivalent 12 m^2 area. Based on this capability high detections that are flagged by the R-TRAK will be tested by in-situ HPGe detectors in order to quantitatively define these potential hot spots. If a hot spot is discovered it will be excavated and the area re-tested with the HPGe detector prior to certification testing.

Action: The following text will be added to Section 6 to define and explain the relevance of hot spots in this RAWP:

When certification takes place for primary radiological COCs in a CU, an appropriate number of samples are taken and submitted for analysis. The certification sample data average must meet the predetermined level of 95% upper confidence limit on the mean in order to demonstrate compliance with the FRLs and successful completion of certification. If no upper bound is established in residual soil, theoretically a small area containing a very high concentration of contaminant could remain and, due to the averaging of samples taken over the CU, the CU could still pass certification.

After removal of soil in a specific area and prior to performing certification sampling, precertification with the R-TRAK, HPGe, and other field instruments

will be conducted to ensure the average levels of the ASCOC(s) is at or below 75% of the FRL(s). The assumption that post-remedial soil levels are at or below 75% of the FRL is a necessary precondition for determining the number of samples that will be necessary to successfully achieve the FRL(s). In order for remediation to be successful, it is important at this stage to determine that this goal is achieved *as an average for a CU (emphasis added)*. Averaging implies it is possible to leave a limited amount of soil above the FRL in place through remediation and still pass certification.

In order to restrict the magnitude of these allowable, but potentially elevated areas of radiological contamination, there will be an upper bound limit imposed on residual contamination which is in compliance with a TBC DOE order 5400.5. For the purposes of this project this limit means no level of soil contamination will be allowed in an area of $12m^2$ (the approximate read frame of the R-TRAK and HPGe at 1 foot) that exceeds x3 the FRL. If x3 level is exceeded this "hot spot" will be removed before certification *even if the CU would be expected to pass certification if it was to remain in place (emphasis added)*. Thus, even if certification sampling can be projected to demonstrate a CU meets the FRL criteria, leaving a hot spot (by this definition) in place is not acceptable.

The "not to exceed hot spot criteria" is based on the minimum resolution of the R-TRAK and HPGe detection equipment and the knowledge that the key receptor modeled for exposure purposes on this site is an undeveloped park user who is mobile and not fixed. With over 350 of these 12 m^2 read frames per CU 1, exceedances of up to x3 the FRL in one of these small areas will have no adverse impact on the exposure received by the receptor, provided the average concentration of the primary contaminants on average achieves the FRL attainment criteria. It is important to note that it is in the best interests of the DOE to REMOVE AS MUCH SOIL EXCEEDING THE FRL AS POSSIBLE in a given certification unit both to attain the target of 75% of the FRL, and to assure success in the certification to follow.

The detection of hot spots in locations where soil removal has occurred and/or in locations where no excavation is deemed necessary is reliant on radiation detection instrumentation that is capable of complete or nearly complete coverage of these locations. Precertification for FRL attainment with the R-TRAK and HPGe detectors will serve this purpose. Post-remedial precertification for FRL attainment has two functions:

1. Ensure the post-remedial condition of the CUS meets the 75% of the FRL on AVERAGE. This in one of the key criteria on which the proposed certification sampling scheme is based.

2. Locate any hot spots that are to be removed PRIOR to performing certification sampling. Again, the hot spot is defined for our purposes as a 12 m^2 (approximate) area that is demonstrated to be greater than X3 the FRL.

The R-TRAK was never intended and does not perform as a fully quantitative radiation detection instrument. Its strong point is the ability for its detection system to completely cover an area with a very high number of adjacent electronic samples taken in the mobile mode. This generated data can then be mapped into an area and isoconcentration lines and variations in surface soil activity are seen with good resolution. The HPGe instrument is then used to determine the value of the isolines and biased high points reported by the R-TRAK. This technique will locate radiological hot spots if they are present."

31) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.1 Pg #: 6-1 Line #:22-24 Code: M
Original Comment #:.

Comment: Insufficient detail is provided regarding the use of HPGe and R-TRAK for precertification activities. Additional detail regarding QA/QC, procedures for calibration, etc. should be provided. Preliminary data from Ohio EPA's split sampling with DOE at Area D suggest the HPGe may not perform as well as expected for precertification needs. Procedures addressing control of variables including weather, soil matrix, other gamma sources, etc. need to be reviewed by Ohio EPA. Additional details need to be provided concerning decision criteria during use of HPGe and R-TRAK for determination of WAC and upgradient "contamination" for stormwater control.

Response: The R-TRAK and HPGe detectors are currently being used to support WAC attainment in areas that are undergoing excavation for purposes of remediation and construction preparation. Our intent is to use these instruments for precertification in excavated and unexcavated areas prior to certification testing. The following procedures documents are being prepared to support and demonstrate the effectiveness of these instruments on site, including the control of field variables:

- HPGe operating procedure
- TRAK instrumentation procedures and software

- Comparability Studies between HPGe output and physical sampling

Determination of WAC is discussed in the Response to OEPA Comment #2, Part A. Stormwater runon is now only a concern from the northern portion of Area A1 and this is discussed in the Response to OEPA Comments #5.

Action: Procedures and comparability study will be sent for US EPA and Ohio EPA review when they are completed. Comparability study will be submitted according the revised schedule presented in U. S. EPA General Comment # 1 response and action.

32) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.1.1 Pg #:6-2 Line #: 7-9 Code: C
Original Comment #:
Comment: Unless effectiveness of the HPGe is much improved over that exhibited in Area D, the use of R-TRAK and HPGe to verify the areal extent of excavation may result in a significant under estimation of the area requiring remediation.

Response: The remedial design is not based upon R-TRAK data, but upon existing (RI/FS) data using a conservative approach. Additionally, the R-TRAK is covering 100% for WAC and FRL attainment. The R-TRAK is a semi-quantitative detection instrument. Due to the very large number of sample points generated by the R-TRAK the data allows dense mapping of relative radiological activity. The HPGe detectors will be used to read the high biased points to establish an upper limit of radiological contamination at those points. The proposed comparability study will have to support the use of HPGe for certification before the ultimate extent of remediation is delimited using HPGe results.

Action: None

33) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.1.1 Pg #: 6-2 Line #: 21-22 Code: C
Original Comment #:
Comment: The document fails to specify the relevance of "hot spot" during post remedial sampling. This is in light of the previous bullet which suggests targeting 75% of the FRL.

Response: Please refer to the Ohio EPA Comment #30 response and action regarding the methods to be employed for the relevance of hot spots in this RAWP. If a hot spot is detected during certification testing, it will be removed.

Action: The text presented in the action for OEPA Comment #30 will be added to Section 6 to clarify the relationship between hot spots and target levels.

34) Commenting Organization: Ohio EPA Commentor: OFFO
Section #:6.2 Pg #:6-3 Line #: 6 Code: E
Original Comment #:
Comment: The text should reference Table 6-2.

Response: Agreed.

Action: Table 6-2 will be referenced in the text.

35) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.3 Pg #:6-8 Line #: 5-14 Code: C
Original Comment #:
Comment: It is also important to ensure the repeatability of measurements by the HPGe and R-TRAK. The study should be revised to include an evaluation of repeatability. The study should also include a variety of soil matrices (e.g., heavy rock loading, etc.).

Response: Agreed. Repeatability is demonstrated by calibrating to well characterized areas such as zones in Area 1, Phase II Sewage Treatment Plant/Incinerator Area. Additionally, known check sources are also important in repeatability checks. This is currently being performed as standard routine.

One of the unvocalized concerns about this issue is the possibility of detection drift of the instrumentation and physical attenuation. The drift is being corrected by improvements in current R-TRAK software.

Action: None

36) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.3 Pg #: 6-9 Line #: 1-9 Code: C
Original Comment #:
Comment: Comparability testing should include the ability of the HPGe detector to identify areas with probable hot spots. The appendix indicates a maximum area for a hot spot of $25m^2$, what minimum area for a hot spot will be used? Will the R-TRAK be the method used to identify hot spots?

Response: Please refer to the Ohio EPA comment #30 response and action regarding the methods to be employed for the relevance of hot spots in this RAWP.

Action: Text, as presented in the action for OEPA Comment #30, will be added to Section 6 to clarify the relationship between hot spots and target levels. All references to hot spots of $25m^2$ will be removed from the Area 1, Phase I RAWP.

37) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.5 Pg #: 6-10 Line #: Code: C
Original Comment #:
Comment: In order to be fully involved in the field program and decision making, Ohio EPA requests DOE provide a main point of contact for acquiring GIS data generated during implementation of this RAWP.

Response: When in final (post-processed) form the electronic and physical sampling data obtained in the precertification and certification efforts will be made available to Ohio EPA through electronic transfer by internet from the FEMP to the Ohio EPA maintained file transfer protocol (FTP) server. Information will be in the form of ORACLE export files. Information has been transferred successfully by this means previously and due to the large size of the data files transfer by other means have not worked in the past. DOE will arrange with Ohio EPA the timely access to this newly generated data. The contact at the Fernald site will be Matt Hnatov @ (513) 648-5284.

Action: Arrangements for facilitating data transfer will be made.

38) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 6 Pg. #: 6-11 Line #: 11 Code: M
Comment: The R-TRAK measurements may be affected by ambient conditions (e.g. soil moisture) at the point of measurement. The RAWP should discuss the ambient condition parameters that will be routinely monitored and how these data will be reported with the corresponding R-TRAK measurements. In addition, the RAWP should discuss procedures (e.g., conventional surveying) for quality assurance/quality control (QA/QC) of the global positioning data.

Response: a) The role of the R-TRAK is to provide a very large number of samples at the rate of 1500 per hour. This data is then spatially mapped to provide relative radiological activity over complete areas. Each reading is 2 seconds in duration and readings area taken over a variety of conditions and terrain. Ambient environmental conditions change throughout the day and it is not possible to attach environmental data to all readings (1500 per hour). The daily log sheets

will record information such as temperature, moisture conditions, and vegetation. This information can be referenced. Attenuation of the gamma signal by environmental conditions is not anticipated to the degree it will alter the function of the R-TRAK output. The HPGe detection is then employed to establish absolute values for locations established with R-TRACK data. The HPGe comparability will establish instrumentation response over a range of environmental variables.

b) The global positioning system (GPS) is checked throughout the day as per the R-TRAK procedure which evaluates how close known survey points are to the position data the GPS on the R-TRAK has reported. These measurements must be within specified tolerances. (see R-TRAK operating procedures)

Action: Rather than including this detailed information in the RAWP, the R-TRAK operating procedure (see schedule in USEPA General Comment #1) will address these issues.

39) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.5.1 Pg #: 6-11 Line #: 15-19 Code: C
Original Comment #:
Comment: Will GPS information be included with the HPGe measurements?

Response: Yes, a GPS and/or a surveyed point will accompany all HPGe readings. Also included will be a code number specifying the certification unit in which the reading was obtained.

Action: This item will be discussed in the HPGe operating procedure (see schedule in USEPA General Comment #1).

40) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 6 Pg. #: 6-11 Line #: 17 Code: C
Comment: The referenced text implies that HPGe data will go into the SWIFTS database but does not indicate that it will be inputted to the SED database. Conversely, the preceding paragraph states that the R-TRAK data will be transferred to the SED. The text should be modified to clarify the databases in which the various types of data (e.g., measuring locations, ambient condition data, analytical data, R-TRAK results, and HPGe results) will be stored.

Response: The document <u>incorrectly</u> states that HPGe data will go into SWIFTS Database, the data is and will be stored in the SED.

Action: The text will be corrected.

41) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 7.1 Pg #: 7-1 Line #: 24-32 Code: M
Original Comment #:
Comment: Based upon the preliminary data from Area D, Ohio EPA recommends DOE collect total uranium samples at the point of the highest R-TRAK or HPGe precertification reading within each certification unit or area to ensure WAC attainment prior to initiating excavation.

Response: Agreed.

Action: A program has been initiated to collect physical samples to confirm the upper bound uranium values for soil from excavated areas to be placed in the OSDF. As noted in the comment, these samples are being collected at the point of the highest R-TRAK or HPGe precertification reading within each certification unit.

42) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 7.5 Pg #:7-6 Line #: 1-4 Code: C
Original Comment #:
Comment: The CUS should be reevaluated based upon detections above the lowest of the BTV and FRL for each COC. Based upon this reevaluation appropriate changes should be made to the CUS.

Response: The certification maps reflect proposed density of certification sampling to be performed based on the demonstrated distribution of contaminants from existing data and process knowledge. As noted in the response to OEPA Comment #22, BTVs will not drive remedial design, but will be considered when designating CUS. Information for BTVs will be collected during the certification process for the purposes previously described. Impacts to CU designation will be minimal and confined primarily to organics.

Action: Please refer to the action for OEPA Comment #44(b) where revised certification maps are proposed.

43) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 7.5 Pg #:7-6 Line #: 4-5 Code: C
Original Comment #:
Comment: The intent of this sentence is unclear to the reviewer. The COCs were determined based upon human health and ecological risk.

Response: Agree. This sentence is misplaced and incorrect

Action: This sentence will be removed from the text

44) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 7.5 Pg #:7-6 Line #: 5-9 Code: M
Original Comment #:
Comment: a)The decision to develop separate CUS for each set of COCs seems inappropriate to Ohio EPA. If as suggested by DOE the primary pathway for primary COC distribution is airborne deposition, then the same should be for the secondary COCs unless a specific activity resulted in contamination of an area. If the mode of deposition is the same, then the CU should be the same. Unless specific activities, such as the FTF or STP, resulted in contamination then airborne deposition should be assumed otherwise a technical discussion of the deposition activity should be included for each CU.

b) In addition to the technical concerns with CU designation, it is unclear how administratively certification will be accomplished for each CU. Will a CU only be certified for PAHs and then a separate CU that may include that particular PAH CU define primary COCs, etc. etc.? This process would seem to be much clearer with one set of CUS for all COCs. The document does not clearly define the process for completion of Certification.

Response: a)Comment Acknowledged. Airborne dispersion is thought to be the dominant, but not the only, mechanism of contaminant dispersion in FEMP soil. Screening of the existing soils data against the FRLs combined with process knowledge demonstrates that the primary contaminants are present in more extensive distribution patterns than the other (secondary) ASCOCs.

Certification Unit design is based on the <u>demonstrated presence</u> of ASCOCs in site soil not their original mode of deposition. For example PAHs and PCBs in Area 1, Phase I were demonstrated to be present above their FRLs only in limited distributions in and near the perimeter of the Process Area. Their transport mechanism may have been the result of airborne dispersion but the resulting presence is restricted in Area 1, Phase I for these two analytical suites. These patterns are in contrast to the primary ASCOCs; uranium, thorium, and radium which have much more extensive patterns of distribution. This fact is reflected in the more extensive primary ASCOC CU assignments.

The differences in extent of ASCOC distributions are a function not only of the quantity of contaminant deposited over the production history but mobility of the

contaminant (solubility), degradation rates, (organics), affinity for the soil substrate, and relative toxicity of the contaminant which impacts the stringency of the FRL. The CU design in the Area 1, Phase I is based on this demonstrated presence. The certification process is intended to document the removal of this demonstrated soil contamination. In order to do this efficiently and cost effectively, certification sampling for ASCOCs by agreement will be limited to areas where the presence of the contaminant as been proven or suspected. This is the basis for designating separate CUs for the five Area 1, Phase I analytical suites of ASCOCs and the resulting differences in coverage.

b)In order to more effectively administratively track the certification process in Area 1, Phase I and elsewhere, a sitewide CU assignment system has been developed. All CUs will fit into this system which will enable certification results to be reviewed and documented in a consistent and repeatable manner. The basis for this system is demonstrated in Figure 7-1.

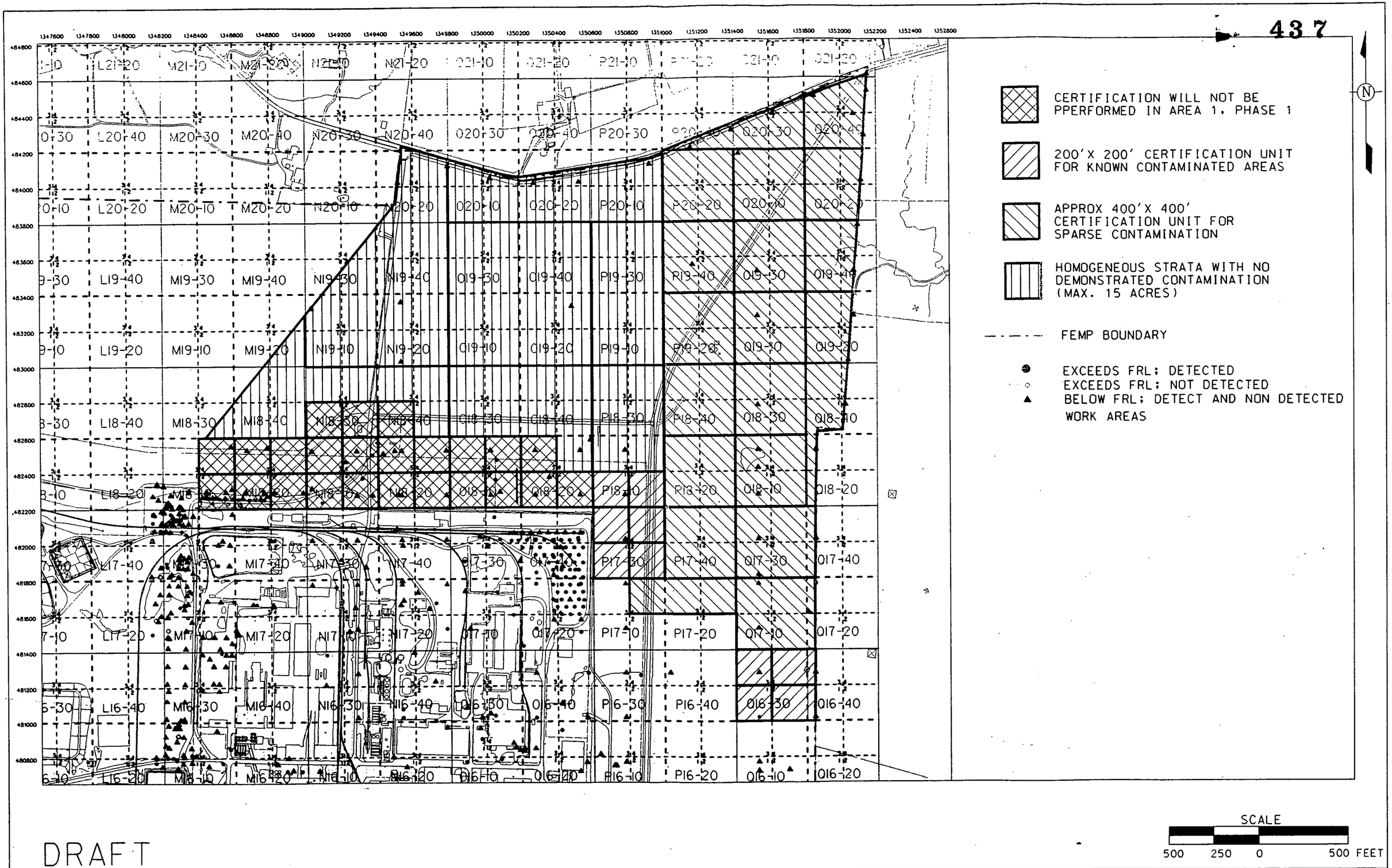
CUs for the five analytical suites for Area 1, Phase I have been transferred to this new system. Draft maps of the realigned CUs have been included with this comment response document. Slight alterations may be made prior to the finalization of these proposed certification maps in the final Area 1, Phase I RAWP as a result of the inclusion of new OSDF requirements and other recent changes. The five draft CU maps also reflect the elimination of Subarea D (rail yard) and D2 (fire training area) from the certification that will be conducted in Area 1, Phase I. The certification process will be complete for any subunit (200' x 200' block on the new system) when all certification test results designated for a block have been returned and the confidence limits with respect to the FRLs have been demonstrated and substantiated by the regulators.

Action: a) None

b) Certification maps to be revised based on improved sitewide system.

45) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 7.6 Pg #: General Line #: n/a Code: C
Original Comment #:
Comment: Will separate certification sampling plans be submitted for each CU? And. will the CUS be the same areas that are identified in this work plan, i.e. Area D?

