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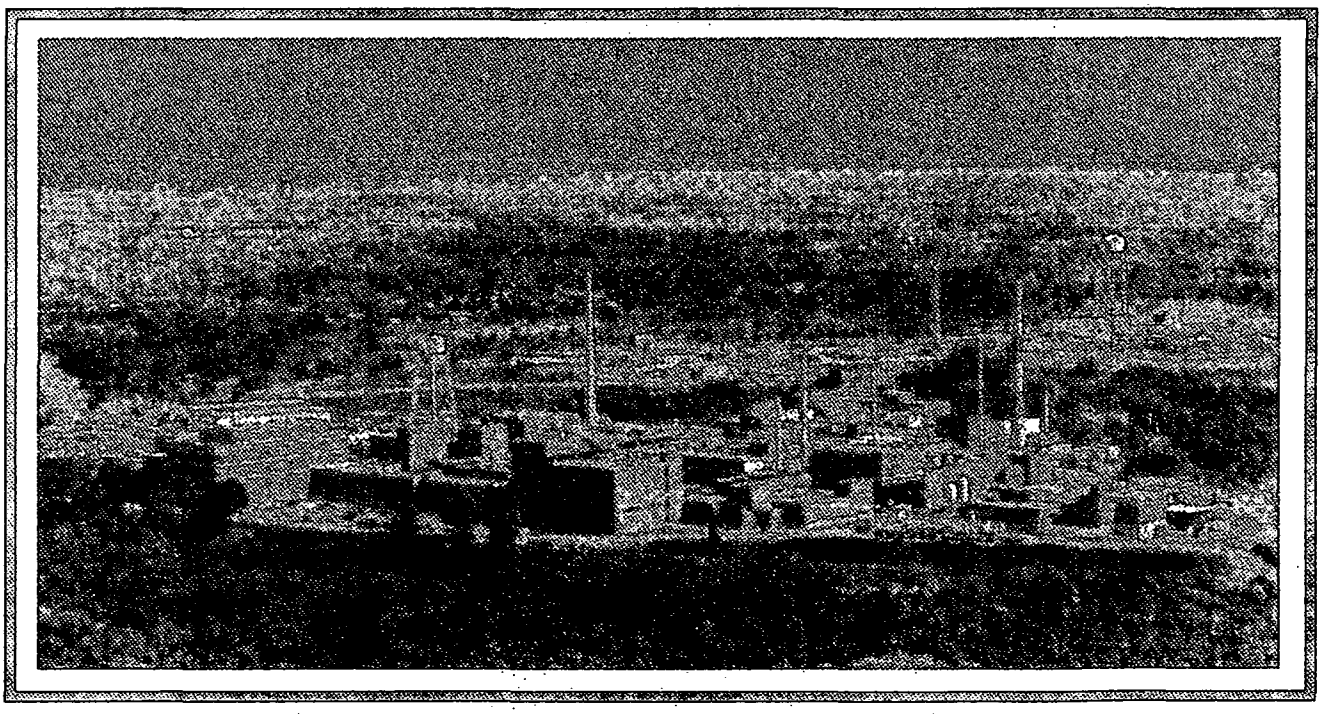
MOUND

Environmental
Restoration
Program

MOUND PLANT
Potential Release Site Package
PRS # 37/399



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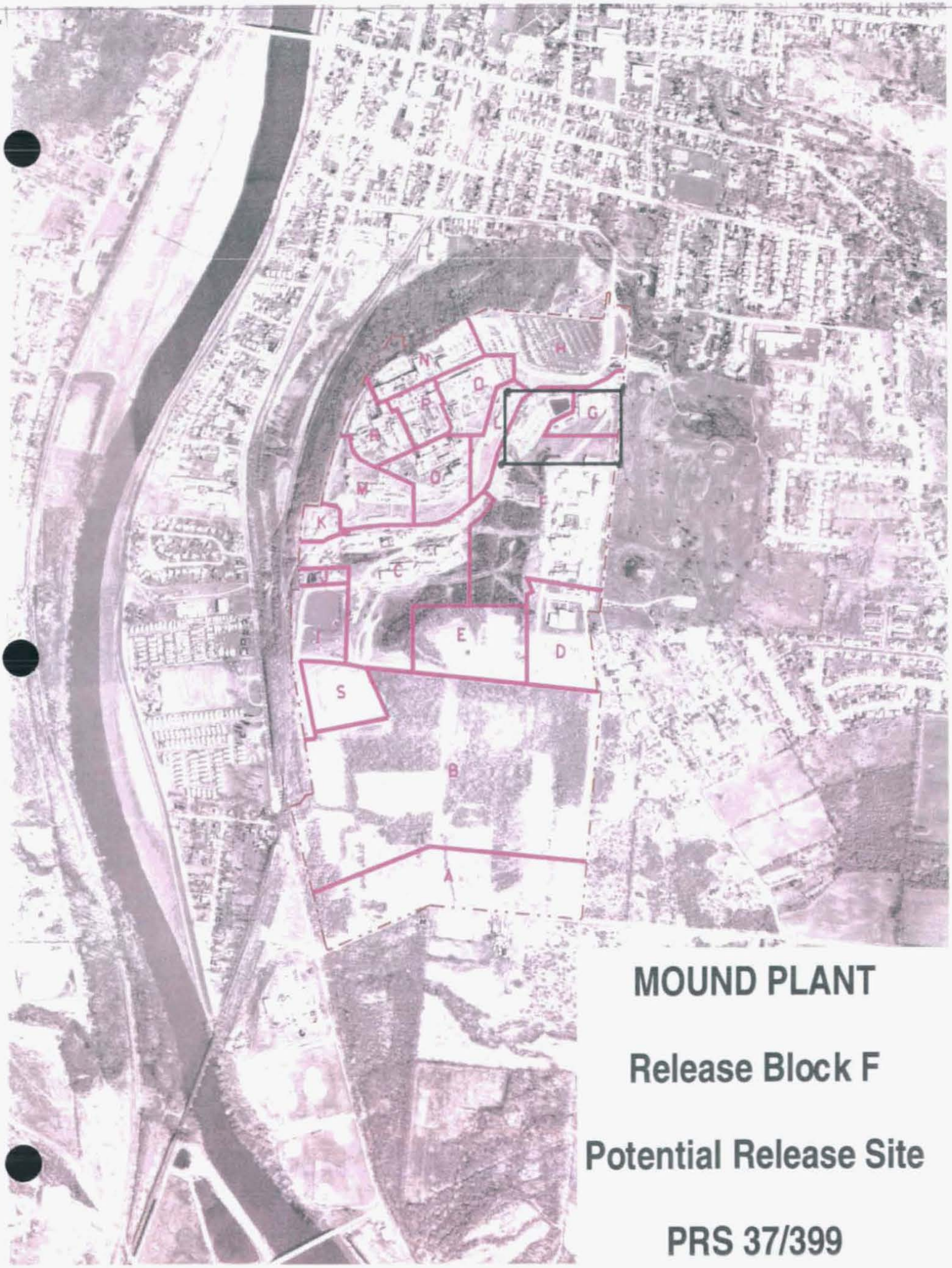
FINAL 1		

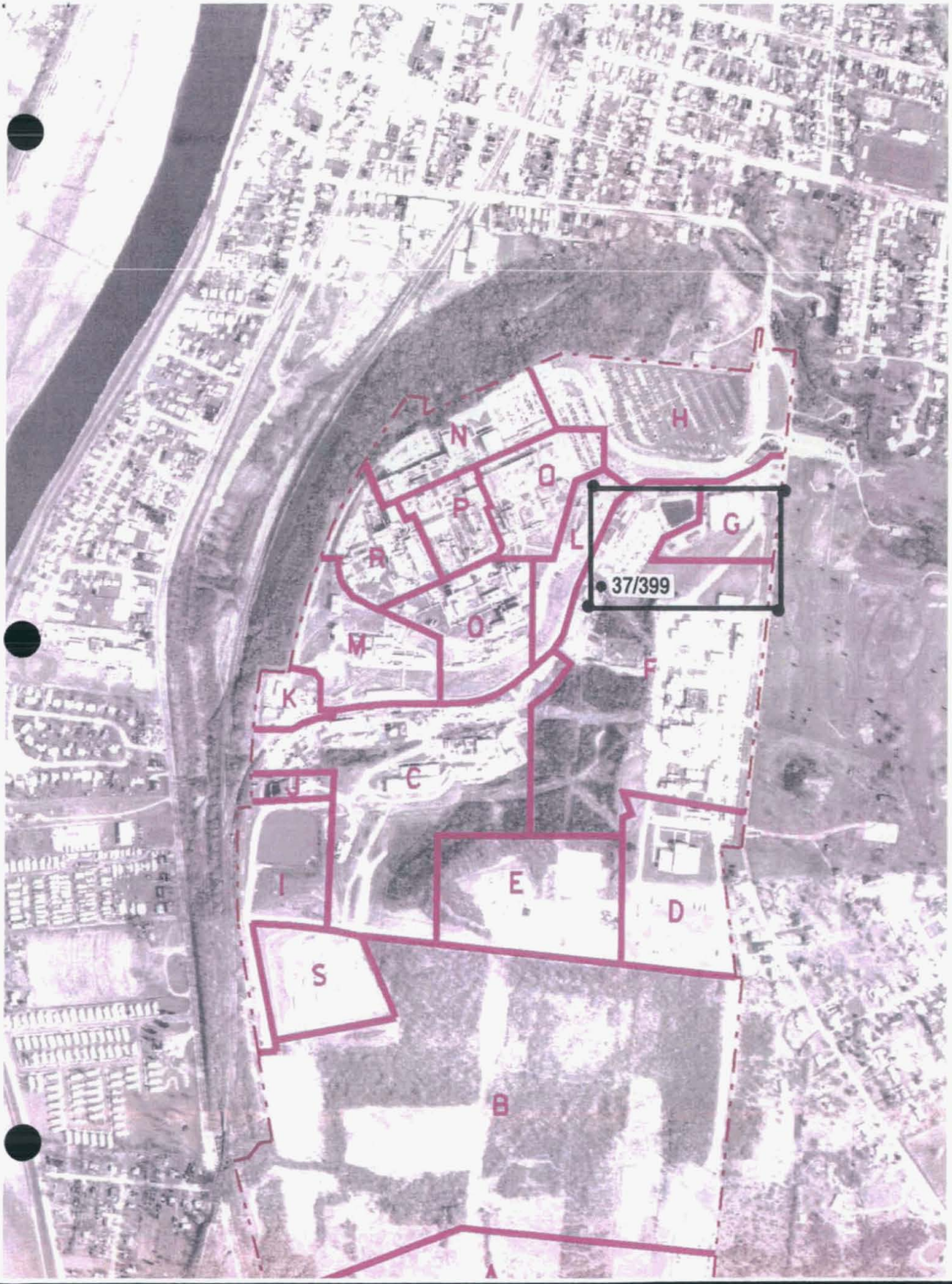


MOUND PLANT

Release Block F

Potential Release Site

PRS 37/399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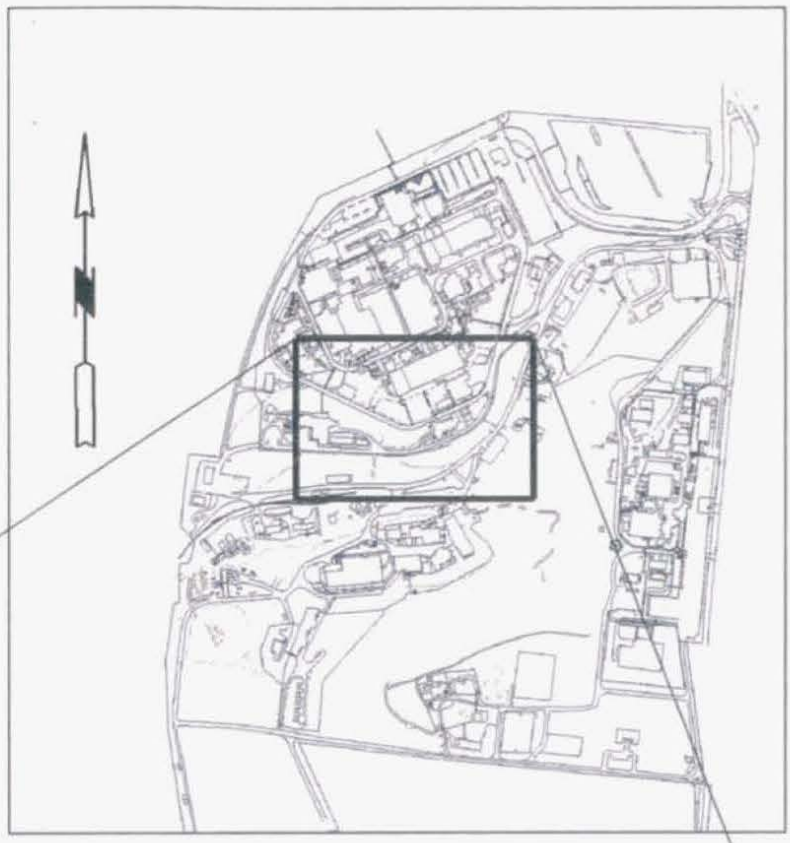
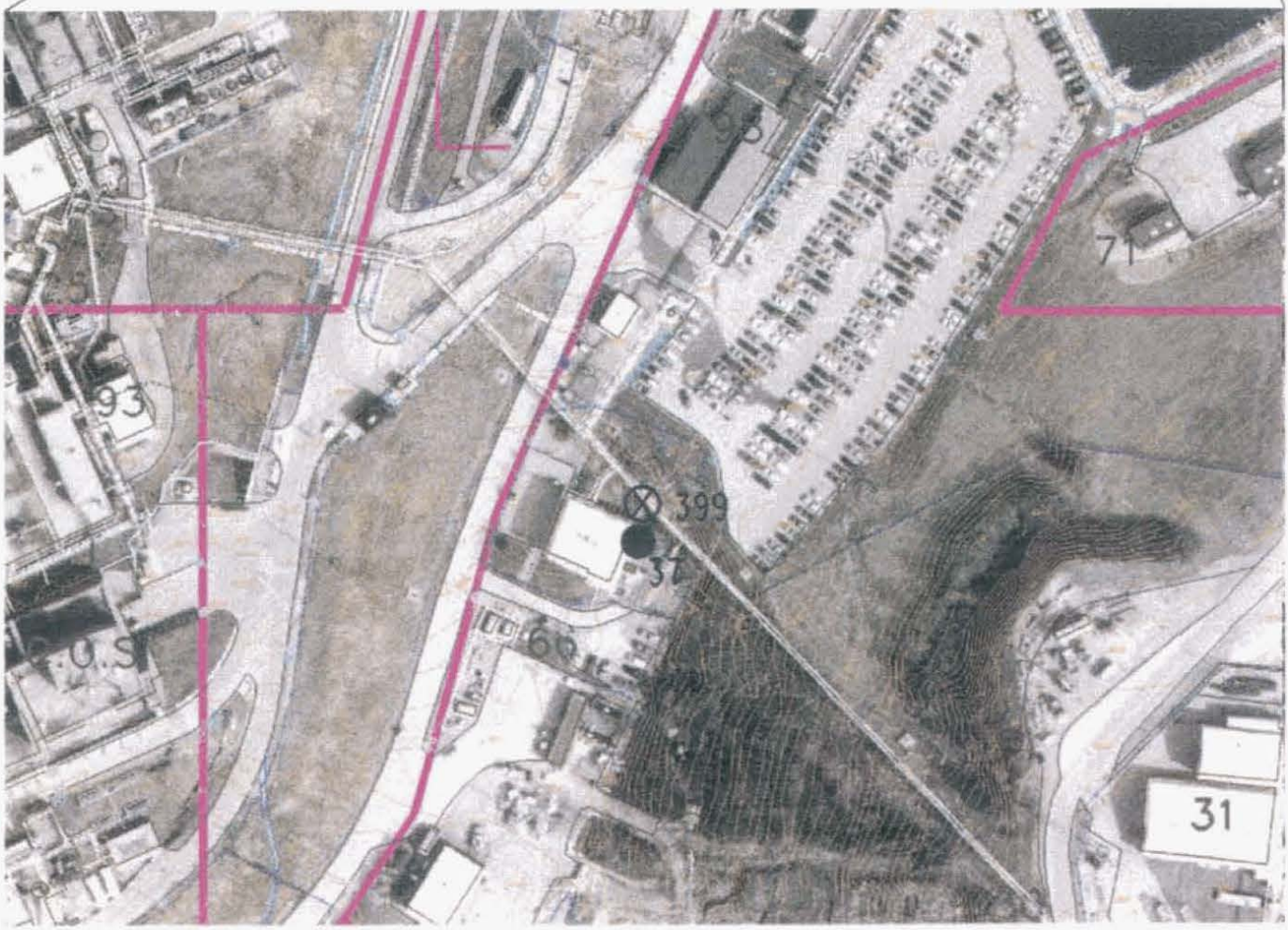
Mound Plant

Release Block F

Potential Release Site

PRS 37/399





399
37

PRS 37/399

PRS HISTORY:

PRS 37

Potential Release Site (PRS) 37 [1] is the location of a historic 1000-gallon, unlined, underground steel tank that was used to store waste solvents prior to their incineration in Building 51.[1,2] It was located adjacent to the northeast corner of Building 51, in the upper valley area of Mound Plant. The tank (No. 220) [6] was installed in 1972 and used only during the time the incinerator was operational. Both the tank and the incinerator were last used in 1974 and the waste solvents were pumped out.[7] The tank was closed by removal in 1990 in accordance with Ohio's Bureau of Underground Storage Tank (BUSTR) program.[5] Visual inspection of the open excavation during removal indicated that residual materials may have contaminated surrounding soils.[5]

PRS 399

PRS 399 was identified in the Operable Unit 5, Operational Area Investigations Phase 1 Investigation Non-AOC Field Report.[7] The investigation of the non-areas of concern (non-AOC) generally included areas that were not known or suspected to be contaminated, but did include detections in areas with the possibility for the presence of hazardous substances. PRS 399 was identified as a result of a single location that exhibited relatively high total halogenated hydrocarbons. PRS 399 is located a few feet from the northeast corner of Building 51, which closely corresponds with that of PRS 37, described above.

CONTAMINATION:

As part of the removal and closure of the tank, three soil samples were collected from the base and walls of the open excavation, as well as a sludge sample from the tank.[5] The soil samples were analyzed for volatile organics, total metals, total petroleum hydrocarbons (TPH), phenol, cyanide, sulfide, total solids, polycarbonated bipenols (PCBs), pH and flashpoint. Results from this sampling indicated the presence of chloroform and trichloroethene* (also known as trichloroethylene or TCE) and TPH in the soils.[5] The organic compounds and all metals were below the guideline values, whereas TPH was found at 560 parts per million (ppm) compared to a guideline criteria of 105 ppm (BUSTR policy) see Table 1.

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* The OU9 Volume 7 - Waste Management Report[2] narrative listed TCE at 210 parts per million (ppm). However, the data sheets from the Building 51 Closure Report[5] show this number is actually 210 micrograms per kilogram (ug/kg) which is equivalent to parts per billion (ppb). Subsequent TCE sampling (reference table 2 below) confirms that Waste Management Report's 210 ppm listing was attributable to transcription error. The guideline criteria for TCE is 41 mg/kg which is equivalent to 41 ppm.

After the tank removal, PRS 37 was investigated during the Operable Unit 3, Miscellaneous Sites Limited Field Investigations in 1991. Four soil samples and 1 duplicate sample were collected from 4 soil borings, 7 to 8 feet in depth.[3] The analytical results were included in the Tank closure report as well as the OU 3 Limited Field Investigation Report.[3] Results of the OU 3 soil sampling and analysis indicated that organic compounds were present below guideline values, and that only beryllium (0.9 ppm) exceeded the guideline value (0.7 ppm), but was below background (1.3 ppm) (see Table 1).

Table 1. Summary of Results of Soil Analyses:

Contaminant	Maximum Concentration Detected	Guideline Criteria
Acetone	500 ppb[5]	105000000 ppb
Chloroform	21 ppb[5]	100000 ppb
Trichloroethene (TCE)	210 ppb[5]	41000 ppb [11]
Carbon disulfide	5 ppb[5,3]	1400000 ppb
2-butanone	1000 ppb[5,3]	46500000 ppb
Beryllium	940 ppb[5,3]	700 ppb 1300 ppb (background)
TPH	560000 ppb[5]	105000 ppb (OEPA policy)

In 1992, a reconnaissance soil gas survey was conducted in the Building 51 area. Eight locations were sampled and analyzed for volatile organic compounds in the areas surrounding PRSs 37 and 399. The study collected samples at 5-foot depths and analyzed them in an on-site mobile using a gas chromatograph (equivalent to USEPA Method 8021). The results of the survey indicated that traces of halogenated organic compounds are present down gradient of the former tank site [8] (see Table 2).

Table 2. Potential Contamination:

Contaminant	Maximum Concentration Detected	Guideline Criteria as Calculated
1,1,1 Trichloroethane (1,1,1 TCA)	37 ppb[8] (soil gas)	173,400 ppb [9] (soil gas)
Tetrachloroethene (PCE)	44 ppb[8] (soil gas)	3,100 ppb [9] (soil gas)
Trichloroethene (TCE)	207 ppb[8] (soil gas)	2,400 ppb [9] (soil gas)
Toluene	3 ppb[8] (soil gas)	414,600 ppb [9] (soil gas)

The passive soil gas survey was conducted, in 1992, as part of the OU 5, Operational Area Investigations Phase 1 Investigation Non-AOC field investigations.[7] This investigation included

a field instrument for detection of low energy radiation (FIDLER) survey; surface soil sampling and analysis using the Mound Plant soil screening facility; and a PETREX passive soil gas survey to detect volatile and semi-volatile organic compounds. The surveys were conducted over a 100-foot grid system.[7]

The results of the PETREX passive soil gas survey indicated that a single, relatively high detection of total halogenated hydrocarbons was recorded in the sample north of Building 51.[7] This sample location is designated as PRS 399. All other sample results for total aromatic, total semi-volatile and total petroleum hydrocarbons were relatively low. The PETREX soil gas methods generally indicate the relative presence of a substance, but do not yield a quantitative concentration of that substance.

Radiological data include samples collected during tank removal and closure in 1990, as well as from the PETREX borehole. Soil samples were collected in the open excavations for health physics monitoring purposes and submitted to the Mound soil screening facility. Results from both the tank excavation [10] and the boreholes in which the PETREX detectors were placed [7] indicated no plutonium-238 or thorium-232 above the Mound as low as reasonably achievable (ALARA) guidelines of 25 and 5 pCi/g, respectively.

READING ROOM REFERENCES:

1) OU9, Site Scoping Report: Volume 12 - Site Summary Report, December 1994. (pages 7-9)
2) OU9, Site Scoping Report: Volume 7 - Waste Management, February 1993. (pages 10-13)
3) OU3, Miscellaneous Sites Limited Field Investigation Report, July 1993. (pages 14-26)
4) OU3, Miscellaneous Sites Limited Field Investigation, Volume II, Appendix A July 1993. (pages 27-50)
5) Closure Report Building 51 - Waste Storage Tank, August 1992. (pages 51-82)
6) Mound Plant Underground Storage Tank Program Plan and Regulatory Review, Nov 1992. (pages 83-85)
7) OU5, Operational Area Phase I Investigation Non-AOC Field Report, June 1995. (pages 86-92)
8) Reconnaissance Sampling Report Soil Gas Survey & Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill, February 1993. (pages 93-104)
11) Risk Based Soil Guideline, December 1995, Revision 0. (pages 110-111)

OTHER REFERENCES:

9) Comparison of Actual Soil Gas Values with Calculated Acceptable Soil Gas Values. (pages 105-107)
10) Mound Soil Screening Facility - Daily Report, December 1990. (pages 108-109)

PREPARED BY:

Dean A. Buckner, Member of EG&G Technical Staff

PRS 37/399
(SUPPLEMENTAL DATA)

HISTORY:

Potential Release Sites 37 and 399 are contiguous with one another at the northeast corner of Building 51. An underground tank holding waste organics and solvents occasioned the designation of PRS 37. PRS 399 resulted from elevated PETREX readings of halogenated hydrocarbons, logically associated with hydrocarbon-contaminated soil.

CONTAMINATION:

In 1996, a **Soil Gas Further Assessment Program** [11] sampled the soil at PRS 37 to a depth of two feet, and another two foot deep sample was taken one hundred feet to the northwest. The samples were quantitatively analyzed for volatiles, semivolatiles, pesticides, PCBs, explosives, metals, and radionuclides. The results from both locations showed that no analytes exceeded the ALARA, regulatory, or guideline criteria.

SUPPLEMENTAL REFERENCES:

11) Further Assessment, Soil Gas Confirmation Sampling, May 1996. (pages 112-126)

MOUND PLANT
PRS 37/399
FORMER TANK SITE
BUILDING 51 SOLVENT WASTE TANK

RECOMMENDATION:

Potential Release Site (PRS) 37 was identified as an underground storage tank used to hold waste solvents prior to incineration, in Building 51. PRS 399 was identified as a single elevated relative soil gas reading near the tank site. The tank was removed, in 1990, in accordance with the Ohio BUSTR program.

Subsequent to the removal, soil sampling in 1991, 1992, and 1996 failed to detect any organics above guideline criteria. In addition, all samples indicated that radionuclides are below guideline criteria.

Therefore, NO FURTHER ASSESSMENT (NFA) is recommended.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath 11/21/96
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer 11/19/96
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel 11/21/96
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from _____ to _____

☐ No comments were received during the comment period.

☐ Comment responses can be found on page _____ of this package.

Page R.

REFERENCE MATERIAL
PRS 37/399

ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 9
SITE SCOPING REPORT:
VOLUME 12 - SITE SUMMARY REPORT

MOUND PLANT
MIAMISBURG, OHIO

December 1994

U.S. DEPARTMENT OF ENERGY
OHIO FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL

Table A.1. Comprehensive Tabulation of Potential Release Sites

Description of History and Nature of Waste Handling						Hazardous Conditions and Incidents			Environmental Data		
No.	Site Name	Location	Status	Potential Hazardous Substances	Ref	Releases	Media	Ref	Analytes[a]	Results	Ref
30	Building 27 Diesel Fuel Storage Tank (Tank 123) (AKA Building 27 Propane Tank)	G-6	Inactive	Tank is actually above ground	3				Not Applicable		
31	Underground Sanitary Sewer Line G5	H-5	In service	Organic solvents	5, 18			7, 18	3, 4, 5, 6, 10, 11, 12, 14, 16	Tables B.6, B.7, and B.8	7
32	Underground Sanitary Sewer Line G12	F-8 G-8		Plating solutions, Laboratory chemicals							
33	Underground Sanitary Sewer Line G14 EAST	H-5 H-6				Suspected, not confirmed	S	2, 7	3, 4, 5, 6, 10, 11, 12, 14, 16	Tables B.6, B.7, B.8, and B.9	7
34	Underground Sanitary Sewer Line G14 WEST	H-5 H-6		Nitric acid, Hydrochloric acid							
35	Underground Sanitary Sewer Lines G19 & G14	G-5		Methylene chloride							
36	Underground Sanitary Sewer Line G15	E-9		Strong acids and bases							
37	Building 51 Waste Solvent Storage Tank (Tank 220)	F-8	Historical	Organic solvents, Paints, Waste oils	3, 4, 5, 18	Tank Removed 1991, VOC residuals	S	4, 23	3, 4, 5, 6, 8	Tables B.6, B.7 and B.8	7, 23
38	Building 51 Waste Incinerator	F-8	Historical	Contaminants listed under Bldg. 51 Waste Solvent Storage Tank (Tank 220)	4, 5		A	4	No Data		
39	Building 51 Waste Incinerator Scrubber	F-8	Historical	Combustion products from Bldg. 51 Waste Incinerator	4, 5	Water released to plant drainage ditch	SW	4	No Data		
40	Building 66 Lot	F-8	Grounds	Plutonium-238 from unknown source	6	Plutonium-238	S	6	13	Table B.1 RSS[c] Location S0323 (Appendix E in Ref. 6)	6

[a]Analyte List Codes
[b]SGS, Soil Gas Survey
[c]RSS, Radiological Site Survey

1 - Soil Gas Survey - Freon 11, Freon 113, Trans-1,2-Dichloroethylene, Cis-1,2-Dichloroethylene, 1,1,1-Trichloroethane, Perchloroethylene, Trichloroethylene, Toluene
2 - Gamma Spectroscopy - Thorium-228, -230, Cobalt-60, Cesium-137, Radium-224, -226, -228, Americium-241, Actinium-227, Bismuth-207, Bismuth-210m, Potassium-40
3 - Target Analyte List
4 - Target Compound List (VOC)
5 - Target Compound List (SVOC)
6 - Target Compound List (Pesticides/Polychlorinated Biphenyl)
7 - Dioxins/Furans
8 - Extractable Petroleum Hydrocarbons (EPH)/Total Petroleum Hydrocarbons (TPH)
9 - Lithium
10 - Nitrate/Nitrite
11 - Chloride
12 - Explosives
13 - Plutonium-238
14 - Plutonium-238, Thorium-232
15 - Cobalt-60, Cesium-137, Radium-226, Americium-241
16 - Tritium

Reference List

1. DOE 1986 "Phase I Installation Assessment Mound (DRAFT)."
2. DOE 1992a "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan (Final)."
3. DOE 1992c "Mound Plant Underground Storage Tank Program Plan & Regulatory Status Review (Final)."
4. DOE 1993a "Site Scoping Report: Volume 7 - Waste Management (Final)."
5. EPA 1988a "Preliminary Review/Visual Site Inspection for RCRA Facility Assessment of Mound Plant."
6. DOE 1993d "Operable Unit 9, Site Scoping Report: Volume 3 - Radiological Site Survey (Final)."
7. DOE 1993c "Operable Unit 3, Miscellaneous Sites Limited Field Investigation Report."
8. DOE 1992d "Reconnaissance Sampling Report Decontamination & Decommissioning Areas, OU6, (Final)."
9. Fentiman 1990 "Characterization of Mound's Hazardous, Radioactive and Mixed Wastes."
10. DOE 1992f "Operable Unit 9, Site Scoping Report: Volume 11 - Spills and Response Actions (Final)."
11. Styron and Meyer 1981 "Potable Water Standards Project: Final Report."
12. DOE 1993b "Reconnaissance Sampling Report - Soil Gas Survey & Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill (Final)."
13. DOE 1993d "Operable Unit 9, Site Scoping Report: Volume 3 - Radiological Site Survey (Final)."
14. DOE 1991b "Main Hill Seeps, Operable Unit 2, On-Scene Coordinator Report for CERCLA Section 104 Remedial Action, West Powerhouse PCB Site."
15. Halford 1990 "Results of South Pond Sampling."
16. DOE 1993e "Operable Unit 4, Special Canal Sampling Report, Miami Erie Canal."
17. DOE 1990 "Preliminary Results of Reconnaissance Magnetic Survey of Mound Plant Areas 2, 6, 7, and C."
18. DOE 1992a "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan (Final)."
19. Rogers 1975 "Mound Laboratory Environmental Plutonium Study, 1974."
20. DOE 1992h "Ground Water and Seep Water Quality Data Report Through First Quarter, FY92."
21. Dames and Moore 1976 a, b "Potable Water Standards Project Mound Laboratory" and "Evaluation of the Buried Valley Aquifer Adjacent to Mound Laboratory."
22. DOE 1992i "Closure Report, Building 34 - Aviation Fuel Storage Tank."
23. DOE 1992j "Closure Report, Building 51 - Waste Storage Tank."
24. DOE 1994 "Operable Unit 1, Remedial Investigation Report."
25. EG&G 1994 "Active Underground Storage Tank Plan."

Document Control No. _____

Environmental Restoration Program

OPERABLE UNIT 9, SITE SCOPING REPORT: VOLUME 7 - WASTE MANAGEMENT

MOUND PLANT
MIAMISBURG, OHIO

February 1993

FINAL
(Revision 0)

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

4.13. HISTORIC LANDFILL (AREA B)

The Area B Historic Landfill is in the southwestern portion of Mound (Figure 4.1). An old gravel excavation and the area just north of it were used for landfill and burning of solid and liquid chemical wastes. When Mound first opened in 1948, a small trash incinerator was located just south of the landfill. This small incinerator proved too small and the practice of burning trash at the landfill site was adopted. A burn cage in the landfill area was used for the open burning of trash and garbage from plant operations. The burn cage consisted of an open wire mesh structure to catch ashes from the burned wood, paper, and other combustible materials (DOE 1991a).

Nonradioactive liquid wastes such as trichloroethene, carbon tetrachloride, benzene, alcohol, acetone (in paints), photoprocessing solutions, and polychlorinated biphenyl (PCB) oils were routinely brought here for disposal. The materials were dumped on the ground or their containers were stacked and ignited. Fuels may have been added to the liquids to assist with their combustion. The practice of open burning in the historic landfill was halted in June 1970 (Wolfe 1973a). Liquid wastes were then staged for off-plant disposal; the disposal of solid wastes continued until 1975. Additional information is given in the waste disposal section of this report.

4.14. BUILDING 51, WASTE INCINERATOR (HISTORICAL)

On April 24, 1970, the Montgomery County, Ohio, General Health District passed regulations requiring conformance to certain air pollution standards on the same date. Mound disposal practices of open burning of solvents and combustible solids would not comply with these regulations (Neubert 1970). Mound decided to incinerate its wastes in order to come into compliance with these regulations.

The waste incinerator was constructed inside Building 51 (Figure 4.1). Building 51 is on an area of extensive fill on the western flank of a ravine in the upper valley area of the plant. Building 51 appears to lie on the southern border of an area of debris disposal within the fill (DOE 1992c). Construction of the incinerator was begun on August 25, 1970. The first test burn was conducted on August 30, 1971. Several operating problems were encountered. Additionally, a test conducted on October 12, 1971, indicated that particulate emissions were too great and that the incinerator could only burn 3,000 pounds of combustibles per hour rather than the designed 5,000 pounds per hour. The report submitted by Bowser-Morner, the company performing the stack tests, indicated that particulate emissions were below allowable levels (Delany 1971), but the test did not conform with federal regulations (Kozuszek 1971). On January 7, 1972, the AEC accepted the incinerator (Werner 1972b). A permit to construct and operate the incinerator was granted on March 24, 1972, by the Montgomery County Air Pollution Control Section (Clark 1972).

The incinerator itself consisted of primary and secondary combustion chambers that had a rated capacity of 5,000 pounds per hour. The combustion chambers were lined with refractory brick. The primary chamber was 222 inches long, 81 inches wide, and 176 inches high. The secondary chamber was 61 inches long by 81 inches wide by 176 inches high. Forced air for combustion was supplied to the grates at a rate of 5,100 cfm.

A liquid waste oil and solvent disposal system, including the Building 51 waste oil storage tank, a heater, and a pump, was connected to the incinerator (MRC, n.d.). The 1,000-gallon underground storage tank was constructed of steel. The incinerator was designed to handle the combustion of the 27 gallons of oil and 16.2 gallons of solvents, typically toluene, acetone, ethanol, and methahol, per day (Russell 1969).

Several problems plagued the use of the incinerator for destruction of solvents and oils. In September 1971, the first load of waste oil and solvent was emptied into the 1,000-gallon holding tank. Problems were encountered when debris in the drums, including rust flakes and rags, clogged the filler funnels and hampered filling. It was noted that 11 drums, approximately 530 gallons of waste oil and solvent, were selected for disposal and added to the 360 gallons of fuel oil that were in the tank (Russell 1971). The plan was to continue to dispose of the accumulated wastes, as well as to continue the weekly collections. It is not known how much actual incineration of waste oils and solvents was done after this. However, in January 1972, a test burn of approximately 80 gallons of waste oils and solvents was conducted (Werner 1972a). The intent of the test burn was to collect data and identify the problems so that corrective actions could be taken. It was established that no future burns would take place until several modifications were made.

Numerous design and construction problems and variances were blamed for the poor performance of the incinerator throughout its life. These problems included misapplication of the cyclones (Werner 1972a, Westendorf 1973). Structural defects also effected the operation of the incinerator (Russell 1971). The problems associated with the cyclones created high particulate content in the recirculated scrubber water. This high particulate content caused the cooling spray nozzles to clog. When the nozzles clogged, the maximum scrubber inlet temperature (800°F) was exceeded, and the furnace effluent was sent directly to the stack without emission control (Werner 1972b). Pressure buildups in the incinerator were common. These pressure buildups caused improper burning and fire to enter into the loading hopper. Control of the charging ram (part of the feed system) was another design flaw that created a major safety hazard (Werner 1972a). The recirculated water was initially discharged to the storm drains. Since the recirculated water became very acidic, it was eventually treated at the SD Building (Russell 1972).

