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**TRENCHING IN SUSPECT AREA NORTH-
NORTHWEST OF THE SOUTH FIELD, SOUTH FIELD
AREA 2**

03/13/92

**DOE-1151-92
DOE-FN/EPA
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LETTER**



Department of Energy
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Mr. James A. Saric, Remedial Project Director
United States Environmental Protection Agency
Region V - HRE-8J
77 West Jackson Street
Chicago, Illinois 60604-3590

Mr. Graham E. Mitchell, Project Manager
Ohio Environmental Protection Agency
40 South Main Street
Dayton, Ohio 45402-2086

Dear Mr. Saric and Mr. Mitchell:

TRENCHING IN THE SUSPECT AREA NORTH-NORTHWEST OF THE SOUTH FIELD, SOUTH FIELD AREA 2

Sampling and analysis plans have been developed and approved as part of the sitewide Remedial Investigation/Feasibility Study (RI/FS) Work Plan. In an October 4, 1989, addendum, the Department of Energy (DOE) prepared a sampling and analysis plan for the Production Area and Other Additional Suspect Areas. As part of this activity, DOE evaluated an area located north-northwest of the South Field Area (South Field Area 2, see Figure 5-1, Enclosure).

Aerial photographs taken in 1954 showed evidence of three trenches oriented north-south in this area. These trenches may have been excavated for borrow material or material burial. In 1989, as part of the Production and Additional Suspect Areas Work Plan, a surface magnetometer survey was conducted along a series of six east/west traverses in South Field Area 2. The survey produced evidence of a magnetic anomaly, and pursuant to the approved plan, a subsequent trench was excavated to determine the nature of this anomaly. The trench was approximately 25 feet long, 10 feet deep, and oriented north to south. No material was uncovered which would have explained the anomaly.

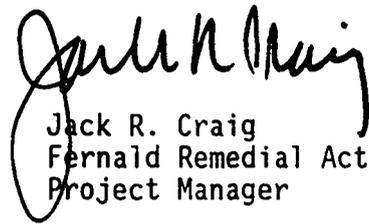
In accordance with the Work Plan Addendum (see pages 5-7, Enclosure) an east-west trench was proposed to be excavated 10 feet deep and perpendicular to the three suspect trenches only if the magnetic survey did not indicate possible areas of buried material. Since the magnetometer survey did indicate the possible presence of buried material, and a subsequent trench was excavated to determine the nature of the anomaly, the east-west trench that was proposed in the addendum was not excavated.

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The DOE-Fernald Field Office (FN) has further examined the South Field Area 2, additional available information, and the previous magnetometer survey and subsequent trenching. The conclusion is that the excavation conducted to uncover the magnetic anomaly may not have been sufficient to determine the previous activities associated with the three trenches. Therefore, the aforementioned proposed east-west trench will be excavated in accordance with the contingency provided in the approved Work Plan Addendum (see Enclosure). DOE considers it prudent to attempt to identify the activities that were associated with the three trenches, and any additional information gathered will be used to assist in further site characterization.

If you or your staff have any questions, please contact Johnny Reising at FTS 774-9083 or (513) 738-9083.

Sincerely,



Jack R. Craig
Fernald Remedial Action
Project Manager

FN:Reising

Enclosure: As Stated

cc w/enc.:

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5.0 SUSPECT AREAS OUTSIDE THE PRODUCTION AREA

The southfield area and two adjacent areas, several rubble mounds and drum storage areas, the fire training area, the laboratory equipment burial area, and a small area around the flagpole represent the identified suspect areas outside of the Production Area. This chapter presents the individual investigation plans for each of these areas. Figure 3-1 is a map showing the location and approximate boundaries of these areas.

5.1 SOUTHFIELD AREA

The southfield is an area where construction rubble, including the old administration building, was disposed of and graded to provide a level surface. Surface radiation measurements were made over the area as part of the Characterization Investigation Study (CIS). The surface measurements indicated elevated readings in the drainage ditch along the gravel roadway and in the drainage along the western side of the area. Twelve borings were also distributed over the adjacent fly ash disposal area and around the perimeter of the southfield during the CIS.