Response: One certification PSP will be written for Area 1, Phase I, not for each CU. The CUs will be modified as per previous agreements. Subarea D (OU1 rail yard) and



/mge/srdig/dgn/map/hor/dpth/s183_059.dgn FER 09/25/96 STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 7-1. AREA 1 PHASE I CERTIFICATION SAMPLING PLAN PRIMARY CONSTITUENTS OF CONCERN

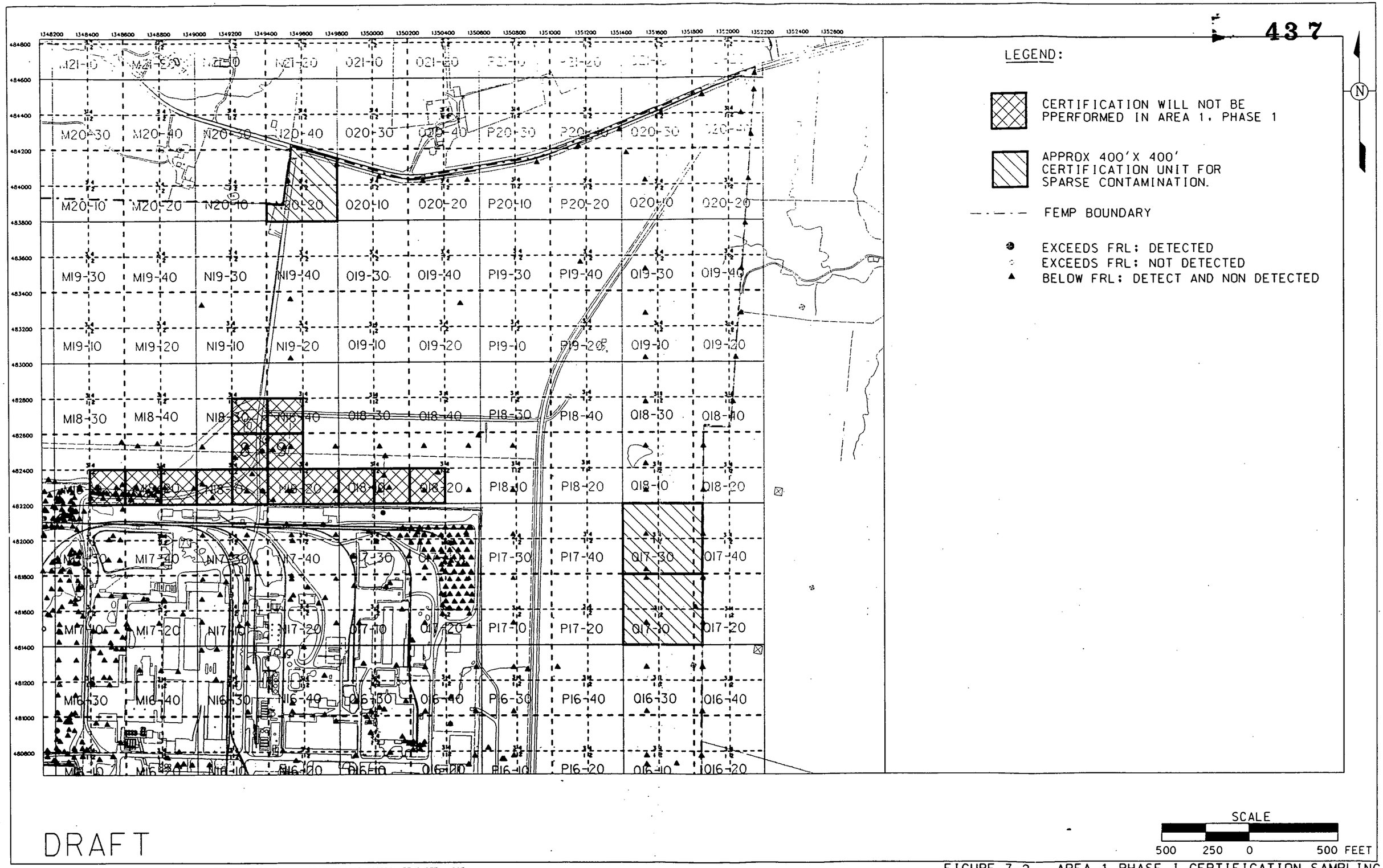


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FIGURE 7-2. AREA 1 PHASE I CERTIFICATION SAMPLING PLAN SECONDARY CONSTITUENTS OF CONCERN: RADS

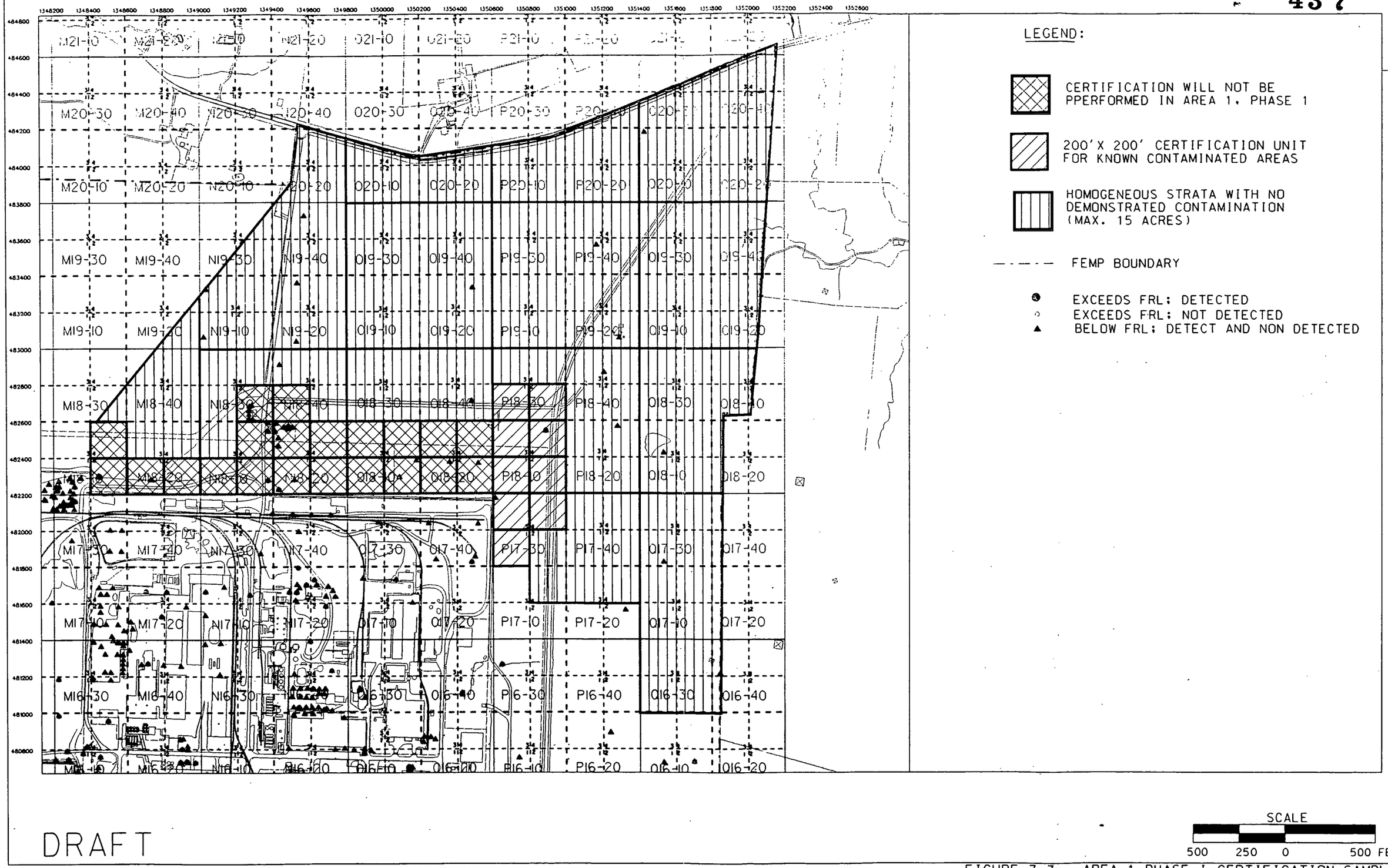

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FIGURE 7-3. AREA 1 PHASE I CERTIFICATION SAMPLING PLAN ,SECONDARY CONSTITUENTS OF CONCERN: METALS

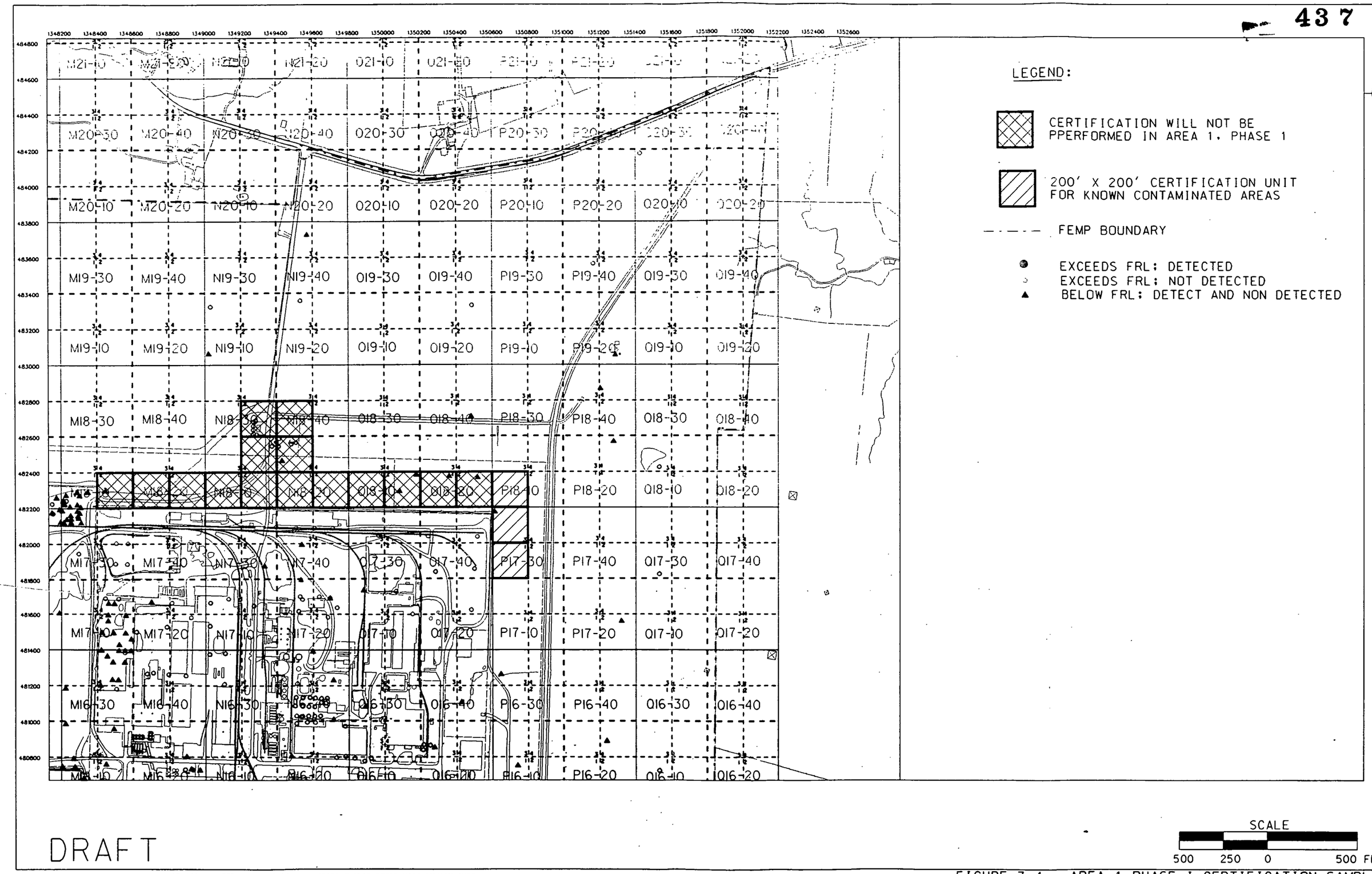

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FIGURE 7-4. AREA 1 PHASE I CERTIFICATION SAMPLING PLAN SECONDARY CONSTITUENTS OF CONCERN: PCBs