The incinerator was used to burn nearly all of the plant's nonradioactive solid wastes and some liquids including paints, oils, and solvents on an experimental basis (Thomas 1991), but most liquids were shipped off-plant for disposal. In an effort to reduce waste disposal costs and find a better way to handle wastes, the "Mound Laboratory Solid Waste Reclamation and Recycling Program" was created. All wastes previously incinerated were eventually handled under this program. The incinerator was operated under interim status from December 30, 1973, to February 15, 1974, when it was completely shut down (Garbe and Wolfe 1974). With the exception of a few janitorial items, the incinerator was disassembled, and removed from Mound on May 22, 1979 (Schroeder 1979, Balsmyer 1979). The tank was removed in November 1990 (Burdg 1991). Soil sampling was performed as part of tank removal. Maximum concentrations of approximately 35 to 560 ppm total petroleum hydrocarbons and 200 ppm trichloroethene were found in the samples.

4.15. AREA C, LITHIUM BURN AREA (HISTORICAL)

Area C is adjacent to the plant drainage ditch in the lower valley area (Figure 4.1). In the late 1950s and early 1960s, the area collected and ponded stagnant water. It may have been about 150 ft in diameter, but its dimensions were irregular. Area C lay just north of the old hand-dug well in the area occupied by several old farm buildings that predated Mound, as shown on the historical topographic map of 1946 (DOE 1992b).

This swampy area was used to destroy small drums of lithium hydride that came from a research project on the Main Hill. Three to four 20-gallon drums a month were destroyed by burning (Meyer 1991). The water assisted and facilitated the reactions. No radioactive materials were associated with the process (Garner 1991). No other disposals are known to have occurred in the area. In 1964, when Building 34 was constructed, the area was filled and regraded, and the burning activity was relocated to the area of standing water in the bottom of the old landfill (Area B).

The ER Program has in the past assumed that Area C occupied a larger area than it probably occupied. A magnetic survey and two ground-penetrating radar surveys (DOE 1990b) covered much larger areas than had been described by Mound personnel during research for this report (Garner 1991). The multiple reflectors observed in the magnetic survey probably relate to the older farm buildings that were razed in the 1950s. The older buildings and the old hand-dug well are apparent in the historical topographic map of 1946 (DOE 1992b). The hand-dug well was in the approximate location now occupied by the fire fighter training pits, built in the late 1960s or early 1970s (DOE 1991d).

Environmental Restoration Program

OPERABLE UNIT 3, MISCELLANEOUS SITES LIMITED FIELD INVESTIGATION REPORT

MOUND PLANT
MIAMISBURG, OHIO

VOLUME I LFI REPORT TEXT (SECTIONS 1-6)

July 1993

FINAL

(Revision 0)

Department of Energy

EG & G Mound Applied Technologies

2.4.2. Field Investigation Procedures

The objective of investigating the glass melter room sump was to determine whether hazardous constituents have been released to the environment. WESTON representatives conducted sampling activities at the glass melter room sump on 19 February 1992. The location of the sump is indicated on Figure 2.4. Water samples from the sump were shipped to IT Laboratories for analysis.

Sludge from the sump was not containerized for laboratory analysis because of elevated radiation readings obtained using a field instrument for detection of low-energy radiation (FIDLER). A sludge sample was retained for analysis by the Mound Plant low-level radiation soils screening facility. Radiation screening confirmed that elevated levels of plutonium-238 were present in the sludge. Sediment sampling was suspended at the glass melter room sump as documented in the U.S. EPA letter to DOE dated 8 May 1992 (EPA 1992a).

A summary of the water samples collected and associated QC samples at the sump listing the sample identification number, sampling depth, date sampled, and requested analytical parameters is presented in Table II.4. Sump water sampling protocol at the Glass Melter Room Sump followed approved OU 3 LFI procedures.

2.5. BUILDING 51 WASTE SOLVENT TANK

2.5.1. Site History

2.5.1.1. Description of the Building 51 Waste Solvent Tank

Building 51 is located in the upper valley between Main Hill and SM/PP Hill. The upper valley area is located in the northeastern portion of the Mound Plant Site, south of the north parking lot (Figure 1.3). Building 51 was the location of a waste incinerator, which was completed in 1972 and operated for approximately 1 year. The tank at Building 51 was probably installed at the same time as the incinerator. The incinerator was used to burn nearly all of the Plant's nonradioactive solid wastes and some liquids including oils, paints, and solvents on an experimental basis. The overall operation of the incinerator was not successful and its use was discontinued because of excessive releases of particulates and because of changes in air pollution control regulations. The incinerator was dismantled in late 1972.

The Building 51 Waste Solvent Tank was removed as part of the Mound Plant underground tank program in December 1990. An undetermined amount of sludge material remained in the tank at the time of removal.

The observation of only sludge remaining in the tank is consistent with reports that the liquid in the tank was pumped out when the tank was removed from service.

Prior environmental sampling has occurred at the site previous to the OU 3 LFI. The contents of the waste solvent tank were sampled by Bowser-Morner on 26 October 1990 (Bowser-Morner 1991). The sludge sample was analyzed for VOCs, heavy metals, TPH, phenol, cyanide, sulfide, total solids, PCBs, pH, and flashpoint (Bowser-Morner 1991).

During removal activities, three soil samples were collected by Mound Plant ER Program personnel on 4 December 1990. One soil sample was collected from each end of the concrete tank pad (8.0 to 8.5 ft BGS) and the other sample was collected from the middle of the pad (7.0 ft BGS). The soil samples collected from the tank excavation were analyzed by Bowser-Morner for VOCs, heavy metals, TPH, phenol, cyanide, sulfide, total solids, PCBs, pH, and flashpoint (Bowser-Morner 1991).

~~The OU 3 field sampling analytical results have previously been reported (DOE 1992d). The report was reviewed by U.S. EPA and OEPA, and was also submitted to the Ohio Bureau of Underground Storage Tank Regulation (BUSTR) in August 1992.~~

~~A soil gas survey was conducted south of the Building 51 Waste Solvent Tank area in August 1992 (DOE 1992e). Soil gas sample locations to the south of Building 51 are detailed in the August 1992 report (DOE 1992e). Results indicate soil vapor phase concentrations of a number of VOCs, including tetrachloroethene (PCE) and trichloroethene (TCE), at concentrations of up to 207 ppb (TCE).~~

2.5.1.2. Potential Area Contaminants

The 1,000-gallon underground waste tank was primarily used to store waste oils and waste solvents from various Mound Plant processes. Liquid waste was pumped from the tank to the incinerator in Building 51 for incineration. Waste materials stored in the waste solvent tank were primarily collected from fume hoods. The spent solvents may have included TCE (F001), acetone (F003), toluene (F005), benzene, enamel paint, lacquer paint, lacquer thinner, methanol, ethanol, and mineral spirits. These materials may be listed under RCRA because of ignitability (D001). Even though the tank was only operational for a short time, some leakage of waste solvents may have occurred while the tank was in the ground and out of service.

2.5.2. Field Investigation Procedures

The objective of sampling at the Building 51 Waste Solvent Tank Area was to assess whether the site is or has been a source of hazardous contaminant releases to the environment through spillage or leakage and

to verify the closure of the tank. The Building 51 Waste Solvent Tank sampling activities included the re-opening of the excavation and the sampling of soils through the use of a stainless steel scoop. Soil sample collection at the Building 51 Waste Solvent Tank Area was conducted by WESTON representatives on 28 August 1991. Four soil samples were collected at the edge of the concrete pad approximately 2 ft below the pad. Sample locations are shown in Figure 2.5. The samples were shipped to IT Laboratories for analysis. A summary of soil samples collected at each location listing the sample identification number, sampling depth, date collected, and requested analytical parameters is presented in Table II.5.

Every effort was made to comply with approved sampling protocol; however, some deviations were necessary in order to obtain the required sample. A summary of deviations for the Building 51 Waste Solvent Tank sampling activity is presented below:

- The sampling depth for all surface soil samples at the Building 51 Waste Solvent Tank sites was extended deeper than 0 to 6 inches as specified in the Work Plan at the request of OEPA because of the possible loss of VOCs following tank excavation and removal.
- Because of underground utilities in the area, the tank site was excavated with steeply sloped side walls and excavation could not be sloped or benched to allow access by soil samplers. Therefore, soil samples were collected from the center of the backhoe bucket after the backhoe collected a sample from the designated sampling areas as described in the OU 3 Work Plan.
- The sampling protocol was modified to collect samples from the sides of the in-place concrete foundation pad.

~~2.6. BUILDING 61 FORMER HEAVY EQUIPMENT AREA~~

2.6.1. Site History

2.6.1.1. Description of the Building 61 Former Heavy Equipment Area

The Building 61 investigation area consisted of the area around Building 61 and an adjacent asphalt-lined pond. Building 61, the Mound Plant shipping and receiving center, is located in the upper valley between Main Hill and SM/PP Hill in the northeastern portion of Mound Plant (Figure 1.3). Its period of use as a heavy equipment staging area in the early decades of Plant operation (1940s and 1950s) predates the construction of Building 61. Currently, Building 61 is used as a warehouse and office building.

Building 61 is adjacent to the asphalt-lined pond, which is part of the site-wide surface water system designed to control precipitation runoff. The area surrounding Building 61, adjacent to the asphalt-lined pond, is largely covered with asphalt.

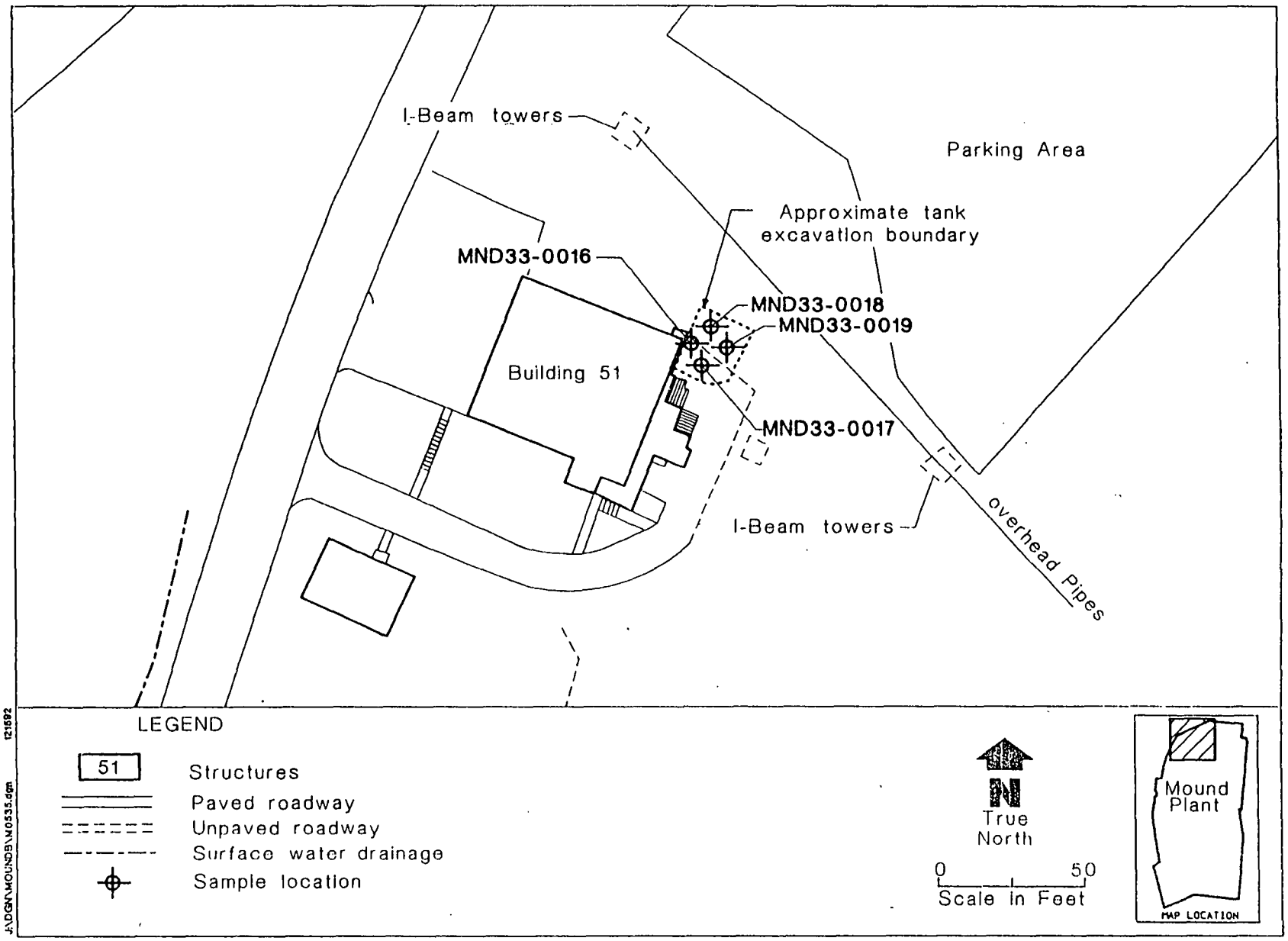

Figure 2.5. Building 51 Waste Solvent Tank soil sample locations.

Table II.5. Building 51 Waste Solvent Tank Sample Summary

Sample Location	Sample Number	Matrix	Date Sampled	Sample Interval (ft BGS)	Parameters Analyzed
MND33-0016	MND33-0016-0001	Soil	8/28/91	1.0 – 2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics.
	MND33-0016-5001	Water	8/28/91	---	TCL VOCs.
MND33-0017	MND33-0017-0001	Soil	8/28/91	1.0 – 2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics.
MND33-0018	MND33-0018-0001	Soil	8/28/91	1.0 – 2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics.
MND33-0019	MND33-0019-0001	Soil	8/28/91	1.0 – 2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics.
	MND33-0019-1001	Soil	8/28/91	1.0 – 2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics.

[a] Feet below base of excavation next to cement foundation pad.
ft – Feet
BGS – Below Ground Surface
P/PCBs – Pesticides/Polychlorinated Biphenyls
SVOCs – Semivolatile Organic Compounds
TAL – Target Analyte List
TCL – Target Compound List
VOCs – Volatile Organic Compounds

3.5. BUILDING 51 WASTE SOLVENT TANK

The Building 51 Waste Solvent Tank, formerly located in the northeast portion of Mound Plant, contained nonradioactive solid and liquid wastes generated as part of Mound Plant operations. These wastes were burned in an incinerator at the location in 1972. The system was nonoperational after that time, and the tank was removed as part of the Mound underground storage tank program in December 1990. Soil samples were collected for laboratory analyses from beneath the tank during removal activities. The results of analyses are documented in a Bowser-Morner report (Bowser-Morner 1991). The results of the OU 3 investigation have been previously reported (DOE 1992d). A description of the Building 51 Waste Solvent Tank activities, including the field investigative procedures, is presented in subsection 2.5.

A soil gas survey was performed in an area southwest of Building 51 in August 1992. A report documenting the soil gas survey that includes analytical results has been completed (DOE 1992e).

During the OU 3 field investigations, four soil samples and one duplicate sample were collected from four soil boring locations. Samples were analyzed for TCL VOCs, SVOCs, P/PCBs; and TAL inorganics to determine if site operations have impacted soil quality in the vicinity of the site. The validated analytical results for all analytes detected at concentrations above laboratory reporting limits for each sample collected are presented in Table III.9.

3.5.1. Volatile Organic Compounds

Two VOCs were detected in site samples. 2-butanone was present in all four samples at concentrations below the PRG. Acetone was also detected at concentrations below the PRG in three samples (MND33-0017-0001, MND33-0018-0001, and MND33-0019-0001). No other VOCs were detected in area soils at concentrations above laboratory reporting limits. The results of the soil gas survey conducted in August 1992 do show low levels of several VOCs in an area southwest of Building 51 (DOE 1992e). Analytical results show concentrations of VOCs Freon 11, Freon 113, Trans-12 DCE, Cis-12 DCE, 1,1,1-TCA, PCE, TCE, and toluene from sample locations southwest of Building 51. The highest recorded soil gas concentration was for toluene at 207 ppb.

3.5.2. Semivolatile Organic Compounds

SVOCs were not detected in any Building 51 Waste Solvent Tank soil samples at concentrations above laboratory reporting limits.

3.5.3. Pesticides and Polychlorinated Biphenyls

Delta-BHC was detected at a concentration above the laboratory reporting limit in sample MND33-0016-0001, but the concentration was less than the PRG. No other pesticides were detected at the Building 51 Waste Solvent Tank.

The detection of delta-BHC in only one sample indicates that soils in the vicinity of the Building 51 Waste Storage Tank have not been significantly impacted. PCBs were not detected in site samples.

3.5.4. TAL Inorganics

Inorganic compounds were not detected in soil samples from the Building 51 Waste Solvent Tank at concentrations above PRGs or proposed action levels.

3.5.5. Summary

The analytical results for soil samples collected at the Building 51 Waste Solvent Tank area, as part of the OU 3 LFI, indicate that site activities have not adversely impacted soil quality in the area. However, the soil gas survey conducted in August 1992 (DOE 1992e) does indicate the presence of several VOCs in the soil gas immediately down-valley (southwest) of the Building 51 site. Based upon these findings, further characterization of the site is recommended to determine the possible relationship between the VOCs found in soil gas samples and previous activities conducted at Building 51.

TABLE III.9
BUILDING 51 WASTE SOLVENT TANK
Location: MWD33-0016
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/05/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Ru Ty
2-BUTANONE (2,3)	0001	S	mG/Kg	0.01	0.018		1.4E+04	I
ALUMINUM, TOTAL (1,5)	0001	S	mG/Kg	.06	18100.		7.8E+05	I
ARSENIC, TOTAL (3)	0001	S	mG/Kg	.002	10.5	J	2.1E+03	I
BARIUM, TOTAL (1,3)	0001	S	mG/Kg	.002	72.2		1.9E+04	I
BERYLLIUM (1,4)	0001	S	mG/Kg	.002	.9		1.5E-01	I
CALCIUM, TOTAL (1,5)	0001	S	mG/Kg	.02	53700.	J	NA	I
CHROMIUM, TOTAL (1,3)	0001	S	mG/Kg	.01	18.5		1.4E+03	I
COBALT, TOTAL (1,5)	0001	S	mG/Kg	.01	10.6		3.9E+01	I
COPPER, TOTAL (1,5)	0001	S	mG/Kg	.01	20.4	J	1.0E+04	I
DELTA-BHC (2,5)	0001	S	mG/Kg	0.0077	0.014	J	3.6E-01	I
IRON, TOTAL (1,5)	0001	S	mG/Kg	.01	25100.	J	NA	I
LEAD, TOTAL (1,3)	0001	S	mG/Kg	.002	23.9		5.3E+01	I
MAGNESIUM, TOTAL (1,5)	0001	S	mG/Kg	.05	16000.	J	NA	I
MANGANESE, TOTAL (1,3)	0001	S	mG/Kg	.002	519.		2.7E+04	I
NICKEL, TOTAL (1,3)	0001	S	mG/Kg	.02	22.1	J	5.4E+03	I
POTASSIUM, TOTAL (5)	0001	S	mG/Kg	.1	4210.		NA	I
SELENIUM, TOTAL (2,5)	0001	S	mG/Kg	.002	1.7	J	1.4E+03	I
SODIUM, TOTAL (5)	0001	S	mG/Kg	.02	310.		NA	I
THALLIUM, TOTAL (1,5)	0001	S	mG/Kg	.002	.26		NA	I
VANADIUM, TOTAL (3)	0001	S	mG/Kg	.01	28.5		1.9E+03	I
ZINC, TOTAL (1,3)	0001	S	mG/Kg	.005	74.2		5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

TABLE III.9
BUILDING 51 WASTE SOLVENT TANK
Location: MND33-0017
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/05/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
2-BUTANONE (2,3)	0001	S	mG/Kg	0.01	0.07		1.4E+04	I
ACETONE (2,3)	0001	S	mG/Kg	0.01	0.24		2.7E+04	I
ALUMINUM, TOTAL (5)	0001	S	mG/Kg	.06	19900.		7.8E+05	I
ARSENIC, TOTAL (3)	0001	S	mG/Kg	.002	13.2		2.1E+03	I
BARIUM, TOTAL (1,3)	0001	S	mG/Kg	.002	70.8		1.9E+04	I
BERYLLIUM (1,4)	0001	S	mG/Kg	.002	.94		1.5E-01	I
CALCIUM, TOTAL (1,5)	0001	S	mG/Kg	.02	15300.	J	NA	I
CHROMIUM, TOTAL (1,3)	0001	S	mG/Kg	.01	21.8		1.4E+03	I
COBALT, TOTAL (1,5)	0001	S	mG/Kg	.01	12.8		3.9E+01	I
COPPER, TOTAL (1,5)	0001	S	mG/Kg	.01	26.0	J	1.0E+04	I
IRON, TOTAL (1,5)	0001	S	mG/Kg	.01	34100.	J	NA	I
LEAD, TOTAL (1,3)	0001	S	mG/Kg	.002	20.2		5.3E+01	I
MAGNESIUM, TOTAL (1,5)	0001	S	mG/Kg	.05	8600.	J	NA	I
MANGANESE, TOTAL (1,3)	0001	S	mG/Kg	.002	681.		2.7E+04	I
NICKEL, TOTAL (1,3)	0001	S	mG/Kg	.02	28.2	J	5.4E+03	I
POTASSIUM, TOTAL (5)	0001	S	mG/Kg	.1	4260.		NA	I
SELENIUM, TOTAL (2,5)	0001	S	mG/Kg	.002	1.9	J	1.4E+03	I
SODIUM, TOTAL (1,5)	0001	S	mG/Kg	.1	161.		NA	I
THALLIUM, TOTAL (1,5)	0001	S	mG/Kg	.002	.42		NA	I
VANADIUM, TOTAL (3)	0001	S	mG/Kg	.01	33.4		1.9E+03	I
ZINC, TOTAL (1,3)	0001	S	mG/Kg	.005	91.4		5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

TABLE III.9
BUILDING 51 WASTE SOLVENT TANK
Location: MWD33-0018
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/05/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Typ
2-BUTANONE (2,3)	0001	S	mG/Kg	0.01	0.059		1.4E+04	I
ACETONE (2,3)	0001	S	mG/Kg	0.01	0.25		2.7E+04	I
ALUMINUM, TOTAL (5)	0001	S	mG/Kg	.06	22200.		7.8E+05	I
ARSENIC, TOTAL (3)	0001	S	mG/Kg	.002	11.3		2.1E+03	I
BARIUM, TOTAL (1,3)	0001	S	mG/Kg	.002	89.5		1.9E+04	I
BERYLLIUM (1,4)	0001	S	mG/Kg	.002	.9		1.5E-01	I
CALCIUM, TOTAL (1,5)	0001	S	mG/Kg	.02	11300.	J	NA	I
CHROMIUM, TOTAL (1,3)	0001	S	mG/Kg	.01	23.7		1.4E+03	I
COBALT, TOTAL (1,5)	0001	S	mG/Kg	.01	13.4		3.9E+01	I
COPPER, TOTAL (1,5)	0001	S	mG/Kg	.01	20.2	J	1.0E+04	I
IRON, TOTAL (1,5)	0001	S	mG/Kg	.01	33200.	J	NA	I
LEAD, TOTAL (1,3)	0001	S	mG/Kg	.002	20.3		5.3E+01	I
MAGNESIUM, TOTAL (1,5)	0001	S	mG/Kg	.05	5560.	J	NA	I
MANGANESE, TOTAL (1,3)	0001	S	mG/Kg	.002	1030.		2.7E+04	I
NICKEL, TOTAL (1,3)	0001	S	mG/Kg	.02	22.0	J	5.4E+03	I
POTASSIUM, TOTAL (5)	0001	S	mG/Kg	.1	4640.		NA	I
SELENIUM, TOTAL (5)	0001	S	mG/Kg	.002	1.6	J	1.4E+03	I
SODIUM, TOTAL (1,5)	0001	S	mG/Kg	.1	237.		NA	I
THALLIUM, TOTAL (1,5)	0001	S	mG/Kg	.002	.24		NA	I
VANADIUM, TOTAL (3)	0001	S	mG/Kg	.01	38.3		1.9E+03	I
ZINC, TOTAL (1,3)	0001	S	mG/Kg	.005	73.8		5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

TABLE III.9
BUILDING 51 WASTE SOLVENT TANK
Location: MWD33-0019
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/05/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	R T
2-BUTANONE	0001	S	mG/Kg	0.01	0.053		1.4E+04	
2-BUTANONE (2,3)	1001	S	mG/Kg	0.01	0.031		1.4E+04	
ACETONE (2,3)	0001	S	mG/Kg	0.01	0.2		2.7E+04	
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	19300.		7.8E+05	
ALUMINUM, TOTAL (5)	1001	S	mG/Kg	.06	18800.		7.8E+05	
ARSENIC, TOTAL	0001	S	mG/Kg	.002	7.53		2.1E+03	
ARSENIC, TOTAL (1,3)	1001	S	mG/Kg	.002	7.97		2.1E+03	
BARIUM, TOTAL	0001	S	mG/Kg	.002	82.2		1.9E+04	
BARIUM, TOTAL (1,3)	1001	S	mG/Kg	.002	86.		1.9E+04	
BERYLLIUM	0001	S	mG/Kg	.002	.87		1.5E-01	
BERYLLIUM (4)	1001	S	mG/Kg	.002	.92		1.5E-01	
CALCIUM, TOTAL	0001	S	mG/Kg	.02	26200.	J	NA	
CALCIUM, TOTAL (1,5)	1001	S	mG/Kg	.02	56300.		NA	
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	19.9		1.4E+03	
CHROMIUM, TOTAL (1,3)	1001	S	mG/Kg	.01	20.4		1.4E+03	
COBALT, TOTAL	0001	S	mG/Kg	.01	12.8		3.9E+01	
COBALT, TOTAL (1,5)	1001	S	mG/Kg	.01	11.2		3.9E+01	
COPPER, TOTAL	0001	S	mG/Kg	.01	28.0	J	1.0E+04	
COPPER, TOTAL (5)	1001	S	mG/Kg	.01	38.2	J	1.0E+04	
IRON, TOTAL	0001	S	mG/Kg	.01	30000.	J	NA	
IRON, TOTAL (1,5)	1001	S	mG/Kg	.01	26500.	J	NA	
LEAD, TOTAL	0001	S	mG/Kg	.002	19.6		5.3E+01	
LEAD, TOTAL (1,3)	1001	S	mG/Kg	.002	21.9		5.3E+01	
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	8940.	J	NA	
MAGNESIUM, TOTAL (1,5)	1001	S	mG/Kg	.05	18000.	J	NA	
MANGANESE, TOTAL	0001	S	mG/Kg	.002	867.		2.7E+04	
MANGANESE, TOTAL (1,3)	1001	S	mG/Kg	.002	482.		2.7E+04	
MERCURY, TOTAL	0001	S	mG/Kg	.06	.28		8.1E+01	
MERCURY, TOTAL (2,3)	1001	S	mG/Kg	.06	.38		8.1E+01	
NICKEL, TOTAL	0001	S	mG/Kg	.02	20.3	J	5.4E+03	
NICKEL, TOTAL (1,3)	1001	S	mG/Kg	.02	23.0	J	5.4E+03	
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	4080.		NA	
POTASSIUM, TOTAL (5)	1001	S	mG/Kg	.1	4660.		NA	
SELENIUM, TOTAL	0001	S	mG/Kg	.002	1.4	J	1.4E+03	
SELENIUM, TOTAL (5)	1001	S	mG/Kg	.002	1.7	J	1.4E+03	
SODIUM, TOTAL	0001	S	mG/Kg	.1	232.		NA	
SODIUM, TOTAL (5)	1001	S	mG/Kg	.1	261.		NA	

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

Notes:
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4: Greater than Guideline Value
5: No Guideline Established

TABLE III.9
BUILDING 51 WASTE SOLVENT TANK
Location: NWD33-0019
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/05/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	R T
THALLIUM, TOTAL (1,5)	0001	S	mG/Kg	.002	.21		NA	
THALLIUM, TOTAL	1001	S	mG/Kg	.002	.27		NA	
VANADIUM, TOTAL (3)	0001	S	mG/Kg	.01	27.9		1.9E+03	
VANADIUM, TOTAL	1001	S	mG/Kg	.01	27.2		1.9E+03	
ZINC, TOTAL (1,3)	0001	S	mG/Kg	.005	94.1		5.4E+04	
ZINC, TOTAL	1001	S	mG/Kg	.005	112.		5.4E+04	

PRG - Preliminary Remediation Goals (Risk Based)
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

Notes:
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ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 3 — MISCELLANEOUS SITES
LIMITED FIELD INVESTIGATION REPORT
VOLUME II
APPENDIX A

MOUND PLANT
MIAMISBURG, OHIO

July 1993

DEPARTMENT OF ENERGY

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL
(REVISION 0)

APPENDIX A

OU 3 LFI REPORT CROSS REFERENCE OF SAMPLE IDENTIFICATION NUMBERS TO INVESTIGATION SITE

Sample Identification Number	Investigation Site
MND33-0001	Powerhouse Area Fuel Tanks
MND33-0002	Powerhouse Area Fuel Tanks
MND33-0004	Powerhouse Area Fuel Tanks
MND33-0005	Powerhouse Area Fuel Tanks
MND33-0006	Building 27 Concrete Flume
MND33-0007	Building 27 Solvent Storage Area
MND33-0009	Building 27 Concrete Flume
MND33-0010	Building 27 Solvent Storage Area
MND33-0011	Building 27 Solvent Storage Area
MND33-0012	Underground Sewer Lines Grid G14 West
MND33-0013	Underground Sewer Lines Grid G14 East
MND33-0014	Building 27 Solvent Storage Area
MND33-0015	Building 27 Sump
MND33-0016	Building 51 Waste Solvent Tank
MND33-0017	Building 51 Waste Solvent Tank
MND33-0018	Building 51 Waste Solvent Tank
MND33-0019	Building 51 Waste Solvent Tank
MND33-0020	Building 34 Former Aviation Fuel Tank
MND33-0021	Building 34 Former Aviation Fuel Tank
MND33-0022	Building 34 Former Aviation Fuel Tank
MND33-0023	Building 34 Former Aviation Fuel Tank
MND33-0024	Building 34 Former Aviation Fuel Tank
MND33-0025	Waste Oil Drum Field
MND33-0026	Waste Oil Drum Field
MND33-0027	Waste Oil Drum Field
MND33-0028	Waste Oil Drum Field
MND33-0029	Waste Oil Drum Field
MND33-0030	Waste Oil Drum Field

APPENDIX A
Location: MWD33-0016
Report Date: 03/09/93

Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
1,1,1-TRICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1,2,2-TETRACHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1,2-TRICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1-DICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1-DICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
1,2,4-TRICHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,2-DICHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,2-DICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROPROPANE	0001	S	MG/KG	0.006	0.006	U			I
1,3-CIS-DICHLOROPROPENE	0001	S	MG/KG	0.006	0.006	U			I
1,3-DICHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,3-TRANS-DICHLOROPROPENE	0001	S	MG/KG	0.006	0.006	U			I
1,4-DICHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4,5-TRICHLOROPHENOL	0001	S	MG/KG	2.	2.	U	2.	UJ	I
2,4,6-TRICHLOROPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DICHLOROPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DIMETHYLPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DINITROPHENOL	0001	S	MG/KG	2.	2.	U	2.	UJ	I
2,4-DINITROTOLUENE	0001	S	MG/KG	0.42	0.42	U			I
2,6-DINITROTOLUENE	0001	S	MG/KG	0.42	0.42	U			I
2-BUTANONE	0001	S	MG/KG	0.01	0.018				I
2-CHLORONAPHTHALENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-CHLOROPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-HEXANONE	0001	S	MG/KG	0.013	0.013	U			I
2-METHYLNAPHTHALENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-METHYLPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-NITROANILINE	0001	S	MG/KG	2.	2.	U	2.	UJ	I
2-NITROPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
3,3'-DICHLOROBENZIDINE	0001	S	MG/KG	0.84	0.84	U	0.84	UJ	I
3-NITROANILINE	0001	S	MG/KG	2.	2.	U	2.	UJ	I
4,4'-DDD	0001	S	MG/KG	0.0094	0.0094	U	0.0094	UJ	I
4,4'-DDE	0001	S	MG/KG	0.0034	0.0034	U	0.0034	UJ	I
4,4'-DDT	0001	S	MG/KG	0.01	0.01	U	0.01	UJ	I

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4,6-DINITRO-O-CRESOL	0001	S	MG/KG	2.	2.	U	2.	UJ	I
4-BROMOPHENYL-PHENYL ETHER	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLORO-3-METHYLPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLOROANILINE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLOROPHENYL-PHENYLETHER	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-METHYL-2-PENTANONE	0001	S	MG/KG	0.013	0.013	U			I
4-METHYLPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-NITROANILINE	0001	S	MG/KG	2.	2.	U	2.	UJ	I
4-NITROPHENOL	0001	S	MG/KG	2.	2.	U	2.	UJ	I
ACENAPHTHENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ACENAPHTHYLENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ACETONE	0001	S	MG/KG	0.01	0.069	B	0.069	U	I
ALDRIN	0001	S	MG/KG	0.0034	0.0034	U	0.0034	UJ	I
ALPHA CHLORDANE	0001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
ALPHA-BHC	0001	S	MG/KG	0.0025	0.0025	U	0.0025	UJ	I
ALUMINUM, TOTAL	0001	S	MG/KG	.06	18100.				
ANTHRACENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ANTIMONY, TOTAL	0001	S	MG/KG	.03	6.2	B	6.1	U	I
AROCLOR-1016	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1221	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1232	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1242	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1248	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1254	0001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
AROCLOR-1260	0001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
ARSENIC, TOTAL	0001	S	MG/KG	.002	10.5		10.5	J	I
BARIUM, TOTAL	0001	S	MG/KG	.002	72.2				I
BENZENE	0001	S	MG/KG	0.006	0.006	U			I
BENZO(A)ANTHRACENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(A)PYRENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(B)FLUORANTHENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(G,H,I)PERYLENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(K)FLUORANTHENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZOIC ACID	0001	S	MG/KG	2.	2.	U	2.	UJ	

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BENZYL ALCOHOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BERYLLIUM	0001	S	MG/KG	.002	.9				I
BETA-BHC	0001	S	MG/KG	0.0051	0.0051	U	0.0051	UJ	I
BIS(2-CHLOROETHOXY)METHANE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-CHLOROETHYL)ETHER	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-CHLOROISOPROPYL)ETHER	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-ETHYLHEXYL)PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BROMODICHLOROMETHANE	0001	S	MG/KG	0.006	0.006	U			I
BROMOFORM	0001	S	MG/KG	0.006	0.006	U			I
BROMOMETHANE	0001	S	MG/KG	0.013	0.013	U			I
BUTYL BENZYL PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
CADMIUM, TOTAL	0001	S	MG/KG	.5	.5	U	0.5	UJ	I
CALCIUM, TOTAL	0001	S	MG/KG	.02	53900.		53700.	J	I
CARBON DISULFIDE	0001	S	MG/KG	0.006	0.006	U			I
CARBON TETRACHLORIDE	0001	S	MG/KG	0.006	0.006	U			I
CHLOROBENZENE	0001	S	MG/KG	0.006	0.006	U			I
CHLOROETHANE	0001	S	MG/KG	0.013	0.013	U			I
CHLOROFORM	0001	S	MG/KG	0.006	0.006	U			I
CHLOROMETHANE	0001	S	MG/KG	0.013	0.013	U			I
CHROMIUM, TOTAL	0001	S	MG/KG	.01	18.5				I
CHRYSENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
COBALT, TOTAL	0001	S	MG/KG	.01	10.6				I
COPPER, TOTAL	0001	S	MG/KG	.01	20.4		20.4	J	I
CYANIDE	0001	S	UG/G	.63	.63	U			I
DELTA-BHC	0001	S	MG/KG	0.0077	0.014		0.014	J	I
DI-N-BUTYL PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DI-N-OCTYL PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBENZO(A,H)ANTHRACENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBENZOFURAN	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBROMOCHLOROMETHANE	0001	S	MG/KG	0.006	0.006	U			I
DICHLOROMETHANE-METHYLENE CHLORIDE	0001	S	MG/KG	0.005	0.002	JB	0.006	U	I
DIELDRIN	0001	S	MG/KG	0.0016	0.0016	U	0.0016	UJ	I
DIETHYL PHTHALATE	0001	S	MG/KG	0.33	0.27	JB	0.42	UJ	I
DIMETHYL PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I