The exact boundaries of the southfield burial area are not known. It is assumed that material was dumped down the natural surface of a meander scar formed by Paddy's Run eroding into the till. As material was dumped, the fill would have extended outward in layers roughly parallel to the natural angle of repose. The south boundary of the southfield area is the steep slope rising from the floodplain of Paddy's Run just north of the running track. The western boundary is the approximate location of a small drainage which leads to Paddy's Run. It appears

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from the CIS data that the western third of the fill is predominantly fly ash. The eastern boundary is uncertain but probably lies immediately west of the roadway leading to the running track. The northern boundary is much less certain. Surface evidence indicates that the burial area may be restricted to the south of the east/west road in the area. Neither Boring 1046, just south of the road, nor Boring 1047, north of the road, encountered any fill material.

The CIS found lead, nickel, vanadium, and zinc in the fly ash. PCBs were also found along with uranium, thorium, and radium in the tens of parts per million (ppm) range. The CIS did not attempt to investigate the central part of the south field where the majority of the building rubble is thought to be located.

Because the fill is likely to contain large amounts of building rubble and concrete, it is unlikely that standard geotechnical equipment such as hollow-stem augers and split-spoon samples will be effective in sampling this material. A series of six test pits will, therefore, be excavated through the fill to characterize the fill and to provide samples for chemical and radiological analysis. The six test pits will be excavated in the locations shown in Figure 5-1. All of the pits will be oriented approximately north/south and the surface length of the pit will be 50 feet. The width and length of the trench bottom will vary with the fill consistency and thickness. The trenches will be excavated with a track-mounted backhoe with an 18- to 24-inch bucket. The pits will be mapped and described by a field geologist. These maps will include the locations of all soil sampling.

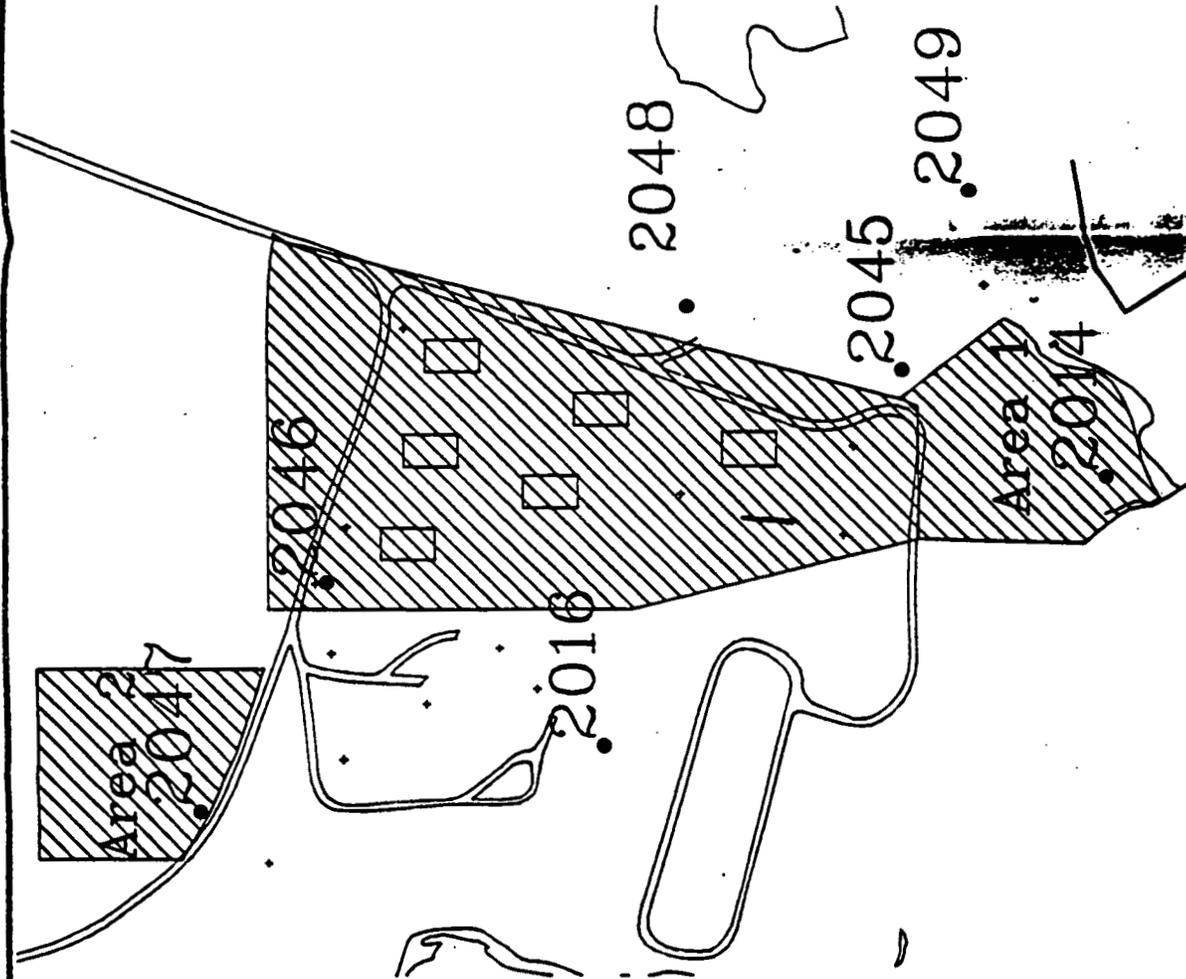
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SCALE (in feet)
0 75 150 225 300