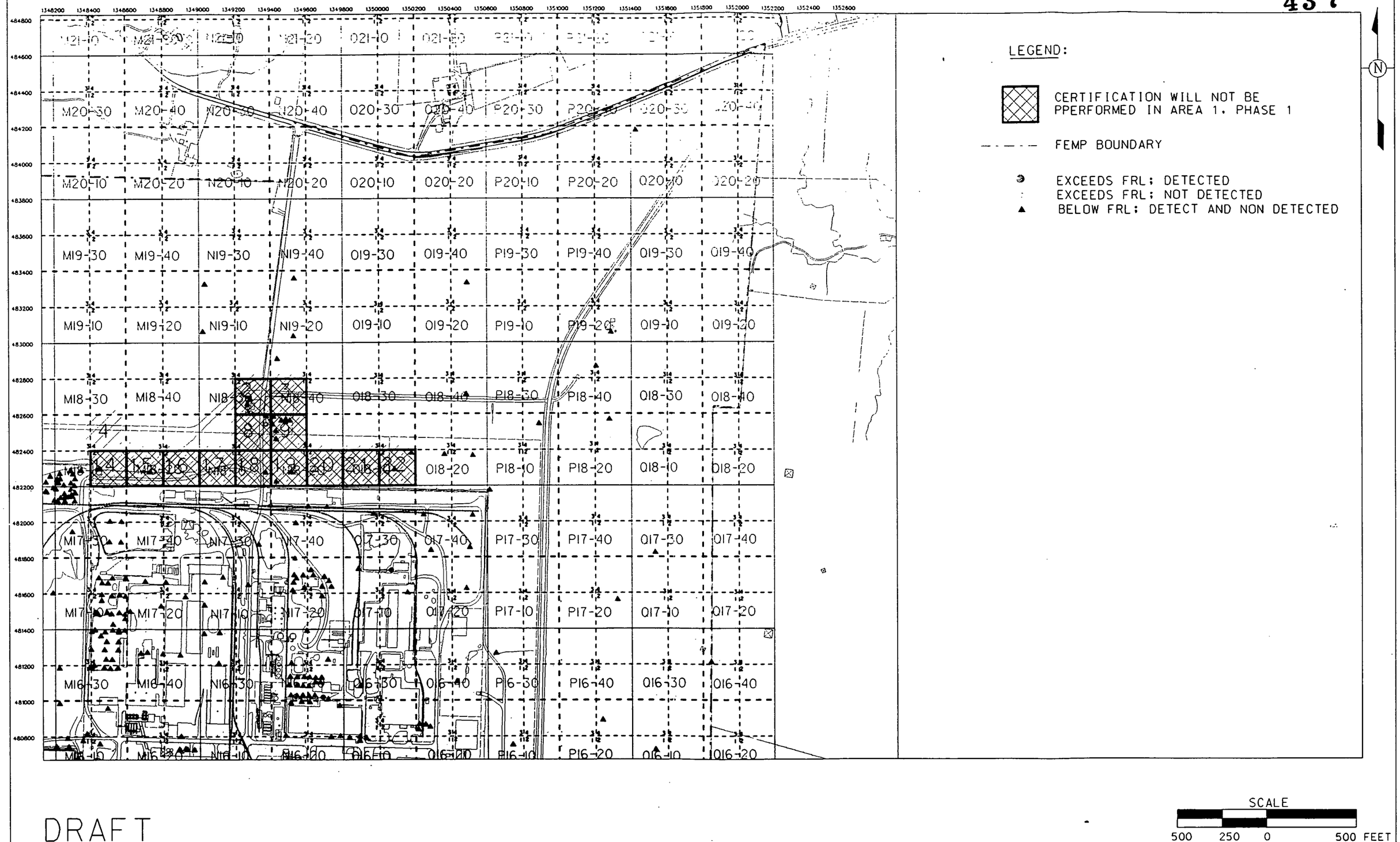

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FIGURE 7-5. AREA 1 PHASE I CERTIFICATION SAMPLING PLAN
SECONDARY CONSTITUENTS OF CONCERN: PAHs

Subarea 2 (FTF) will not be included in the Area 1, Phase I RAWP as per previous agreement. The submission of the completed certification reports are in the enclosed schedule.

Action: Revised certification schedule is included.

46) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 7 Pg. #: 7-7 Line #: 17 Code: C
Comment: The RAWP should provide a more detailed justification for the use of 12 samples for documenting cleanup. The justification should state whether this number is qualitatively or quantitatively based. A detailed description of the rationale and derivation of the number of samples is required including a discussion of underlying assumptions. All calculations should be thoroughly documented including the procedures used to compute the requisite statistical parameters (e.g., variance calculations, etc.). An example calculation for a primary COC should be provided to illustrate the computation of the number of samples to document cleanup.

Response: Agreed.

Action: The additional justification for number of certification samples will be provided. Proposed additional text is presented below.

The number of samples required to acheive statistical confidence was determined from the following equation:

$$n = \frac{(Z_{1-\alpha} - Z_{1-\beta})^2}{\left(\frac{FRL - \bar{x}_{target}}{S_{CA}}\right)^2}$$

where

α = *probability of a Type I Error* (.05)
β = *probability of a Type II Error* (.20)
FRL = *the FRL for the given analyte*
$\bar{x}_{target}$ = *target clean-up level mean*
= *75% of the FRL*
S_{CA} = *standard deviation estimated Clean Areas*

The target clean-up level during precertification is 75 percent of the FRL. At this target clean-up level the maximum expected value (average level) would be no greater than 75% of the FRL. As a conservative extimate we chose to use 75% of the FRL as the target clean-up level mean.

An estimate of the variability for post-remedial conditions was based on estimates calculated from existing data in "clean areas". The concept was that the variability demonstrated in unimpacted areas would be similar to post-remedial conditions in impacted areas as well. The procedure used to estimate the clear area variability is as follows:

1. The site was divided into 100 ft. by 100 ft. blocks. This was accomplished by simply dividing the Northing and Easting coordinate by 100 since these coordinates are presented in feet.
2. Block averages were calculated for each 100x100 block.
3. Blocks were then categorized as either impacted (average greater than or equal to the FRL) or unimpacted (average less than the FRL).
4. All sample locations that were located in a impacted blocks were then eliminated from consideration.
5. The final screening removed any sample that was in excess of three times the FRL since these sample values would immidiately trigger a localized remedial effort.
6. From the data remaining (unimpacted areas), the variability used in the calculations was calculated.

Using this methodolgy we hoped to best develop an estimate of post-remedial variability. Under these assumptions and methods the estimated sample sizes are 12 for primary COCs and nine for secondary COCs. The drivers for these sample sizes were Thorium-232 (primary) and Arsenic and Beryllium (secondary).

A table outlying the calculated sample sizes and estimated variability and an example calculation with the revised Area 1, Phase I Risk Assessment Work Plan Addendum will be provided.

47) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 7 Pg. #: 7-7 Line #: 32 Code: C
Comment: For clarity, the decision path described in the referenced text should be presented in flow chart form. In addition, the text should clarify what is meant by "the collection of additional samples." Specifically, will another suite of 12 samples be collected at random from the CU grid cells or will some other approach be implemented?

Response: Agreed.

Action: The certification process and decision points will be graphically illustrated by inclusion of a flow chart to augment the text. Please see the proposed flowchart on the following page.

48) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 7 Pg #:7-8 Line #: 1-8 & 25-31 Code: C
Original Comment #:
Comment: It is unacceptable to have any of the actions described in these bullets occur without agency approval unless additional detail is provided in the document delineating the decision making process at this point.

Response: Agreed.

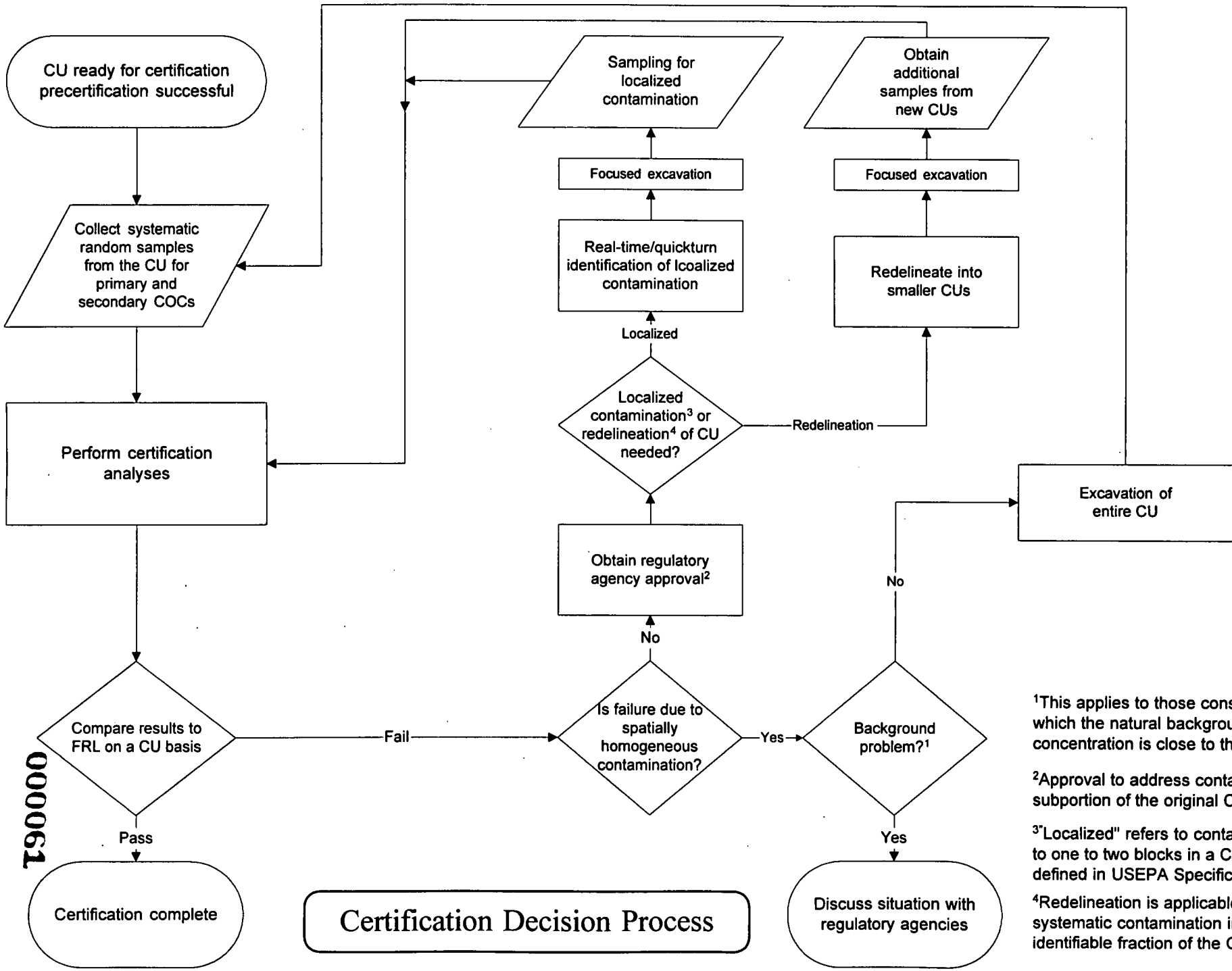
Action: A Flow Chart/Decision Matrix will be provided as proposed in Ohio EPA Comment No. 47. This chart depicts decision points where Regulatory approval will be required prior to initiating further action.

49) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 7 Pg. #: 7-8 Line #: 26 Code: C
Comment: The proposed distribution of certification units is based on existing soil data and process knowledge. Clarification is required regarding certification unit re-delineation based on the spatial distribution of the sample (concentration data). Guidelines should be specified in order that the integrity of the certification unit distribution is maintained after re-delineation.

Response: Agreed.

Action: If a CU fails certification for one or more COCs the reason for failure and magnitude will be assessed with consultation with the Regulatory Agencies (as indicated in the flow chart mentioned in the responses to OEPA Comment #47 and #48 prior to redelineation, excavation, and recertification.

50) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 7 Pg. #: 7-8 Line #: 33 Code: C
Comment Part 1: A discussion of the treatment of non-detect values in the computation of $\overline{x}_I$ should be included in the text. Additionally, the definition of the sample variance term should indicate that it will be calculated from the samples collected from the ith CU.



Certification Decision Process

[1]This applies to those constituents for which the natural background concentration is close to the FRL.

[2]Approval to address contamination as a subportion of the original CU.

[3]"Localized" refers to contamination limited to one to two blocks in a CU as blocks are defined in USEPA Specific Comment #13.

[4]Redelineation is applicable for spatially systematic contamination in an identifiable fraction of the CU.

Response: Agreed.

(a) For the statistical tests for compliance with FRLs the non-detected values will be assigned the value of one half of the detection limit, given that the detection limit is less than the remedial goal. If the detection limits exceed the remedial goal (FRL) then other methods will need to be used. These methods will be determined if such a case arrives on a case by case basis and will be submitted for regulatory agency approval.

(b) Section 7.7 has been replaced by corrected text to address this concern.

Action: The additional information will be provided.

Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 7 Pg. #: 7-9 Line #: 9 Code: C
Comment Part 2: The referenced text should be revised as follows: If the computed value (t) exceeds the critical value of a t-distribution for a = 0.05 and b = 0.2 at the appropriate degrees of freedom then the null hypothesis, which is that the average soil level within the CU is **equal to or greater than** the FRL or BTV, is rejected.

Response: Agreed. This language was inadvertently left out of the text. Additionally, the BTV's are not driving soil remediation as described in comment # 22. As described, excavation of soil will not be driven by the BTV values .

Action: The text will be revised as follows:

7.7 <u>STATISTICAL TESTING</u>

In order to statistically determine if a CU can be designated as 'clean' (to pass certification) the average soil sample value will be compared to the remedial goal. Since the burden is on the FEMP to prove that the remedial goals have been achieved, the hypothesis is formulated as:

H_0 = the i_{th} CU is assumed to be out of compliance (i.e. the average concentration for a given analyte is equal to or greater than the remedial goal.

H_A = there is significant evidence to indicate that the average concentration of the given analyte in the i_{th} CU is less than the remedial goal and therefore we reject the null hypothesis and deem the CU clean.

The following statistical test will be used to determine if the average concentration in the i_{th} CU is less than the remedial goal:

$$t = \frac{RG - \bar{x}_i}{\sqrt{S_i^2/n_i}}$$

where:

RG = *the remedial goal*
$\bar{x}_i$ = *the mean concentration for the* i_{th} *CU*
S_i^2 = *the sample variance for the* i_{th} *CU*
n_i = *the number of samples the* i_{th} *CU*

If the computed value (t) exceeds the critical value of a t-distribution with σ = 0.05 at n-1 degrees of freedom then the null hypothesis is rejected in favor of the alternative. Thus, if the average concentration of the given analyte is significantly less than the remedial goal the test statistic (t) becomes large. If the test statistic exceeds the critical value then there is significant evidence that the average concentration for the given analyte is less than the remedial goal and, therefore, the hypothesis that the CU is out of compliance can be rejected and the CU can be deemed clean.

51) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 7.8 Pg #: 7-10 Line #: 13-17 Code: C
Original Comment #:
Comment: Ohio EPA understood Area C certification was necessary to conduct disposal facility construction. Why is no date provided for completion of certification for this unit?

Response: Area C (the initial portion of the borrow area) is needed for the second phase of OSDF construction, but not the construction planned for Spring 1997. A certification date will be provided.

Action: See action for U. S. EPA General Comment #1.

52) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 7-1 Pg #: 7-11 Line #: Footnote b Code: C
Original Comment #:

Comment: Footnote "b": As discussed in a previous comment, Ohio EPA believes that BTVs should be used in the delineation of CUS and the document should be revised accordingly.

Response: The CUs will be reevaluated for consideration of BTV levels. Primary COCs will not be impacted, secondaries may have slight alterations in type and extent. See Ohio EPA specific comment # 22 response.

Action: BTV exceedances will be evaluated for CU design in the final CU maps. Minimal impact is anticipated.

53) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Figure 7-1 Pg #: Line #: Code: C
Original Comment #:
Comment: During early discussions of this document, Ohio EPA expressed concern over dilution of contamination by dividing contaminated areas by multiple CUS. The division of the FTF into 4 CUS centered on it is an example of our concern. The CUS should be revised to address this and other centralized contamination areas.

Response: The FTF will be remediated as a component of Area 3, not Area 1, Phase I. At that time the FTF will be excavated and certified. No attempt has been or will be made to dilute the contaminated areas by splitting up CUs. During certification design for Area 3 an attempt will be made to assign a single CU to FTF.
Action: None.

54) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix A Pg #: 02100-2 Line #: 1.05A Code: C
Original Comment #:
Comment: Ohio EPA requests that a copy of the subcontractor dust suppression plan should be provided to Ohio EPA for review.

Response: A copy of the subcontractor dust suppression plan will be submitted to the Ohio EPA for informational purposes.

Action: The subcontractor dust suppression plan is included as an attachment to these comments together with the excerpt from the Area 1, Phase I Health and Safety Plan that defines the scope of the dust suppression plan..

55) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix A Pg #: 02100-2 Line #: 1.05B Code: C
Original Comment #:

Comment: Ohio EPA was unable to find the detailed drawing for the debris stockpile in the attached drawings. Please reference the appropriate drawing.

Response: The debris pile is presented in the plan view on drawing 75A-5500-G-00441.

Action: A Request for Clarification of Information (RCI) will be issued to the subcontractor indicating the specific drawing that relates to the specification.

56) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix A Pg #: 02100-3 Line #: 3.02A Code: C
Original Comment #:

Comment: The document fails to address the disposition of trees and shrubs. The document requires that stumps be placed in the debris stockpile but does not address the disposition of the upper portions of the vegetation. The document should be revised to provide disposition for the trees and shrubs. Does DOE intend to dispose of stumps within the OSDF?

Response: The ultimate disposition of trees and stumps is being analyzed in the Sitewide Excavation Plan (SEP) which is due to the regulatory agencies on March 14, 1997. These materials with Area 1, Phase I will be placed in the debris pile (separate from the soil pile) and dispositioned later according to the processes approved in the SEP. Additionally, an analysis of COC uptake in trees will be included in the SEP.

Action: No action at this time.

57) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix A Pg #: 02100-3 Line #: 3.02B Code: M
Original Comment #:

Comment: No backfill or grading activities may occur prior to <u>certification</u> completion. Simply waiting until precertification is complete is unacceptable. Such activities would result in dilution of contaminants through mixing which is inconsistent with the concerns outlined in Ohio EPA's letter of concurrence with the OU5 ROD.

Response: As noted in the meeting between U. S. EPA, Ohio EPA, DOE, and Fluor Daniel Fernald (FDF) on September 17, 1996, construction begins prior to completion of certification in the footprint for relocation of the North Entrance Road (Area A). Efforts will be made to minimize the risk associated with construction in this area by performing real-time analyses (precertification) and getting certification samples taken as rapidly as possible. This approach has been taken to avoid

schedule impacts on the north entrance road relocation and, in turn, on excavation within the OSDF footprint.

Action: Please refer to U. S. EPA General Comment #1 for text changes to clarify certification schedule.

58) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: 02100-4 Line #: Code:
Original Comment #:
Comment: Protection of the electric tower should be included in the specification.

Response: This concern is addressed by a detail in the drawings, but could be further clarified since it is not mentioned in the specifications. As a result, this change will be dealt with through a Request for Clarification of Information/Design Change Notice (RCI/DCN).

Action: As noted in the response.

59) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: 02110-5 Line #: 3.02 C Code:
Original Comment #:
Comment: This section mentions cleaning the filter fabric on the riser structure however the drawing detail on 91X-5900-G-00238, 75X-5500-X-00450, and 75X-5900-G-00456 does not show riser pipe wrapped in filter fabric. Please include wrapping riser pipe with geotextile fabric ODOT 712.09 C to prevent holes in riser pipe from plugging.

Response: Agree that subsequent riser pipe construction should utilize geotextile wrap.

Action: DOE has contacted the construction subcontractor for the area east of the North Entrance Road to ensure that a geotextile wrap is applied to the riser pipe.

60) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: 02730-3 Line #: 3.02 D Code:
Original Comment #:
Comment: Two of the risers are shown with one inch holes as called out in this specification, however the riser in drawing 91X-5900-G-00238 is shown with 1.250" holes. This specification would not apply to that riser. Also, this section would be appropriate to call out the geotextile wrap for the riser as indicated in a previous comment.

Response: Agree that the issue about hole size should be clarified. Because the construction subcontractor has already been mobilized, this was handled by Operable Unit 1 Construction Management. Please refer to the previous comment regarding the wrap for the riser pipe.

Action: As noted in the response for the hole size inconsistency. Please refer to the previous comment regarding the action on the wrap for the riser pipe.

61) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix A Pg #: 02920-3 Line #: 3.02C Code: C
Original Comment #:
Comment: The specification does not provide a time frame by which the east impacted soil stockpile will be seeded. Inclusion of a time frame for this and other seeding activities will prevent undue erosion of soil.

Response: The stockpile is intended to be seeded within five working days after impacted material placement is complete. Because the construction subcontractor has already been mobilized, this will be clarified using a Request for Clarification of Information (RCI) per FEMP procedures.

Action: As noted in the response.

62) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: Drawings 75A-5500-G-00439 & 75A-5500-G-00441
Line #: Code:
Original Comment #:
Comment: Both of these drawings have a sediment basin #1. Recommend renaming the sediment basin on drawing 75A-5500-G-00441 to sediment basin #4. Also change drawing 75X-5500-X-00450 to reflect the renaming.