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ENDOSULFAN I(ALPHA)	0001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
ENDOSULFAN II(BETA)	0001	S	MG/KG	0.0034	0.0034	U	0.0034	UJ	I
ENDOSULFAN SULFATE	0001	S	MG/KG	0.056	0.056	U	0.056	UJ	I
ENDRIN	0001	S	MG/KG	0.0051	0.0051	U	0.0051	UJ	I
ENDRIN ALDEHYDE	0001	S	MG/KG	0.02	0.02	U	0.02	UJ	I
ENDRIN KETONE	0001	S	MG/KG	0.02	0.02	U	0.02	UJ	I
ETHYLBENZENE	0001	S	MG/KG	0.006	0.006	U			I
FLUORANTHENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
FLUORENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
GAMMA CHLORDANE	0001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
GAMMA-BHC (LINDANE)	0001	S	MG/KG	0.0034	0.0034	U	0.0034	UJ	I
HEPTACHLOR	0001	S	MG/KG	0.0025	0.0025	U	0.0025	UJ	I
HEPTACHLOR EPOXIDE	0001	S	MG/KG	0.07	0.07	U	0.07	UJ	I
HEXACHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
HEXACHLOROBUTADIENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
HEXACHLOROCYCLOPENTADIENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
HEXACHLOROETHANE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
INDENO(1,2,3-CD)PYRENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
IRON, TOTAL	0001	S	MG/KG	.01	25200.		25100.	J	I
ISOPHORONE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
LEAD, TOTAL	0001	S	MG/KG	.002	23.9				I
MAGNESIUM, TOTAL	0001	S	MG/KG	.05	16100.		16000.	J	I
MANGANESE, TOTAL	0001	S	MG/KG	.002	519.				I
MERCURY, TOTAL	0001	S	MG/KG	.06	.06	U			I
METHOXYCHLOR	0001	S	MG/KG	0.15	0.15	U	0.15	UJ	I
N-NITROSO-DI-N-PROPYLAMINE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
N-NITROSODIPHENYLAMINE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
NAPHTHALENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
NICKEL, TOTAL	0001	S	MG/KG	.02	22.1		22.1	J	I
NITROBENZENE	0001	S	MG/KG	0.42	0.42	U			I
PENTACHLOROPHENOL	0001	S	MG/KG	2.	2.	U	2.	UJ	I
PERCENT MOISTURE	0001	S	% MOIST	-	21.				I
PHENANTHRENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
PHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I

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POTASSIUM, TOTAL	0001	S	MG/KG	.1	4210.				I
PYRENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
SELENIUM, TOTAL	0001	S	MG/KG	.002	1.79		1.7	J	I
SILVER, TOTAL	0001	S	MG/KG	.01	.62	B	0.62	U	I
SODIUM, TOTAL	0001	S	MG/KG	.02	310.	B			I
STYRENE	0001	S	MG/KG	0.006	0.006	U			I
TETRACHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
THALLIUM, TOTAL	0001	S	MG/KG	.002	.26	B			I
TOLUENE	0001	S	MG/KG	0.006	0.006	U			I
TOTAL XYLENES	0001	S	MG/KG	0.006	0.006	U			I
TOXAPHENE	0001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
TRICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
VANADIUM, TOTAL	0001	S	MG/KG	.01	28.5				I
VINYL ACETATE	0001	S	MG/KG	0.013	0.013	U			I
VINYL CHLORIDE	0001	S	MG/KG	0.013	0.013	U			I
ZINC, TOTAL	0001	S	MG/KG	.005	74.2				I

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1,1,1-TRICHLOROETHANE	0001	S	MG/KG	0.007	0.007	U			I
1,1,2,2-TETRACHLOROETHANE	0001	S	MG/KG	0.007	0.007	U			I
1,1,2-TRICHLOROETHANE	0001	S	MG/KG	0.007	0.007	U			I
1,1-DICHLOROETHANE	0001	S	MG/KG	0.007	0.007	U			I
1,1-DICHLOROETHENE	0001	S	MG/KG	0.007	0.007	U			I
1,2,4-TRICHLOROBENZENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
1,2-DICHLOROBENZENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
1,2-DICHLOROETHANE	0001	S	MG/KG	0.007	0.007	U			I
1,2-DICHLOROETHENE	0001	S	MG/KG	0.007	0.007	U			I
1,2-DICHLOROPROPANE	0001	S	MG/KG	0.007	0.007	U			I
1,3-CIS-DICHLOROPROPENE	0001	S	MG/KG	0.007	0.007	U			I
1,3-DICHLOROBENZENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
1,3-TRANS-DICHLOROPROPENE	0001	S	MG/KG	0.007	0.007	U			I
1,4-DICHLOROBENZENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
2,4,5-TRICHLOROPHENOL	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I
2,4,6-TRICHLOROPHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
2,4-DICHLOROPHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
2,4-DIMETHYLPHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
2,4-DINITROPHENOL	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I
2,4-DINITROTOLUENE	0001	S	MG/KG	0.45	0.45	U			I
2,6-DINITROTOLUENE	0001	S	MG/KG	0.45	0.45	U			I
2-BUTANONE	0001	S	MG/KG	0.01	0.07				I
2-CHLORONAPHTHALENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
2-CHLOROPHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
2-HEXANONE	0001	S	MG/KG	0.014	0.014	U			I
2-METHYLNAPHTHALENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
2-METHYLPHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
2-NITROANILINE	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I
2-NITROPHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
3,3'-DICHLOROBENZIDINE	0001	S	MG/KG	0.9	0.9	U	0.9	UJ	I
3-NITROANILINE	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I
4,4'-DDD	0001	S	MG/KG	0.01	0.01	U	0.01	UJ	I
4,4'-DDE	0001	S	MG/KG	0.0037	0.0037	U	0.0037	UJ	I
4,4'-DDT	0001	S	MG/KG	0.011	0.011	U	0.011	UJ	I

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BENZYL ALCOHOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BERYLLIUM	0001	S	MG/KG	.002	.94				I
BETA-BHC	0001	S	MG/KG	0.0055	0.0055	U	0.0055	UJ	I
BIS(2-CHLOROETHOXY)METHANE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BIS(2-CHLOROETHYL)ETHER	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BIS(2-CHLOROISOPROPYL)ETHER	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BIS(2-ETHYLHEXYL)PHTHALATE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BROMODICHLOROMETHANE	0001	S	MG/KG	0.007	0.007	U			I
BROMOFORM	0001	S	MG/KG	0.007	0.007	U			I
BROMOMETHANE	0001	S	MG/KG	0.014	0.014	U			I
BUTYL BENZYL PHTHALATE	0001	S	MG/KG	0.33	0.048	J			I
CADMIUM, TOTAL	0001	S	MG/KG	.52	.52	U	0.52	UJ	I
CALCIUM, TOTAL	0001	S	MG/KG	.02	15300.		15300.	J	I
CARBON DISULFIDE	0001	S	MG/KG	0.005	0.004	J			I
CARBON TETRACHLORIDE	0001	S	MG/KG	0.007	0.007	U			I
CHLOROBENZENE	0001	S	MG/KG	0.007	0.007	U			
CHLOROETHANE	0001	S	MG/KG	0.014	0.014	U			I
CHLOROFORM	0001	S	MG/KG	0.007	0.007	U			I
CHLOROMETHANE	0001	S	MG/KG	0.014	0.014	U			I
CHROMIUM, TOTAL	0001	S	MG/KG	.01	21.8				I
CHRYSENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
COBALT, TOTAL	0001	S	MG/KG	.01	12.8				I
COPPER, TOTAL	0001	S	MG/KG	.01	26.		26.0	J	I
CYANIDE	0001	S	UG/G	.68	.68	U			I
DELTA-BHC	0001	S	MG/KG	0.0082	0.0082	U	0.0082	UJ	I
DI-N-BUTYL PHTHALATE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
DI-N-OCTYL PHTHALATE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
DIBENZO(A,H)ANTHRACENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
DIBENZOFURAN	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
DIBROMOCHLOROMETHANE	0001	S	MG/KG	0.007	0.007	U			I
DICHLOROMETHANE-METHYLENE CHLORIDE	0001	S	MG/KG	0.007	0.007	U			I
DIELDRIN	0001	S	MG/KG	0.0018	0.0018	U	0.0018	UJ	I
DIETHYL PHTHALATE	0001	S	MG/KG	0.33	0.29	JB	0.45	UJ	I
DIMETHYL PHTHALATE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	

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4,6-DINITRO-O-CRESOL	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I
4-BROMOPHENYL-PHENYL ETHER	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
4-CHLORO-3-METHYLPHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
4-CHLOROANILINE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
4-CHLOROPHENYL-PHENYLETHER	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
4-METHYL-2-PENTANONE	0001	S	MG/KG	0.014	0.014	U			I
4-METHYLPHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
4-NITROANILINE	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I
4-NITROPHENOL	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I
ACENAPHTHENE	0001	S	MG/KG	0.33	0.047	J			I
ACENAPHTHYLENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
ACETONE	0001	S	MG/KG	0.01	0.24	B	0.24		I
ALDRIN	0001	S	MG/KG	0.0037	0.0037	U	0.0037	UJ	I
ALPHA CHLORDANE	0001	S	MG/KG	0.013	0.013	U	0.013	UJ	I
ALPHA-BHC	0001	S	MG/KG	0.0027	0.0027	U	0.0027	UJ	I
ALUMINUM, TOTAL	0001	S	MG/KG	.06	19900.				I
ANTHRACENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
ANTIMONY, TOTAL	0001	S	MG/KG	5.9	5.9	U			I
AROCLOR-1016	0001	S	MG/KG	0.11	0.11	U	0.11	UJ	I
AROCLOR-1221	0001	S	MG/KG	0.11	0.11	U	0.11	UJ	I
AROCLOR-1232	0001	S	MG/KG	0.11	0.11	U	0.11	UJ	I
AROCLOR-1242	0001	S	MG/KG	0.11	0.11	U	0.11	UJ	I
AROCLOR-1248	0001	S	MG/KG	0.11	0.11	U	0.11	UJ	I
AROCLOR-1254	0001	S	MG/KG	0.22	0.22	U	0.22	UJ	I
AROCLOR-1260	0001	S	MG/KG	0.22	0.22	U	0.22	UJ	I
ARSENIC, TOTAL	0001	S	MG/KG	.002	13.2				I
BARIUM, TOTAL	0001	S	MG/KG	.002	70.8				I
BENZENE	0001	S	MG/KG	0.007	0.007	U			I
BENZO(A)ANTHRACENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BENZO(A)PYRENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BENZO(B)FLUORANTHENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BENZO(G,H,I)PERYLENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BENZO(K)FLUORANTHENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
BENZOIC ACID	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
ENDOSULFAN I(ALPHA)	0001	S	MG/KG	0.013	0.013	U	0.013	UJ	I
ENDOSULFAN II(BETA)	0001	S	MG/KG	0.0037	0.0037	U	0.0037	UJ	I
ENDOSULFAN SULFATE	0001	S	MG/KG	0.06	0.06	U	0.06	UJ	I
ENDRIN	0001	S	MG/KG	0.0055	0.0055	U	0.0055	UJ	I
ENDRIN ALDEHYDE	0001	S	MG/KG	0.021	0.021	U	0.021	UJ	I
ENDRIN KETONE	0001	S	MG/KG	0.022	0.022	U	0.022	UJ	I
ETHYLBENZENE	0001	S	MG/KG	0.007	0.007	U			I
FLUORANTHENE	0001	S	MG/KG	0.33	0.16	J			I
FLUORENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
GAMMA CHLORDANE	0001	S	MG/KG	0.013	0.013	U	0.013	UJ	I
GAMMA-BHC (LINDANE)	0001	S	MG/KG	0.0037	0.0037	U	0.0037	UJ	I
HEPTACHLOR	0001	S	MG/KG	0.0027	0.0027	U	0.0027	UJ	I
HEPTACHLOR EPOXIDE	0001	S	MG/KG	0.076	0.076	U	0.076	UJ	I
HEXACHLOROBENZENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
HEXACHLOROBUTADIENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
HEXACHLOROCYCLOPENTADIENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
HEXACHLOROETHANE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
INDENO(1,2,3-CD)PYRENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
IRON, TOTAL	0001	S	MG/KG	.01	34000.		34100.	J	I
ISOPHORONE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
LEAD, TOTAL	0001	S	MG/KG	.002	20.2				I
MAGNESIUM, TOTAL	0001	S	MG/KG	.05	8580.		8600.	J	I
MANGANESE, TOTAL	0001	S	MG/KG	.002	681.				I
MERCURY, TOTAL	0001	S	MG/KG	.06	.06	U			I
METHOXYCHLOR	0001	S	MG/KG	0.16	0.16	U	0.16	UJ	I
N-NITROSO-DI-N-PROPYLAMINE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
N-NITROSODIPHENYLAMINE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
NAPHTHALENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
NICKEL, TOTAL	0001	S	MG/KG	.02	28.2		28.2	J	I
NITROBENZENE	0001	S	MG/KG	0.45	0.45	U			I
PENTACHLOROPHENOL	0001	S	MG/KG	2.2	2.2	U	2.2	UJ	I
PERCENT MOISTURE	0001	S	% MOIST	-	27.				I
PHENANTHRENE	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I
PHENOL	0001	S	MG/KG	0.45	0.45	U	0.45	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
POTASSIUM, TOTAL	0001	S	MG/KG	.1	4260.				I
PYRENE	0001	S	MG/KG	0.33	0.086	J			I
SELENIUM, TOTAL	0001	S	MG/KG	.002	1.92		1.9	J	I
SILVER, TOTAL	0001	S	MG/KG	.01	.94	B	0.94	U	I
SODIUM, TOTAL	0001	S	MG/KG	.1	161.	B			I
STYRENE	0001	S	MG/KG	0.007	0.007	U			I
TETRACHLOROETHENE	0001	S	MG/KG	0.007	0.007	U			I
THALLIUM, TOTAL	0001	S	MG/KG	.002	.42	B			I
TOLUENE	0001	S	MG/KG	0.007	0.007	U			I
TOTAL XYLENES	0001	S	MG/KG	0.007	0.007	U			I
TOXAPHENE	0001	S	MG/KG	0.22	0.22	U	0.22	UJ	I
TRICHLOROETHENE	0001	S	MG/KG	0.007	0.007	U			I
VANADIUM, TOTAL	0001	S	MG/KG	.01	33.4				I
VINYL ACETATE	0001	S	MG/KG	0.014	0.014	U			I
VINYL CHLORIDE	0001	S	MG/KG	0.014	0.014	U			I
ZINC, TOTAL	0001	S	MG/KG	.005	91.4				

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
1,1,1-TRICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1,2,2-TETRACHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1,2-TRICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1-DICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1-DICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
1,2,4-TRICHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,2-DICHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,2-DICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROPROPANE	0001	S	MG/KG	0.006	0.006	U			I
1,3-CIS-DICHLOROPROPENE	0001	S	MG/KG	0.006	0.006	U			I
1,3-DICHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,3-TRANS-DICHLOROPROPENE	0001	S	MG/KG	0.006	0.006	U			I
1,4-DICHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4,5-TRICHLOROPHENOL	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I
2,4,6-TRICHLOROPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DICHLOROPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DIMETHYLPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DINITROPHENOL	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I
2,4-DINITROTOLUENE	0001	S	MG/KG	0.42	0.42	U			I
2,6-DINITROTOLUENE	0001	S	MG/KG	0.42	0.42	U			I
2-BUTANONE	0001	S	MG/KG	0.01	0.059				I
2-CHLORONAPHTHALENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-CHLOROPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-HEXANONE	0001	S	MG/KG	0.013	0.013	U			I
2-METHYLNAPHTHALENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-METHYLPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-NITROANILINE	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I
2-NITROPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
3,3'-DICHLOROBENZIDINE	0001	S	MG/KG	0.85	0.85	U	0.85	UJ	I
3-NITROANILINE	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I
4,4'-DDD	0001	S	MG/KG	0.0095	0.0095	U	0.0095	UJ	I
4,4'-DDE	0001	S	MG/KG	0.0035	0.0035	U	0.0035	UJ	I
4,4'-DDT	0001	S	MG/KG	0.01	0.01	U	0.01	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
4,6-DINITRO-O-CRESOL	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I
4-BROMOPHENYL-PHENYL ETHER	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLORO-3-METHYLPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLOROANILINE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLOROPHENYL-PHENYLETHER	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-METHYL-2-PENTANONE	0001	S	MG/KG	0.013	0.013	U			I
4-METHYLPHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-NITROANILINE	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I
4-NITROPHENOL	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I
ACENAPHTHENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ACENAPHTHYLENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ACETONE	0001	S	MG/KG	0.01	0.25	B	0.25		I
ALDRIN	0001	S	MG/KG	0.0035	0.0035	U	0.0035	UJ	I
ALPHA CHLORDANE	0001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
ALPHA-BHC	0001	S	MG/KG	0.0026	0.0026	U	0.0026	UJ	I
ALUMINUM, TOTAL	0001	S	MG/KG	.06	22200.				I
ANTHRACENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ANTIMONY, TOTAL	0001	S	MG/KG	5.7	5.7	U			I
AROCLOR-1016	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1221	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1232	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1242	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1248	0001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1254	0001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
AROCLOR-1260	0001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
ARSENIC, TOTAL	0001	S	MG/KG	.002	11.3				I
BARIUM, TOTAL	0001	S	MG/KG	.002	89.5				I
BENZENE	0001	S	MG/KG	0.006	0.006	U			I
BENZO(A)ANTHRACENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(A)PYRENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(B)FLUORANTHENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(G,H,I)PERYLENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(K)FLUORANTHENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZOIC ACID	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
BENZYL ALCOHOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BERYLLIUM	0001	S	MG/KG	.002	.9				I
BETA-BHC	0001	S	MG/KG	0.0051	0.0051	U	0.0051	UJ	I
BIS(2-CHLOROETHOXY)METHANE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-CHLOROETHYL)ETHER	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-CHLOROISOPROPYL)ETHER	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-ETHYLHEXYL)PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BROMODICHLOROMETHANE	0001	S	MG/KG	0.006	0.006	U			I
BROMOFORM	0001	S	MG/KG	0.006	0.006	U			I
BROMOMETHANE	0001	S	MG/KG	0.013	0.013	U			I
BUTYL BENZYL PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
CADMIUM, TOTAL	0001	S	MG/KG	.51	.51	U	0.51	UJ	I
CALCIUM, TOTAL	0001	S	MG/KG	.02	11300.		11300.	J	I
CARBON DISULFIDE	0001	S	MG/KG	0.006	0.006	U			I
CARBON TETRACHLORIDE	0001	S	MG/KG	0.006	0.006	U			I
CHLOROBENZENE	0001	S	MG/KG	0.006	0.006	U			I
CHLOROETHANE	0001	S	MG/KG	0.013	0.013	U			I
CHLOROFORM	0001	S	MG/KG	0.006	0.006	U			I
CHLOROMETHANE	0001	S	MG/KG	0.013	0.013	U			I
CHROMIUM, TOTAL	0001	S	MG/KG	.01	23.7				I
CHRYSENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
COBALT, TOTAL	0001	S	MG/KG	.01	13.4				I
COPPER, TOTAL	0001	S	MG/KG	.01	20.2		20.2	J	I
CYANIDE	0001	S	UG/G	.64	.64	U			I
DELTA-BHC	0001	S	MG/KG	0.0077	0.0077	U	0.0077	UJ	I
DI-N-BUTYL PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DI-N-OCTYL PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBENZO(A,H)ANTHRACENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBENZOFURAN	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBROMOCHLOROMETHANE	0001	S	MG/KG	0.006	0.006	U			I
DICHLOROMETHANE-METHYLENE CHLORIDE	0001	S	MG/KG	0.005	0.002	JB	0.006	U	I
DIELDRIN	0001	S	MG/KG	0.0017	0.0017	U	0.0017	UJ	I
DIETHYL PHTHALATE	0001	S	MG/KG	0.33	0.36	JB	0.42	UJ	I
DIMETHYL PHTHALATE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
ENDOSULFAN I(ALPHA)	0001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
ENDOSULFAN II(BETA)	0001	S	MG/KG	0.0035	0.0035	U	0.0035	UJ	I
ENDOSULFAN SULFATE	0001	S	MG/KG	0.057	0.057	U	0.057	UJ	I
ENDRIN	0001	S	MG/KG	0.0051	0.0051	U	0.0051	UJ	I
ENDRIN ALDEHYDE	0001	S	MG/KG	0.02	0.02	U	0.02	UJ	I
ENDRIN KETONE	0001	S	MG/KG	0.021	0.021	U	0.021	UJ	I
ETHYLBENZENE	0001	S	MG/KG	0.006	0.006	U			I
FLUORANTHENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
FLUORENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
GAMMA CHLORDANE	0001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
GAMMA-BHC (LINDANE)	0001	S	MG/KG	0.0035	0.0035	U	0.0035	UJ	I
HEPTACHLOR	0001	S	MG/KG	0.0026	0.0026	U	0.0026	UJ	I
HEPTACHLOR EPOXIDE	0001	S	MG/KG	0.071	0.071	U	0.071	UJ	I
HEXACHLOROBENZENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
HEXACHLOROBUTADIENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
HEXACHLOROCYCLOPENTADIENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	
HEXACHLOROETHANE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
INDENO(1,2,3-CD)PYRENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
IRON, TOTAL	0001	S	MG/KG	.01	33100.		33200.	J	I
ISOPHORONE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
LEAD, TOTAL	0001	S	MG/KG	.002	20.3				I
MAGNESIUM, TOTAL	0001	S	MG/KG	.05	5550.		5560.	J	I
MANGANESE, TOTAL	0001	S	MG/KG	.002	1030.				I
MERCURY, TOTAL	0001	S	MG/KG	.06	.06	U			I
METHOXYCHLOR	0001	S	MG/KG	0.15	0.15	U	0.15	UJ	I
N-NITROSO-DI-N-PROPYLAMINE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
N-NITROSODIPHENYLAMINE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
NAPHTHALENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
NICKEL, TOTAL	0001	S	MG/KG	.02	22.		22.0	J	I
NITROBENZENE	0001	S	MG/KG	0.42	0.42	U			I
PENTACHLOROPHENOL	0001	S	MG/KG	2.1	2.1	U	2.1	UJ	I
PERCENT MOISTURE	0001	S	% MOIST	-	22.				I
PHENANTHRENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
PHENOL	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
POTASSIUM, TOTAL	0001	S	MG/KG	.1	4640.				I
PYRENE	0001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
SELENIUM, TOTAL	0001	S	MG/KG	.002	1.53		1.6	J	I
SILVER, TOTAL	0001	S	MG/KG	.38	.38	U	0.38	UJ	I
SODIUM, TOTAL	0001	S	MG/KG	.1	237.	B			I
STYRENE	0001	S	MG/KG	0.006	0.006	U			I
TETRACHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
THALLIUM, TOTAL	0001	S	MG/KG	.002	.24	B			I
TOLUENE	0001	S	MG/KG	0.006	0.006	U			I
TOTAL XYLENES	0001	S	MG/KG	0.006	0.006	U			I
TOXAPHENE	0001	S	MG/KG	0.21	0.21	U	0.21	UJ	I
TRICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
VANADIUM, TOTAL	0001	S	MG/KG	.01	38.3				I
VINYL ACETATE	0001	S	MG/KG	0.013	0.013	U			I
VINYL CHLORIDE	0001	S	MG/KG	0.013	0.013	U			I
ZINC, TOTAL	0001	S	MG/KG	.005	73.8				I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
1,1,1-TRICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1,1-TRICHLOROETHANE	1001	S	MG/KG	0.006	0.006	U			I
1,1,2,2-TETRACHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1,2,2-TETRACHLOROETHANE	1001	S	MG/KG	0.006	0.006	U			I
1,1,2-TRICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1,2-TRICHLOROETHANE	1001	S	MG/KG	0.006	0.006	U			I
1,1-DICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,1-DICHLOROETHANE	1001	S	MG/KG	0.006	0.006	U			I
1,1-DICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
1,1-DICHLOROETHENE	1001	S	MG/KG	0.006	0.006	U			I
1,2,4-TRICHLOROBENZENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
1,2,4-TRICHLOROBENZENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,2-DICHLOROBENZENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
1,2-DICHLOROBENZENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,2-DICHLOROETHANE	0001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROETHANE	1001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROETHENE	1001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROPROPANE	0001	S	MG/KG	0.006	0.006	U			I
1,2-DICHLOROPROPANE	1001	S	MG/KG	0.006	0.006	U			I
1,3-CIS-DICHLOROPROPENE	0001	S	MG/KG	0.006	0.006	U			
1,3-CIS-DICHLOROPROPENE	1001	S	MG/KG	0.006	0.006	U			
1,3-DICHLOROBENZENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
1,3-DICHLOROBENZENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
1,3-TRANS-DICHLOROPROPENE	0001	S	MG/KG	0.006	0.006	U			I
1,3-TRANS-DICHLOROPROPENE	1001	S	MG/KG	0.006	0.006	U			I
1,4-DICHLOROBENZENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
1,4-DICHLOROBENZENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4,5-TRICHLOROPHENOL	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I
2,4,5-TRICHLOROPHENOL	1001	S	MG/KG	2.	2.	U	2.	UJ	I
2,4,6-TRICHLOROPHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
2,4,6-TRICHLOROPHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DICHLOROPHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
2,4-DICHLOROPHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DIMETHYLPHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
2,4-DIMETHYLPHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2,4-DINITROPHENOL	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I
2,4-DINITROPHENOL	1001	S	MG/KG	2.	2.	U	2.	UJ	I
2,4-DINITROTOLUENE	0001	S	MG/KG	0.4	0.4	U			I
2,4-DINITROTOLUENE	1001	S	MG/KG	0.42	0.42	U			I
2,6-DINITROTOLUENE	0001	S	MG/KG	0.4	0.4	U			I
2,6-DINITROTOLUENE	1001	S	MG/KG	0.42	0.42	U			I
2-BUTANONE	0001	S	MG/KG	0.01	0.053				I
2-BUTANONE	1001	S	MG/KG	0.01	0.031				
2-CHLORONAPHTHALENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
2-CHLORONAPHTHALENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-CHLOROPHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
2-CHLOROPHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-HEXANONE	0001	S	MG/KG	0.012	0.012	U			I
2-HEXANONE	1001	S	MG/KG	0.013	0.013	U			I
2-METHYLNAPHTHALENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
2-METHYLNAPHTHALENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-METHYLPHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
2-METHYLPHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
2-NITROANILINE	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I
2-NITROANILINE	1001	S	MG/KG	2.	2.	U	2.	UJ	I
2-NITROPHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
2-NITROPHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
3,3'-DICHLOROBENZIDINE	0001	S	MG/KG	0.8	0.8	U	0.8	UJ	I
3,3'-DICHLOROBENZIDINE	1001	S	MG/KG	0.84	0.84	U	0.84	UJ	I
3-NITROANILINE	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I
3-NITROANILINE	1001	S	MG/KG	2.	2.	U	2.	UJ	I
4,4'-DDD	0001	S	MG/KG	0.009	0.009	U	0.009	UJ	I
4,4'-DDD	1001	S	MG/KG	0.0094	0.0094	U	0.0094	UJ	I
4,4'-DDE	0001	S	MG/KG	0.0033	0.0033	U	0.0033	UJ	I
4,4'-DDE	1001	S	MG/KG	0.0034	0.0034		0.0034	UJ	I
4,4'-DDT	0001	S	MG/KG	0.0097	0.0097	U	0.0097	UJ	I
4,4'-DDT	1001	S	MG/KG	0.01	0.01	U	0.01	UJ	I
4,6-DINITRO-O-CRESOL	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I
4,6-DINITRO-O-CRESOL	1001	S	MG/KG	2.	2.	U	2.	UJ	I
4-BROMOPHENYL-PHENYL ETHER	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
4-BROMOPHENYL-PHENYL ETHER	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLORO-3-METHYLPHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
4-CHLORO-3-METHYLPHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLOROANILINE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
4-CHLOROANILINE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-CHLOROPHENYL-PHENYLETHER	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
4-CHLOROPHENYL-PHENYLETHER	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-METHYL-2-PENTANONE	0001	S	MG/KG	0.012	0.012	U			I
4-METHYL-2-PENTANONE	1001	S	MG/KG	0.013	0.013	U			I
4-METHYLPHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
4-METHYLPHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
4-NITROANILINE	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I
4-NITROANILINE	1001	S	MG/KG	2.	2.	U	2.	UJ	I
4-NITROPHENOL	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I
4-NITROPHENOL	1001	S	MG/KG	2.	2.	U	2.	UJ	I
ACENAPHTHENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
ACENAPHTHENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ACENAPHTHYLENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
ACENAPHTHYLENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ACETONE	0001	S	MG/KG	0.01	0.2	B	0.2		I
ACETONE	1001	S	MG/KG	0.01	0.14	B	0.14	U	I
ALDRIN	0001	S	MG/KG	0.0033	0.0033	U	0.0033	UJ	I
ALDRIN	1001	S	MG/KG	0.0034	0.0034	U	0.0034	UJ	I
ALPHA CHLORDANE	0001	S	MG/KG	0.011	0.011	U	0.011	UJ	I
ALPHA CHLORDANE	1001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
ALPHA-BHC	0001	S	MG/KG	0.0024	0.0024	U	0.0024	UJ	I
ALPHA-BHC	1001	S	MG/KG	0.0026	0.0026	U	0.0026	UJ	I
ALUMINUM, TOTAL	0001	S	MG/KG	.06	19300.				I
ALUMINUM, TOTAL	1001	S	MG/KG	.06	18800.				I
ANTHRACENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
ANTHRACENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ANTIMONY, TOTAL	0001	S	MG/KG	5.4	5.4	U			I
ANTIMONY, TOTAL	1001	S	MG/KG	5.7	5.7	U			I
AROCLOR-1016	0001	S	MG/KG	0.097	0.097	U	0.097	UJ	I
AROCLOR-1016	1001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1221	0001	S	MG/KG	0.097	0.097	U	0.097	UJ	I
AROCLOR-1221	1001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1232	0001	S	MG/KG	0.097	0.097	U	0.097	UJ	I
AROCLOR-1232	1001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1242	0001	S	MG/KG	0.097	0.097	U	0.097	UJ	I
AROCLOR-1242	1001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1248	0001	S	MG/KG	0.097	0.097	U	0.097	UJ	I
AROCLOR-1248	1001	S	MG/KG	0.1	0.1	U	0.1	UJ	I
AROCLOR-1254	0001	S	MG/KG	0.19	0.19	U	0.19	UJ	I
AROCLOR-1254	1001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
AROCLOR-1260	0001	S	MG/KG	0.19	0.19	U	0.19	UJ	I
AROCLOR-1260	1001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
ARSENIC, TOTAL	0001	S	MG/KG	.002	7.53				I
ARSENIC, TOTAL	1001	S	MG/KG	.002	7.97				I
BARIUM, TOTAL	0001	S	MG/KG	.002	82.2				I
BARIUM, TOTAL	1001	S	MG/KG	.002	86.				I
BENZENE	0001	S	MG/KG	0.006	0.006	U			I
BENZENE	1001	S	MG/KG	0.006	0.006	U			I
BENZO(A)ANTHRACENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BENZO(A)ANTHRACENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(A)PYRENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BENZO(A)PYRENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(B)FLUORANTHENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BENZO(B)FLUORANTHENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(G,H,I)PERYLENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BENZO(G,H,I)PERYLENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZO(K)FLUORANTHENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
BENZO(K)FLUORANTHENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BENZOIC ACID	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I
BENZOIC ACID	1001	S	MG/KG	2.	2.	U	2.	UJ	I
BENZYL ALCOHOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BENZYL ALCOHOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BERYLLIUM	0001	S	MG/KG	.002	.87				I
BERYLLIUM	1001	S	MG/KG	.002	.92				I
BETA-BHC	0001	S	MG/KG	0.0049	0.0049		0.0049	UJ	I
BETA-BHC	1001	S	MG/KG	0.0051	0.0051		0.0051	UJ	I
BIS(2-CHLOROETHOXY)METHANE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BIS(2-CHLOROETHOXY)METHANE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-CHLOROETHYL)ETHER	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BIS(2-CHLOROETHYL)ETHER	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-CHLOROISOPROPYL)ETHER	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BIS(2-CHLOROISOPROPYL)ETHER	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BIS(2-ETHYLHEXYL)PHTHALATE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BIS(2-ETHYLHEXYL)PHTHALATE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
BROMODICHLOROMETHANE	0001	S	MG/KG	0.006	0.006	U			I
BROMODICHLOROMETHANE	1001	S	MG/KG	0.006	0.006	U			I
BROMOFORM	0001	S	MG/KG	0.006	0.006	U			I
BROMOFORM	1001	S	MG/KG	0.006	0.006	U			I
BROMOMETHANE	0001	S	MG/KG	0.012	0.012	U			I
BROMOMETHANE	1001	S	MG/KG	0.013	0.013	U			I
BUTYL BENZYL PHTHALATE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
BUTYL BENZYL PHTHALATE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
CADMIUM, TOTAL	0001	S	MG/KG	.48	.48	U	0.48	UJ	I
CADMIUM, TOTAL	1001	S	MG/KG	.5	.5	U	0.51	UJ	I
CALCIUM, TOTAL	0001	S	MG/KG	.02	26200.		26200.	J	I
CALCIUM, TOTAL	1001	S	MG/KG	.02	56300.				I
CARBON DISULFIDE	0001	S	MG/KG	0.006	0.006	U			I
CARBON DISULFIDE	1001	S	MG/KG	0.006	0.006	U			I
CARBON TETRACHLORIDE	0001	S	MG/KG	0.006	0.006	U			I
CARBON TETRACHLORIDE	1001	S	MG/KG	0.006	0.006	U			I
CHLOROBENZENE	0001	S	MG/KG	0.006	0.006	U			I
CHLOROBENZENE	1001	S	MG/KG	0.006	0.006	U			I
CHLOROETHANE	0001	S	MG/KG	0.012	0.012	U			I
CHLOROETHANE	1001	S	MG/KG	0.013	0.013	U			I
CHLOROFORM	0001	S	MG/KG	0.006	0.006	U			I
CHLOROFORM	1001	S	MG/KG	0.006	0.006	U			I
CHLOROMETHANE	0001	S	MG/KG	0.012	0.012	U			I
CHLOROMETHANE	1001	S	MG/KG	0.013	0.013	U			I
CHROMIUM, TOTAL	0001	S	MG/KG	.01	19.9				I
CHROMIUM, TOTAL	1001	S	MG/KG	.01	20.4				I
CHRYSENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I

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Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
CHRYSENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
COBALT, TOTAL	0001	S	MG/KG	.01	12.8				I
COBALT, TOTAL	1001	S	MG/KG	.01	11.2				I
COPPER, TOTAL	0001	S	MG/KG	.01	28.1		28.0	J	I
COPPER, TOTAL	1001	S	MG/KG	.01	38.1		38.2	J	I
CYANIDE	0001	S	UG/G	.61	.61	U			I
CYANIDE	1001	S	UG/G	.64	.64	U			I
DELTA-BHC	0001	S	MG/KG	0.0073	0.0073		0.0073	UJ	I
DELTA-BHC	1001	S	MG/KG	0.0086	0.0086		0.0086	UJ	I
DI-N-BUTYL PHTHALATE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
DI-N-BUTYL PHTHALATE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DI-N-OCTYL PHTHALATE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
DI-N-OCTYL PHTHALATE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBENZO(A,H)ANTHRACENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
DIBENZO(A,H)ANTHRACENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBENZOFURAN	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
DIBENZOFURAN	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
DIBROMOCHLOROMETHANE	0001	S	MG/KG	0.006	0.006	U			I
DIBROMOCHLOROMETHANE	1001	S	MG/KG	0.006	0.006	U			I
DICHLOROMETHANE-METHYLENE CHLORIDE	0001	S	MG/KG	0.005	0.005	JB	0.006	U	I
DICHLOROMETHANE-METHYLENE CHLORIDE	1001	S	MG/KG	0.005	0.007	B	0.006	U	
DIELDRIN	0001	S	MG/KG	0.0016	0.0016	U	0.0016	UJ	I
DIELDRIN	1001	S	MG/KG	0.0017	0.0017	U	0.0017	UJ	I
DIETHYL PHTHALATE	0001	S	MG/KG	0.33	0.23	JB	0.4	UJ	I
DIETHYL PHTHALATE	1001	S	MG/KG	0.33	0.26	JB	0.42	UJ	I
DIMETHYL PHTHALATE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
DIMETHYL PHTHALATE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
ENDOSULFAN I(ALPHA)	0001	S	MG/KG	0.011	0.011	U	0.011	UJ	I
ENDOSULFAN I(ALPHA)	1001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
ENDOSULFAN II(BETA)	0001	S	MG/KG	0.0033	0.0033	U	0.0033	UJ	I
ENDOSULFAN II(BETA)	1001	S	MG/KG	0.0034	0.0034	U	0.0034	UJ	I
ENDOSULFAN SULFATE	0001	S	MG/KG	0.054	0.054	U	0.054	UJ	I
ENDOSULFAN SULFATE	1001	S	MG/KG	0.056	0.056	U	0.056	UJ	I
ENDRIN	0001	S	MG/KG	0.0049	0.0049	U	0.0049	UJ	I
ENDRIN	1001	S	MG/KG	0.0051	0.0051	U	0.0051	UJ	I
ENDRIN ALDEHYDE	0001	S	MG/KG	0.19	0.019	U	0.019	UJ	I
ENDRIN ALDEHYDE	1001	S	MG/KG	0.02	0.02	U	0.02	UJ	I
ENDRIN KETONE	0001	S	MG/KG	0.019	0.019	U	0.02	UJ	I
ENDRIN KETONE	1001	S	MG/KG	0.02	0.02	U	0.02	UJ	I
ETHYLBENZENE	0001	S	MG/KG	0.006	0.006	U			I
ETHYLBENZENE	1001	S	MG/KG	0.006	0.006	U			I
FLUORANTHENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
FLUORANTHENE	1001	S	MG/KG	0.33	0.069	J	0.069	UJ	I
FLUORENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	