FIGURE 5-1
SOUTH FIELD AREA

KEY:	□	TEST PITS
	▨	SUSPECT AREAS
	●	EXISTING WELLS
	+	CIS BORINGS
FACILITIES TESTING BORING LOCATIONS (PRELIMINARY)		
SOUTH FIELD AREA		
DATE	BY	SCALE
09/22/89		



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During excavation, samples will be collected with the backhoe for field screening with a pancake GM and an HNu. These samples will be collected at depth intervals offive feet at three equally-spaced locations along the length of the trench. The maximum thickness of the fill is estimated to be 20 feet. Therefore, the maximum number of samples for screening from any trench would be 12; that is, samples at 5, 10, 15, and 20 feet at three locations. The deepest sample will be from the native soils beneath the till. A portion of each sample will also be placed in a 500-milliliter (ml) wide-mouth jar and submitted for full radiological analysis.

If a reading is detected with the HNu, a sample will be collected for full HSL analysis, including HSL pesticides/PCBs as well as organophosphorus pesticide analyses. If more than one sample from a trench gives a sustained reading of 5 ppm for 10 seconds on the HNu, then the sample with the highest reading will be sent to the laboratory for HSL analysis. If all samples from a pit exhibit above-background HNu readings, then two samples with the highest readings and widest separations will be sent to the laboratory. If there is no field evidence of chemical contamination, then a single sample will be collected from the deepest part of the fill. A total of 6 to 12 samples will be submitted for HSL analyses.

A SPA-3 probe attached to a pole with a rate meter scale will be used to scan at least five vertical profiles along the length of the test pit on one side. The location and vertical and lateral extent of any zones with high counts will be delineated on the geologic map of the pit wall.

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The corners of the test pit will be staked so they can be accurately surveyed. The depth of the pit will also be carefully measured using rods to determine the thickness of the fill. All measurements are to be made from the surface and all samples are to be collected with the backhoe. If the test pit sides are unstable, the pit depths and relative thicknesses of fill will be estimated by reference marks on the side of the backhoe boom. It is anticipated that the sides of the trench will be stable and measurements can be made from the surface. In the event that the sides are not stable, measurements which require standing near the edge of the pit will not be made.

After the test pit has been inspected, sampled, and described, it will be backfilled with the material which was excavated from the pit. The entire disturbed area will be covered with six inches of clean soil borrowed from elsewhere on the FMPC. The bucket of the backhoe will be steam cleaned at the excavation site after each trench is excavated and backfilled.