Response: One drawing has a sediment basin while the other actually has a sediment trap. This has been discussed with the construction subcontractor and the subcontractor is aware of the difference between the two items.

Action: No further action is needed.

63) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: Drawing 75A-5500-G-00441 Line #: Code:
Original Comment #:

Comment: The purpose of the diversion ditch and sediment fence along the east side of the excavation is unclear. There doesn't appear to be barriers to run-on of surface water into the excavation area. Water appears to be diverted to the laydown area.

Response: The diversion ditch is intended to prevent runon from entering the excavated area to the west of the diversion ditch. The sediment fence was intended to prevent silt from the excavated area from entering the ditch. Due to the location of the excavated region, it has been decided not to excavate top soil from that area at this time (the area east of the diversion ditch). This will remove the need for sediment fence along the diversion ditch. That area will be excavated and certified later as part of Area 1, Phase II rather than with Area 1, Phase 1.

Action: Text and figure changes presented in General U. S. EPA Comment #1 serve to clarify which areas are being excavated and certified.

64) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: Line #: Code:
Original Comment #:
Comment: Install indicators in sediment basins to indicate the level at which sediment should be removed. Such indicators should be included on the design drawings.

Response: Agree that such indicators can be of value and should be installed.

Action: DOE has directed the construction subcontractor to install level indication.

65) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: Line #: Code:
Original Comment #:
Comment: Diversion ditches constructed to prevent run-on of surface water should have check dams to prevent ditch erosion.

Response: The slope of the diversion ditches is low enough the preclude a definitive need for check dams.

Action: The diversion ditches will be inspected by FEMP Environmental Compliance staff to ensure that erosion is not occurring. If it is found to occur, check dams will be installed at that time.

66) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: Drawing 75X-5500-X-00452 & 91X-5900-G-00237 Code:
Original Comment #:

Comment: Use of straw/hay bales are not recommended. Ohio EPA's position on straw/hay bales has been clarified with DOE and FDF several times. We would expect that DOE will incorporate these recommendations into all future design submittals.

Response: DOE is working with the construction subcontractor for the excavation east of the North Entrance Road to replace use of straw/hay bales with silt fence wherever possible and appropriate.

Action: As noted in the response.

67) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix A Pg #: Line #: Code:
Original Comment #:
Comment: The sediment basins for the impacted soil stockpiles should be sized to include the drainage area of any run on water not diverted from them.

Response: Agree. These basins were sized for the 10 year, 24 hour storm event.

Action: No action required.

68) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix B Pg #: B.2-1 Line #: Table B-2 Code:
Original Comment #:
Comment: The statement is made that "neither habitat nor populations of the state-listed threatened spring coralroot (*Corallorhiza wisteriana*) were found on FEMP property." Although no populations were found, as stated in Results of Surveys for Spring Coral Root, Hamilton County Ohio, July 11, 1994, "Despite **the presence of suitable habitat near the western edge of the northern woodlands** (emphasis added) Spring Coral-root was not observed at any of the locations surveyed", suitable habitat is present on the FEMP. Please revise the document appropriately.

Response: Agree.

Action: Text will be revised.

69) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix B Pg #: B.3-26 Line #: Well Abandonment Code:
Original Comment #:
Comment: OAC 3745-09-10 applies to all existing wells, not only wells constructed after February 15, 1975 as indicated.

Response: Although the OU5 ROD stipulates a date for the effectiveness of this ARAR, all FEMP owned monitoring wells will be plugged and abandoned under the criteria set forth in OAC 3745-09-10.

Action: None

70) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: Appen. C Pg. #: C.1-2 Line #: 32 Code: C
Comment: Clarification should be provided to indicate that information input for the analysis will be obtained from the certification soil samples for the given certification unit under consideration.

Response: Agreed.

Action: The text will be revised to clarify and expand the discussion of certification reporting.

71) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix C, Table C.1-1 Pg #: C.1-8 Line #: Code: C
Original Comment #:
Comment: The schedule for certification requirements provided in this table disagree with the only date provided in table on page 7-10. If certification is truly required for Area A by November 1996 then the document must be revised to reflect the fact this area will be certified under this work plan. As stated in previous comments, the RAWP must be revised to include a schedule for those areas addressed under its scope.

Response: Appendix C will be modified to refer to the schedule presented in the new Section 3.1.7 (see U. S. EPA General Comment #1). Please see the response to Ohio EPA Comment #57 for a discussion of certification and the construction schedule in Area A.

Action: The reference to "Table C.1-1" on line 2 of Page C.1-2 will be changed to "see Section 3.1.7 of the Area 1, Phase I RAWP." See Action under U. S. EPA General Comment #1.

72) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: Appen. C Pg. #: C.3-5 Line #: 24 Code: C
Comment: A primary objective of the study should be to demonstrate the accuracy of the device over the complete range of field conditions that may possibly be

encountered during the R-TRAK's use in Area 1, Phase I. At a minimum, R-TRAK concentration data and coincident radionuclide concentrations obtained through conventional laboratory analyses should be obtained and compared over the complete range of possible soil moisture, soil density, and vegetation conditions that may potentially be encountered during full deployment of the device.

Response: This Data Quality Objective (DQO) is a discussion of the comparison between the HPGe analysis and the lab comparison of physical sampling data which will include environmental parameters such as percent moisture, soil density and relative vegetation. This can also be compared to the R-TRAK data which has positioning and analysis data. The R-TRAK is generally the first step of pre-certification followed by the HPGe or lab sampling.

Action: Additional text will be added to the document to better define the objectives.

73) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix D Pg #: Line #: Code:
Original Comment #:
Comment: Consideration should be given to an additional sediment pond installed in the vicinity of NPDES *4006. There is already a basin there from previous use as a borrow area so that construction of a basin should relatively simple. A basin in this area would capture all water from the site prior to discharge through *4006.

Response: Agree that the concept of a basin capturing sediment from all runoff from a given area may be superior to multiple traps and/or basins upstream of the same point. While the work is ongoing in the drainage area of #4006 and the proposed basin cannot be installed in time to impact that surface stripping operation, the concept of a single major basin will be analyzed in subsequent design work.

Action: No action at this time.

74) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Appendix D Pg #: D-2 Line #: 19-21 Code:
Original Comment #:
Comment: The biota monitoring section of the Integrated Environmental Monitoring Plan (IEMP) makes no mention of monitoring Sloan's Crayfish or any threatened or endangered monitoring.

Response: Comment Acknowledged.

Action: As indicated in Section 1.2 of the IEMP, a Natural Resource Impact Monitoring Plan (NRIMP) will be prepared. This plan will provide the strategy for the monitoring of ecological impacts to wetlands, threatened and endangered species, and terrestrial and aquatic habitats. The monitoring results will be submitted in conjunction with quarterly and annual IEMP reporting. It is currently envisioned that the NRIMP will become an addendum to the IEMP. The current schedule calls for the initial submittal of the NRIMP on December 6, 1996, for U. S. EPA and Ohio EPA review and comment.

75) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix E Pg #: Figure E-11 Line #: Code: C
Original Comment #:
Comment: Based upon a review of Ohio EPA GIS data, it would appear that the figure does not accurately portray Tc-99 contamination at the site. Please revise the document appropriately.

Response: Figure E-11 does not correctly depict the Technetium-99 data.

Action: Figure E-11 will be revised to depict the most current spatial representation of Tc-99 soil data on site.

76) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appen. F Pg #: F-5 Line #: General Code: C
Original Comment #:
Comment: Will the R-TRAK be able to detect a hot spot at 3 X FRL? (at what confidence).

Response: The R-TRAK can be adjusted to "signal" at any concentration or count for uranium, thorium and radium. Post remedially it is intended to set this alarm at the respective FRLs. To locate "hot spots" as defined in the response to Comment #30, the post-remedial track maps will be reviewed and high areas (with counts at or above the FRL) will be located and read with HPGe detector. At this time we cannot specifically set a level of confidence at detecting an area of 3 X FRL for primary radiological COCs with the R-TRAK alone. The R-TRAK, like HPGe detectors, average over an area of approximately $12m^2$. Calibration of an R-TRAK reading can be conducted by an HPGe reading at 1 foot height with an equivalent averaging area. Comparability of the HPGe detection to physical samples and laboratory analysis will be demonstrated in the forthcoming HPGe comparability study.

Action: Text will be added to Section 6 to clarify this approach.

Appendix A
The following comments (77-30) are from a summary of a July, 1996 conference call between Ohio EPA, DOE and FDF. Reference: DOE FEMP, MSL 531-0297, HAMILTON COUNTY, OU1 & OU2 SEDIMENT AND EROSION CONTROL DRAWINGS 91X-5900-G-00233, 00234, 00237 AND 75X-5900-G-00455, 00456, July 1, 1996 to Mr. Johnny Reising.

Ohio EPA Comments #77-87

Response: ***Ohio EPA Comments #77-87 have been handled in earlier communications between the Department of Energy and the Ohio Division of Surface Water. Please refer to letter 3432701 from Joe Bartoszek to Johnny Reising dated July 1, 1996.***

Action: ***As noted in response.***

77) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawing 91X-5900-G-00237 Pg #: Line #: Code:
Original Comment #:
Comment: Check dam detail does not conform to Rainwater and Land Development guidelines. Use of hay bales is not considered acceptable.

Response: Check dams will be constructed per Rainwater and Land Development guidelines.

Action: As noted in the response.

78) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawing 91X-5900-G-00237 Pg #: Line #: Code:
Original Comment #:
Comment: Silt fence fabric should conform to fabric properties in Rainwater and Land Development guidelines, unable to determine fabric properties from drawing.

Response: Specifications of silt fence fabric will be checked to assure conformance with specifications in Rainwater and Land Development guidelines.

Action: Errors in silt fence fabric specifications in Rainwater and Land Development guidelines found and corrected, fabric essentially similar to ODOT 712.09 Geotextile Fabrics, Type C Sediment Fence.

79) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawings 91X-5900-G-00233 & 00234 Pg #: Line #: Code:
Original Comment #:

Comment: Reason for installation of silt fence along railroad unclear. Position does not follow contour and appears to function as diversion to flow from railroad directing flow to drainage ditch through culvert at section 1 G00240.

Response: Flow will be verified to assure that water does not flow along RR side of fence and into drainage ditch untreated.

Action:

80) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawings 91X-5900-G-00233 & 00234 Pg #: Line #: Code:
Original Comment #:
Comment: Flow into sediment pond may short circuit flowing directly to outlet without allowing sufficient settling time. Recommend the installation of baffles per Rainwater and Land Development guidelines.

Response: Baffles will be installed per Rainwater and Land Development guidelines.

Action:

81) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawings 91X-5900-G-00233 & 00234 Pg #: Line #: Code:
Original Comment #:
Comment: Ditch improvements should be scheduled so that work progresses in sections from downstream to upstream, stabilizing each downstream section prior to beginning work on the next section.

Response: Ditch improvements will be scheduled as indicated.