APPENDIX A
Location: MWD33-0019
Report Date: 03/09/93

Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
FLUORENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
GAMMA CHLORDANE	0001	S	MG/KG	0.011	0.011	U	0.011	UJ	I
GAMMA CHLORDANE	1001	S	MG/KG	0.012	0.012	U	0.012	UJ	I
GAMMA-BHC (LINDANE)	0001	S	MG/KG	0.0033	0.0033	U	0.0033	UJ	I
GAMMA-BHC (LINDANE)	1001	S	MG/KG	0.0034	0.0034	U	0.0034	UJ	I
HEPTACHLOR	0001	S	MG/KG	0.0024	0.0024	U	0.0024	UJ	I
HEPTACHLOR	1001	S	MG/KG	0.0026	0.0026	U	0.0026	UJ	I
HEPTACHLOR EPOXIDE	0001	S	MG/KG	0.068	0.068	U	0.068	UJ	I
HEPTACHLOR EPOXIDE	1001	S	MG/KG	0.071	0.071	U	0.071	UJ	I
HEXACHLOROBENZENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
HEXACHLOROBENZENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
HEXACHLOROBUTADIENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
HEXACHLOROBUTADIENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
HEXACHLOROCYCLOPENTADIENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
HEXACHLOROCYCLOPENTADIENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
HEXACHLOROETHANE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
HEXACHLOROETHANE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
INDENO(1,2,3-CD)PYRENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
INDENO(1,2,3-CD)PYRENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
IRON, TOTAL	0001	S	MG/KG	.01	30000.		30000.	J	I
IRON, TOTAL	1001	S	MG/KG	.01	26400.		26500.	J	I
ISOPHORONE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
ISOPHORONE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
LEAD, TOTAL	0001	S	MG/KG	.002	19.6				I
LEAD, TOTAL	1001	S	MG/KG	.002	21.9				I
MAGNESIUM, TOTAL	0001	S	MG/KG	.05	8950.		8940.	J	I
MAGNESIUM, TOTAL	1001	S	MG/KG	.05	18000.		18000.	J	I
MANGANESE, TOTAL	0001	S	MG/KG	.002	867.				I
MANGANESE, TOTAL	1001	S	MG/KG	.002	482.				I
MERCURY, TOTAL	0001	S	MG/KG	.06	.28				I
MERCURY, TOTAL	1001	S	MG/KG	.06	.38				I
METHOXYCHLOR	0001	S	MG/KG	0.14	0.14	U	0.14	UJ	I
METHOXYCHLOR	1001	S	MG/KG	0.15	0.15	U	0.15	UJ	I
N-NITROSO-DI-N-PROPYLAMINE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
N-NITROSO-DI-N-PROPYLAMINE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
N-NITROSODIPHENYLAMINE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
N-NITROSODIPHENYLAMINE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
NAPHTHALENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
NAPHTHALENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
NICKEL, TOTAL	0001	S	MG/KG	.02	20.3		20.3	J	I
NICKEL, TOTAL	1001	S	MG/KG	.02	22.9		23.0	J	I
NITROBENZENE	0001	S	MG/KG	0.4	0.4	U			I
NITROBENZENE	1001	S	MG/KG	0.42	0.42	U			I
PENTACHLOROPHENOL	0001	S	MG/KG	1.9	1.9	U	1.9	UJ	I

APPENDIX A
Location: MWD33-0019
Report Date: 03/09/93

Parameter	Samp Id	M	Units of Measure	Laboratory Reporting Limit	Laboratory Result	Lab Qual. (1)	Validated Result (2)	Data Val. Qual.	Run Type
PENTACHLOROPHENOL	1001	S	MG/KG	2.	2.	U	2.	UJ	I
PERCENT MOISTURE	0001	S	% MOIST	-	18.				I
PERCENT MOISTURE	1001	S	% MOIST	-	22.				I
PHENANTHRENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
PHENANTHRENE	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
PHENOL	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
PHENOL	1001	S	MG/KG	0.42	0.42	U	0.42	UJ	I
POTASSIUM, TOTAL	0001	S	MG/KG	.1	4080.				I
POTASSIUM, TOTAL	1001	S	MG/KG	.1	4660.				I
PYRENE	0001	S	MG/KG	0.4	0.4	U	0.4	UJ	I
PYRENE	1001	S	MG/KG	0.33	0.044	J			I
SELENIUM, TOTAL	0001	S	MG/KG	.002	1.44		1.4	J	I
SELENIUM, TOTAL	1001	S	MG/KG	.002	1.63		1.7	J	I
SILVER, TOTAL	0001	S	MG/KG	.01	.86	B	0.86	U	I
SILVER, TOTAL	1001	S	MG/KG	.01	.83	B	0.83	U	I
SODIUM, TOTAL	0001	S	MG/KG	.1	232.	B			I
SODIUM, TOTAL	1001	S	MG/KG	.1	261.	B			I
STYRENE	0001	S	MG/KG	0.006	0.006	U			I
STYRENE	1001	S	MG/KG	0.006	0.006	U			I
TETRACHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
TETRACHLOROETHENE	1001	S	MG/KG	0.006	0.006	U			I
THALLIUM, TOTAL	0001	S	MG/KG	.002	.21	B			I
THALLIUM, TOTAL	1001	S	MG/KG	.002	.27	B			I
TOLUENE	0001	S	MG/KG	0.006	0.006	U			I
TOLUENE	1001	S	MG/KG	0.006	0.006	U			I
TOTAL XYLENES	0001	S	MG/KG	0.006	0.006	U			I
TOTAL XYLENES	1001	S	MG/KG	0.006	0.006	U			I
TOXAPHENE	0001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
TOXAPHENE	1001	S	MG/KG	0.2	0.2	U	0.2	UJ	I
TRICHLOROETHENE	0001	S	MG/KG	0.006	0.006	U			I
TRICHLOROETHENE	1001	S	MG/KG	0.006	0.006	U			I
VANADIUM, TOTAL	0001	S	MG/KG	.01	27.9				I
VANADIUM, TOTAL	1001	S	MG/KG	.01	27.2				I
VINYL ACETATE	0001	S	MG/KG	0.012	0.012	U			I
VINYL ACETATE	1001	S	MG/KG	0.013	0.013	U			I
VINYL CHLORIDE	0001	S	MG/KG	0.012	0.012	U			I
VINYL CHLORIDE	1001	S	MG/KG	0.013	0.013	U			I
ZINC, TOTAL	0001	S	MG/KG	.005	94.1				I
ZINC, TOTAL	1001	S	MG/KG	.005	112.				I

Document Control No. _____

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Environmental Restoration Program

CLOSURE REPORT
BUILDING 51 - WASTE STORAGE TANK

MOUND PLANT
MIAMISBURG, OHIO

August 1992

FINAL

(Revision 0)

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
Technical Support Office
Los Alamos National Laboratory

EXECUTIVE SUMMARY

This report was specifically prepared for two purposes: 1) to evaluate the need to perform a removal action at the Building 51 former waste tank site at the Mound Plant in Miamisburg, Ohio, and 2) to present a preliminary determination of whether additional investigation or remedial action at this site is warranted. This report also documents the proper removal of an underground storage tank at Building 51 and documents the investigations of the soil contamination at the tank site.

Removal Action

The Building 51 waste storage tank was installed in 1972 as a part of a waste incinerator facility in Building 51, which operated for approximately 1 year, at Mound Plant. The waste storage tank was used to hold waste oil and some waste solvents prior to incineration. The tank was removed in December 1990 by the Mound Plant Engineering Program (EP) in compliance with the Ohio Bureau of Underground Storage Tank Regulation (BUSTR) requirements. EP tank removal sampling was performed on December 4, 1990, by Bowser-Morner, Inc., an environmental subcontractor.

Following removal, the tank was decontaminated, and then cut up for salvage as scrap steel. The tank contents were turned over to the Mound Plant Waste Management Program which in turn disposed of the contents through a RCRA-approved disposal facility. The excavated soil was used as fill for the excavation site following the OU3 LFI sampling.

On the basis of the EP tank removal sampling results, which indicated elevated total petroleum hydrocarbon (TPH) levels in the soil below the tank, the U.S. Department of Energy (DOE) initiated Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) removal action activities to mitigate the apparent hazard posed by the contaminated soil. Removal action activities included a site evaluation in accordance with 40 Code of Federal Regulation (CFR) 300.410, and preliminary planning for a removal action.

In addition to the EP tank removal sampling results, the DOE received final validated results from soil sampling conducted at the Building 51 former tank site in August 1991 as a part of the Operable Unit (OU) 3 Limited Field Investigation (LFI). These results confirm the presence of trace amounts of a few volatile organic compounds (VOC), semivolatile organic compounds (SVOC), polychlorinated biphenyls (PCB), petroleum hydrocarbons, and metals in the former tank site soils. Specific compounds detected included: acetone, carbon disulfide, chloroform, methyl ethyl ketone, trichloroethene, acenapthene, fluoranthene, pyrene, butylbenzylphthalate, Aroclor 1254, and various metals such as beryllium, chromium and lead.

Based on a review of available soil contaminant data and potential routes of exposure pursuant to the CERCLA removal site evaluation requirements of 40 CFR 300.410, a removal action is not considered necessary because there is no imminent and substantial danger to the public health or welfare posed by the released hazardous substances.

Need for Additional Investigations

The second objective of this report is to assist the OU3 LFI effort by providing a preliminary determination of the need to conduct further investigation or remedial actions at the former tank site. Because action levels based on federal or state applicable or relevant and appropriate requirements (ARAR) or on risk studies have not yet been established at Mound Plant, the LFI determination presented in the report will be subject to re-evaluation as action levels are developed. Lacking established Plant-wide action levels, the Building 51 former tank site soil data were compared to possible action levels. Possible action levels used in this report were developed using available regulatory and policy thresholds that include:

- Proposed Resource Conservation and Recovery Act (RCRA) 40 CFR 264 Subpart S action levels for soils.
- RCRA land disposal restriction treatment standards for waste code F039.
- Ohio Environmental Protection Agency (OEPA) petroleum soil clean-up policy standards.

When soil contaminant data are compared with the possible action levels, beryllium, which was found in concentrations up to 0.94 milligrams per kilogram (mg/kg), exceeds the 40 CFR Subpart S action level of 0.2 mg/kg. Applying the equation used to derive the possible action level, the maximum concentration of beryllium detected equates to a carcinogenic risk of 5.8×10^{-6} (5.8 cases per 1,000,000 exposed people). No contaminants were identified above the land disposal restriction treatment standards. The total petroleum hydrocarbon (TPH) results were found to exceed the OEPA policy standard of 40 mg/kg; however, the more toxic constituents of concern at Mound Plant comprising TPH did not include significant quantities of the more toxic VOCs and SVOCs of concern at Mound Plant.

Based on this analysis, it is concluded that no need exists to conduct further investigation at the Building 51 former tank site, nor will there be a need to conduct remedial actions. This conclusion will be re-evaluated based on the results of background sampling and the development of Mound Plant action levels. DOE has committed to retaining the tank site soil data in the OU3 Remedial Investigation where it will be addressed in the risk assessment/risk management process (DOE, 1992a).

The FFA contains both the procedural and substantive requirements for RI/FS work. The DOE is proposing the RI/FS activities for a broad geographic area, including the area within the Mound Plant as well as areas beyond the Mound Plant boundaries. Because of the size and the complexity of the RI/FS, the Mound Plant has been divided into nine OUs to facilitate management of the RI/FS. Underground storage tank (UST) sites have been allocated to various OUs, as appropriate, according to their location and relationship to activities within the units. (The Building 51 former tank site is currently assigned to OU3).

Mound Plant was formed as a technical organization in 1943 to determine the chemical and metallurgical properties of polonium as part of the Manhattan Engineering District (DOE, 1986). This work was conducted for the U.S. Army at several locations in the Dayton, Ohio, area. In 1946, 182 acres adjacent to the city of Miamisburg, Ohio, were purchased for the permanent Mound Plant site (Figure 1.1). Work being conducted at the Dayton units was moved to Mound Plant in 1948. The total acreage of Mound Plant was later expanded to 305 acres; however, there was no development on the new property.

The successive United States government agencies that have owned Mound Plant are: the Manhattan Engineering District, the Atomic Energy Commission, the Energy Research and Development Agency, and the DOE. The Monsanto Research Corporation operated Mound Plant for each of these agencies until December 1988, when it was succeeded by EG&G Mound Applied Technologies.

Mound Plant is currently an integrated research, development, and production facility, which operates in support of the DOE weapons and energy programs (DOE, 1986). Mound Plant manufactures non-nuclear components and tritium-containing components for nuclear weapons, and also develops small heat sources for the space and defense programs.

1.3. TANK SITE HISTORY

The Building 51 waste storage tank was located adjacent to Building 51 in the valley between the Main Hill and the Special Metallurgical/Plutonium Processing (SM/PP) Hill (Figure 1.2). The tank was part of a waste incinerator facility at Building 51 and was probably installed at the same time as the incinerator that it fed. The incinerator was completed in 1972 and only operated for a total of approximately 1 year. It was used to burn nearly all of the Plant's nonradioactive solid wastes and some liquids including oils, paints, and solvents on an experimental basis, but most liquids were shipped off-plant for disposal. A scrubber system was installed in 1974 to reduce emissions and the unit operated for a few months thereafter. The overall operation of the incinerator was not successful

and its use was discontinued because of excessive releases of particulates and of changes in air pollution control regulations. The unit and the scrubber were dismantled in the late 1970s or early 1980s (DOE, 1991d).

The 1,000-gallon underground waste tank was primarily used to store waste oils and also waste organic solvents from various Mound Plant processes. Liquid waste was pumped from the tank to the incinerator to be burned. Materials stored in the tank are believed to have included: waste petroleum oils (various types); waste solvents including trichloroethene, acetone, toluene, and benzene; and other flammable materials such as enamel and lacquer paints, lacquer thinner, methanol, ethanol, and mineral spirits. Waste oil reportedly comprised the majority of the waste, with solvents being a minor constituent; however, there are no records to confirm this.

The Building 51 waste storage tank was removed by the Engineering Program (EP) in December 1990 as part of the Mound Plant underground tank program. Prior to the removal, notice was provided to the Ohio Department of Commerce, Division of the State Fire Marshall, Bureau of Underground Storage Tank Regulation (BUSTR). In addition, notice that the Building 51 tank was being removed was provided to the Ohio Environmental Protection Agency (OEPA), Division of Emergency and Remedial Response.

Based upon the EP tank removal report (Bowser-Morner, 1991), the tank was in poor condition with heavy corrosion and numerous holes. Although the tank was only operational for a short time, it is evident that some leakage may have occurred while the tank was in the ground and out of service. An undetermined amount of sludge material remained in the tank at the time of removal, which is consistent with reports that the tank was pumped out to the capabilities of the system when the tank was taken out of service. Therefore, between 1972 and 1990, there was a limited potential for leakage of residual materials to occur. Both the sludge and the surrounding soil were sampled as a part of the EP tank removal; analytical results are discussed in Section 2.2.

1.4. SITE LOCATION AND SETTING

The Building 51 former waste storage tank site is located adjacent to Building 51 in the upper valley between the Main Hill and the SM/PP Hill (Figure 1.2). The upper valley area is located in the northeastern portion of the Mound Plant site, south of the north parking lot area. Currently, the area is largely comprised of service buildings, paved parking lots, and an asphalt-lined pond built on fill materials. The upper valley area has undergone numerous changes to accommodate plant growth and has a long history of debris disposal (DOE, 1991c). Much of the disposal appears to have included

materials dumped over the sides of the western slopes so that the debris moves easterly into the drainage channel.

The Building 51 waste storage tank was installed as a part of an incinerator facility in Building 51, completed sometime around 1972, and appears to have been built on the lower channel fill terrace. The building and the immediate area surrounding it appear to have been relatively undisturbed until 1979. The activities involved with the disturbance between 1979 and 1981 are currently unknown, but may be related to the construction of sewer and drain lines installed beneath the paved parking lots.

1.5. SITE GEOLOGY

The Building 51 waste storage tank is located in the east-west trending tributary valley that occupies lowland between the two hills at Mound Plant (DOE, 1991b). The valley is underlain by unconsolidated deposits that vary in thickness from 20 feet to greater than 75 feet. The thickness of these deposits increases to the west toward the ancestral valley of the Great Miami River. Deposits within the tributary valley include silt, sand, and gravel; in general, the sequence coarsens downward. Permeable layers of sand and gravel are common at depths greater than 30 feet.

The modern Great Miami River occupies an ancient valley that was formed by meltwater from continental glaciers. The valley is filled with thick, extensive glacial deposits of permeable sand and gravel that are referred to as the Buried Valley Aquifer, which is an important groundwater resource (DOE, 1989). Two distinct layers of sand and gravel, separated by glacial till, have been identified in geologic logs from off-site monitoring wells located in the Buried Valley Aquifer. Deposits in the Buried Valley Aquifer reach a maximum thickness of greater than 150 feet, and are underlain by approximately 3,400 feet of flat-lying Cambrian and Ordovician-age marine shales and limestones. The site hydrogeology, including groundwater flow and quality, is discussed in the RI/FS work plan (DOE, 1991b).

According to a geologic log completed for a soil boring/monitoring well (#0111) located near the Building 51 waste storage tank site, soils in the vicinity are generally comprised of brown to dark gray gravelly clay fill to a depth of approximately 17 feet below ground surface (bgs) (DOE, 1992b). Soils between 17 and 22 feet bgs consist of gray to light brown, sandy, gravelly silt. Alternating layers of light brown to brown sand and gravelly silt occupy the depths between 22 and 34 feet bgs. Soils from 34 to 62 feet bgs are generally light brown to reddish brown gravelly sand and coarse-grained sand

2. CONTAMINANT CHARACTERIZATION

2.1. FIELD SAMPLING

The Building 51 waste tank site has recently been the subject of two field investigations. The first investigation was conducted as a part of Mound Plant EP tank removal activities in late 1990. The second investigation took place in August 1991 as part of the OU3 LFI. The sampling practices used in these investigations are described below in Sections 2.1.1. and 2.1.2.; analytical results for both investigations are presented in Section 2.2.

2.1.1. Tank Removal Sampling

As described by Bowser-Morner, Inc., the contents of the waste tank were sampled on October 26, 1990 (Bowser-Morner, 1991). A sludge sample was collected through the tank fill pipe opening using a pre-cleaned bailer and was analyzed by Bowser-Morner, Inc. for volatile organics, heavy metals, total petroleum hydrocarbons (TPH), phenol, cyanide, sulfide, total solids, polychlorinated biphenyls (PCB), pH, and flashpoint.

The waste tank system at Building 51 was removed by the Mound Plant EP on December 4, 1990. Once the tank was removed, three soil samples were collected in the excavation pursuant to Ohio State Fire Marshal and OEPA guidelines. One soil sample was collected at each end of the concrete tank pad at an approximate depth of 8 to 8½ feet bgs, and one soil sample was collected from the middle of the pad at an approximate depth of 7 feet bgs, for a total of three samples. (Shown in Figures 2.1 and 2.2).

Soil samples collected from the tank excavation were analyzed by Bowser-Morner, Inc. for volatile organics, heavy metals, TPH, phenol, cyanide, sulfide, total solids, PCBs, pH, and flashpoint.

Excavated soils and soil samples were monitored using a photoionization detector (PID). Although PID measurements of excavation soils ranged up to 15 relative response units (RRU), PID measurements for the samples were each found to be 4 RRU.

2.1.2. OU3 Limited Field Investigation Sampling

On August 28, 1991, as part of the OU3 LFI, Mound Plant and Roy F. Weston, Inc. (WESTON) personnel were on site to observe the re-opening of the December 1990 excavation associated with the Building 51 waste tank removal. Because the hole excavated to remove the tank was never

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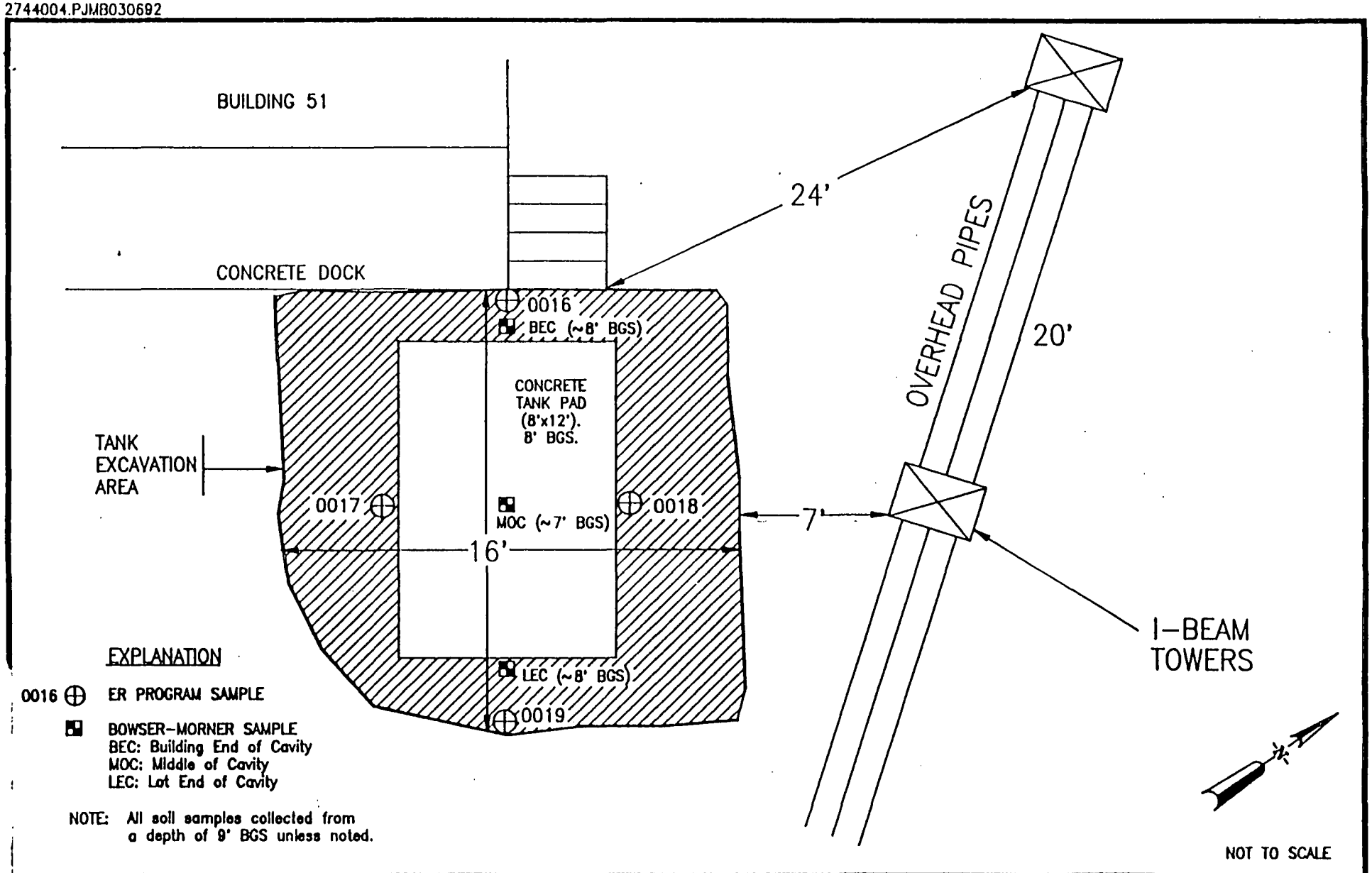

MOUND PLANT ENVIRONMENTAL RESTORATION PROGRAM CLOSURE REPORT	SOIL EXCAVATION SAMPLING LOCATIONS BUILDING 51 WASTE STORAGE TANK EXCAVATION AREA	FIGURE 2-2

backfilled, the re-opening involved additional excavation because the walls of the original hole were caving in. This new excavation was 16 feet wide by 16 feet long and 8 feet deep. An approximately 1-foot thick concrete tank pad was discovered at a depth of 8 feet bgs. The dimensions of the pad were 8 feet by 12 feet. Overexcavation of approximately 2 feet away from and 1 foot below the pad was performed prior to sampling, where possible.

Observations in the field included discovery of stained, dark gray clayey soils at a depth of 8 feet bgs surrounding all sides of the concrete pad. Subsurface samples were collected and screened for volatile organic compounds (VOC) using a PID and a flame ionization detector (FID). Soil samples were collected with a stainless steel scoop from a backhoe bucket. The backhoe was used to collect soils from central locations from each of the four excavation walls at a depth of approximately 9 feet bgs. Sampling personnel could not enter the excavation due to the height and potential instability of the excavation walls. The walls of the excavation could not be adequately sloped for entry due to the proximity of utilities. The sample locations are shown in Figures 2.1 and 2.2. All samples collected by WESTON were shipped to IT Corporation Laboratories, Oak Ridge, Tennessee, for analyses.

A summary of soil samples collected at the Building 51 site during the OU3 LFI is presented in Table II.1 and includes the sample identification number, sample interval or type of sample, date collected, and analytical testing parameters requested.

2.1.2.1. OU3 Limited Field Investigation Work Plan Consistency

The following is a summary of points of variance within the OU3 LFI Work Plan (DOE, 1991a). Except as noted, sampling was consistent with the referenced Work Plan.

- At the request of OEPA, the sampling depth for all soil samples below the base of the excavation at the Building 51 waste tank site was extended deeper than the 0 to 6 inches specified in the Work Plan due to the possible loss of VOCs after the tank was excavated. Except for caving of the sides, the excavation had remained open since tank removal activities in December 1990.

- Due to underground utilities in the area, the excavation could not be sloped to allow access by soil samplers as prescribed in the Work Plan; therefore, soil samples were collected from the center of the backhoe bucket after it picked up soil from the designated locations.

- The sampling protocol was modified to collect samples from the sides of the in-place tank foundation pad that the Work Plan did not anticipate. The Work Plan specified one sample from each end of the tank pit, one sample from the middle of the excavation, and one sample from beneath a joint in the piping leading from the tank.

2.1.2.2. Regulatory Agency Sample Collection

An OEPA representative was on site to observe OU3 sampling activities and to collect split samples at the Building 51 site. The split samples taken at sample locations 0016 and 0019 were analyzed for VOCs, pesticides/PCBs, and metals (including cyanide).

OEPA split sample results serve as an additional quality control check for ER Program sampling and analysis; however, such split samples were not necessarily sampled nor analyzed in accordance with the OU3 Quality Assurance Project Plan (QAPP; DOE, 1991e). Consequently, the validity of the OEPA data cannot be ascertained; OEPA split sample data are provided in this report for completeness and are regarded as estimated.

2.2. ANALYTICAL RESULTS

Sections 2.2.1. and 2.2.2. present the analytical results of the investigations described in Section 2.1.

2.2.1. Engineering Program Tank Removal Results

Table II.2 provides the laboratory results from the EP tank removal investigation for the sludge and soil samples collected at the Building 51 waste tank site. As noted in the table, the tank contents (sludge) were found to contain low concentrations of VOCs including: benzene, chloroform, ethylbenzene, methylene chloride, tetrachloroethylene, toluene, trans-1,2-dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, xylene, acetone, methyl ethyl ketone, and methyl isobutyl ketone. The following metals were detected: chromium, lead, sodium, iron, and manganese; TPH and trace Aroclor 1260 were also detected.

VOCs identified in the soil samples included chloroform and trichloroethylene in the samples taken from nearest the building (BEC) and from the middle of the concrete pad (MOC) (Figure 2.2). Each metal analyzed for was detected with the exception of selenium and silver. The highest TPH value, 560 milligrams per kilogram (mg/kg), was found in the sample from the middle of the concrete pad. Aroclor 1254 was reported in a trace concentration in the sample from nearest Building 51.

Laboratory reports for the EP tank removal results are provided in Appendix A. No laboratory precision and accuracy information was available for the tank removal analysis. As was the case with the OEPA split sample data, the EP tank removal sampling and analyses were not performed in accordance with the QAPP. Consequently, the EP analytical results are regarded as estimated.

Table II.2
Laboratory Results of Soil and Sludge Samples Collected
During Engineering Program BUSTR Tank Removal
Building 51 - Waste Storage Tank

PARAMETER	Unit	Building End of Cavity	Middle of Cavity	Lot End of Cavity	Sludge (mg/L)
Benzene (2,3)	ug/kg	<2	<2	<2	0.0396
Chloroform (2,5)	ug/kg	21	21	<10	0.0129
Ethylbenzene (2,3)	ug/kg	<2	<2	<2	0.22
Methylene chloride (2,5)	ug/kg	<50	<50	<50	0.26
Tetrachloroethylene (2,3)	ug/kg	<25	<25	<25	0.0076
Toluene (2,3)	ug/kg	<2	<2	<2	1.9
Trans-1,2-Dichloroethylene (2,3)	ug/kg	<25	<25	<25	0.162
1,1,1-Trichloroethane (2,5)	ug/kg	<25	<25	<25	0.0104
Trichloroethylene (2,3)	ug/kg	53	210	<25	9.1
Xylene (2,3)	ug/kg	<2	<2	<2	2.4
Acetone (2,3)	ug/kg	<500	<500	<500	2000
Methyl Ethyl Ketone (2,5)	ug/kg	<1000	<1000	<1000	8.4
Methyl Isobutyl Ketone (2,5)	ug/kg	<500	<500	<500	13
Mercury (2,3)	mg/kg	0.17	0.06	0.03	<0.001
Arsenic (1,3)	mg/kg	2.3	2.4	5.8	<0.002
Selenium (2,5)	mg/kg	<0.4	<0.4	<0.4	<0.05
Silver (1,3)	mg/kg	<2	<2	<2	<0.1
Barium (1,3)	mg/kg	16	8.5	38	<0.1
Cadmium (1,3)	mg/kg	0.61	0.44	0.41	<0.01
Chromium (1,3)	mg/kg	4.8	3.8	20	<0.01
Lead (1,3)	mg/kg	6.1	2.3	6.4	<0.1
Sodium (1,5)	mg/kg	95	140 (1)	<10	510
Iron (1,5)	mg/kg	5000	4800	21000	8.7
Manganese (1,3)	mg/kg	100	120	470	0.13
Total Petroleum Hydrocarbons (2,5)	mg/kg	75	560	35	48
Phenol (2,3)	mg/kg	<0.15	<0.15	<0.15	<0.008
Cyanide (2,3)	mg/kg	<0.1	<0.1	<0.1	<0.01

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

Table II.2 (Continued)
Laboratory Results of Soil and Sludge Samples Collected
During Engineering Program BUSTR Tank Removal
Building 51- Waste Storage Tank

PARAMETER	Unit	Building End of Cavity	Middle of Cavity	Lot End of Cavity	Sludge (mg/L)
Sulfide	mg/kg	<1	<1	<1	18
Total Solids	%	93	96	87	143.30
PCBs	mg/kg	0.12 PCB1254	<0.04	<0.04	0.15 PCB1260
pH	S.U.	8.7	8.8	7.7	9.6 (S.U.)
Flash Point	degrees F	None to 210	None to 210	None to 210	None to 210

Key

mg/kg = milligram per kilogram
mg/L = milligram per liter
S.U. = Standard Units
ug/kg = microgram per kilogram

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

Source: Bowser-Morner, 1991

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2.2.2. OU3 Limited Field Investigation

Tables II.3, II.4, II.5, and II.6 present the analytical results from the OU3 LFI for VOCs, semivolatile organic compounds (SVOC), pesticides/PCBs, and inorganics, respectively. VOCs that were detected included acetone, carbon disulfide, and 2-butanone (methyl ethyl ketone); all were detected in concentrations of 250 micrograms per kilogram (μg/kg) or less. SVOCs that were found included acenapthene, 4-bromophenyl-phenylether, fluoranthene, pyrene, and butylbenzylphthalate. Various metals and a pesticide (delta-BHC, with an estimated detection below the nominal detection limit) were also identified in the soil samples. With the exception of acetone and some metals, all were reported as estimated values often below the nominal detection limit.

On the basis of the internal laboratory quality assurance program, the data were sometimes qualified using letter codes, which are defined as follows:

- B – Analyte detected in laboratory blank.
- J – Value is considered estimated.
- U – Compound was analyzed for but not detected. The number is the method detection limit for the sample.
- X – Quantitation performed from secondary column.
- Y – Detection limit determined from secondary column. Peaks observed on primary column quantitated at less than contract-required detection limit on the secondary column.
- Z – No analytical result reported for this compound.

Analytical results presented in Tables II.3 through II.6 include or are a compilation of: Form I data, the data summary reported by the laboratory; validated data, evaluated in accordance with the OU3 QAPP, as discussed in Appendix C; and OEPA data, which are the results of the split sampling and analysis conducted by the State of Ohio. Laboratory results for the OU3 LFI are provided in Appendix B.

2.3. OU3 DATA QUALITY SUMMARY

In order to obtain data of sufficient quality to meet the objectives of the OU3 LFI, a system of quality controls and quality assessment was established in the OU3 QAPP (DOE, 1991e). Methods and procedures used in the field and the laboratory for collecting and analyzing soil samples from the Building 51 former tank site were reviewed and evaluated in accordance with the QAPP. Results of this review and evaluation are presented in preliminary form in Appendix C. A final report on the

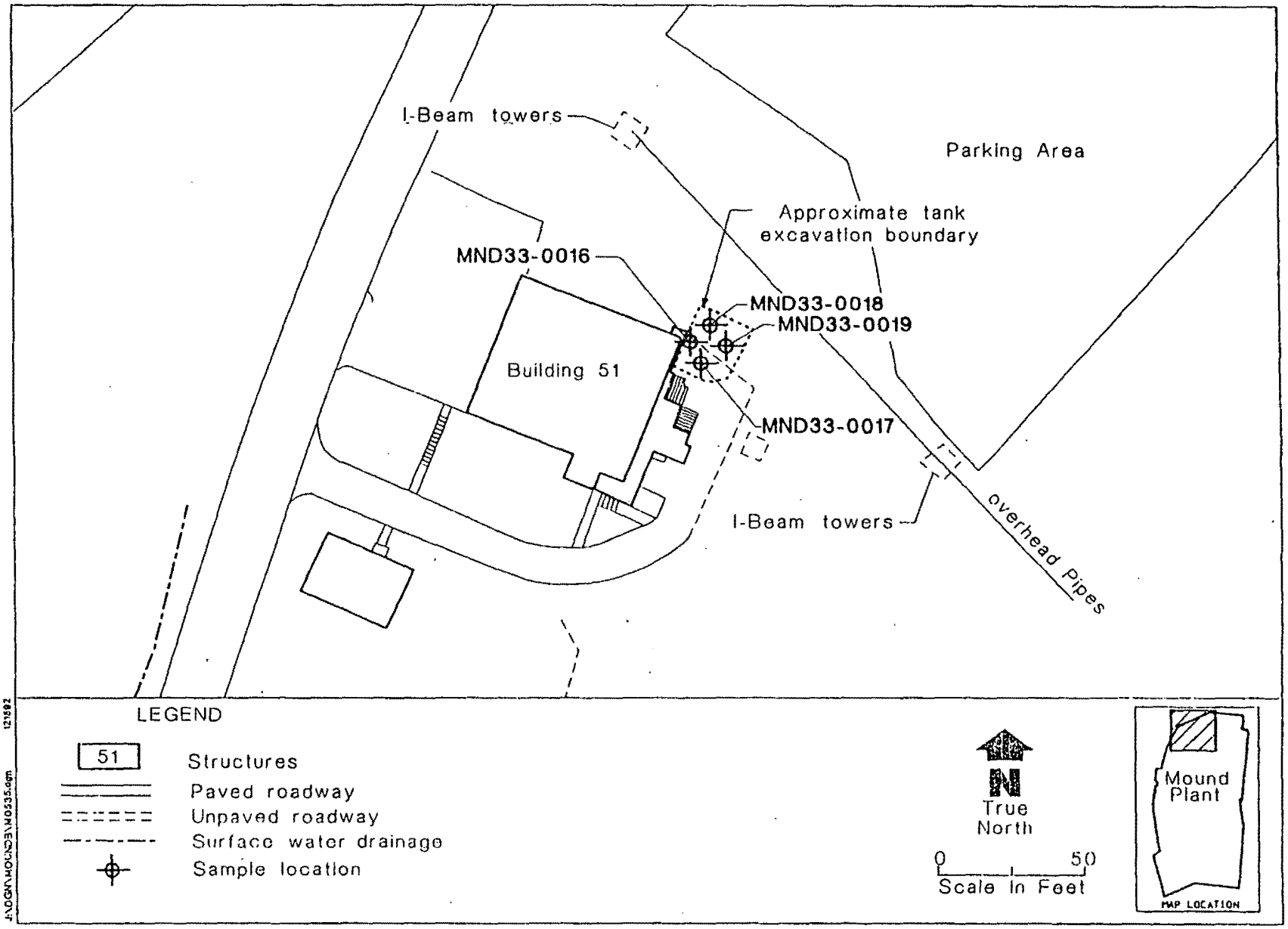

Figure 2.5. Building 51 Waste Solvent Tank soil sample locations.