South Field Area 1: This flat area is underlain with flood plain deposits from Paddy's Run and is not covered with till. The area is bounded on the west at the tree line and extends to the east to include the fill for the culvert over the outfall ditch.

A surface walkover survey using SPA 3 and FIDLER instrumentation will be conducted in the flat open area between the South Field and Paddy's Run. The walkover survey will be conducted on 25 foot grids as was done in the original

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walkover survey for the RI/FS. Biased soil samples will also be collected in the survey area using the same selection procedures as in the RI/FS Work Plan.

Three pits in Area 1 are clearly located on a 1954 photograph. The location of the pits will be determined by triangulating from features that appear on the 1954 photograph and still exist today. A single auger boring will be drilled into the center of each pit in the same manner as the other borings in this plan. Samples will be screened as they are collected. Alternate six-inch samples over the length of the boring will be analyzed for the full set of radiological parameters. Any split spoon sample that has 5 ppm reading for 10 seconds on the HNu will be analyzed for full HSL, including PCBs.

South Field Area 2: The second area located north-northwest of the South Field Area is where a crane appeared to be piling dirt in roughly north south oriented piles in the 1954 photograph. It is unknown if this was simply a borrow pit where cover material was removed or if some burial activity was going on. This area is now partially covered by the tree farm. However, at least the middle portion of this suspect area is where trees were removed from the tree farm and planted along the entrance road to the FMPC, leaving an open area in which to conduct the investigation.

Since the area was graded for tree planting and disturbed again for the tree removal, it is not likely that a surface walkover survey will be useful in this area. A surface magnetometer survey will be conducted over this area along a series of six east/west

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traverses. Readings will be taken at ten-foot intervals along each of the traverses. Four of the traverses will be spread over the width of the open area. The remaining two traverses will be to the north and south of the first row of trees that bounds the clear area. Since these traverses are to be perpendicular to the alignment of the piles in the 1954 photograph, they should detect any buried metals.

Unless the magnetic survey produces an indication of specific areas where buried material may be present, a single trench will be excavated across the present clear area from east to west. This trench will be excavated to a depth of ten feet and sampled in the same manner as the trenches in the South Field. Since this trench will be perpendicular to the orientation of the suspected burial activity, it should be able to address or disprove the question of the presence of any burial activity. If the magnetic survey does detect buried metal, an excavation will be made to determine the nature of the material.

Northeast Area: A third area identified in the 1954 photograph is a strip of land extending east, along the north side of the gravel road, from the fire training area to the north access road. This area was reportedly used by construction contractors for staging equipment during construction of the FMPC. The area to be investigated is about 100 feet wide and is within the present tree farm.

A surface walkover survey will be conducted along the south edge of this area between the drainage ditch and the first row of trees. There is not sufficient room within the tree farm to conduct a meaningful walkover survey. A series of 25 foot

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grids will be laid out and surveyed using the same procedures and equipment as the walkover survey in the RI/FS. The need for biased soil samples will also be determined from the results of the walkover survey as was done in the site wide RI/FS.

A ground magnetic survey will be conducted along the edge of the drainage, along the south edge of the tree farm, and between the next three rows of trees to the north for a total of five traverses. Based on the number and frequency of anomalies identified by the magnetic survey, a hand auguring program may be developed to sample the soils. Soils will be analyzed for total uranium and screened with an HNu. If HNu readings are above background, a full HSL analysis will be performed on the sample with the highest reading from each site.

There is one small area in the northeast part of this investigation area that was identified as a possible burial site. If there is a magnetic anomaly in that area, a boring will be made with a hollow stem auger in the same manner as in the production area.

5.2 RUBBLE PILES AND DRUM STORAGE AREAS

As indicated in Figure 3-1, there are three locations where rubble has been placed on the land surface outside of the southfield area. One area is west of the K-65 Silos and forms the east bank of Paddy's Run. A single test pit will be excavated and sampled in this area. The excavation will begin 100 feet south of Monitor Well 1032 and extend southward for 50 feet. The excavation, sampling, data collection, and