Action:

82) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawings 91X-5900-G-00233 & 00234 Pg #: Line #: Code:
Original Comment #:
Comment: Dimensions of sediment pond need to be shown in the drawings.

Response: Dimensions will be shown as indicated.

Action:

83) Commenting Organization: Ohio EPA Commentor: DSW

Section #: Drawings 91X-5900-G-00233 & 00234 Pg #: Line #: Code:
Original Comment #:
Comment: Drawing need to show location/type of indicator to show level at which sediment must be cleaned.

Response: A suitable indicator will be installed and labeled; painted stripe is acceptable.

Action:

84) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawings 75X-5900-G-00455 & 00456 Pg #: Line #: Code:
Original Comment #:
Comment: Show sediment pond dimensions on drawings.

Response: Dimensions will be shown as indicated

Action:

85) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawings 75X-5900-G-00455 & 00456 Pg #: Line #: Code:
Original Comment #:
Comment: Silt fence appears to be used as a diversion mechanism rather than using diversion ditches. Special precautions must be taken to prevent lateral flow along fence from eroding base of fence.

Response: Fence will be checked for erosion at foot during weekly stormwater inspections.

Action:

86) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawings 75X-5900-G-00455 & 00456 Pg #: Line #: Code:
Original Comment #:
Comment: Drawings need to show location/type of indicator to show level at which sediment must be cleaned.

Response: A suitable indicator will be installed and labeled; painted stripe is acceptable.

Action:

87) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Drawings 75X-5900-G-00455 & 00456 Pg #: Line #: Code:

Original Comment #:

Comment: Assure that ODOT 712.09 type C fabric properties are equivalent to fabric properties in Rainwater and Land Development guidelines (e.g. ODOT UV exposure strength 70% using ASTM D 4355 equivalent to Rainwater and Land Development guidelines strength 90% using ASTM-G-26).

Response: Specifications of silt fence fabric will be checked to assure conformance with specifications in Rainwater and Land Development guidelines.

Action: Errors in Rainwater and Land Development guidelines have been corrected.

and Safety Requirements with Matrix for this project. This section lists the minimum health and safety requirements for handling the various conditions.

b) This project is within a radiologically uncontrolled area. There is no radiological contamination anticipated above the acceptable radiological limits but radiological monitoring will be performed by FERMCO Radiological Safety prior to the start of work and as needed during construction/excavation. If radiological contamination above the acceptable limits is encountered a radiological boundary will be established around the area and the subcontractor will follow the requirements as shown in the H&S Requirements Matrix.

c) The subcontractor shall be required to provide a "clean" dumpster for his use during the project. It shall be stationed at the work site. This dumpster shall be used for the disposal of construction waste that the subcontractor generates on the project and which FERMCO representatives deem non-contaminated and releasable. The subcontractor shall be responsible for having the dumpster delivered and removed.

d) The subcontractor shall submit a Proactive Dust Suppression Plan as part of the "Safe Work Plan" to FERMCO for approval. This plan shall include but not be limited to the following:

- Listing of specific pieces and quantities of equipment to be used.
- The control of fugitive dust will be by the use of water or approved dist suppression chemicals or as directed by FERMCO Construction Management.
- Day and hours of operation during construction activities.
- Day and hours of operation during non-work periods on an as-needed basis such as between shifts, weekends, holidays, etc.
- Have someone on-call 24 hours/day seven days/week to respond to a dust alert. Dust suppression to begin two (2) hours after notification during non-work periods.
- There shall be no visible particulate emissions from any paved/unpaved roadway, parking area, or any area within, entering, or leaving the construction work area limits except for a period of time not to exceed six (6) minutes during any 60-minute observation period from a fixed observation point for any operation or area.
- The subcontractor shall only apply the amount of water necessary for dust control and compaction. Excess water shall not be applied.

Visible particulate emissions are defined as visible particulate that are generated during construction/remediation activities, rise above the apex of the equipments wheels or tracks, and/or drift greater than 10 feet. Visible particulate are also those generated by wind movement with the potential to migrate from the work area.

The Proactive Dust Suppression Plan shall demonstrate the subcontractor's understanding of the importance of dust suppression requirements. It shall be adequate for all work areas. Approval of this plan does not relieve the subcontractor of any responsibilities regarding the control of dust under the terms of the subcontract.

e) Work stoppage in case of excessive and/or visible dust: The amount of type of dust suppression equipment in operation and FERMCO's approval of the Proactive Dust Suppression Plan shall not prevent FERMCO from stopping work if there is excessive dust. The subcontractor will monitor all construction activities. He will be responsible for any shutdown by FERMCO due to excessive and/or visible dust.

f) A site speed limit of 15 mph shall be posted and shall be observed at all times by all construction personnel and equipment operators.

g) Parking shall be prohibited along the North Access Road and shall only be permitted in the FERMCO South Parking Lot or in designated areas adjacent to excavation Area 1, (North & South).

h) The subcontractor shall maintain the exhaust system of all vehicles and equipment to protect against excessive noise and air pollution in compliance with the applicable site, local, state, and federal regulators.

I) The subcontractor shall carefully coordinate all construction activities with the Construction Contracts Manager or his designee to avoid conflicts and unnecessary delays in construction.

j) Two two-way radios or cellular phone shall be maintained at the project during all working hours, available for use to all employees for emergencies. Personnel shall call 6511 by phone or "Control" by radio to report any emergency.

k) The subcontractor shall be responsible for preventing damage to adjacent structures, fences, utilities, trees, etc.. while performing his work.

CFC 437

A- Don Kel
A- Lee McDaniel
A- Steve Garland
A- Gregory Nyman
A- A.C. Snider

KELCHNER
ENVIRONMENTAL

SUBMITTAL S32-R0
DUST SUPPRESSION CONTROL PLAN

For FERMCO Subcontract FSC594
Area 1 Phase 1 (East) Soil Remediation Project

September 12, 1996

1.0 General

Kelchner Environmental is aware of the necessity to prevent the production and migration of dust during this project. Kelchner Environmental is dedicated to a proactive dust suppression/prevention policy. The following is a description of the equipment and techniques that will be used at the Fernald Soil Remediation project.

2.0 Relevant Equipment

The following equipment will be used during the execution of dust creating activities. This equipment will be maintained as part of our normal site maintenance protocols.

- Water wagon of 1000 to 1500 gallons capacity.
- Mounted gasoline powered water pump.
- Spray bar and hose.
- Farm tractor.

3.0 Prevention / Integrated Approach

The first line defense in a dust suppression plan is the prevention of the production of dust in the first place. Kelchner Environmental plans to use an integrated approach to dust control. First, only that excavation and stripping that is necessary at the time will be carried out. In this way, the open, or cut, areas will be minimized to the greatest extent possible. The primary pieces of excavation hauling equipment, the agricultural-tractor/pull pan combination, will follow random routes to and from the cut area. This random routing or "split tracking" will reduce the damage to the sod and will preserve the natural soil protection of the turf layer.

In those areas cut by the tires, there will be used a water/surfactant mixture to hold the soil surface in place. The surfactant used will be Cousins Pine Sap Emulsion, a natural product made from pine sap. The technical specifications follow in Attachment I. Cousins Pine Sap Emulsion has been approved by FERMCO for use on the Fernald Site. The use of the surfactant will allow the conservation of water by holding the soil surface in place long after the water has evaporated. In those areas that have been stripped or excavated, the surface will be protected with the water/surfactant mixture between the time of excavation and the time the area is pre-certified by FERMCO. As soon as the pre-certification is granted, the areas will be seeded and mulched after which the surface will be treated with the water/surfactant mixture. This will produce two results. First, the water added to the soil surface will assist in seed germination, second the surfactant will tend to hold the mulch in place longer, giving the turf ample time to become established. Berms and diversion ditches will be seeded and mulched as soon as completed to prevent erosion and dust production. All areas will be monitored for erosion damage and repaired as needed for the duration of the project.

4.0 Implementation

Kelchner Environmental intends to use the existing paved site roads very little. Most of the equipment will stay off of the paved roads. Any soil deposited on existing site roads by site activities will be wet down and washed off of the asphalt surface. All travel, parking and construction areas within Kelchner's sphere of influence will be subjected to this proactive dust prevent/suppression plan.

ATTACHMENT 1

COUSINS DUST CONTROL PRODUCT INFORMATION

cousins

Pine Sap Emulsion

ɔusins Dust Control Division, 1801 Matzinger Rd., Toledo, Ohio 43612, 1-419-726-1500 1-800-433-6754

Complete dust control

Road surface stabilizer

Soil stabilizer

Coal and ash stock pile sealant

Features:

- Environmentally safe
- 100% organic
- Non-corrosive
- Non-flammable
- No offensive odor
- Ecologically safe
- Will not leach
- Easily mixed with water
- Non-tracking-will not stick to shoes or tires after curing
- Safe, clean and easy to use

Product Description

Cousins Pine Sap Emulsion is a 100% organic emulsion produced from naturally occurring resins (pine sap), which has gained widespread use for fugitive dust control, the sealing of coal and ash stockpiles and soil stabilization. It is dilutable with water for easy application.

Product Uses

Cousins Pine Sap Emulsion's principal use is to maintain unpaved roads by controlling dust, stabilizing and sealing the road surfaces. With proper application the surface becomes dust-free, waterproof, and suitable for foot or vehicular traffic. A properly maintained surface will last indefinitely. Cousins Pine Sap Emulsion is also used to seal coal and ash stockpiles by forming a waterproof skin, which prevents leaching and erosion.

Performance

Cousins Pine Sap Emulsion works better than petroleum-based emulsions, chlorides, and lignosulfonates previously used for dust suppression.

Printed on Recycled Paper

Environmental

Cousins Pine Sap Emulsion is completely organic and non-hazardous to workers and the environment. Replaces chlorides, lignosulfonates, oil products and asphalt emulsions.

Cousins Pine Sap Emulsion is a state-of-the-art, environmentally friendly complete dust control product. When applied to gravel roads it will circulate, penetrate and extend down into the foundation and bond dust to stone. This will build a durable and waterproof surface that will be pliable yet hard enough to actually spin tires and burn rubber without causing surface damage. Cousins Pine Sap Emulsion surfaces can be vacuumed, swept or flushed, the same as paved surfaces, when periodically maintained.

Cousins Dust Control Division Pine Sap Emulsion

Cousins Pine Sap Emulsion: Advantages

Cousins Pine Sap Emulsion is superior to conventional dust control products in several respects.

Cousins Pine Sap Emulsion leaves a cumulative residue of pine sap deposited on the soil particles. Areas once conditioned require only occasional re-treatment to bind fugitive dust, which has blown onto the area or which has been stirred up from beneath.

Cousins Pine Sap Emulsion has a coating depth which enables penetration into the soil to be treated. The coating can be controlled by varying the dilution with water and the total volume of liquid applied per unit of surface. The type of surface influences the amount of liquid to achieve the desired penetration. Only the amount required to bind the individual dust particles is needed.