Table II.1

Summary of Soil Samples, Bldg. 51
OU3 Limited Field Investigation

Sample Location	Sample Number	Sample Description
Location 0016	MND33-0016-0001 (MND33-0016)	Interval 1 to 2 feet below base of excavation next to cement foundation pad; 28 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide).
	MND33-0016-5001	Ambient blank; 28 August 1991; analyses requested - TCL VOCs.
Location 0017	MND33-0017-0001 (MND33-0017)	Interval 1 to 2 feet below base of excavation next to cement foundation pad, 28 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide).
Location 0018	MND33-0018-0001 (MND33-0018)	Interval 1 to 2 feet below base of excavation next to cement foundation pad; 28 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide).
Location 0019	MND33-0019-0001 (MND33-0019)	Interval 1 to 2 feet below base of excavation next to cement foundation pad; 28 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide).
	MND33-0019-1001	Interval 1 to 2 feet below base of excavation next to cement foundation pad. (Duplicate); 28 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide).

TCL = Target Compound List
VOC = volatile organic compound
SVOC = semivolatile organic compound
PCB = polychlorinated biphenyl
TAL = Target Analyte List

Table II.3
Data Table For Volatile Organic Compounds, Bldg. 51•
0U3 Limited Field Investigation

SAMPLE ID	0016-0001			0017-0001		0018-0001		0019-0001		
ANALYTE	Validated Data (a)	Form I Data (b)	OEPA Data (c)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	OEPA Data (c)
Chloromethane (2,5)		13 U	10		14 U		13 U		12 U	10
Bromomethane (2,5)		13 U	10		14 U		13 U		12 U	10
Vinyl Chloride (2,5)		13 U	10		14 U		13 U		12 U	10
Chloroethane (2,3)		13 U			14 U		13 U		12 U	10
Methylene Chloride (2,5)	6 U	2 BJ	940		7 U	6 U	2 BJ	6 U	5 BJ	430
Acetone (2,3)	69 U	69 B	440	240	240 B	250	250 B		200 B	170
Carbon Disulfide (2,3)		6 U	5		4 J		6 U		6 U	5
1,1-Dichloroethene (2,3)		6 U	5		7 U		6 U		6 U	5
1,1-Dichloroethane		6 U	5		7 U		6 U		6 U	5
1,2 Dichloroethane (total) (2,3)		6 U			7 U		6 U		6 U	
Chloroform (2,5)		6 U	5		7 U		6 U		6 U	5
1,2-Dichloroethane (2,3)		6 U	5		7 U		6 U		6 U	5
2-Butanone (2,3)		18	190		70		59		53	100
1,1,1-Trichloroethane (2,5)		6 U	7		7 U		6 U		6 U	5
Carbon Tetrachloride (2,3)		6 U	5		7 U		6 U		6 U	5
Vinyl Acetate (2,5)		13 U	10		14 U		13 U		12 U	10
Bromodichloromethane (2,3)		6 U	5		7 U		6 U		6 U	5
1,2-Dichloropropane (2,5)		6 U	5		7 U		6 U		6 U	5
cis-1,3-Dichloropropene (2,5)		6 U	5		7 U		6 U		6 U	5
Trichloroethene (2,5)		6 U	5		7 U		6 U		6 U	5
Dibromochloromethane (2,3)		6 U	5		7 U		6 U		6 U	5
1,1,2-Trichloroethane (2,5)		6 U	5		7 U		6 U		6 U	5
Benzene (2,3)		6 U	5		7 U		6 U		6 U	5
trans-1,3-Dichloropropene (2,5)		6 U	5		7 U		6 U		6 U	5
2-Chloroethyl vinyl ether (2,5)			10							10
Bromoform (2,5)		6 U	5		7 U		6 U		6 U	5

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

Table II.3 (Continued)
Data Table For Volatile Organic Compounds, Bldg. 51*
043 Limited Field Investigation

SAMPLE ID	0016-0001			0017-0001		0018-0001		0019-0001		
ANALYTE	Validated Data (a)	Form I Data (b)	OPEA Data (c)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (a)	OPEA Data (c)
4-Methyl-2-pentanone (2,3)		13 U	10		14 U		13 U		12 U	10
2-Hexanone (2,5)		13 U	10		14 U		13 U		12 U	10
Tetrachloroethene (2,3)		6 U	5		7 U		6 U		6 U	5
1,1,2,2-Tetrachloroethane (2,5)		6 U	5		7 U		6 U		6 U	5
Toluene (2,3)		6 U	25		7 U		6 U		6 U	16
Chlorobenzene (2,5)		6 U	14		7 U		6 U		6 U	12
Ethylbenzene (2,3)		6 U	8		7 U		6 U		6 U	6
Styrene (2,5)		6 U	5		7 U		6 U		6 U	6
Xylene (total) (2,3)		6 U	37		7 U		6 U		6 U	28

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

Key

* All data presented in micrograms per kilogram (ug/kg).

(a) OU3 Data Validation Results.
(b) OU3 Limited Field Investigation Analytical Results.
(c) Ohio EPA split sample results.

B = Analyte detected in laboratory blank.
J = Estimated value.
U = Compound was analyzed for but not detected. The number is the method detection limit for the sample.

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Table II.4
Data Table For Semivolatile Organic Compounds, Bldg 51*
OU3 Limited Field Investigation

SAMPLE ID	0016-0001		0017-0001		0018-0001		0019-0001	
ANALYTE	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)
3-Nitroaniline (2,5)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
Acenaphthene (2,5)	420 UJ	420 U	47 J	47 J	420 UJ	420 U	400 UJ	400 U
2,4-Dinitrophenol (2,5)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
4-Nitrophenol (2,5)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
Dibenzofuran (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2,4-Dinitrotoluene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Diethylphthalate (2,5)	420 UJ	270 BJ	450 UJ	290 BJ	420 UJ	360 BJ	400 UJ	230 BJ
4-Chlorophenyl-phenylether (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Fluorene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
4-Nitroaniline (2,5)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
4,6-Dinitro-2-Methylphenol (2,5)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
N-Nitrosodiphenylamine (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
4-Bromophenyl-phenylether (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Hexachlorobenzene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Pentachlorophenol (2,3)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
Phenanthrene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Anthracene (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Di-n-Butylphthalate (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Fluoranthene (2,3)	420 UJ	420 U	160 J	160 J	420 UJ	420 U	400 UJ	400 U
Pyrene (2,3)	420 UJ	420 U	86 J	86 J	420 UJ	420 U	400 UJ	400 U
Butylbenzylphthalate (2,3)	420 UJ	420 U	48 J	48 J	420 UJ	420 U	400 UJ	400 U
3,3'-Dichlorobenzidine (2,5)	840 UJ	840 U	900 UJ	900 U	850 UJ	850 U	800 UJ	800 U
Benzo(a)Anthracene (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Chrysene (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
bis(2-Ethylhexyl)Phthalate (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

Table II.4 (Continued)
Data Table For Semivolatile Organic Compounds, Bldg 51*
OU3 Limited Field Investigation

SAMPLE ID	0016-0001		0017-0001		0018-0001		0019-0001	
ANALYTE	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)
Di-n-Octyl Phthalate (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Benzo(b)Fluoranthene (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Benzo(k)Fluoranthene (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
* Benzo(a)Pyrene (2,4)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Indeno(1,2,3-cd)Pyrene (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
* Dibenz(a,h)Anthracene (2,4)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Benzo(g,h,i)Perylene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Phenol (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
bis(2-Chloroethyl) Ether (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2-Chlorophenol (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
1,3-Dichlorobenzene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
1,4-Dichlorobenzene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Benzyl Alcohol (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
1,2-Dichlorobenzene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2-Methylphenol (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
bis(2-Chloroisopropyl)Ether (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
4-Methylphenol (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
N-Nitroso-Di-n-Propylamine (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Hexachloroethane (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Nitrobenzene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Isophorone (2,3)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2-Nitrophenol (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2,4-Dimethylphenol (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Benzoic Acid (2,5)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
bis(2-Chloroethoxy)Methane (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U

* ESTIMATED VALUE EXCEEDS GUIDELINE VALUE

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value

Table II.4 (Continued)
Data Table For Semivolatile Organic Compounds, Bldg 51*
OU3 Limited Field Investigation

SAMPLE ID	0016-0001		0017-0001		0018-0001		0019-0001	
ANALYTE	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)
2,4-Dichlorophenol (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
1,2,4-Trichlorobenzene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Napthalene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
4-Chloroaniline (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Hexachlorobutadiene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
4-Chloro-3-Methylphenol (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2-Methylnaphthalene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Hexachlorocyclopentadiene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2,4,6-Trichlorophenol (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2,4,5-Trichlorophenol (2,5)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
2-Chloronaphthalene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2-Nitroaniline (2,5)	2000 UJ	2000 U	2200 UJ	2200 U	2100 UJ	2100 U	1900 UJ	1900 U
Dimethyl Phthalate (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
Acenaphthylene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U
2,6-Dinitrotoluene (2,5)	420 UJ	420 U	450 UJ	450 U	420 UJ	420 U	400 UJ	400 U

Key

* All data presented in micrograms per kilogram (ug/kg) ppb

(a) OU3 Data Validation Results.
(b) OU3 Limited Field Investigation Analytical Results.

B = Analyte detected in laboratory blank.
J = Estimated value.
U = Compound was analyzed for but not detected. The number is the method detection limit for the sample.

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

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Table II.5
Data Table For Pesticides and PCBs, Bldg 51*
OU3 Limited Field Investigation

SAMPLE ID	0016-0001			0017-0001		0018-0001		0019-0001			0019-1001	
ANALYTE	Validated Data (a)	Form I Data (b)	OEPA Data (c)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	OEPA Data (c)	Validated Data (a)	Form I Data (b)
alpha-BHC	2.5 UJ	2.5 U	8 U	2.7 UJ	2.7 U	2.6 UJ	2.6 U	2.4 UJ	2.4 U	20 U	2.6 UJ	2.6 U
beta-BHC	5.1 UJ	5.1 U	8 U	5.5 UJ	5.5 U	5.1 UJ	5.1 U	4.9 UJ	4.9 UY	20 U	5.1 UJ	5.1 UY
delta-BHC	14 J	14 X	8 U	8.2 UJ	8.2 U	7.7 UJ	7.7 U	7.3 UJ	7.3 UY	20 U	8.6 UJ	8.6 UZ
gamma-BHC (Lindan	3.4 UJ	3.4 U	8 U	3.7 UJ	3.7 U	3.5 UJ	3.5 U	3.3 UJ	3.3 U	20 U	3.4 UJ	3.4 U
Heptachlor	2.5 UJ	2.5 U	8 U	2.7 UJ	2.7 U	2.6 UJ	2.6 U	2.4 UJ	2.4 U	20 U	2.6 UJ	2.6 U
Aldrin	3.4 UJ	3.4 U	8 U	3.7 UJ	3.7 U	3.5 UJ	3.5 U	3.3 UJ	3.3 U	20 U	3.4 UJ	3.4 U
Heptachlor epoxide	70 UJ	70 U	8 U	76 UJ	76 U	71 UJ	71 U	68 UJ	68 U	20 U	71 UJ	71 U
Endosulfan I	12 UJ	12 U	8 U	13 UJ	13 U	12 UJ	12 U	11 UJ	11 U	20 U	12 UJ	12 U
Dieldrin	1.6 UJ	1.6 U	8 U	1.8 UJ	1.8 U	1.7 UJ	1.7 U	1.6 UJ	1.6 U	33 U	1.7 UJ	1.7 U
4,4'-DDE	3.4 UJ	3.4 U	17 U	3.7 UJ	3.7 U	3.5 UJ	3.5 U	3.3 UJ	3.3 U	33 U	3.4 UJ	3.4 U
Endrin	5.1 UJ	5.1 U	17 U	5.5 UJ	5.5 U	5.1 UJ	5.1 U	4.9 UJ	4.9 U	33 U	5.1 UJ	5.1 U
Endosulfan II	3.4 UJ	3.4 U	17 U	3.7 UJ	3.7 U	3.5 UJ	3.5 U	3.3 UJ	3.3 U	33 U	3.4 UJ	3.4 UY
4,4'-DDD	9.4 UJ	9.4 U	17 U	10 UJ	10 U	9.5 UJ	9.5 U	9.0 UJ	9.0 U	33 U	9.4 UJ	9.4 U
Endosulfan sulfate	56 UJ	56 U	17 U	60 UJ	60 U	57 UJ	57 U	54 UJ	54 U	33 U	56 UJ	56 U
4,4'-DDT	10 UJ	10 U	17 U	11 UJ	11 U	10 UJ	10 U	9.7 UJ	9.7 U	33 U	10 UJ	10 U
Methoxychlor	150 UJ	150 U	83 U	160 UJ	160 U	150 UJ	150 U	140 UJ	140 U	170 U	150 UJ	150 U
Endrin ketone	20 UJ	20 U	17 U	22 UJ	22 U	21 UJ	21 U	20 UJ	20 U	33 U	20 UJ	20 U
alpha-chlordane	12 UJ	12 U	83 U	13 UJ	13 U	12 UJ	12 U	11 UJ	11 U	170 U	12 UJ	12 U
gamma-chlordane	12 UJ	12 U	83 U	13 UJ	13 U	12 UJ	12 U	11 UJ	11 U	170 U	12 UJ	12 U
Toxaphene	200 UJ	200 U	165 U	220 UJ	220 U	210 UJ	210 U	200 UJ	200 U	330 U	200 UJ	200 U
Aroclor-1016	100 UJ	100 U	83 U	110 UJ	110 U	100 UJ	100 U	97 UJ	97 U	170 U	100 UJ	100 U
Aroclor-1221	100 UJ	100 U	83 U	110 UJ	110 U	100 UJ	100 U	97 UJ	97 U	170 U	100 UJ	100 U
Aroclor-1232	100 UJ	100 U	83 U	110 UJ	110 U	100 UJ	100 U	97 UJ	97 U	170 U	100 UJ	100 U
Aroclor-1242	100 UJ	100 U	83 U	110 UJ	110 U	100 UJ	100 U	97 UJ	97 U	170 U	100 UJ	100 U
Aroclor-1248	100 UJ	100 U	83 U	110 UJ	110 U	100 UJ	100 U	97 UJ	97 U	170 U	100 UJ	100 U
Aroclor-1254	200 UJ	200 U	165 U	220 UJ	220 U	200 UJ	200 U	190 UJ	190 U	330 U	200 UJ	200 U
Aroclor-1260	200 UJ	200 U	165 U	220 UJ	220 U	200 UJ	200 U	190 UJ	190 U	330 U	200 UJ	200 U
Endrin aldehyde	20 UJ	20 U		21 UJ	21 U	20 UJ	20 U	19 UJ	19 U		20 UJ	20 U

Key

* All data presented in micrograms per kilogram (ug/kg). ppb

(a) OU3 Data Validation Results.
(b) OU3 Limited Field Investigation Analytical Results.
(c) Ohio EPA split sample results.

U = Compound was analyzed for but not detected. The number is the method detection limit for the sample.
X = Quantitation performed from secondary column.
Y = Detection limit determined from secondary column. Peaks observed on primary column quantitated at less than the CRDL on the secondary column.
Z = No analytical result reported for this compound.

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

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Table II.6
Data Table For Inorganics, Bldg. 51*
OU3 Limited Field Investigation

SAMPLE ID	0016-0001			0017-0001		0018-0001		0019-0001			0019-1001	
ANALYTE	Validated Data (a)	Form I Data (b)	OEPA Data (c)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)	OEPA Data (c)	Validated Data (a)	Form I Data (b)
Aluminum (5)		18100	930		20000		22300		19200	1200		18900
Antimony (2,3)	6.1 U	6.1 B	<10		5.9 U		5.7 U		5.4 U	<10		5.7 U
Arsenic (3)	10.5 J	10.5	2.2		13.3		11.3		7.5	2.3		8.0
Barium (1,3)		72.0	45		70.9		89.7		82.1	45		86.2
* Beryllium (4)		0.90	1		0.94		0.90		0.87	1		0.92
Cadmium (1,3)	0.50 UJ	0.50 U	<0.5	0.52 UJ	0.52 U	0.51 UJ	0.51 U	0.48 UJ	0.48 U	<0.5	0.51 UJ	0.51 U
Calcium (1,5)	53700 J	53700	40000	15300 J	15300 B	11300 J	11300 B	26200 J	26200	32000		56400
Chromium (3)		18.5	12		21.8		23.7		19.9	15		20.5
Cobalt (1)		10.6	8		12.8		13.4		12.8	10		11.2
Copper (5)	20.4 J	20.4	14	26.0 J	26.0	20.2 J	20.2	28.0 J	28.0	16	38.2 J	38.2
Iron (1,5)	25100 J	25100	19000	34100 J	34100	33200 J	33200	30000 J	30000	27000	26500 J	26500
Lead (1,3)		23.9	10		20.3		20.3		19.6	10		21.9
Magnesium (1,5)	16000 J	16000	9800	8600 J	8600	5560 J	5560	8940 J	8940	6600	18000 J	18000
Manganese (1,3)		517	480		683		1030		867	530		483
Mercury (2,3)		0.06 U	<0.25		0.06 U		0.06 U		0.28	<0.25		0.37
Nickel (1,3)	22.1 J	22.1	15	28.2 J	28.2	22.0 J	22.0	20.3 J	20.3	19	23.0 J	23.0
Petroleum Hydrocarbons (2,5)			<25							<25		
Percent Solids (%) (2,5)			79							80		
Potassium (5)		4200	1300		4260		4650		4080	1400		4670
Selenium (2,5)	1.7 J	1.7	0.3	1.9 J	1.9	1.6 J	1.6	1.4 J	1.4	0.2	1.7 J	1.7
Silver (1,3)	0.62 U	0.62 B	<2	0.94 U	0.94 B	0.38 UJ	0.38 U	0.86 U	0.86 B	<2	0.83 U	0.83 B
Sodium (5)		309 B	150		161 B		237 B		232 B	160		262 B
Thallium (1,5)		0.27 B	<0.25		0.42 B		0.24 B		0.21 B	<0.25		0.27 B
Vanadium (3)		28.4	41		33.5		38.4		27.9	32		27.2
Zinc (1,3)		74.0	44		91.6		74.0		94.0	50		112
Cyanide (1)		0.63 U			0.68 U		0.64 U		0.61 U			0.63 U

* EXCEEDS GUIDELINE VALUE

Key

* All data presented in milligrams per kilogram (mg/kg).

(a) OU3 Data Validation Results.
(b) OU3 Limited Field Investigation Analytical Results.
(c) Ohio EPA split sample results

B = Analyte detected in laboratory blank.
J = Estimated value.
U = Compound was analyzed for but not detected. The number is the method detection limit for the sample.

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

validation and quality assessment of the data will be presented in the OU3 LFI Report.

According to the preliminary OU3 data quality assessment presented in Appendix C, analytical data generated in the OU3 LFI are of sufficient quality for the purposes of this report, that is, the data will support a meaningful comparison with regulatory or health-based thresholds.

3. DISCUSSION

3.1. COMPARISON OF SAMPLING AND ANALYSIS EFFORTS AND RESULTS

Upon review of the analytical data provided in Section 2.2., it is evident that EP tank removal results and OU3 LFI results cannot be directly compared. Tank removal results reflect the OEPA data requirements for closure of a UST site. Alternately, the OU3 LFI data includes parameters of concern to the CERCLA RI/FS effort at Mound Plant. In order to conservatively evaluate the tank site soils, the two data sets are considered to be cumulative to form a single, larger analytical resource. There are, however, certain differences between the investigation results that must be discussed.

As described in Section 2.1., samples taken as part of EP tank removal activities were collected just after the tank had been removed from the ground. These sample results would accordingly reflect the condition of relatively undisturbed excavation soils. In addition, EP tank removal samples included soils from directly beneath the center of the tank above the concrete pad and from roughly the depth of the pad at two ends. Consequently, these samples were collected near the tank and conceivably represent soils most recently contaminated with the tank contents. At the time of the tank excavation, staining was also reported on the bottom of the excavation cavity, however, no groundwater or product was seen in the excavation. Low PID readings were recorded (10 to 15 ppm).

In contrast, OU3 LFI samples were taken after the tank excavation had remained open for nearly 9 months, which had the unplanned result of allowing contaminants to volatilize and biodegrade, and also potentially be flushed or diluted to some degree by precipitation. Furthermore, OU3 LFI samples were collected deeper than the EP tank removal samples, which should cause the OU3 LFI samples to reflect soils contaminated by materials released at an earlier point in time than those of the tank removal samples. Because contaminant concentrations reported in the OU3 LFI results are overall much lower than those reported from EP tank removal activities and because the OU3 LFI results were from deeper samples, and because of the physical evidence noted at the time of the tank removal, the extent of contamination may be very limited. OU3 LFI samples did not include soil from the top of the tank pad.

Although analytical parameters differed somewhat between the two investigations, both included testing for VOCs, cyanide, PCBs, and metals; some of the specific parameters also varied. In addition, the OU3 LFI included testing for SVOCs, which would roughly correspond with the TPH testing performed in the tank removal investigation, as both analyses may provide data reflecting the presence of potentially hazardous heavy hydrocarbon compounds.

EP tank removal results (Table II.2) report chloroform in a concentration of 21 μg/kg on top of the tank pad and at the end of the tank pad near Building 51. Trichloroethylene was also detected in these samples in concentrations ranging from 53 μg/kg at the Building 51 end of the pad to 210 μg/kg on top of the pad (Figure 2.2). Neither chloroform nor trichloroethylene was detected in the OU3 LFI analyses. The OU3 LFI analyses did, however, report finding acetone in concentrations up to 25 μg/kg, carbon disulfide in an estimated concentration of 4 μg/kg, and 2-butanone (methyl ethyl ketone) in concentrations of up to 70 μg/kg.

With the exception of phenol, which was not detected, and TPH, EP tank removal analyses did not include SVOCs. OU3 LFI results report several SVOCs in trace concentrations, estimated below the nominal detection limits and also several tentatively identified compounds (TIC). Appendix B presents the analyte results for the OU3 testing including SVOCs, which report the qualitative detection of some unknown hydrocarbons. Because the instrument run times were relatively long for these TICs, it appears that they represent various heavy hydrocarbon compounds. The numeric concentrations of these TICs are estimated and cannot be compared with the concentrations of TPH reported in the tank removal results; however, the TICs may indicate that TPH detected in tank site soils consists of hydrocarbon compounds not identified as a concern in the Mound Plant RI/FS efforts and not included in the VOC target analyte list.

As described in Section 2.2., various metals were detected in tank site soils in both investigations; however, because metals are common, naturally occurring soil constituents, the concentrations detected may only reflect background soil levels. At this time, background soil chemistry information is not yet available for Mound Plant and concentrations of metals detected at the tank site must be regarded as contaminants.

A notable exception is beryllium, which was detected in the OU3 LFI analysis and is not likely to be found in background soils. The beryllium found in the former tank site soils is probably the result of an ineffective air filtration system used in Mound Plant manufacturing activities, such as the use of cutting oils containing trace amounts of beryllium in machining area operations from roughly 1953 to 1965 (DOE, 1991d) and is not thought to be a tank-related contaminant.

3.2. REMOVAL ACTION EVALUATION

Since the concentration of contaminants in the soil at the Building 51 tank site are relatively low, there is need to question whether a removal action is necessary (see Section 1.1.1.). CERCLA requirements specified in 40 CFR 300.410(e) indicate that a removal site evaluation should be terminated when:

(1) There is no release;

(2) The source is neither a vessel nor a facility as defined in 40 CFR 300.5 of the NCP;

(3) The release involves neither a hazardous substance, nor a pollutant or contaminant that may present an imminent and substantial danger to public health or welfare;

(4) The release is of a naturally occurring material, contained within structure, or results only from ordinary use-deterioration of a water supply and there is no other authority to respond in a capable and timely manner;

(5) The amount, quantity, or concentration released does not warrant federal response;

(6) A party responsible for the release, or any other person, is providing appropriate response, and on-scene monitoring by the government is not required; or

(7) The removal site evaluation is completed.

The decision to terminate a removal evaluation is commonly completed on the basis of available information as a conceptual exercise. The information is evaluated to determine whether an "imminent and substantial danger to the public health and welfare" exists. At the Building 51 former tank site, contaminants at the site are currently buried 9 feet or more bgs. Therefore, there is no likelihood of significant exposure to human populations or animals through the following pathways:

- Direct ingestion of contaminated soil or dust.
- Inhalation of contaminants from fugitive dust emissions.
- Contaminant exposure resulting from surface water run-off to sources of drinking water or recreation (streams, lakes).
- Uptake and subsequent biomagnification of contaminants from soil by native vegetation.

The only pathway of possible significance is contamination of groundwater. Although the Building 51 former tank site was not investigated as a potential source of groundwater contamination in the OU3 LFI, this pathway is not expected to present an imminent hazard for the following reasons:

- Concentrations of contaminants in soils at the 7 to 10 foot bgs level are relatively low as described in Section 3.1.
- Based on physical evidence (see Section 3.1.), the total volume of released contaminants from the Building 51 tank is expected to be small.

- Total depth to groundwater is expected to be approximately 56 feet based on nearby monitoring wells (DOE, 1992b). Migration of contaminants through the unsaturated soil zone will result in a significant decrease in the concentration of contaminants.

- No drinking water wells are currently present in the vicinity of the Building 51 site.

Therefore, because there is no imminent and substantial danger to the public health or welfare, the criterion to terminate the removal site evaluation has been met and a removal action is not necessary.

3.3. DETERMINATION OF A NEED FOR FURTHER INVESTIGATION OR REMEDIATION

As stated in Section 1.1.2., the second objective of this report is to provide a preliminary determination of the need to conduct further investigation or remedial actions at the Building 51 former tank site. Because action levels based on ARARs or on risk studies have not yet been established at Mound Plant, possible action levels were established based on available regulatory and policy thresholds.

As discussed in Section 1.[illegible] final interpretation and reporting of all OU3 data is pending. Proposal of ARARs in accordance with the FFA will be made in conjunction with the latter report. The following discussion is provided only to place the Building 51 results in context and support a decision about whether further action in the form of investigations or remediations is needed at this time.

With respect to ARAR determinations, the Mound Plant FFA, Section XII (F)(1), states that:

> For those primary documents or secondary documents that consist of or include ARAR determinations...the project managers shall meet to identify and propose...all potential ARARs pertinent to the report being addressed.

CERCLA § 121(d) requires that ARARs be complied with when performing remedial responses. "Applicable requirements," as defined in 40 CFR 300.5, mean:

> Those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.

3.3.2. Possible Action Levels

As discussed in Section 3.3.1., chemical-specific ARARs for contaminated soils do not currently exist. In order to discuss action levels for this report, the EPA-proposed rule of 40 CFR Part 264 Subpart S, Corrective Action for Solid Waste Management Units (55 FR 30798) has been referenced. Specifically, the action level criteria for contaminated soil found in Appendix A (55 FR 30865) have been identified for contaminants apparently released from the Building 51 waste tank. Table III.1 presents a list of the contaminants together with possible action levels. Because many of the chemicals identified had not been assigned action levels in the proposed Subpart S rule, possible action levels were calculated by using chronic oral reference doses (RfD) and carcinogenic slope factors (CSF) taken from the EPA Health Effects Assessment Summary Tables, First Quarter, FY-1991 (EPA, 1991) and by using the risk formulas for carcinogens and systemic toxicants provided in Appendix E of the proposed rule (55 FR 30870) based on an ingestion route of exposure. The lowest concentration threshold for each potential contaminant, whether taken from the proposed rule tables or calculated, are presented in Table III.1. Ensuring that Building 51 waste tank contaminants exist in concentrations not greater than the levels presented in Table III.1 will provide for a carcinogenic risk of 10^{-6} or less for each carcinogen. Similarly, if contaminant concentrations are below Table III.1 thresholds, they are also below adverse effect levels for systemic toxicants.

If it becomes necessary to remove contaminated soils from the Building 51 tank site, ARARs governing the management and disposal of such soils would have to be proposed. These ARARs might include compliance with the Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions (LDR) in 40 CFR Part 268 for activities involving on-site placement of hazardous wastes or treatment prior to land disposal. If the contaminants in the soils can be identified as hazardous wastes, the soils would require testing to determine if waste constituents are present in excess of applicable treatment standards. These treatment standards are hazardous waste code-specific and indicate the maximum concentration of waste constituents allowable in wastes to be land disposed. An example of a hazardous waste code that might be applied to tank site soil contaminants is F039, multi-source location. In essence, F039 applies to leachate, or waste containing leachate, derived from a hazardous waste management unit that held hazardous wastes described by more than one waste code. F039 treatment standards for each of the constituents detected in Building 51 tank soils are provided in Table III.1. While no hazardous waste code determinations have been made for the soil constituents, the F039 standards are presented because they provide a good example of potential treatment standards.

Table III.1
Summary of Compounds Detected in Mound Plant Bldg. 51 Waste Storage
Tank Soils Compared with Selected Regulatory Thresholds

PARAMETER	UNIT	16-0001	17-0001	18-0001	19-0001	19-1001	BMBEC	BMMOC	BMLEC	OEPA01	OEPA01	OEPA PETROLEUM SOIL CLEANU POLICY (ug/kg)	PROPOSED 264 SUBPART S (mg/kg)	F039 TREATMENT STANDARD IN LDRs (a)
1,1,1-Trichloroethane	ug/kg	6U	7U	6U	6U		<25	<25	<25	7	5		7000	5.6 mg/kg
Acenaphthene	ug/kg	420UJ	47J	420UJ	400UJ								4800	4 mg/kg
Acetone	ug/kg	69U	240	250	200B		<500	<500	<500	440	170		8000	160 mg/kg
Aluminum	mg/kg	18100	20000	22300	19200	18900				930	1200		(b)	
Arsenic	mg/kg	10.5J	13.3	11.3	7.5	8.0	2.3	2.4	5.8	2.2	2.3		80	5 mg/L
Barium	mg/kg	72	70.9	89.7	82.1	86.2	16	8.5	38	45	45		4000	52 mg/L
Beryllium	mg/kg	0.90	0.94	0.90	0.87	0.92				1	1		0.2	
Butylbenzylphthalate	ug/kg	420UJ	48J	420UJ	400UJ								20000	7.9 mg/kg
Cadmium	mg/kg	0.5UJ	0.52UJ	0.51UJ	0.48UJ		0.61	0.44	0.41	<0.5	<0.5		40	0.06 mg/L
Calcium	mg/kg	53700J	15300J	11300J	26200J	56400				40000	32000		(b)	
Carbon disulfide	ug/kg	6U	4J	6U	6U					5	5		8000	
Chlorobenzene	ug/kg	6U	7U	6U	6U					14	12		2000	5.7 mg/kg
Chloroform	ug/kg	6U	7U	6U	6U		21	21	<10	5	5		100	5.6 mg/kg
Chromium	mg/kg	18.5	21.8	23.7	19.9	20.5	4.8	3.8	20	12	15		400	5.2 mg/L
Cobalt	mg/kg	10.6	12.8	13.4	12.8	11.2				8	10		(b)	
Copper	mg/kg	20.4J	26.0J	20.2J	28.0J	38.2J				14	16		2960	
Ethylbenzene	ug/kg	6U	7U	6U	6U		<2	<2	<2	8	6	6000	8000	6 mg/kg
Fluoroanthene	ug/kg	420UJ	160J	420UJ	400UJ								3200	8.2 mg/kg
Iron	mg/kg	25100J	34100J	33200J	30000J	26500J	5000	4800	21000	19000	27000		(b)	
Lead	mg/kg	23.9	20.3	20.3	19.6	21.9	6.1	2.3	6.4	10	10		(b)	0.51 mg/L
Magnesium	mg/kg	16000J	8600J	5560J	8940J	18000J				9800	6600		(b)	
Manganese	mg/kg	517	683	1030	867	483	100	120	470	480	530		8000	
Mercury	mg/kg	0.06U	0.06U	0.06U	0.28	.037	0.17	0.06	0.03	<0.25	<0.25		20	0.025 mg/L
Methyl Ethyl Ketone (2-butanone)	ug/kg	18	70	59	53		<1000	<1000	<1000	190	100		4000	36 mg/kg
Methylene chloride	ug/kg	6U	7U	6U	6U		<50	<50	<50	940	430		90	33 mg/kg

TABLE III.1 (Continued)
Summary of Compounds Detected in Mound Plant Bldg. 51 Waste Storage
Tank Soils Compared with Selected Regulatory Thresholds

PARAMETER	UNIT	16-0001	17-0001	18-0001	19-0001	19-1001	BMBEC	BBMOC	BMLEC	OEPA01	OEPA01	OEPA PETROLEUM SOIL CLEANU POLICY (ug/kg)	PROPOSED 264 SUBPART S (mg/kg)	F039 TREATMENT STANDARD IN LDRs (a)
Nickel	mg/kg	22.1J	28.2J	22.0J	20.3J	23.0J				15	19		2000	0.32 mg/L
PCBs	ug/kg	U(b)	U(b)	U(b)	U(b)		0.12PCB1254	<0.04	<0.04	U(b)	U(b)		0.09	
Potassium	mg/kg	4200	4260	4650	4080	4670				1300	1400		(c)	
Pyrene	ug/kg	420UJ	86J	420UJ	400UJ								24000	8.2 mg/kg
Selenium	mg/kg	1.7J	1.9J	1.6J	1.4J	1.7J	<0.4	<0.4	<0.4	0.3	0.2		(c)	5.7 mg/L
Sodium	mg/kg	309B	161B	237B	232B	262B	95	140	<10	150	160		(c)	
Thallium	mg/kg	0.27B	0.42B	0.24B	0.21B	0.27B				<0.25	<0.25		5.6	
Toluene	ug/kg	6U	7U	6U	6U		<2	<2	<2	25	16	4000	20000	28 mg/kg
Total Petroleum Hydrocarbons	mg/kg						75	560	35	<25	<25	40000		
Total Solids	%						93	96	87	79	80			
Trichloroethylene	ug/kg	6U	7U	6U	6U		53	210	<25	5	5		60	5.6 mg/kg
Vanadium	mg/kg	28.4	33.5	38.4	27.9	27.2				41	32		560	
Xylene	ug/kg	6U	7U	6U	6U		<2	<2	<2	37	28	28000	200000	28 mg/kg
Zinc	mg/kg	74.0	91.6	74.0	94.0	112				44	50		16000	
Delta-BHC	ug/kg	14J	8.2UJ	7.7UJ	7.3UJ					8U	20U		24	0.066 mg/kg
pH	S.U.						8.7	8.8	7.7					

Key

16-0001: IT Labs' split, sample #016
17-0001: IT Labs' split, sample #017
18-0001: IT Labs' split, sample #018
19-0001: IT Labs' split, sample #019

BMBEC: Bowser-Morner Sample, Building End of Cavity
BMMOC: Bowser-Morner Sample, Middle of Cavity
BMLEC: Bowser-Morner Sample, Lot End of Cavity
OEPA016: Ohio EPA's split, sample #016
OEPA019: Ohio EPA's split, sample #019

(a) When units are mg/L, treatment standard is concentration in extract.
(b) See laboratory results in Appendix B
(c) No oral Rfd or carcinogenic slope factor found.
Standard was not available, nor could it be calculated.

B = Analyte detected in laboratory blank
J = Estimated value
mg/kg = milligram per kilogram
mg/L = milligram per liter
mg/kg = microgram per kilogram
S.V. = Standard Units
U = Compound was analyzed for but not detected. The number is the method detection limit for the sample.

r:\projects\dess\mound\mound51.wq1

In the event that soil constituents would be found not to be hazardous wastes, petroleum hydrocarbon concentrations could be compared to those provided by the OEPA policy on petroleum-contaminated soils (OEPA, 1991). While not promulgated standards and therefore not ARARs, the OEPA thresholds do provide useful guidance and could be applied as TBCs; OEPA petroleum-contaminated soil standards are presented in Table III.1. It should be noted that the OEPA standards are reportedly being revised and a new TPH threshold of 105 mg/kg will be implemented (Gaston, 1992).

When investigation results are compared with the 40 CFR 264 Subpart S action levels in Table III.1, only beryllium is found to exceed the action level and the remaining analytes detected were often at least an order of magnitude lower than the action levels. The OU3 LFI detected beryllium in concentrations ranging from 0.87 to 0.94 mg/kg, which exceed the action level of 0.2. Applying the equation used to derive the action level, the maximum beryllium detected equates to a carcinogenic risk of 5.8×10^{-6}.

For comparison purposes only, when investigation results are evaluated against land disposal standards, no constituents are found to exceed the standards. However, some of the standards are expressed as milligrams per liter in waste extract. Consequently, constituents for which these standards might apply cannot be evaluated with available data.

Finally, when investigation results are compared to the OEPA petroleum-contaminated soil standards, only the TPH results from the EP tank removal activities exceed the OEPA standard. However, as discussed in Section 3.1, toxic TPH compounds were not detected in significant concentration in VOC and SVOC analyses.

Consequently, although comparison of soil contaminant data to possible action levels indicates beryllium and petroleum hydrocarbons are somewhat elevated, the low concentrations of these parameters present minimal risk to human health or the environment. Accordingly, further investigation or remediation should not be necessary. This determination will be re-evaluated in the future as the overall RI/FS effort progresses and formal remediation goals are established.

3.4. FUTURE COMPARISON WITH ARARs AND RISK-BASED PRGs

The discussion in Section 3.3. comparing investigation results to possible action levels is intended to offer criteria by which to evaluate existing data. Section 1.1. of this report explains the objectives of determining the need for a removal action for the released hazardous substances and of offering a preliminary determination of the need to conduct further investigation [illegible] at the tank site.

4. CONCLUSIONS

On the basis of the review and discussion presented in Sections 1., 2., and 3., the following conclusions are evident:

- The EP tank removal investigation identified chloroform in soil samples at a concentration of 21 μg/kg, as well as trichloroethylene at 210 μg/kg. The only VOCs detected during the OU3 LFI were 2-butanone at a concentration of 70 μg/kg and acetone at 250 μg/kg.

- The EP tank removal investigation did not identify SVOCs in soil samples. Low levels of SVOCs found during the OU3 LFI included: butylbenzyl phthalate at an estimated concentration of 48 μg/kg, acenaphthene at 47 μg/kg, fluoranthene at 160 μg/kg, pyrene at 86 μg/kg, and delta-BHC at 14 μg/kg.

- The EP tank removal investigation found low levels of arsenic, barium, cadmium, chromium, lead, manganese, and mercury in soil samples. The OU3 LFI also found low levels of the same metals as well as aluminum, beryllium, cobalt, copper, iron, magnesium, nickel, vanadium, and zinc. Most of these metals could be expected as background in soils, however, this expectation cannot be confirmed because background samples have not been collected off the site. The exception to this is beryllium, which was found at levels up to 0.92 mg/kg and would not be expected in background soils.

- The beryllium found in former tank site soils is probably the result of Mound Plant manufacturing activities that have involved the metal from 1953 to 1965 and is not considered to be a tank-related contaminant.

- On the basis of a review of the Building 51 former tank site soil contaminant data from Mound Plant EP tank removal activities and from the OU3 LFI of the site, a removal action to address the contaminated soils is not necessary.

- Upon review of the potential exposure pathways as provided in Section 3.2., there is no imminent and substantial danger to the public or welfare and, pursuant to 40 CFR 300.410(e). The DOE is hereby concluding the removal site evaluation.

- Based on comparison to these possible action levels, it is concluded that no need exists to conduct further investigation at the Building 51 tank site nor will there be a need to conduct remedial actions. This conclusion will have to be re-evaluated based on the results of background sampling and as the site-specific action levels for the Mound Plant evolve from PRGs, ARAR determination, the Baseline Risk Assessment, and the Record of Decision. DOE has committed to retaining the tank site soil data in the OU3 Remedial Investigation where it will be addressed by the risk assessment/risk management process (DOE, 1992a).

ENVIRONMENTAL RESTORATION PROGRAM

MOUND PLANT UNDERGROUND STORAGE TANK PROGRAM PLAN AND REGULATORY STATUS REVIEW

MOUND PLANT

MIAMISBURG, OHIO

November 1992

DEPARTMENT OF ENERGY

ALBUQUERQUE OPERATIONS OFFICE

ENVIRONMENTAL RESTORATION PROGRAM

EG&G MOUND APPLIED TECHNOLOGIES

FINAL (REVISION 0)

As discussed above, the Building 27 waste flume was converted in 1985 to a hazardous waste generator accumulation tank that held waste for less than 90 days. The former settling sump served as secondary containment capacity for the flume. Use of the flume and the sump for this purpose was discontinued on October 1, 1991. Based on communications with the Waste Management Program, the tank system will be closed in accordance with the tank closure requirements applicable to RCRA hazardous waste generator tanks (Andersen, 1991b). Waste Management closure activities will be coordinated with the ER Program (FFA) which is currently conducting investigations in the area.

2.3.8. Building 34: Aviation Fuel Storage Tank (Tank 219)

A 5,000-gallon, unlined, steel tank was formerly used to supply aviation fuel to a container burn test unit. The tank was reportedly last used in 1972 and was removed by the Mound Plant Engineering Program in compliance with Ohio's BUSTR Program on November 27, 1990 (Andersen, 1990c). A preliminary closure assessment was conducted and the results indicated that hazardous fuel constituents had been released to the environment (Bowser-Morner, 1991). A BUSTR closure of the tank has not been completed and, accordingly, the tank is currently subject to BUSTR requirements.

Due to the apparent release, the potential threat posed to human health and the environment, and previous commitments, the tank has been assigned to ER Program Operable Unit 3. Analytical results from the Operable Unit 3 sampling of the site were documented in the ER Program Report "Closure Report, Building 34–Aviation Fuel Storage Tank." This "Closure Report" was submitted to the BUSTR with a request to close the file on the tank in September 1992.

2.3.9. Building 51: Waste Solvent Storage Tank (Tank 220)

A 1,000-gallon, unlined, steel tank was formerly used to store waste oil and some small quantities of solvents prior to incineration in Building 51. When the tank was last used in 1972, remaining waste solvents were pumped out and incinerated. Most incineration equipment in Building 51 was removed by 1975. The tank is reported to have been closed in place in accordance with standard industry practice in 1972 (Andersen, 1990c). The tank was removed on December 6, 1990, by the Mound Plant Engineering Program in compliance with Ohio's BUSTR Program. A preliminary closure assessment was conducted and the results indicated that hazardous substances had been released to the environment (Bowser-Morner, 1991). A BUSTR closure of the tank has not been completed and, accordingly, the tank is currently subject to BUSTR requirements.

Due to the apparent release, the potential threat posed to human health and the environment, and previous commitments, the tank has been assigned to ER Program Operable Unit 3. Analytical results

from the Operable Unit 3 sampling of the site are documented in the ER Program report "Closure Report, Building 51–Waste Storage Tank." This "Closure Report" was submitted to the BUSTR with a request to close the file on the tank in September 1992.

2.3.10. Building 43: Solvent Storage Tank (Tank 221)

This 1,000-gallon, stainless-steel tank was originally constructed to store acetone or alcohol solvents for use in Building 43. The stainless-steel tank reportedly has never been used and at removal still contained the water used in hydrostatic testing when the tank was installed (Burdg, 1991b). Laboratory results confirmed the contents to be deionized water (Bowser-Morner, 1991). The tank was closed by removal on November 29, 1990, in accordance with BUSTR requirements. Accordingly, because the tank has been removed and had only contained water, the tank should be deleted as a concern as a UST.

It should be noted that the Mound UST Plan (NUS, 1989) identified a 500-gallon solvent tank immediately adjacent to Building 43. When Mound Plant engineers visited the area to plan closure activities they found that there were two tanks in proximity to Building 43. The first was a 500-gallon concrete settling basin formerly used to process explosives production wastewaters from Building 43. The second was a 1,000-gallon stainless-steel tank installed to store solvents, but was never used. Consequently, there is no "500-gallon solvent tank," and Mound Plant has identified the 500-gallon concrete settling basin as Tank 201 and the 1,000-gallon stainless-steel tank as Tank 221 for the purposes of this document.

2.3.11. Building 58: Diesel Fuel Storage Tank (Tank 222)

This 3,000-gallon, unlined, steel tank was formerly used to supply diesel fuel to Emergency Generator Number 1. The tank is reported by Mound Plant personnel to have been closed by removal in December 1989 (Andersen, 1990c). As a closed tank site, the location will be investigated by the ER Program (FFA) in Operable Unit 2 to determine if evidence of a release exists.

2.3.12. Building 56: Diesel Fuel Storage Tank (Tank 223)

This 825-gallon, unlined steel tank was formerly used to supply diesel fuel to an emergency power generator. The tank is reported by Mound Plant site personnel to have been closed by removal in December 1989 (Andersen, 1990c). As a closed tank site, the location will be investigated by the ER Program (FFA) in Operable Unit 2 to determine if evidence of a release exists.

Document Control No._____

Environmental Restoration Program

OPERABLE UNIT 5
OPERATIONAL AREA PHASE I INVESTIGATION
NON-AOC FIELD REPORT

MOUND PLANT
MIAMISBURG, OHIO

VOLUME II - APPENDICES A-G

June 1995

Final (Revision 0)

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

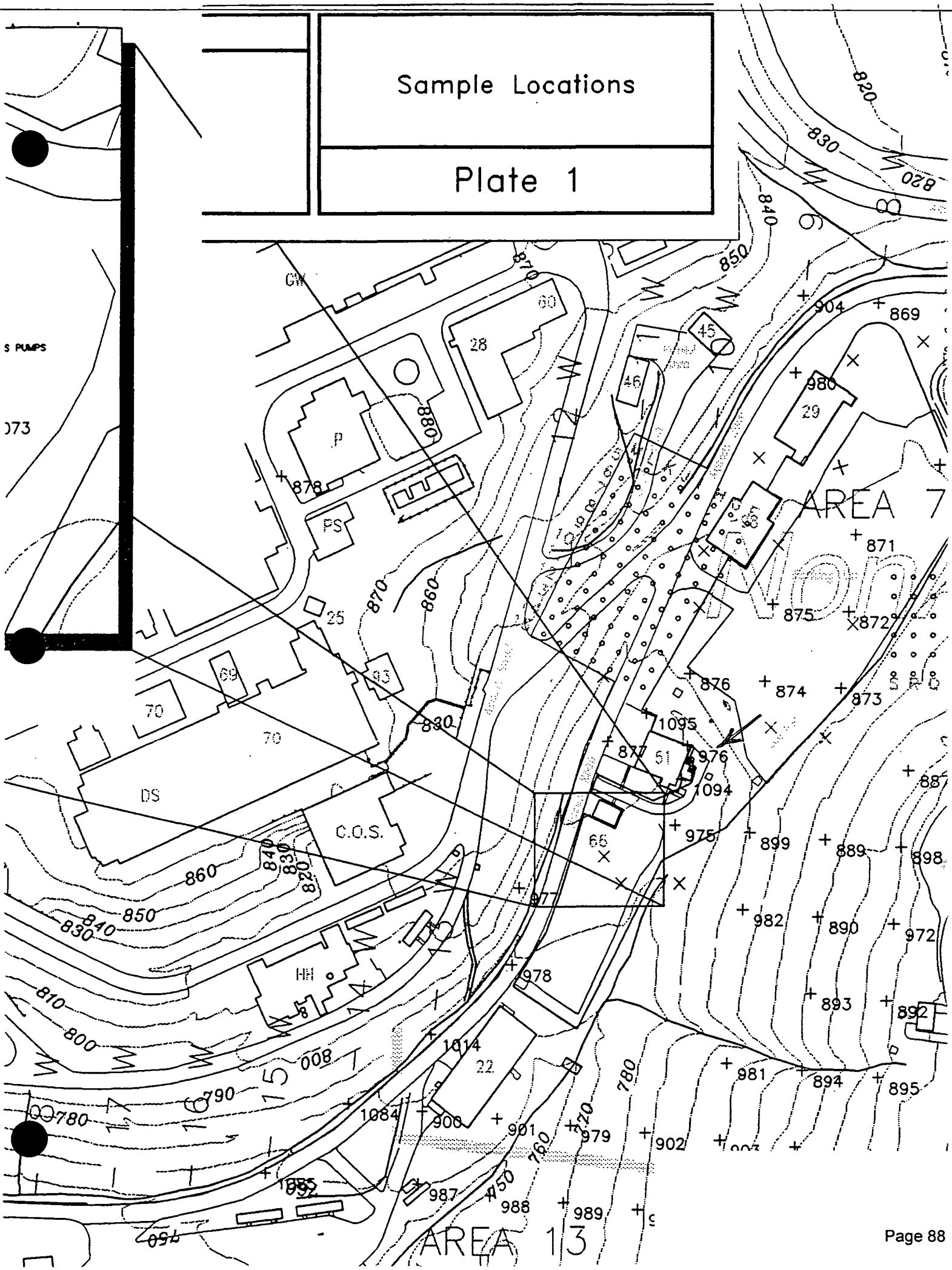
APPENDIX D

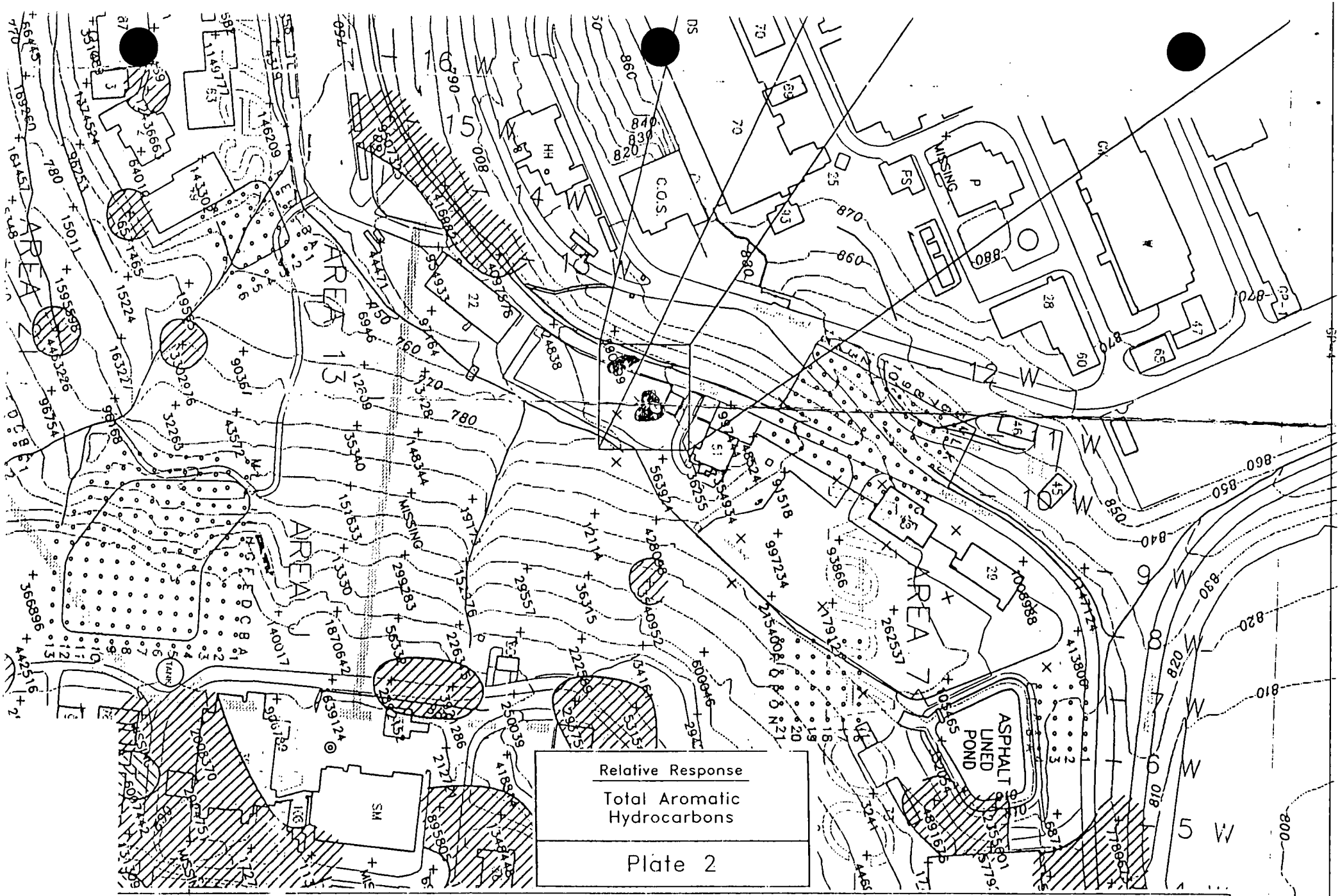
RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA) FOR NON-AOC POINTS

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
20N03	130	100	6.5	6.5	NC	0	a	0.3	a
20N04	176.8	110	8.97	7.5	NC	0	a	1.1	a
20N05	176.8	85	8.97	4.5	NC	WIPE	c	WIPE	c
20N06	176.8	375	8.97	22.0	30	27	b	2.6	b
20N07	176.8	325	8.97	22.5	45	37	b	14.7	b
20N10	157.3	95	8.45	4.5	NC	0	a	0.6	a
20N11	157.3	80	8.45	4.0	NC	WIPE	c	WIPE	c
21N01	253.5	140	12.48	9.5	NC	15	a	1	a
						3	a	0.8	a
21N02	176.8	140	8.97	6.5	NC	7	a	1	a
						19	a	0.7	a
21N03	176.8	160	8.97	8.0	NC	20	a	1.2	a
21N04	176.8	100	8.97	5.0	NC	9	a	0.5	a
21N05	152.1	110	8.45	10.0	NC	11	a	1.8	a
21N08	176.8	85	8.97	4.5	NC	WIPE	c	WIPE	c
21N09	176.8	75	8.97	4.5	NC	WIPE	c	WIPE	c
21N10	157.3	90	8.45	6.5	NC	19	a	0.9	a
22N01	253.5	145	12.48	8.5	NC	24	a	1.3	a
22N02	176.8	135	8.97	5.5	NC	3	a	0.6	a
22N03	176.8	115	8.97	6.0	NC	18	a	1.1	a
22N04	152.1	100	8.45	9.5	NC	19	a	2	b
22N05	152.1	105	8.45	8.0	NC	10	a	1.4	a
22N08	176.8	115	8.97	4.5	NC	WIPE	c	WIPE	c
22N09	176.8	95	8.97	6.0	NC	WIPE	c	WIPE	c
23N01	253.5	170	12.48	10.5	NC	25	b	0.8	a
23N02	176.8	160	8.97	5.0	NC	16	a	0.8	a
						26	b	1.0	a
23N03	152.1	115	8.45	5.5	NC	3	a	1.1	a
23N04	152.1	95	8.45	6.0	NC	12	a	0.7	a

Sample Locations

Plate 1





LEGEND

Relative Response Values (in ion counts):

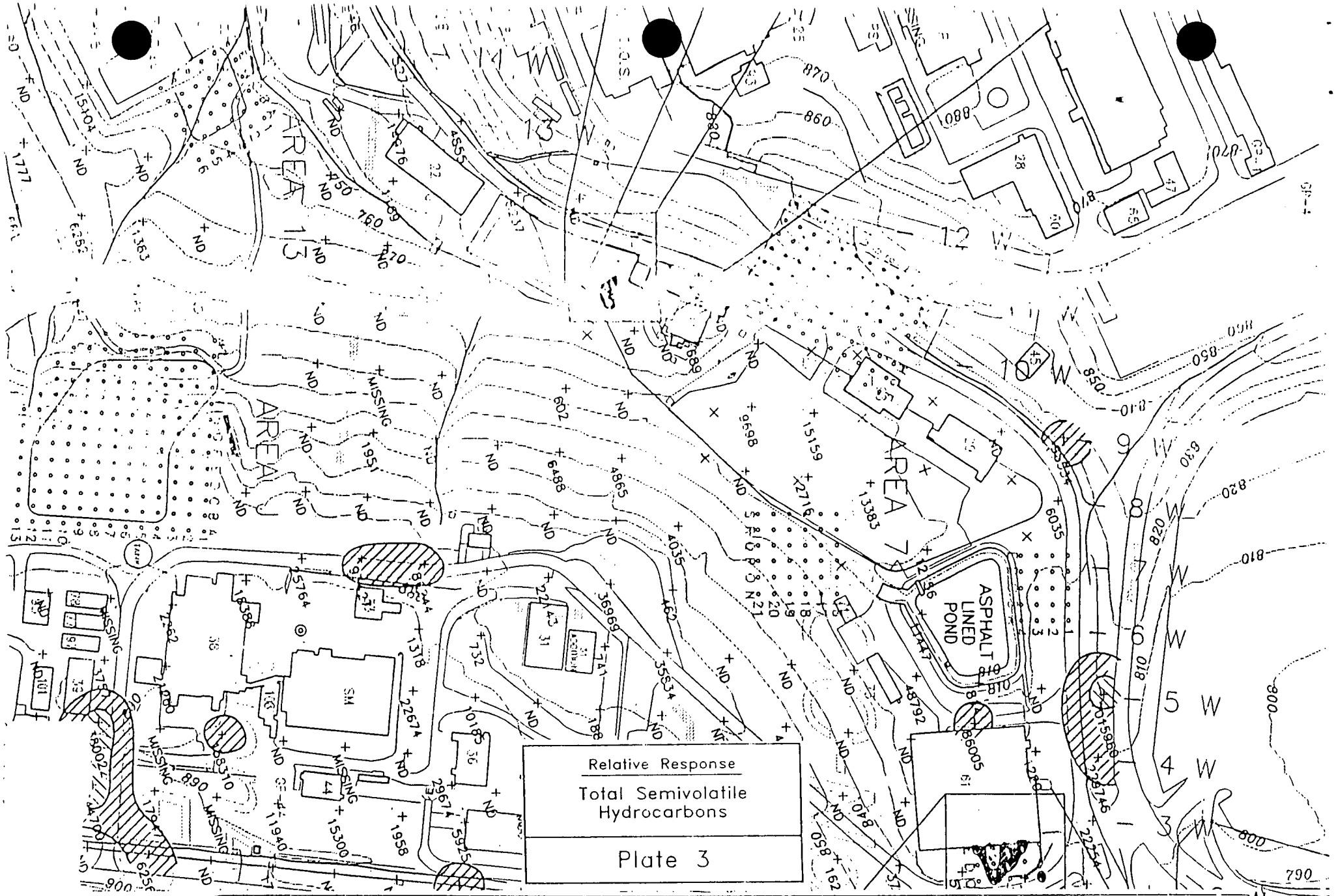
NonAOC-South	NonAOC-West	NonAOC-East	NonAOC-North	Area 61
≥ 4,200,000	≥ 20,000,000	≥ 5,000,000	≥ 10,000,000	≥ 5,800,000
850,000-4,199,999	2,600,000-19,999,999	850,000-4,999,999	1,500,000-9,999,999	1,400,000-5,799,999

Features:

+ PETREX Sample Location

ND Not Detected

T Denotes interference by terpenes; see text.



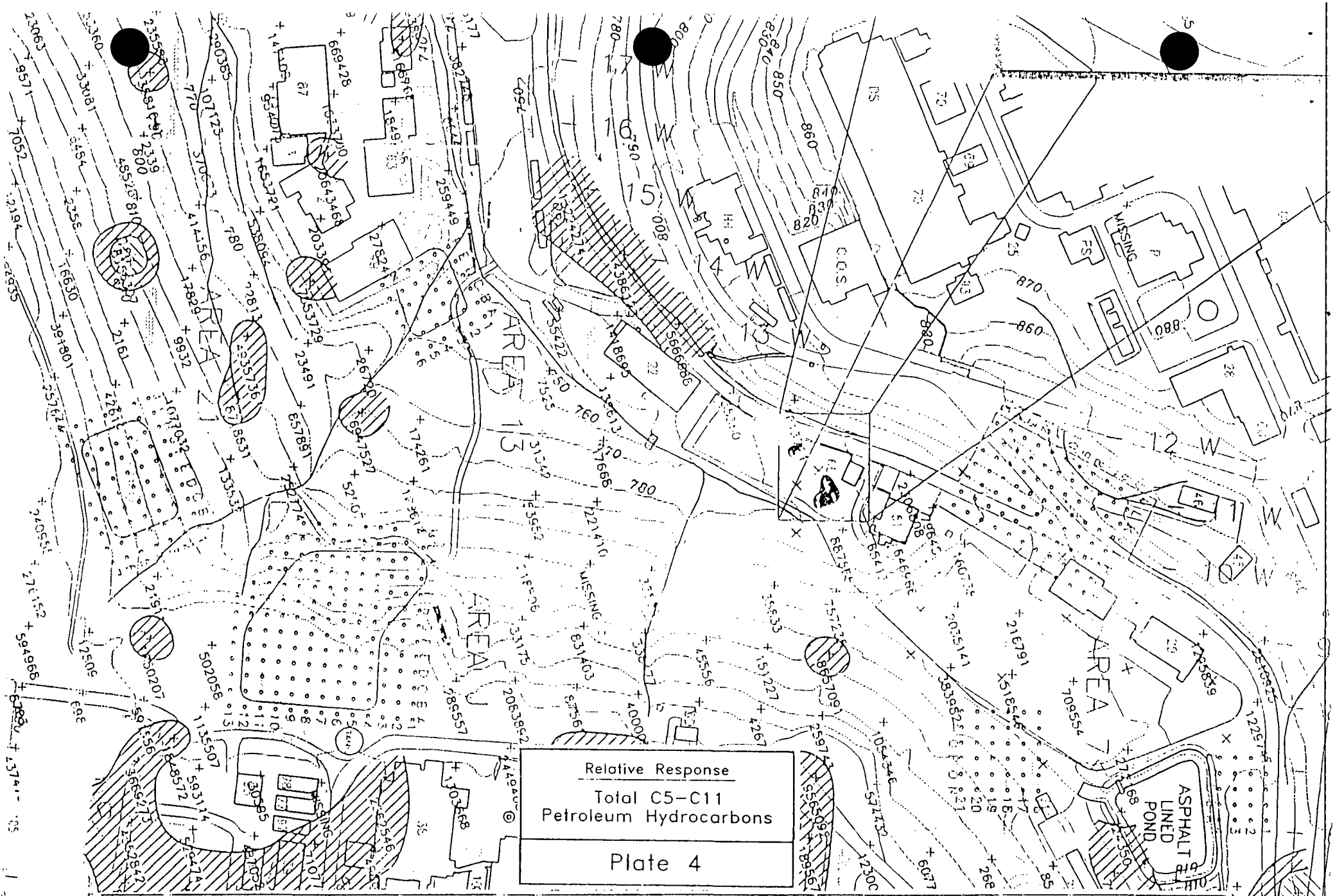
Relative Response

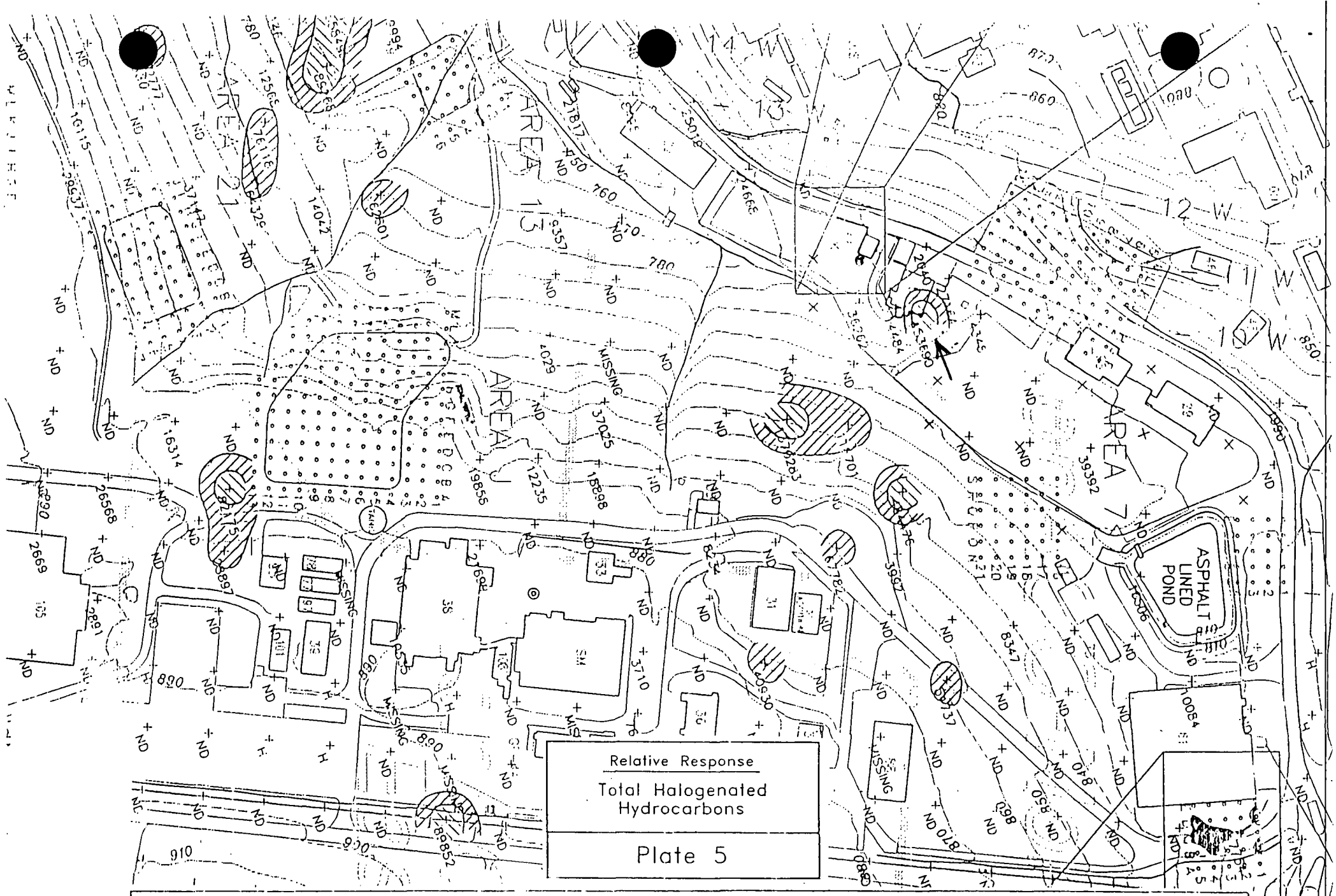
Total Semivolatile Hydrocarbons

Plate 3

LEGEND

Relative Response Values (in ion counts):					Features:
NonAOC-South	NonAOC-West	NonAOC-East	NonAOC-North	Area 61	+ PETREX Sample Location
≥ 70,000	≥ 1,000,000	≥ 300,000	≥ 800,000	≥ 1,400,000	ND Not Detected
7,000-69,999	100,000-999,999	30,000-299,999	80,000-799,999	180,000-1,399,999	


Relative Response
Total C5-C11
Petroleum Hydrocarbons
Plate 4
ASPHALT LINED POND
AREA 13
AREA 1
MISSING
C.O.S.
LEGEND
Relative Response Values (in ion counts):
NonAOC-South
≥ 8,000,000
1,500,000-7,999,999
NonAOC-West
≥ 29,000,000
3,000,000-28,999,999
NonAOC-East
≥ 11,500,000
1,600,000-11,499,999
NonAOC-North
≥ 23,000,000
4,000,000-22,999,999
Area 61
≥ 25,000,000
3,000,000-24,999,999
Features:
PETREX Sample Location
Denotes interference by terpenes; see text.



Relative Response

Total Halogenated Hydrocarbons

Plate 5

LEGEND

Relative Response Values (in ion counts):

NonAOC - South	NonAOC-West	NonAOC-East	NonAOC-North	Area 61
≥ 500,000	≥ 500,000	≥ 80,000	≥ 400,000	≥ 250,000
50,000-499,999	50,000-499,999	20,000-79,999	40,000-399,999	35,000-249,999

Features:

+ PETREX Sample Location

ND Not Detected

H Denotes interference by petroleum hydrocarbons; see text.

Environmental Restoration Program

RECONNAISSANCE SAMPLING REPORT SOIL GAS SURVEY AND GEOPHYSICAL INVESTIGATIONS, MOUND PLANT MAIN HILL AND SM/PP HILL

REPORT
APPENDICES A, B AND D

MOUND PLANT
MIAMISBURG, OHIO

February 1993

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

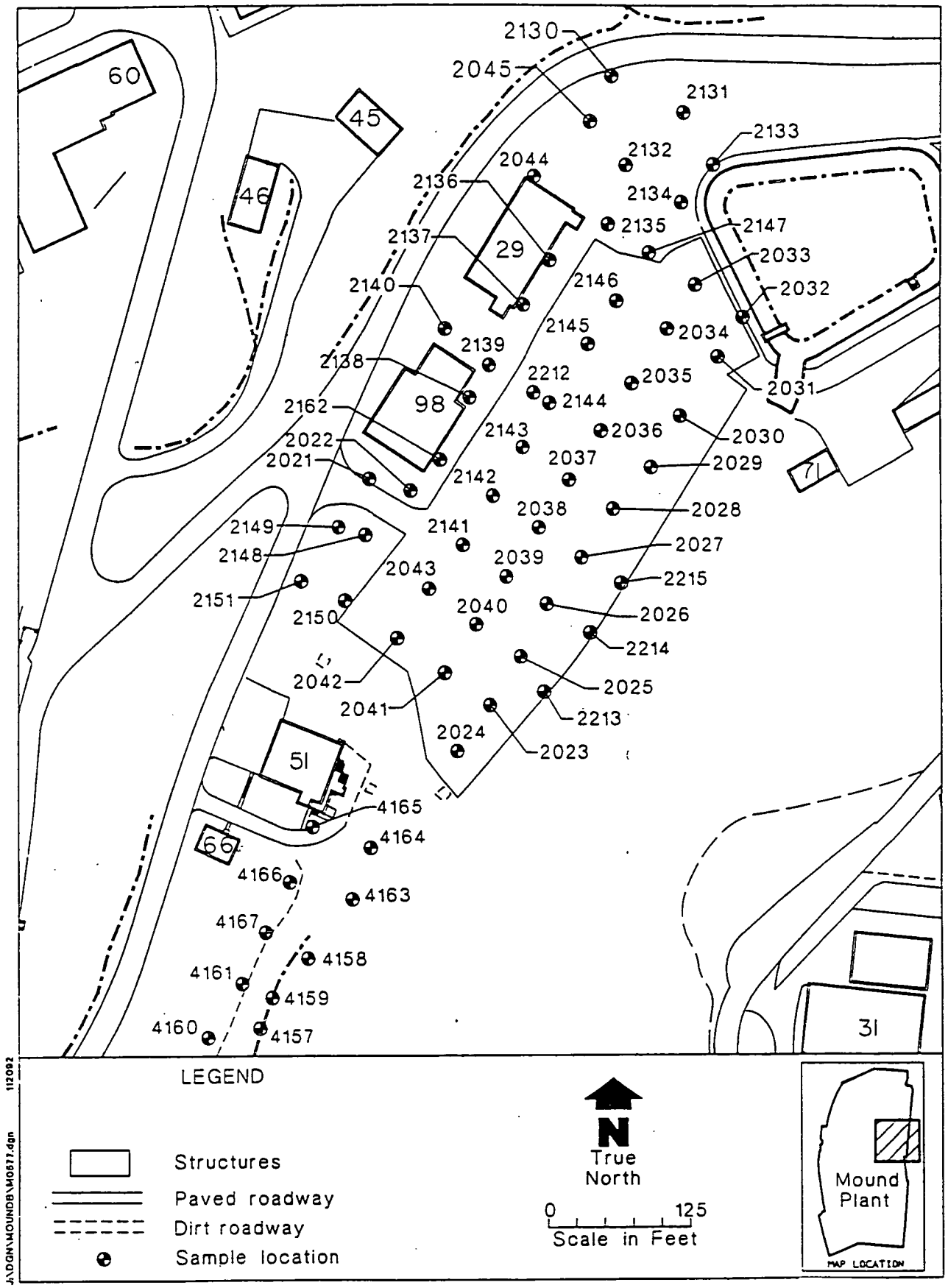


Figure 2.4: Area 7 and Building 51 sample location map.