Cousins Pine Sap Emulsion is not restricted to massing dust particles on soils. For example, Cousins Pine Sap Emulsion is an excellent stockpile sealant for coal and fly ash providing freeze protection and erosion protection.

Cousins Pine Sap Emulsion can also be sprayed over large reclamation areas with seed. Cousins Pine Sap Emulsion will prevent the seed from being blown away and aids germination.

Cousins Pine Sap Emulsion is stable for storage. The only requirement in storing Cousins Pine Sap Emulsion is that the storage facility always be above freezing. Cousins Pine Sap Emulsion is a product with a long shelf life.

Cousins Pine Sap Emulsion is safe to handle. Because Cousins Pine Sap Emulsion is 100% organic, non-toxic and non-hazardous, it poses no safety problems in handling.

Cousins Pine Sap Emulsion is easy to use. It does not require intense equipment clean up and maintenance and is not messy at application, compared to other products.

Supplied as a concentrate for economical shipping. It is diluted for specific uses.

Cousins Pine Sap Emulsion can be stored for long periods of time in a concentrated form.

Cousins Pine Sap Emulsion is simple and easy to use in dilutions of 5:1, 8:1, 10:1 and 20:1, depending on the application required.

Cousins Pine Sap Emulsion: Opacity Testing

To determine effective dust control...

Figure 1.
Cousins Pine Sap Emulsion
Efficiency Control Curve Notes

i) There is no discernable decay rate after 12,000 vehicle passes for Cousins Pine Sap Emulsion.

ii) The maximum control for calcium chloride and lignosulfate is 50-65%.

COUSINS PINE SAP EMULSION TEST RESULTS

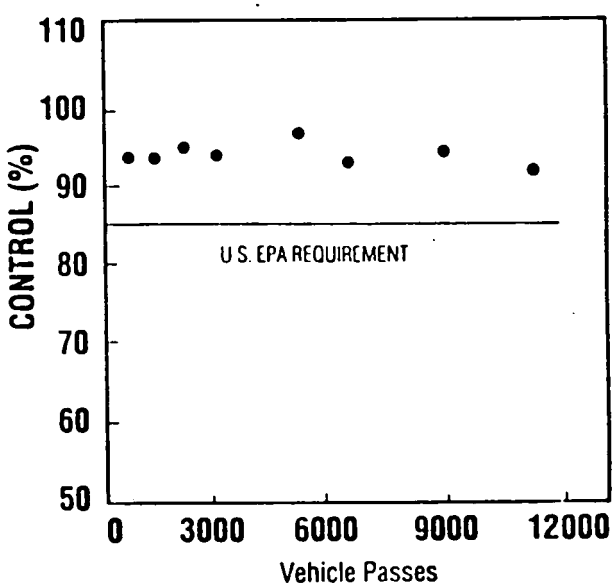
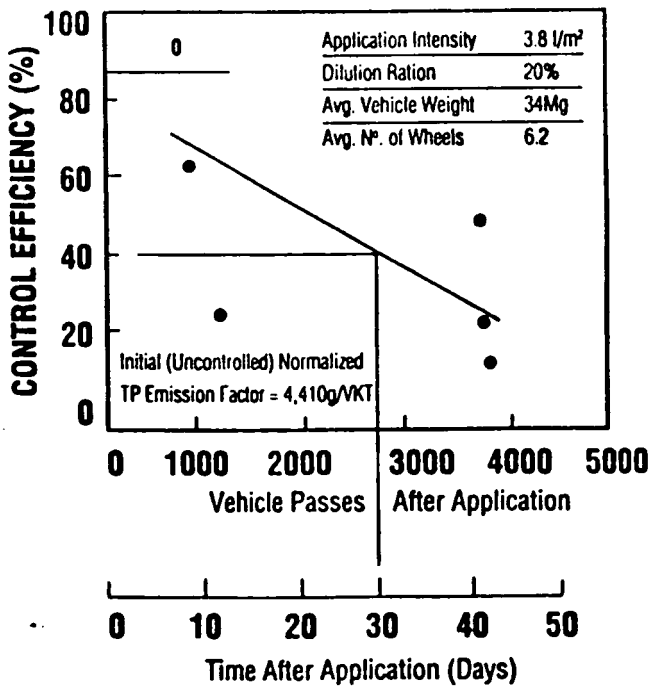


Figure 2.
Control Efficiency Decay
(oil based emulsion)

OIL BASED EMUSION TEST RESULTS



Cousins Pine Sap Emulsion: Principle Uses

Stabilizing soils, ores, coals, and other matter in which dust is undesirable.

- Coal and ash stockpile sealing
- Short term or long term dust control
- Stabilizing and sealing surfaces of unpaved roads
- Stabilizing road shoulders and slopes along highways
- Sealing and waterproofing road base prior to paving
- Providing dust control and stable surfaces for parking lots, remote helicopter landing sites and similar areas
- Providing dust control and stable surfaces for unpaved areas near industrial plants and mining areas
- Sealing landfill sites
- Airport pads sealing
- Wind and moisture erosion controlling
- Stockpile freeze control
- Sealing tailings – ponds
- Hydroseeding
- Sealing construction areas

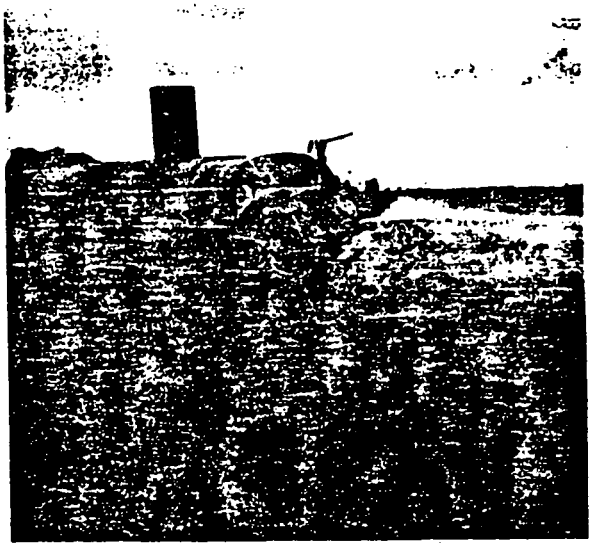
For further information please contact:
cousins
Dust Control Division
1801 Matzinger Road
Toledo, Ohio 43612

Cousins Dust Control Division

usins Dust Control Division utilizes our own formula for e Sap Emulsion. Cousins Pine Sap Emulsion is completely ural and non-hazardous, it is environmentally ndly, and replaces chlorides, lignosulfonates, oil ducts, and asphalt emulsions. Principal uses include; aintaining unpaved roads by controlling dust, bilizing and sealing road surfaces, coal and ash pile aling, erosion control, and hydroseeding.

Erosion Control on Landfill Slopes

Road Dust Control



Storage Pile Dust Control

100% organic	Ecologically Safe
Non-corrosive	Environmentally Safe
Non-flammable	Will not leach
No offensive odor	Safe, clean, easy to use

cousins
Waste Control Corporation
1701 E. Matzinger Rd.
Toledo, Ohio 43612
(419) 726-1500 • 1-800/433-6754

Cousins Dust Control

437

PINE SAP EMULSION™

Pine Sap Emulsion™ is a unique, versatile, all natural product specifically designed to naturally control dust, stabilize road surfaces along with forming a waterproof skin which prevents leaching and erosion.

As health and environmental regulations focus more on air and water quality, Cousins Dust Control provides a cost effective natural way to reduce these health and environmental concerns.

Pine Sap Emulsion™ replaces refined petroleum and asphalt types of emulsions. Many of these potentially carcinogenic oils are sometimes diluted with flammable solvents which produce volatile organic compounds (VOC's). Other dust control products containing chlorides and lignosulfonates can be corrosive to passing vehicles and/or equipment, in addition to being potentially harmful to plant and vegetation life.

Let Cousins Dust Control provide a safe solution to control your fugitive dust problems!

Pine Sap Emulsion™

- **Ecologically Safe**
- **Environmentally Safe**
- **Non–Carcinogenic**
- **Non–Corrosive**
- **Non–Flammable**

Distributorships Available

Principle Uses

Fugitive Dust Control for:
Mining/Industrial/Government roadways Private/Public Parking lots

Stabilizing/Sealing - Roads/Trails
Landfills/Soils/Hydroseeding
Ores/Coal/Ash Stockpiles

Erosion Control/Chemical Tarp

cousins

Dust Control • Environmental Services
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419/726-1500 • 1-800/433-6754
Fax 419/729-8506

000088

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MATERIAL SAFETY DATA SHEET

PINE SAP EMULSION™

SECTION I MANUFACTURER INFORMATION

Cousins Dust Control
1701 Matzinger Road
Toledo, Ohio 43612
1-419-726-1500 / 1-800-433-6754
FAX 1-419-729-8506

SECTION II COMPONENT DATA

Chemical Components:	Tree sap, surfactants, and water
T.D.G. Classification:	None Available
Chemical Formula:	None Available
Material Use:	Fugitive Dust Control

SECTION III PHYSICAL DATA

Physical State	liquid
Odor/ Appearance	brown emulsion with bland odor
Vapor Pressure	N/A
Vapor Density	N/A
Boiling Point	212° F
Specific Gravity	0.998
Solubility in water	soluble
Melting Point	N/A
Evaporation Rate	0
Density	8.33 lbs/ gallon
ph Level	5.9 - 6.2

SECTION VI FIRE AND EXPLOSION HAZARD DATA

Flash Point (° F)	550° F method used: C.O.C.
Flammability Limits	N/A
LEL	N/A
Extinguishing media	foam, CO_2, dry powder, water
Special fire fighting procedures	none
Unusual fire and explosion hazards	none

SECTION V REACTIVITY DATA

Conditions to avoid	avoid exposing mist and sprays to high temperatures or open flames
Stability	stable
Incompatibility/ material to avoid	none
Hazardous decomposition products	none
Hazardous polymerization	N/A

SECTION VI HEALTH HAZARD DATA

Health Hazards	none established
Emergency First Aid Procedures	If skin contact does occur, rinse thoroughly with soap and water. If in eyes, flush with cold water for ten (10) minutes. If irritation persists, consult a physician.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

Action to take for spills: Dike and contain spill, cover with a thin layer of dirt or sand and remove with suitable tool. Transfer to suitable containers.

Waste Disposal Method: Dispose of waste material in accordance with local and state laws.

Precautions to be taken in handling and storing: Handle with protective gloves and store at temperatures above freezing. Material is stable in storage.

Special Shipping Instructions: None

SECTION VIII CONTROL MEASURES

Respiratory Protection	none
Ventilation: Local exhaust	sufficient
Mechanical	none
Protective gloves	rubber
Eye protection	goggles
Other protective clothing	none

Preparation of MSDS:
Hazards in the Chemical Lab, 4th ed. Royal Society of Chemistry, 1986

The information herein is given in good faith, but no warranty, expressed or implied is made. Product users should make independent judgments of the suitability of this information to insure proper use and to protect the health and safety of employees.

g:cs/dust/psemsds