TABLE II.8. SUMMARY OF POSITIVE DETECTIONS–BUILDING 51
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11 (2,5)	FREON 113 (2,5)	TRAN–12DCE (2)	CIS–12DCE (2)	111TCA (2,5)	PCE (2)	TCE (2)	TOLUENE (2)
MND–01–4157–0025w	28 AUG 92	---	---	---	---	---	---	---	0.2 * (3)
MND–01–4160–0015	29 AUG 92	---	---	---	8 (3)	---	---	---	37 * (3)
MND–01–4160–0025w	30 AUG 92	---	---	---	---	---	---	---	0.23 (3)
MND–01–4161–0015	29 AUG 92	---	---	---	---	---	---	9 (3)	8 * (3)
MND–01–4161–1025	29 AUG 92	---	---	---	---	---	7 (3)	19 (3)	---
MND–01–4166–0015	31 AUG 92	5	9	---	---	---	44 (3)	75 (3)	---
MND–01–4166–0025	31 AUG 92	---	18	---	---	4	44 (3)	56 (3)	---
MND–01–4167–0015	31 AUG 92	89	---	---	18 (3)	37	44 (3)	207 (3)	8 * (3)
MND–01–4167–0025	31 AUG 92	36	---	---	---	11	---	169 (3)	8 * (3)

Notes:
Only sample locations having positive detections are shown.
*: Associated trip, ambient, equipment or field blank contained specified compound.
B: Indicates blank sample.
w: Indicates water sample.

Notes:
1: Less than Background
2: No Background Established
3: Less than Guideline Value
4: Greater than Guideline Value
5: No Guideline Established

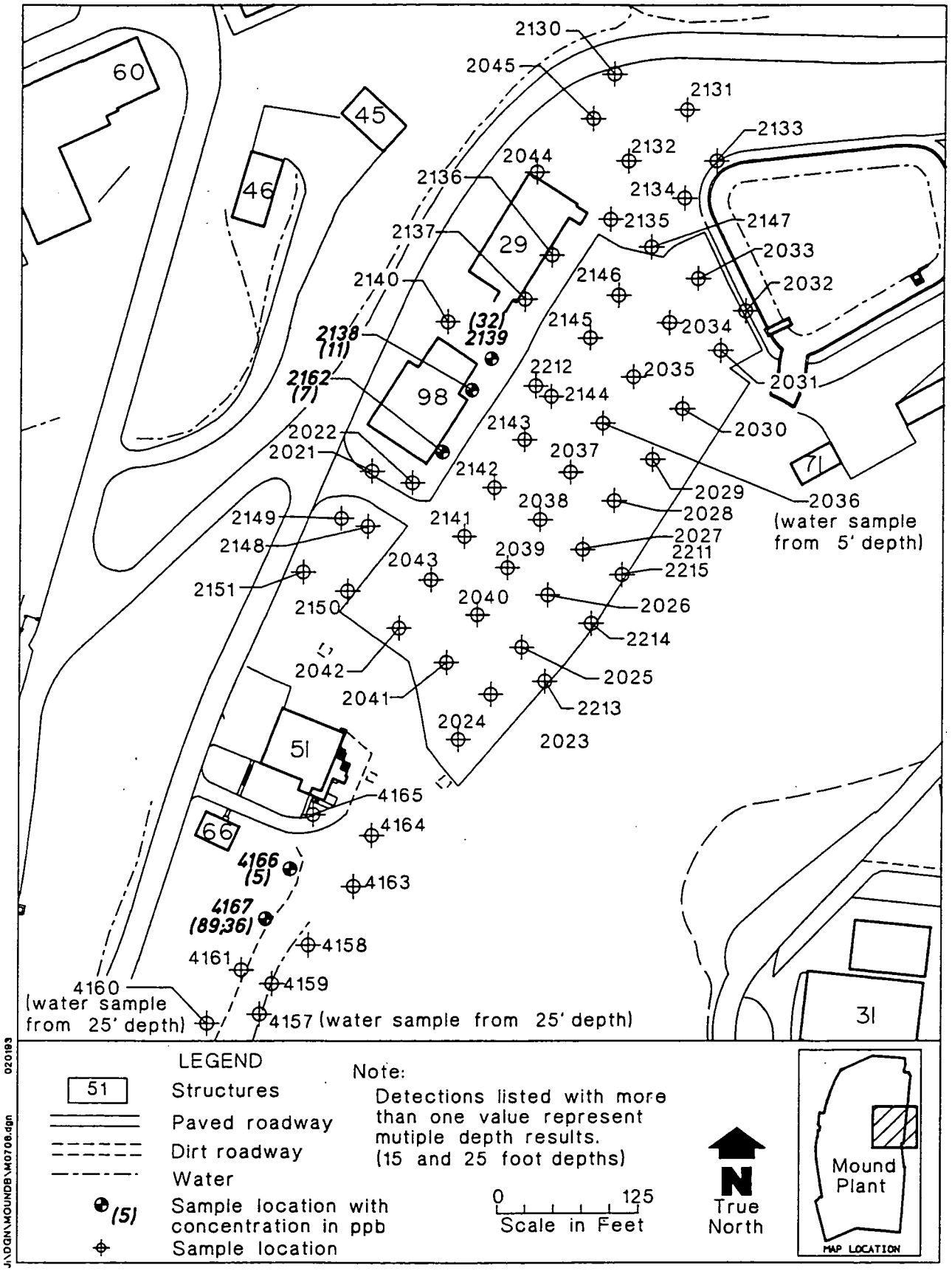


Figure 2.29. Freon II detection map for Area 7 and Building 51.

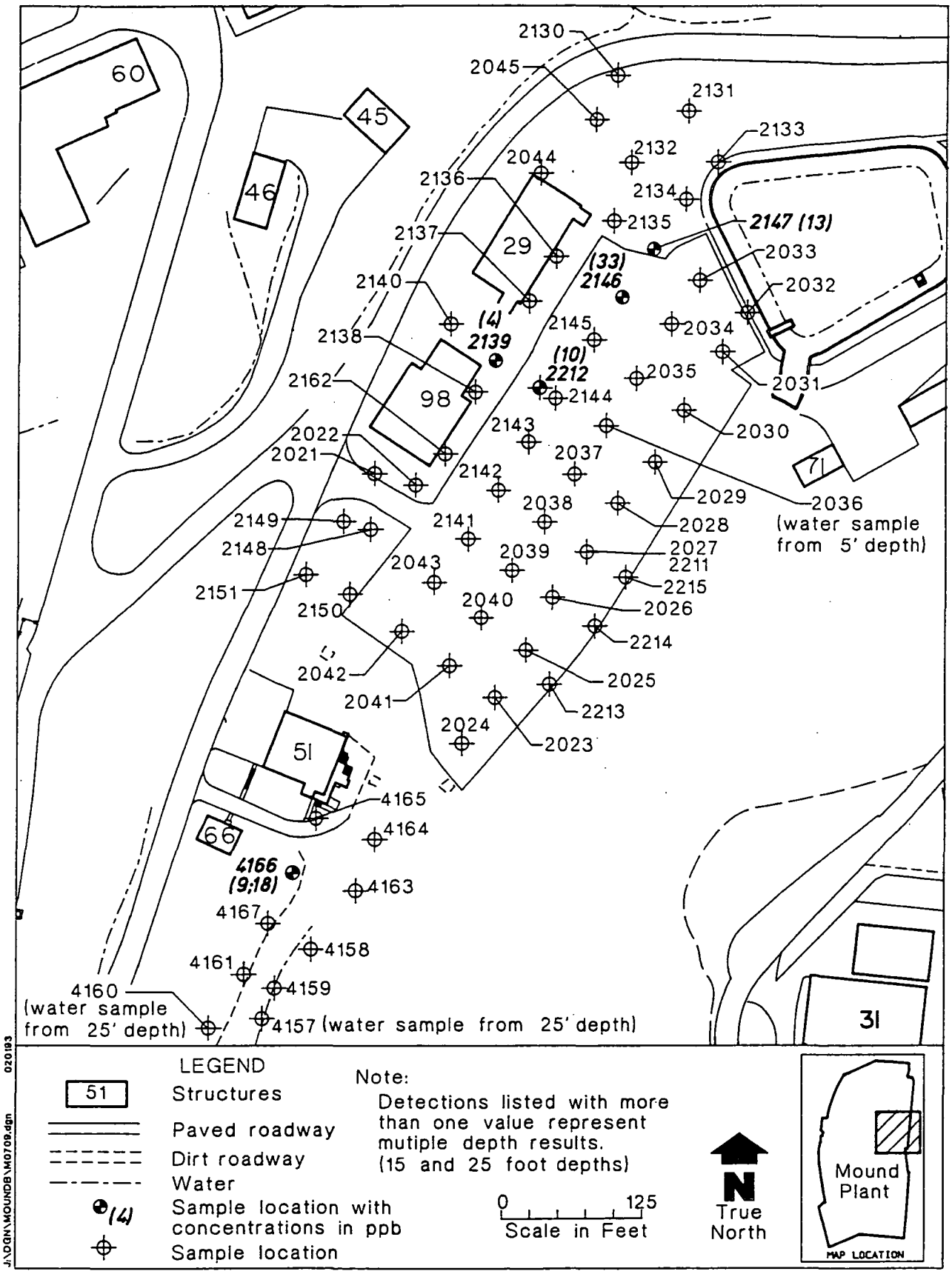


Figure 2.30. Freon 113 detection map Area 7 and Building 51.

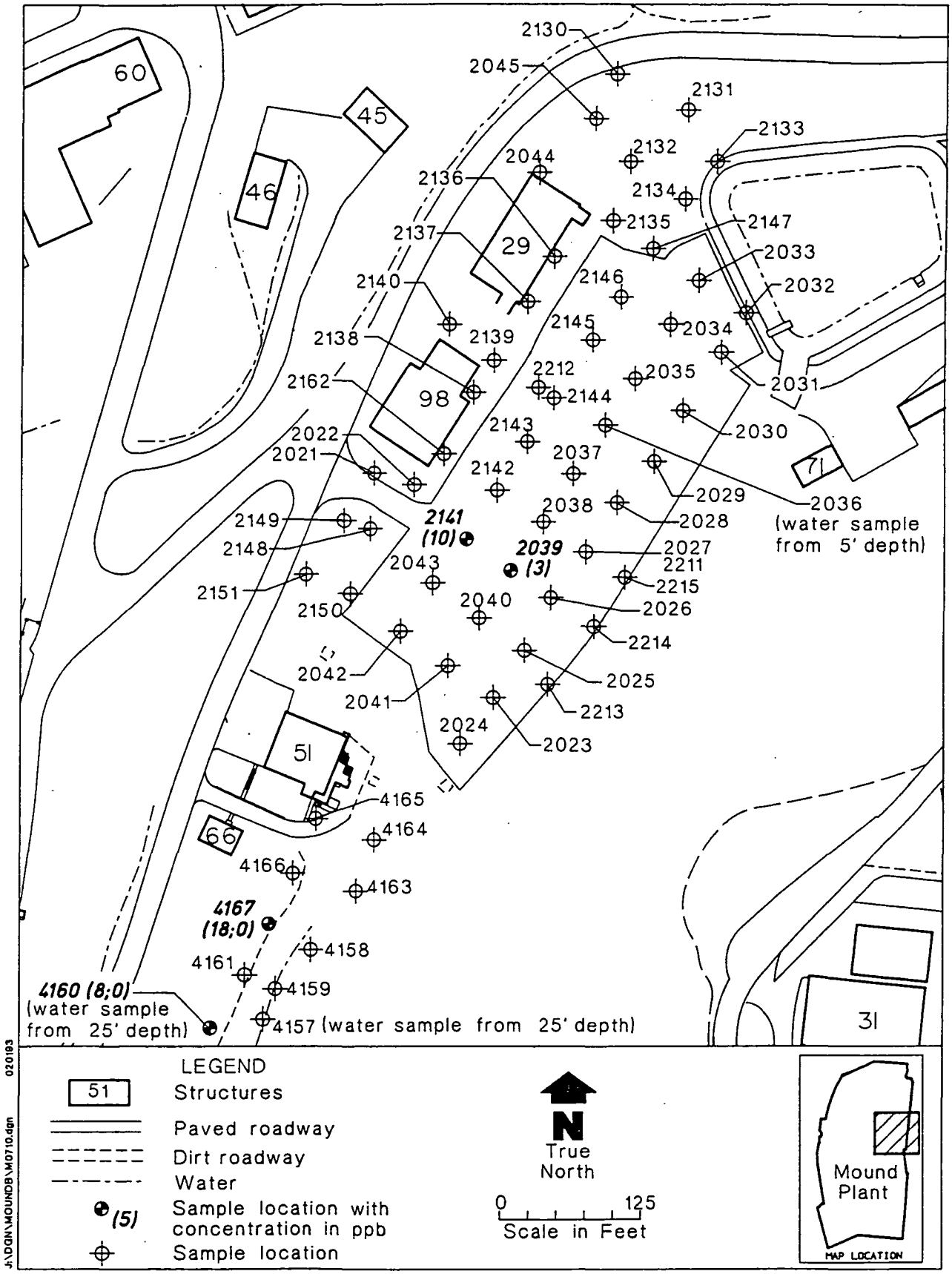


Figure 2.31. CIS-1,2-Dichloroethene detection map for Area 7 and Building 51.

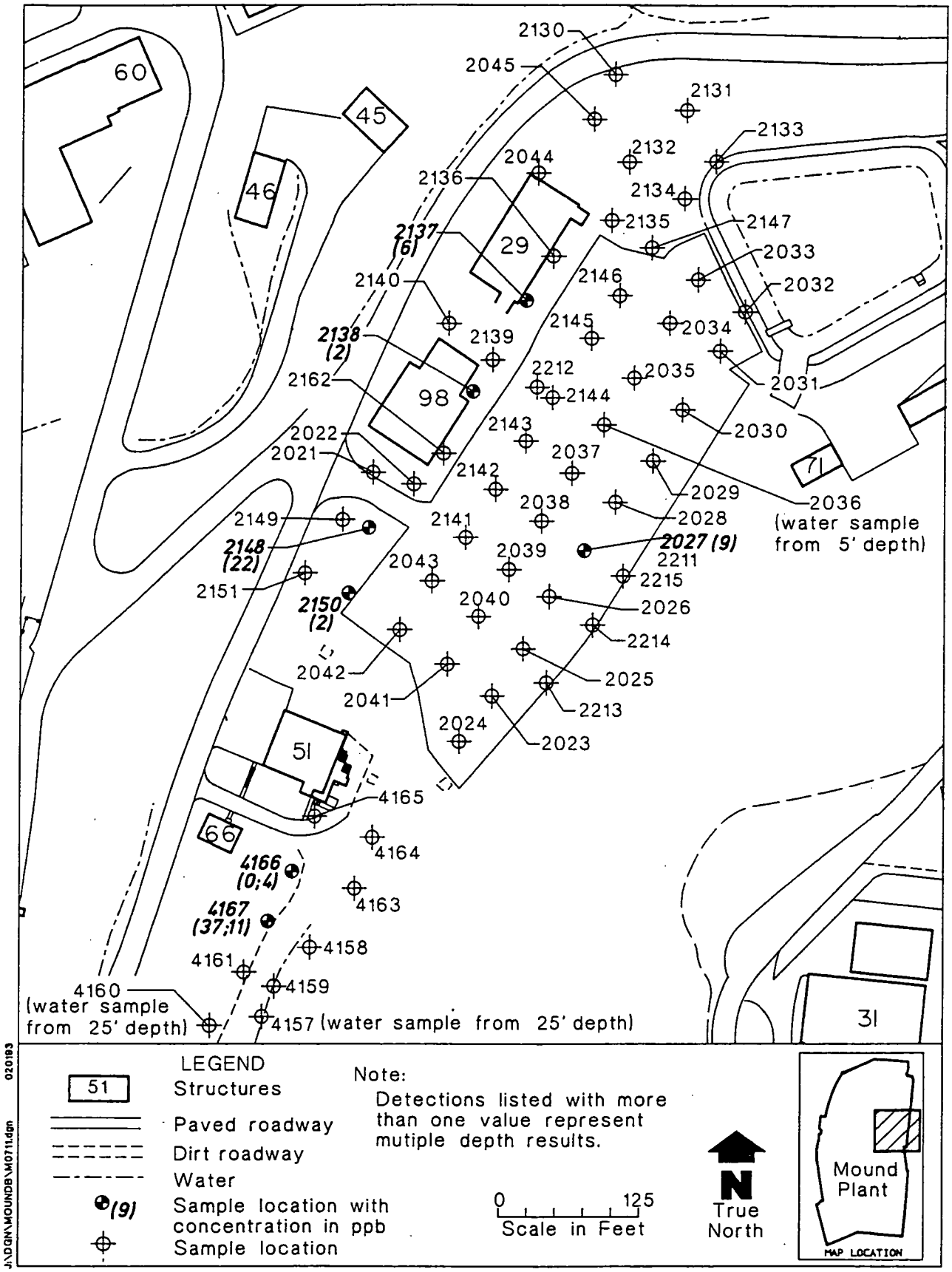


Figure 2.32. 1,1,1-Trichloroethane detection map for Area 7 and Building 51.

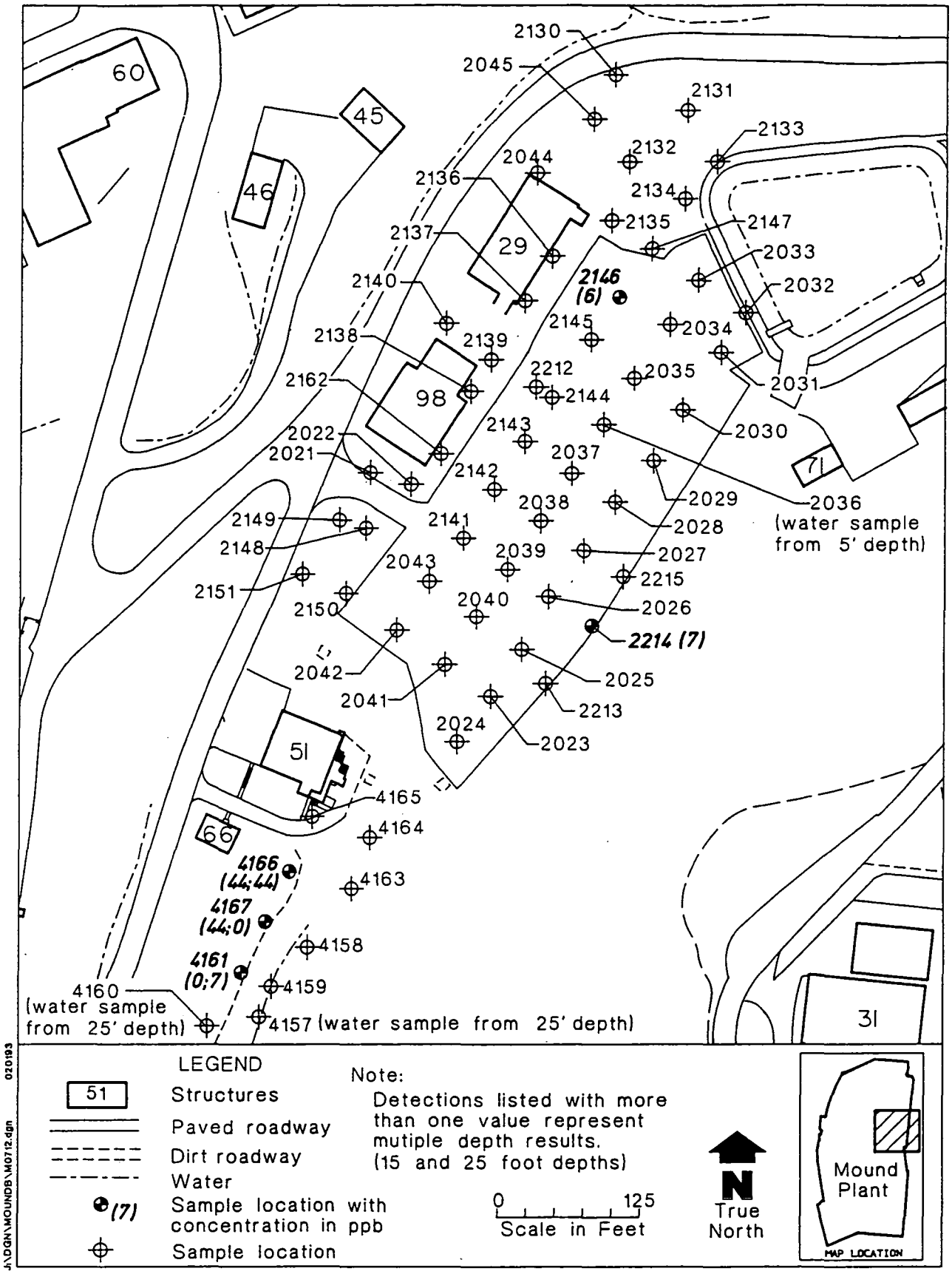


Figure 2.33. Tetrachloroethene detection map for Area 7 and Building 51.

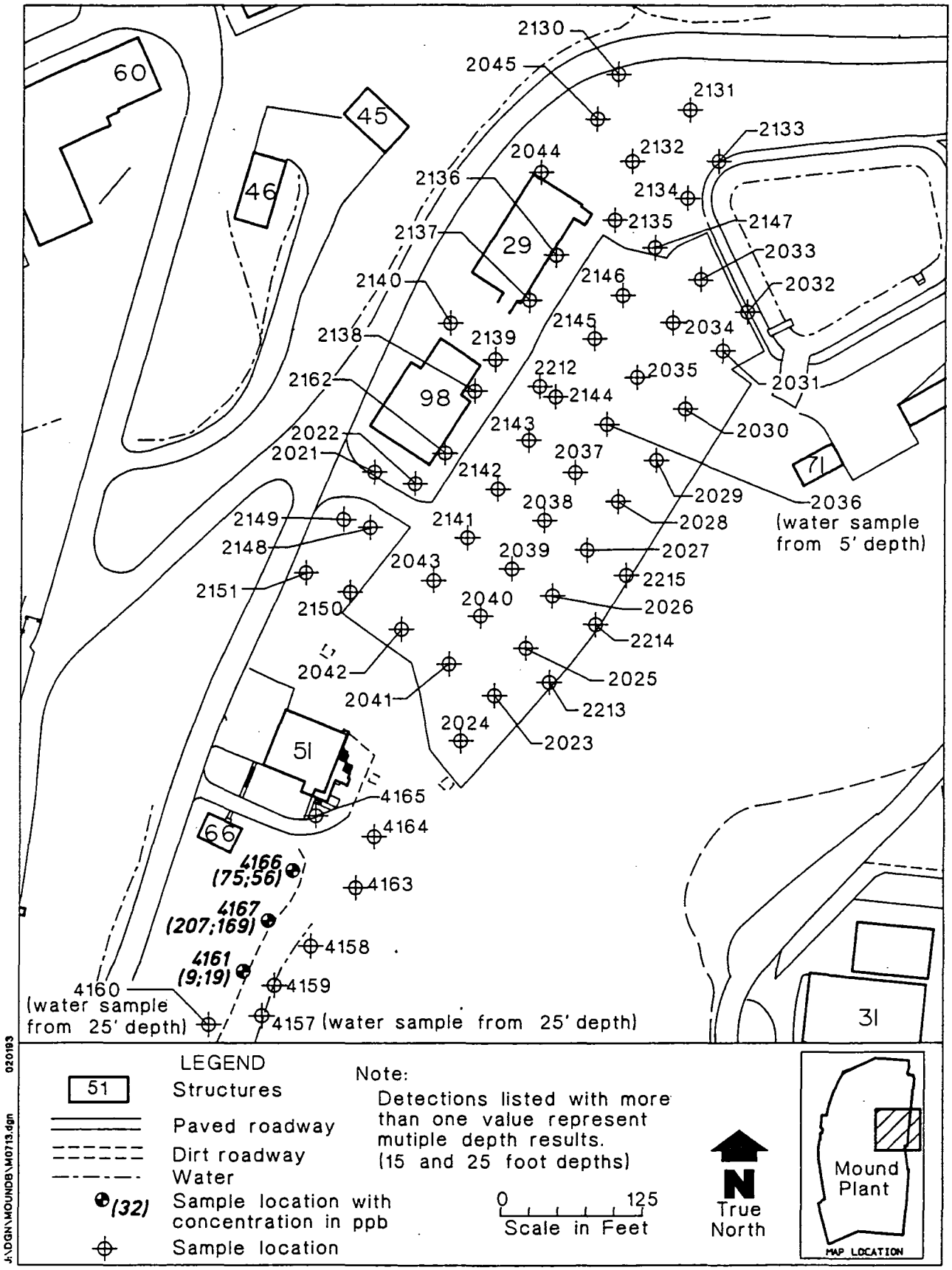


Figure 2.34. Trichloroethene detection map for Area 7 and Building 51.

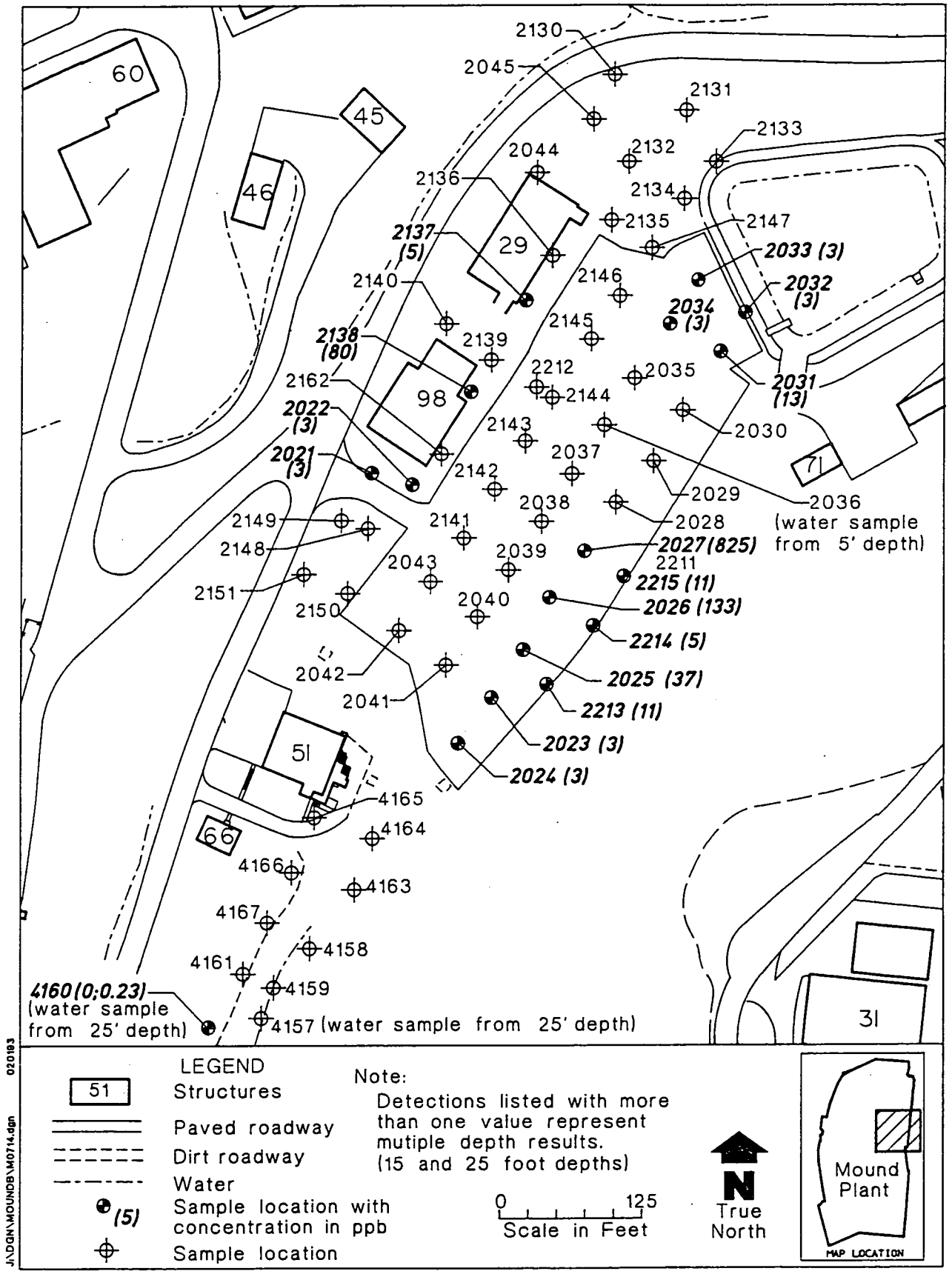


Figure 2.35. Toluene detection map for Area 7 and Building 51.

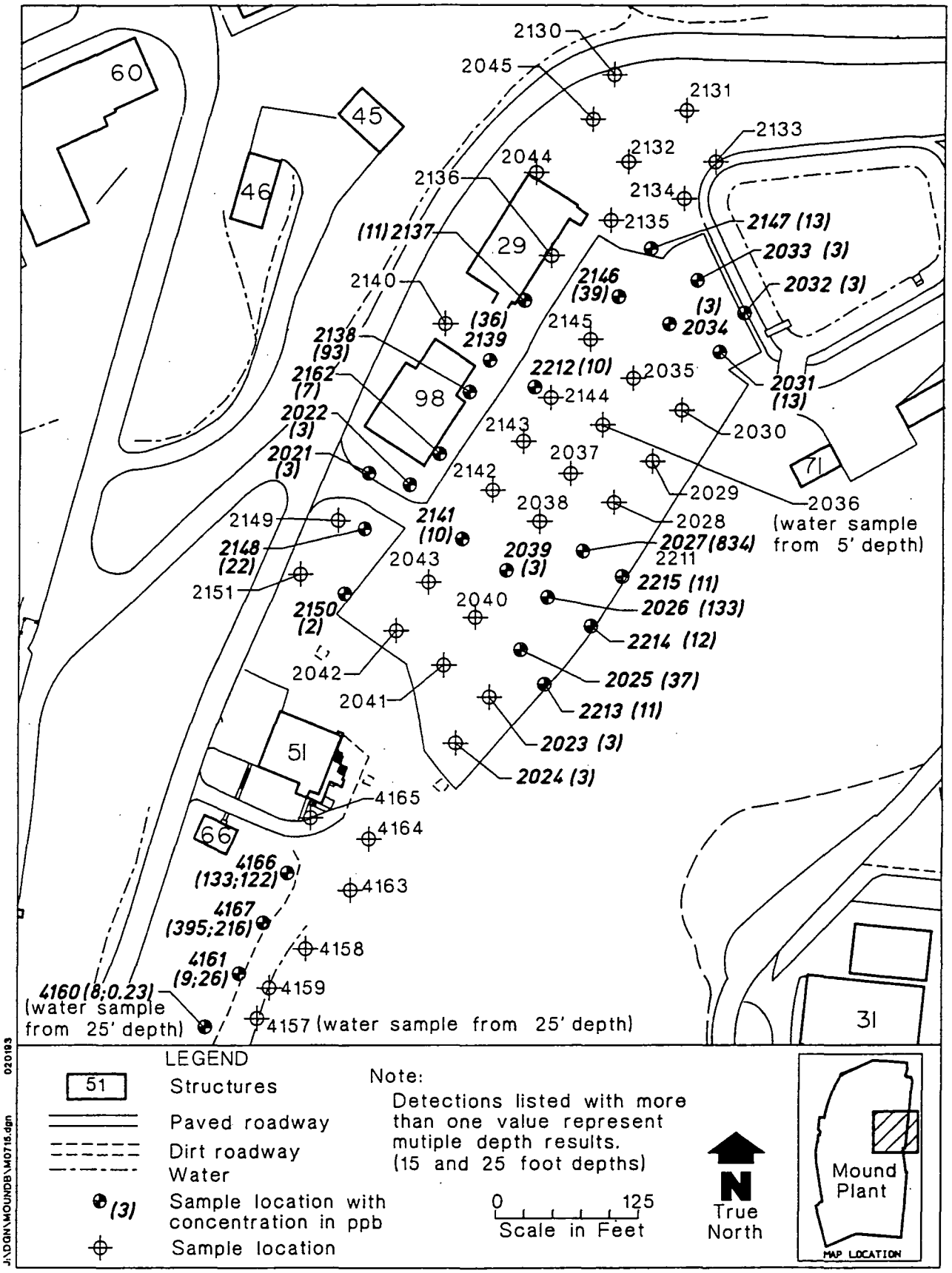


Figure 2.36. Total VOCs detection map for Area 7 and Building 51.

TABLE II.10 SUMMARY OF POSITIVE DETECTIONS–AREA 7
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11	FREON 113	TRAN–12DCE	CIS–12DCE	111TCA	PCE	TCE	TOLUENE
MND–01–2021–0005	1 AUG 92	---	---	---	---	---	---	---	3
MND–01–2022–0005	1 AUG 92	---	---	---	---	---	---	---	3
MND–01–2023–0005	1 AUG 92	---	---	---	---	---	---	---	3
MND–01–2024–0005	1 AUG 92	---	---	---	---	---	---	---	3
MND–01–2025–0005	1 AUG 92	---	---	---	---	---	---	---	37
MND–01–2026–0005	1 AUG 92	---	---	---	---	---	---	---	133
MND–01–2027–0005	1 AUG 92	---	---	---	---	9	---	---	825
MND–01–2031–0005	1 AUG 92	---	---	---	---	---	---	---	13
MND–01–2032–0005	2 AUG 92	---	---	---	---	---	---	---	3
MND–01–2033–0005	2 AUG 92	---	---	---	---	---	---	---	3
MND–01–2034–0005	2 AUG 92	---	---	---	---	---	---	---	3
MND–01–2034–1005	2 AUG 92	---	---	---	---	---	---	---	3
MND–01–2036–0005w	3 AUG 92	---	---	---	---	---	---	---	242 *
MND–01–2036–1005w	3 AUG 92	---	---	---	---	---	---	---	218 *
MND–01–2039–0005	2 AUG 92	---	---	---	3	---	---	---	---
MND–01–2044–0005	3 AUG 92	---	---	---	---	---	---	---	13 *
MND–01–2137–1005	24 AUG 92	---	---	---	---	6	---	---	5
MND–01–2138–0005	24 AUG 92	11	---	---	---	2	---	---	80
MND–01–2139–0005	25 AUG 92	32	4	---	---	---	---	---	3 *
MND–01–2141–0005	25 AUG 92	---	---	---	10	---	---	---	5 *
MND–01–2142–0005	25 AUG 92	---	---	---	---	---	---	---	11*
MND–01–2142–1005	25 AUG 92	---	---	---	---	---	---	---	11*
MND–01–2145–0005	25 AUG 92	---	---	---	---	---	---	---	5 *
MND–01–2146–0005	25 AUG 92	---	33	---	---	---	6	---	---
MND–01–2147–0005	25 AUG 92	---	13	---	---	---	---	---	---
MND–01–2148–0005	26 AUG 92	---	---	---	---	22	---	---	---
MND–01–2149–0005	26 AUG 92	---	---	---	---	---	---	---	5 *
MND–01–2149–1005	26 AUG 92	---	---	---	---	---	---	---	5 *
MND–01–2150–0005	26 AUG 92	---	---	---	---	2	---	---	5 *
MND–01–2162–0005	30 AUG 92	7	---	---	---	---	---	---	---
MND–01–2212–0015	26 SEP 92	---	10	---	---	---	---	---	---
MND–01–2213–0005	26 SEP 92	---	---	---	---	---	---	---	11
MND–01–2214–0005	26 SEP 92	---	---	---	---	---	7	---	5
MND–01–2215–0005	26 SEP 92	---	---	---	---	---	---	---	11

Notes:

Only sample locations having positive detections are shown.
*: Associated trip, ambient, equipment or field blank contained specified compound.
B: Indicates blank sample.
w: Indicates water sample.

COMPARISON OF ACTUAL SOIL GAS VALUES WITH CALCULATED ACCEPTABLE SOIL GAS VALUES

3/5/96

SCREENING POTENTIAL RELEASE SITES BASED ON SOIL GAS READINGS

Soil gas readings can be utilized in the PRS screening process to identify potential release sites that may present a potential soil contamination problem for volatile organics. The soil gas survey that was conducted at Mound as part of the "Reconnaissance Sampling Report--Soil Gas Survey and Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill" investigated 8 volatile compounds. The concentrations of these compounds in the in the vapor phase within the pore spaces of the soil can be correlated to the actual soil contaminant concentrations by utilizing a method developed by ICF Kaiser Engineers. This technique has been used with US EPA Region IX approval at a large Superfund site contaminated with many of the same chemicals found at relatively low levels in soils at the Mound Plant.

The soil concentration can be estimated from the soil gas values by the following equation:

$$Ct = (Cg/Pb)*[[Pb \bullet Kd / H] + [pw / H] + [pt - pw]]$$

where

Cg	concentration of volatile chemical concentrations as soil vapor in ng/ml
Pb	Bulk density of the soil in g/ml
Kd	soil/water partition coefficient in ml/g
H	Dimensionless Henry's Law Constant
pw	water filled porosity
pt	total porosity
Ct	target soil concentration in ng/g or ug/kg (ppb)

The technique that Mound Plant will use for screening a PRS, is to compare the soil gas values obtained at a PRS with soil gas concentrations that are known to be below any regulatory or health based level of concern. The risk based guideline values for the Mound Plant (DOE, December 1995) soils are based upon 10^{-6} risk levels or a hazard index of 1. These values correspond to direct soil exposure to persons who's activities place them at the highest risk, in particular inhalation and ingestion by a Mound Plant construction worker.

Another potential exposure path must be considered, however. The potential for some of the organic contaminants to leach into ground water must be considered in developing protective soil screening levels. A "Mound Plant Soil Screening Level" paper explains the calculation of soil screening levels. For all of the chemicals that the soil gas survey identified, the calculated soil screening level soil concentrations are below the standard guideline values, therefore they are more conservative and are appropriate to be used as the basis for the soil gas calculations.

By re-arranging the equation, and using either the soil guideline values or the soil screening levels as the target soil concentration, a soil gas concentration can be calculated; this calculated soil gas concentration can be compared to the actual observed soil gas values:

$$Cg = (Pb*Ct)/[[Pb*Kd/H] + [pw/H] + [pt-pw]]$$

The values of the soil specific and chemical parameters for this equation are summarized as follows:

Pb	1.6	Bulk density of the soil in g/ml
pw	0.15	water filled porosity
pt	0.43	total porosity
foc	0.02	fraction organic material in soil (used in developing the SSL values)

Typical chemicals that are detected with soil gas sampling are:					
NAME	H	Kd	Calculated Acceptable Soil Screening Level Value	Calculated Acceptable Soil Gas Reading	Calculated Acceptable Soil Gas Reading
		ml/g	mg/kg (ppm)	ng/ml	ppb
Toluene	2.52E-01	3.42	22.06	1.56E+03	414600
Trichloroethene (TCE)	4.35E-01	2.24	0.07	1.26E+01	2400
111 Trichloroethane (TCA)	7.63E-01	2.2	3.01	9.46E+02	173400
Trans-1,2 Dichloroethene (DCE)	2.29E-01	1	0.70	1.41E+02	35700
cis-1,2 Dichloroethene (DCE)	1.85E-01	2.78	0.31	1.97E+01	5600
Freon 11	NA	NA			
Freon 113	NA	NA			
Tetrachloroethene (PCE)	7.09E-01	2.78	0.09	2.13E+01	3100

na not available

IF THE SOIL GAS READING IS BELOW THE VALUES IN THE CALCULATED SOIL GAS READING COLUMN (SHADED), THEN THERE IS NO THREAT TO GROUNDWATER FROM THIS PRS.

The soil screening level values are calculated using the Soil Screening Methodology. The Potential Release Site is assumed to be more than 100 meters from a potential drinking water source with an aquifer thickness of 15 meters and a source size of 10 meters. The hydraulic gradient is assumed to be 0.01 which is conservative for most of the Mound Plant PRSs. In special instances where the PRS lies less than 100 meters from a potential drinking water source, or the hydraulic gradient is much less than 0.01, new SSL values and new acceptable soil gas values will be calculated for that particular PRS.

SOIL SCREENIG FACILITY BLD-51 TANK
Data Management System

CONT Sample's, taken by B. BRUMLEY [redacted]
DAILY REPORT FOR December 5,1990

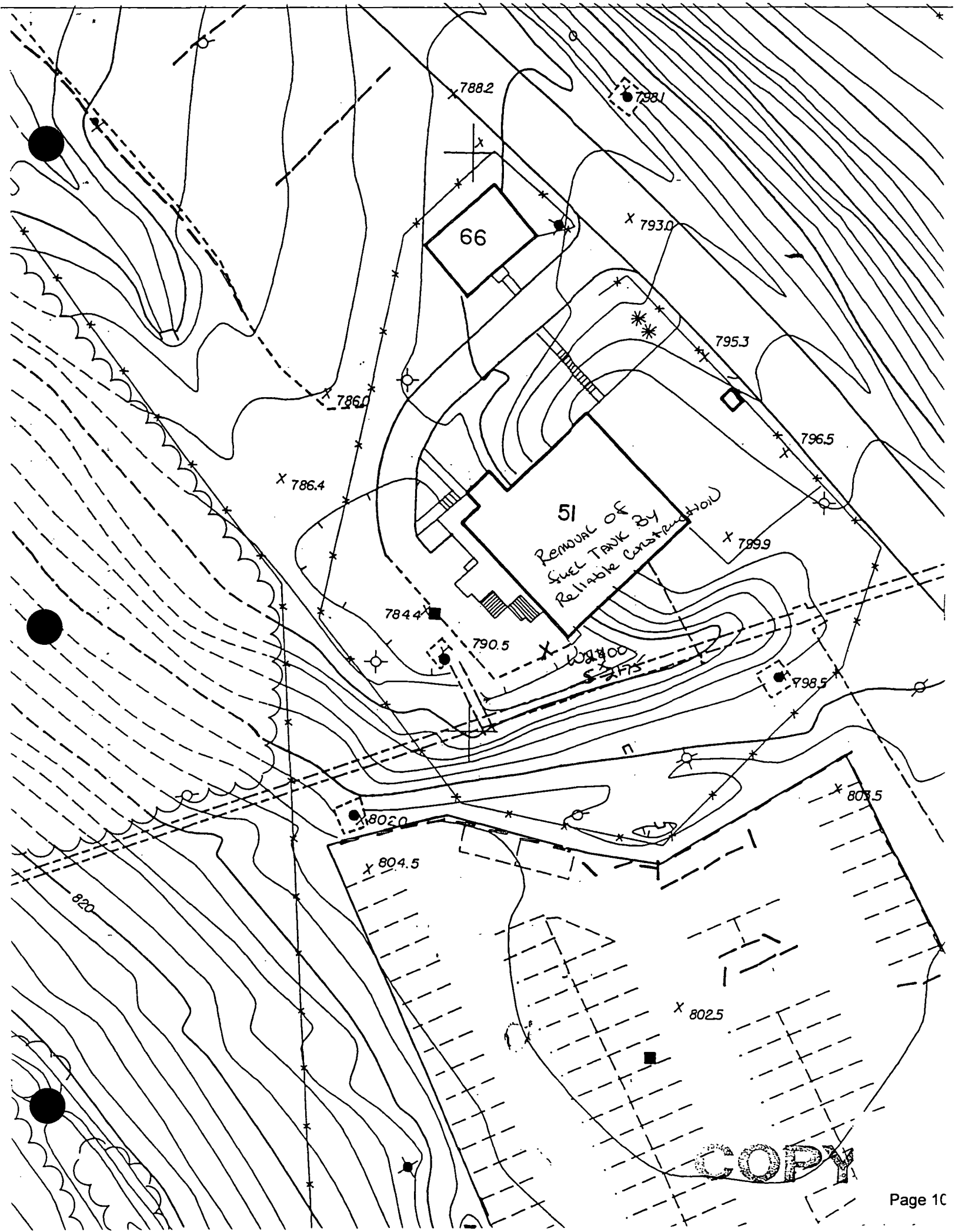
SAMPLE NUMBER	DATE SCREEN	SAMPLER	SAMPLE TYPE	TH 232 pCi/q	PU 238 pCi/g	GRID & SAMPLE LOCATION	WELL ID
1 9012057	12/05/90	B. BRUMLEY [redacted]	CONT	0.6	2	W2400 X S2175 SS #1	A
2 9012058	12/05/90	B. BRUMLEY [redacted]	CONT	0.5	0	W2400 X S2175 SS #2	C
3 9012059	12/05/90	B. BRUMLEY [redacted]	CONT	0.5	8	W2400 X S2175 SS #3	A
4 90120510	12/05/90	B. BRUMLEY [redacted]	CONT	0.6	0	W2400 X S2175 SS #4	A
5 90120511	12/05/90	B. BRUMLEY [redacted]	CONT	0.3	7	W2400 X S2175 SS #5	B
6 90120512	12/05/90	B. BRUMLEY [redacted]	CONT	0.1	3	W2400 X S2175 SS #6 BM	B
7 90120513	12/05/90	B. BRUMLEY [redacted]	CONT	0.1	2	W2400 X S2175 SS #7 BM	B
8 90120514	12/05/90	B. BRUMLEY [redacted]	CONT	0.6	0	W2400 X S2175 SS #8 BM	C
9 90120515	12/05/90	B. BRUMLEY [redacted]	CONT	0.8	0	W2400 X S2175 SS #9 TANK	C

Soil Samples taken During Removal of fuel tank By BLD-51 Samples labled BM were Bowser morner Samples for VOC contamination. All soil Remained at Removal site.

COPY

PREPARED BY : TROY J. PEARSON III

ALL SOIL SAMPLE ARE RAN FOR 400 SEC UNLESS SPECIFIED IN THIS REPORT. [ANY QUESTION CALL EXT.4408]


788.2
798.1
66
793.0
795.3
786.0
796.5
786.4
51
Removal of
Fuel Tank By
Reliable Construction
799.9
784.4
790.5
798.5
803.5
802.0
804.5
820
802.5
COPY

RISK-BASED GUIDELINE VALUES

MOUND PLANT
MIAMISBURG, OHIO

December 1995

Submitted to the
Office of Southwestern Area Programs (EM-453)
Environmental Restoration
and the
Miamisburg Area Office
U.S. DEPARTMENT OF ENERGY

Prepared by
HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
Environmental Management and Enrichment Facilities
Managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

FINAL
(REVISION 0)

TABLE 5A

Commercial/Office Worker - Soil Guideline Values: Chemicals (Units = mg/kg)

CHEMICAL	Ingestion				Inhalation				Ingestion + Inhalation			
	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1
Tribromomethane	7.2E+04	7.2E+03	7.2E+02	4.1E+04	1.6E+09	1.6E+08	1.6E+07		7.2E+04	7.2E+03	7.2E+02	
Trichloroethylene	5.2E+04	5.2E+03	5.2E+02		4.4E+02	4.4E+02	4.5E+01		4.4E+02	4.1E+02	4.1E+01	
Trichlorofluoromethane				6.1E+05				7.3E+02				7.3E+02
Trichloromethane	9.4E+04	9.4E+03	9.4E+02	2.0E+04	3.1E+02	3.1E+01	3.1E+00		3.1E+02	3.1E+01	3.1E+00	
Xylene				4.1E+06								
bis(2-Ethylhexyl)phthalate	4.1E+04	4.1E+03	4.1E+02	4.1E+04								
PAHs												
Acenaphthylene												
Anthracene				6.1E+05								
Benzo(a)anthracene	7.8E+02	7.8E+01	7.8E+00									
Benzo(a)pyrene	7.8E+01	7.8E+00	7.8E-01									
Benzo(b)fluoranthene	7.8E+02	7.8E+01	7.8E+00									
Benzo(g,h,i)perylene												
Benzo(k)fluoranthene	7.8E+03	7.8E+02	7.8E+01									
Dibenz(a,h)anthracene	7.8E+01	7.8E+00	7.8E-01									

MOUND

Environmental
Restoration
Program

Further Assessment

Soil Gas Confirmation Sampling

Mound Plant
Miamisburg, Ohio

May 1996

Revision 0

Department of Energy

EG&G Mound Applied Technologies

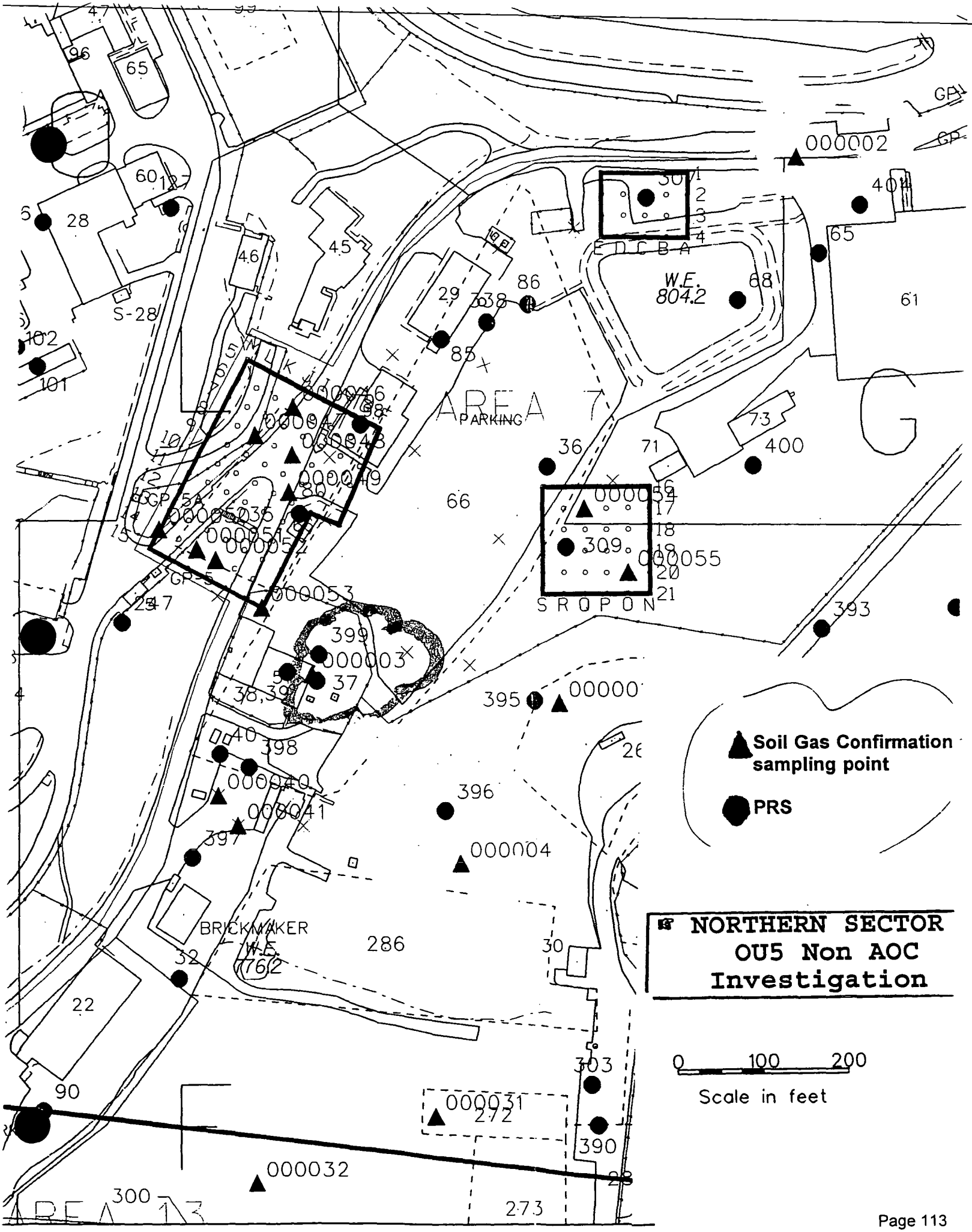

Soil Gas Confirmation sampling point
PRS
NORTHERN SECTOR
OU5 Non AOC
Investigation
0 100 200
Scale in feet
AREA 7
PARKING
W.E. 804.2
SROPON
BRICKMAKER
W.E. 776.2
AREA 13
000002
000031
000032
000053
000054
000055
000004
000040
000041
000046
000048
000049
000035
000051
000052
000003
309
399
398
397
396
395
286
272
273
390
303
300
90
22
32
30
28
29
38
86
85
36
71
73
400
404
65
61
68
45
46
28
60
96
47
101
102
247
393
37
38,39
40
GP-5A
GP-5
GP-1
GP-2

Table I.1 Soil Analyte List

Volatile Organic Compounds

Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane
2-Butanone
Carbon Disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Dibromochloromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethene (total)
1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylbenzene
2-Hexanone
Methylene Chloride
4-Methyl-2-Pentanone
Styrene
1,1,2,2-Tetrachloroethane
Tetrachloroethene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Toluene
Vinyl Acetate
Vinyl Chloride
Xylenes (total)

Semivolatile Organic Compounds

Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
bis(2-Chloroethoxy)methane
bis(2-Chloroethyl)ether
bis(2-Ethylhexyl)phthalate
4-Bromophenyl-phenylether
Butylbenzylphthalate
Carbazole
4-Chloroaniline
4-Chloro-3-methylphenol
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl-phenylether
Pentachlorophenol
Phenanthrene
Phenol
Chrysene
Dibenz(a,h)anthracene
Dibenzofuran
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
3,3-Dichlorobenzidine
2,4-Dichlorophenol
Diethylphthalate
2,4-Dimethylphenol
Dimethyphthalate
Di-n-butylphthalate
Di-n-octylphthalate
4,6-Dinitro-2-methylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Fluoranthene
Fluorene
Pyrene
1,2,4-Trichlorobenzene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno(1,2,3-cd)pyrene
Isophorone
2-Methylnaphthalene
2-Methylphenol
4-Methylphenol
Naphthalene
2-Nitroaniline
3-Nitroaniline
4-Nitroaniline
Nitrobenzene
2-Nitrophenol
4-Nitrophenol
N-Nitroso-di-n-propylamine
N-Nitroso-diphenylamine
2,2-oxybis(1-Chloropropane)
2,4,5-Trichlorobenzene
2,4,6-Trichlorobenzene

Table I.1 Soil Analyte List (Continued)

Pesticides/PCB's		
Aroclor-1016	Delta-BHC	Endosulfan II
Aroclor-1221	Gamma-BHC	Endosulfan sulfate
Aroclor-1232	alpha-Chlordane	Endrin
Aroclor-1242	gamma-Chlordane	Endrin aldehyde
Aroclor-1248	4,4'-DDD	Endrin ketone
Aroclor-1254	4,4'-DDE	Heptachlor
Aroclor-1260	4,4'-DDT	Heptachlor epoxide
Aldrin	Dieldrin	Methoxychlor
Alpha-BHC	Endosulfan I	Toxaphene
Beta-BHC		
Inorganics		
Aluminum	Copper	Potassium
Antimony	Cyanide	Selenium
Arsenic	Iron	Silver
Barium	Lead	Sodium
Beryllium	Lithium	Thallium
Bismuth	Magnesium	Tin
Cadmium	Manganese	Vanadium
Calcium	Mercury	Zinc
Chromium	Molybdenum	Nitrate/Nitrite
Cobalt	Nickel	Explosives (USATHAMA,PETN)
Radionuclides		
Americium-241	Plutonium-238	Thorium-230
Bismuth-207	Plutonium-239/240	Thorium-232
Bismuth-210	Potassium-40	Uranium-234
Cesium-137	Radium-226	Uranium-235
Cobalt-60	Thorium-228	Uranium-238

Table I.2. Variance From 3-Foot Sampling Depth Specification

Location	Description of Variance
SGC-NAC-000001	Core sampler hit refusal at 2 feet.
SGC-NAC-000002	Relocated due to utilities.
SGC-NAC-000003	Core sampler hit refusal at 2 feet.
SGC-NAC-000004	Core sampler hit refusal at 18 inches.
SGC-NAC-000005	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-NAC-000006	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-NAC-000007	Core sampler hit refusal at 18 inches.
SGC-NAC-000008	Drilled to 2 feet due to utilities.
SGC-NAC-000010	Drilled to 1 foot; hand-augered rest due to utilities; flag against building, so sample taken 6 feet from flag.
SGC-NAC-000012	Drilled to 2 feet due to utilities.
SGC-SAN-000018	Core sampler hit refusal at 2 feet; relocated from inside clarifier.
SGC-NAC-000029	Core sampler hit refusal at 18 inches.
SGC-A61-000043	Sampled 1 foot from flag.
SGC-A61-000047	Drilled to 2 feet due to utilities.
SGC-A61-000048	Drilled to 2 feet due to utilities.
SGC-A61-000049	Relocated due to utilities.
SGC-A61-000051	Core sampler hit refusal at 18 inches.
SGC-A61-000052	Relocated due to utilities; core sampler hit refusal at 18 inches.
SGC-A61-000053	Core sampler hit refusal at 2 feet.
SGC-A13-000056	Core sampler hit refusal at 18 inches
SGC-A13-000058	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-A13-000060	Core sampler hit refusal at 1 foot.
SGC-AOJ-000064	Core sampler hit refusal at 2 - 3 inches.
SGC-AOJ-000066	Core sampler hit refusal at 4 inches.
SGC-AOJ-000067	Core sampler hit refusal at 6 inches.
SGC-AOJ-000069	Core sampler hit refusal at 2 feet.
SGC-A03-000080	Core sampler hit refusal at 20 inches
SGC-A03-000081	Drilled to 2 feet due to utilities.
SGC-A03-000082	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-A03-000083	Sampled 25 feet from original location due to storm sewer; core sampler hit refusal at 18 inches.
SGC-A03-000087	Core sampler hit refusal at 2 feet.
SGC-A21-000088	Core sampler hit refusal at 18 inches.
SGC-A21-000090	Core sampler hit refusal at 20 inches.
SGC-SDB-000097	Relocated due to utilities.
SGC-SDB-000098	Relocated from inside a building.
SGC-SDB-000101	Relocation of SGC-SDB-000099; first location surveyed incorrectly.
SGC-SDB-000102	Relocation of SGC-SDB-000100; first location surveyed incorrectly.

Table A.1. Soil Gas Confirmation Detected Volatile Organic Compounds

ANALYTE	SGC NAC 000002	SGC NAC 000003	SGC NAC 000004	SGC NAC 000005	SGC NAC 000006	SGC NAC 000007	Background	10^{-6} Construction Worker Guidelines
VOLATILES (μg/Kg)								
Acetone	36						NA	105000000
1,2-Dichloroethene (total)							NA	21500000
2-Butanone	12						NA	46500000
Benzene	1 J						NA	8900
Carbon Disulfide							NA	1400000
Chloroform			67				NA	NA
Chloromethane							NA	NA
Ethylbenzene							NA	480
Methylene Chloride	6			7	8		NA	NA
Tetrachloroethene							NA	10500000
Toluene	1 J	1 J					NA	1250000
Trichloroethene						7	NA	41000
Xylene (total)							NA	2150000000

No entry - not detected
mg/kg - milligrams/kilogram
NA - Value not available
NC - Background not comp
ND - No detections in background samples
mg-N/kg - milligrams per kilogram, reported as nitrogen
J - Numerical value is an estimated quantity
B - Analyte detected in blanks associated with this sample

Table A.1. Soil Gas Confirmation Detected Volatile Organic Compounds (cont.)

ANALYTE	SGC A61 000042	SGC A61 000043	SGC A61 000045	SGC A61 000046	SGC A61 000053	SGC A61 000054	Background	10^{-6} Construction Worker Guidelines
VOLATILES (µg/Kg)								
Acetone			8 J	17			NA	105000000
1,2-Dichloroethene (total)							NA	21500000
2-Butanone		5 J-C	5 J				NA	46500000
Benzene							NA	8900
Carbon Disulfide							NA	1400000
Chloroform							NA	NA
Chloromethane							NA	NA
Ethylbenzene							NA	480
Methylene Chloride	6	9	8	9	4 J	7	NA	NA
Tetrachloroethene							NA	10500000
Toluene		2 J	3 J				NA	1250000
Trichloroethene							NA	41000
Xylene (total)							NA	2150000000

Table A.2. Soil Gas Confirmation Detected Semivolatile Organic Compounds

ANALYTE	SGC NAC 000001	SGC NAC 000002	SGC NAC 000003	SGC NAC 000004	SGC NAC 000005	SGC NAC 000006	Background	10^{-6} Construction Worker Guidelines
SEMIVOLATILES (µg/Kg)								
Acenaphthene		190 J	63 J				NA	NA
Acenaphthylene		730				42 J	NA	NA
Anthracene		1300	66 J		25 J	55 J	NA	320000000
Benzo(a)anthracene		1500	180 J		160 J	350 J	NA	4100
Benzo(a)pyrene		1300	180 J		200 J	450	NA	410
Benzo(b)fluoranthene		1000	180 J		190 J	460	NA	4100
Benzo(g,h,i)perylene		550	110 J		100 J	260 J	NA	NA
Benzo(k)fluoranthene		1000	160 J		190 J	440	NA	41000
Bis(2-ethylhexyl)phthalate							NA	215000
Butylbenzylphthalate							NA	215000000
Carbazole		600	62 J			34 J	NA	NA
Chrysene		1500	220 J		240 J	490	NA	410000
Di-n-butyl phthalate	120 J			280 J			NA	105000000
Di-n-octyl phthalate							NA	21500000
Dibenz(a,h)anthracene		180 J	40 J		37 J	87 J	NA	410
Dibenzofuran		1100	23 J				NA	NA
Diethyl phthalate							NA	NA
Fluoranthene		3400 D	480		400 J	800	NA	42500000
Fluorene		1500	42 J				NA	NA
Indeno(1,2,3-cd)pyrene		690	120 J		130 J	320 J	NA	4100
2-Methylnaphthalene		970					NA	NA
Naphthalene		4000 D	24 J				NA	NA
Phenanthrene		4700 D	380		150 J	280 J	NA	NA
Phenol							NA	650000000
Pyrene	24 J	2700 D	440		340 J	730	NA	32000000

Table A.2. Soil Gas Confirmation Detected Semivolatile Organic Compounds (cont.)

ANALYTE	SGC A61 000053	SGC A13 000056	SGC A13 000057	SGC A13 000058	SGC A13 000060	SGC A13 000061	Background	10^{-6} Construction Worker Guidelines
SEMIVOLATILES (µg/Kg)								
Acenaphthene							NA	NA
Acenaphthylene							NA	NA
Anthracene	79 J				30 J		NA	320000000
Benzo(a)anthracene	210 J			29 J	71 J		NA	4100
Benzo(a)pyrene	190 J			28 J	67 J		NA	410
Benzo(b)fluoranthene	140 J			17 J	55 J		NA	4100
Benzo(g,h,i)perylene	120 J			13 J	60 J		NA	NA
Benzo(k)fluoranthene	150 J			22 J	63 J		NA	41000
Bis(2-ethylhexyl)phthalate		27 J	28 J		36 J	28 J	NA	215000
Butylbenzylphthalate							NA	215000000
Carbazole	24 J						NA	NA
Chrysene	210 J			32 J	81 J		NA	410000
Di-n-butyl phthalate							NA	105000000
Di-n-octyl phthalate							NA	21500000
Dibenz(a,h)anthracene	35 J						NA	410
Dibenzofuran							NA	NA
Diethyl phthalate							NA	NA
Fluoranthene	480	22 J		65 J	190 J		NA	42500000
Fluorene							NA	NA
Indeno(1,2,3-cd)pyrene	100 J			17 J	48 J		NA	4100
2-Methylnaphthalene							NA	NA
Naphthalene							NA	NA
Phenanthrene	290 J			35 J	140 J		NA	NA
Phenol							NA	650000000
Pyrene	390	18 J		57 J	140 J		NA	32000000

Table A.4. Soil Gas Confirmation Detected TAL Inorganics

ANALYTE	SGC NAC 000001	SGC NAC 000002	SGC NAC 000003	SGC NAC 000004	SGC NAC 000005	SGC NAC 000006	Background	10^{-6} Construction Worker Guidelines
INORGANICS (mg/kg)								
Aluminum	11000	4190	1910	11400	7970	7780	19000	NA
Antimony		0.23 B		0.24 B	0.41 B		NA	425
Arsenic	1.5 B	2.1 B	2.9 B	1.4 B	7	7.2	8.6	320
Barium	48.6	20.7 B	23.7 B	47.1 B	73.6	86.4	180	75000
Beryllium	0.56		0.12 B	0.65	0.38	0.28	1.3	0.7
Bismuth							NA	NA
Cadmium		0.25 B	0.19 B		0.36 B	0.5 B	2.1	1050
Calcium	162000	159000	95500	152000	13600	36200	310000	NA
Chromium	13.2	6.7	3.8	15.2	13	11.6	20	1050000
Cobalt	9.8 B	4.6 B	2.3 B	10.1 B	7.6 B	7.6 B	19	NA
Copper	16.2	11.9	9.9	17.1	14.5	15.2	26	NA
Cyanide							ND	21400
Iron	21300	10600	5680	21800	17260	17700	35000	NA
Lead	6.7	5.2	11.2	8.6	30.9	25.1	48	NA
Lithium	21 B	12.5 B	6.2 B	23 B	7.7 B	10.3 B	26	NA
Magnesium	6160	57800	27900	5670	5270	35600	40000	NA
Manganese	695	384	270	612	383	589	1400	135000
Mercury			0.13				NC	320
Molybdenum	0.43 B	1.2 B	0.77 B		1.7 B	1.5 B	27	NA
Nickel	18.4	9.9	6.4 B	20.6	11.1	16.1	32	21500
Potassium	1780	742 B	346 B	2080	574 B	744 B	1900	NA
Selenium							NA	NA
Silver			0.24 B				1700	5500000
Sodium	228 B	888 B	150 B	137 B	411 B	348 B	240	NA
Thallium							460	NA
Tin	1.1 B			1.4 B	1 B		20	NA
Vanadium	14.9	8.3	4.7	16.3	23.1	18.9	25	7500
Zinc	53.3	29.5		67	59	69.2	140	320000

Table A.4. Soil Gas Confirmation Detected TAL Inorganics (cont.)

ANALYTE	SGC A61 000049		SGC A61 000050		SGC A61 000051		SGC A61 000052		SGC A61 000053		SGC A61 000054		Background	10^{-6} Construction Worker Guidelines
INORGANICS (mg/kg)														
Aluminum	7040		2690		9810		6900		3890		10200		19000	NA
Antimony									0.23	B			NA	425
Arsenic	3.8		5.3		5		3.2		3.3		1.2	B	8.6	320
Barium	34.7	B	19	B	52.4		26.6	B	30.2	BJ	39.5	B	180	75000
Beryllium	0.13	B	0.14	B	0.53		0.12	B			0.66		1.3	0.7
Bismuth					1.3	B							NA	NA
Cadmium	0.32	B	0.3	B	0.27	B	0.28	B					2.1	1050
Calcium	168000		217000		98100		264000		181000		205000		310000	NA
Chromium	11.4		5.4		16.4		9		7.8	J	12.9		20	1050000
Cobalt	7.8	B	3	B	9.8	B	7.3	B	4.3	B	10.5	B	19	NA
Copper	14		29.1		25.3		12.2		13.9	J	13.7		26	NA
Cyanide													ND	21400
Iron	17100		6510		21900		16500		11400	J	20600		35000	NA
Lead	7.7		26.7		16.7		12.7		11.2	J	4		48	NA
Lithium	20.9	B	10.3	B	24.5		19.6	B	14	B	20.8	B	26	NA
Magnesium	30400		102000		18400		11600		47900	J	5290		40000	NA
Manganese	570		264		684		728		471	J	886		1400	135000
Mercury									0.06	B			NC	320
Molybdenum	1.4	B	0.51	B	1.9	B	0.62	B	0.96	B			27	NA
Nickel	16.8		6.4	B	20.8		14.1		10.5		19.1		32	21500
Potassium	1170		555	B	1770		1010	B	565	B	1700		1900	NA
Selenium													NA	NA
Silver			0.21	B	0.3	B			0.19	B			1700	5500000
Sodium	1030	B	616	B	875	B	199	B	911	BJ	268	B	240	NA
Thallium													460	NA
Tin			0.89	B	1.5	B			0.9	B			20	NA
Vanadium	10.8		6.7		17.1		9.6		8.6	J	14.1		25	7500
Zinc	46.6		254		120		66.1		73	J	40		140	320000

Table A.5. Soil Gas Confirmation Detected Nitrate-Nitrite

ANALYTE	SGC NAC 000001	SGC NAC 000002	SGC NAC 000003	SGC NAC 000004	SGC NAC 000005	SGC NAC 000006	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	83.9	93.8	88.5	83.3	78.4	75.0	NA	NA
Nitrate/Nitrite (MG-N/KG)	2.0	1.8	1.2	2.1	7.2	4.8	26	NA

ANALYTE	SGC NAC 000007	SGC NAC 000008	SGC NAC 000009	SGC NAC 000010	SGC NAC 000011	SGC NAC 000012	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	83.9	95.0	78.9	83.9	90.1	84.7	NA	NA
Nitrate/Nitrite (MG-N/KG)	1.6	26.5	2.2	5.9	5.3	1.8	26	NA

ANALYTE	SGC NAC 000013	SGC NAC 000014	SGC NAC 000015	SGC NAC 000016	SGC NAC 000017	SGC SAN 000018	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	81.7	80.9	74.0	85.3	72.8	84.2	NA	NA
Nitrate/Nitrite (MG-N/KG)	2.1	4.9	3.0	2.4	6.4	13.7	26	NA

ANALYTE	SGC NAC 000019	SGC NAC 000020	SGC NAC 000021	SGC NAC 000022	SGC NAC 000023	SGC NAC 000024	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	85.3	87.6	77.4	78.3	77.5	89.5	NA	NA
Nitrate/Nitrite (MG-N/KG)	6.5	2.1	6.1	2.2	11.6	2.2	26	NA

Table A.5. Soil Gas Confirmation Detected Nitrate-Nitrite (cont.)

ANALYTE	SGC A61 000049	SGC A61 000050	SGC A61 000051	SGC A61 000052	SGC A61 000053	SGC A61 000054	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	86.3	85.0	82.6	83.0	85.3	84.6	NA	NA
Nitrate/Nitrite (MG-N/KG)	1.5	1.8	1.6	4.6	2.3	2.6	26	NA

ANALYTE	SGC A61 000055	SGC A13 000056	SGC A13 000057	SGC A13 000058	SGC A13 000059	SGC A13 000060	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	77.3	95.3	88.9	93.7	92.8	91.0	NA	NA
Nitrate/Nitrite (MG-N/KG)	2.1	1.9	3.8	1.9	3.3	2.4	26	NA

ANALYTE	SGC A13 000061	SGC AOJ 000062	SGC AOJ 000063	SGC AOJ 000064	SGC AOJ 000065	SGC AOJ 000066	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	90.5	86.6	94.9	91.2	85.5	86.5	NA	NA
Nitrate/Nitrite (MG-N/KG)	2.2	6.2	2.2	1.2	4.2	3.4	26	NA

ANALYTE	SGC AOJ 000067	SGC AOJ 000068	SGC AOJ 000069	SGC AOJ 000070	SGC AOJ 000071	SGC AOJ 000072	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	80.7	84.0	82.0	88.2	86.1	87.6	NA	NA
Nitrate/Nitrite (MG-N/KG)	9.3	1.7	3.2	2.0	2.7	6.3	26	NA

Table A.6. Soil Gas Confirmation Detected Radionuclides

ANALYTE	SGC NAC 000001	SGC NAC 000002	SGC NAC 000003	SGC NAC 000004	SGC NAC 000005	SGC NAC 000006	SGC NAC 000007	Background	10^{-6} Construction Worker Guidelines
RADIONUCLIDES (pCi/g)									
Americium-241								ND	4.95
Bismuth-207								ND	0.175
Bismuth-210								ND	NA
Cesium-137						0.861		0.42	0.46
Cobalt-60								NC	0.1
Plutonium-238	1.42	0.0690	0.833	0.0870	0.543	4.32	0.537	0.13	5.5
Plutonium-239/240			0.0252					0.18	5.5
Potassium-40	21.7	2.95	6.53	27.4	15.1	14.3	10.8	37	NA
Radium-226	1.03	0.478	0.508	1.16	1.22	0.870	0.537	2	0.14
Thorium-228	1.52	0.277	0.370	1.24	1.05	1.06	0.431	1.5	0.85
Thorium-230	0.814	0.374	0.621	0.980	1.19	1.18	0.582	1.9	44
Thorium-232	1.30	0.184	0.315	1.17	0.950	1.18	0.328	1.4	50
Uranium-234	2.19	0.401	0.419	0.934	0.874	0.761	0.551	1.1	37.5
Uranium-235	0.0974		0.0400	0.0349	0.0328			0.11	3.35
Uranium-238	2.35	0.392	0.512	0.918	0.913	0.815	0.574	1.2	11

Table A.6. Soil Gas Confirmation Detected Radionuclides (cont.)

ANALYTE	SGC A61 000050	SGC A61 000051	SGC A61 000052	SGC A61 000053	SGC NAC 000054	SGC A61 000055	SGC A13 000056	Background	10^{-6} Construction Worker Guidelines
RADIONUCLIDES (pCi/g)									
Americium-241								ND	4.95
Bismuth-207								ND	0.175
Bismuth-210								ND	NA
Cesium-137		0.718						0.42	0.46
Cobalt-60								NC	0.1
Plutonium-238	0.138	2.25	0.0678	0.756	0.147	0.215	0.0451	0.13	5.5
Plutonium-239/240		0.0221	0.00605	0.00562	0.00291			0.18	5.5
Potassium-40	23.2	20.2	30.2	9.48	22.0	18.6	9.27	37	NA
Radium-226	0.794	1.01	0.810	0.532	0.629	1.02		2	0.14
Thorium-228	0.796	0.928	0.879	0.419	0.948	1.35	0.283	1.5	0.85
Thorium-230	0.763	0.833	0.835	0.594	0.867	1.14	0.606	1.9	44
Thorium-232	0.835	0.718	0.916	0.0346	0.896	1.16	0.884	1.4	50
Uranium-234	0.723	0.675	0.653	0.467	0.648	1.02	0.374	1.1	37.5
Uranium-235		0.0565			0.0541	0.0428		0.11	3.35
Uranium-238	0.885	0.734	0.648	0.387	0.816	1.02	0.576	1.2	11