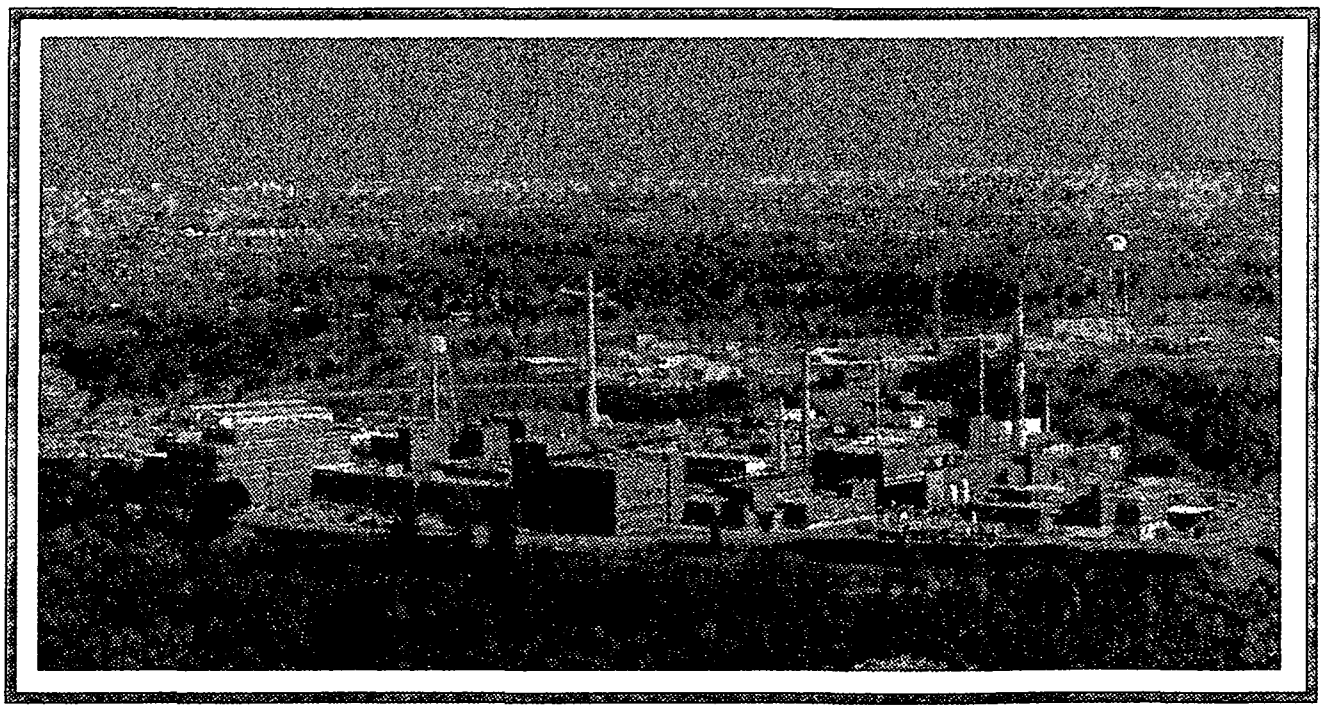
EG&G MOUND-30-03-03-03--9701300047

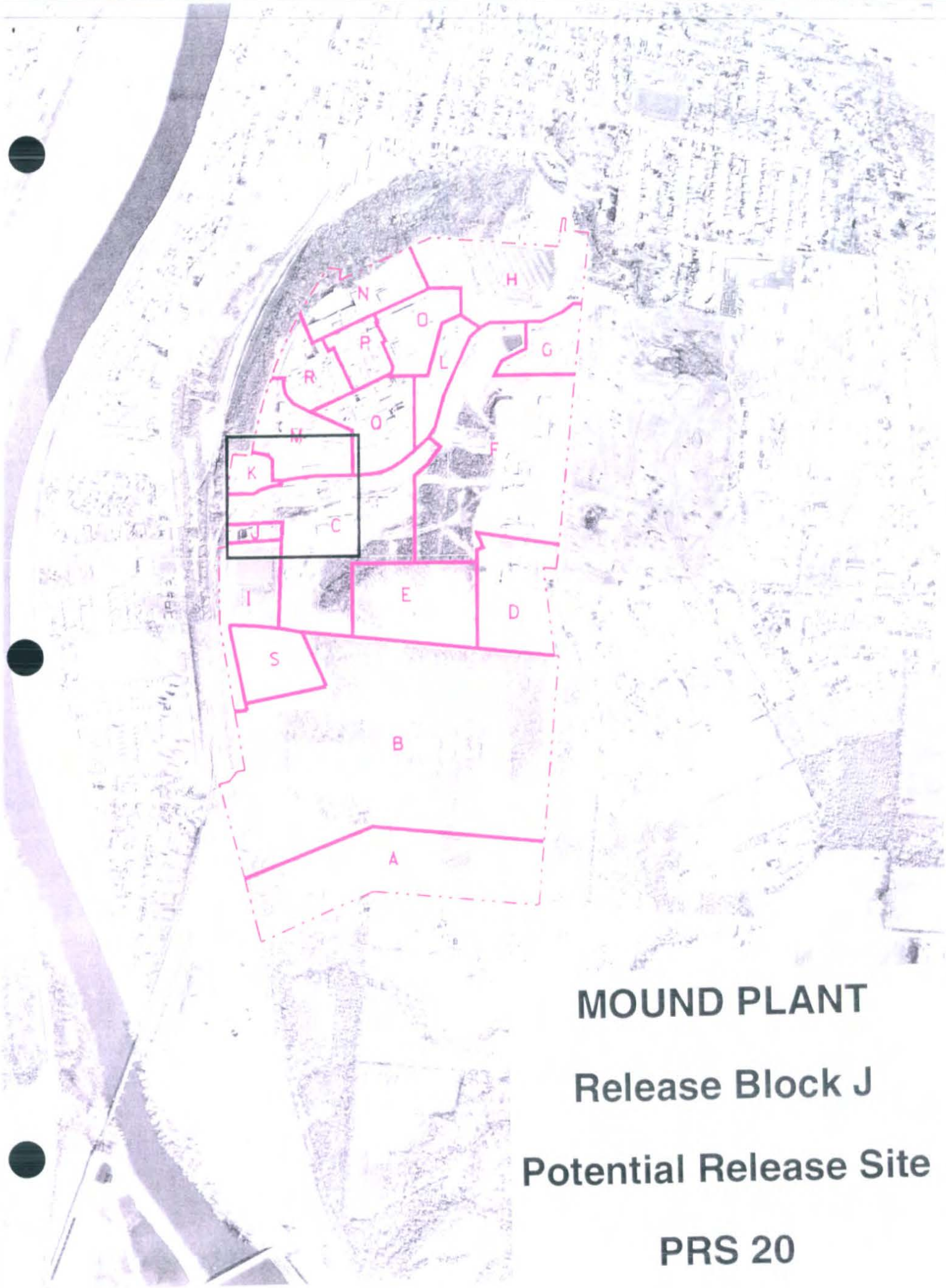
MOUND

Environmental
Restoration
Program

MOUND PLANT
Potential Release Site Package
PRS # 20



REV	DESCRIPTION	DATE
PUBLIC RELEASE 0	Available for comment.	Dec. 17, 1996
FINAL 1		



MOUND PLANT

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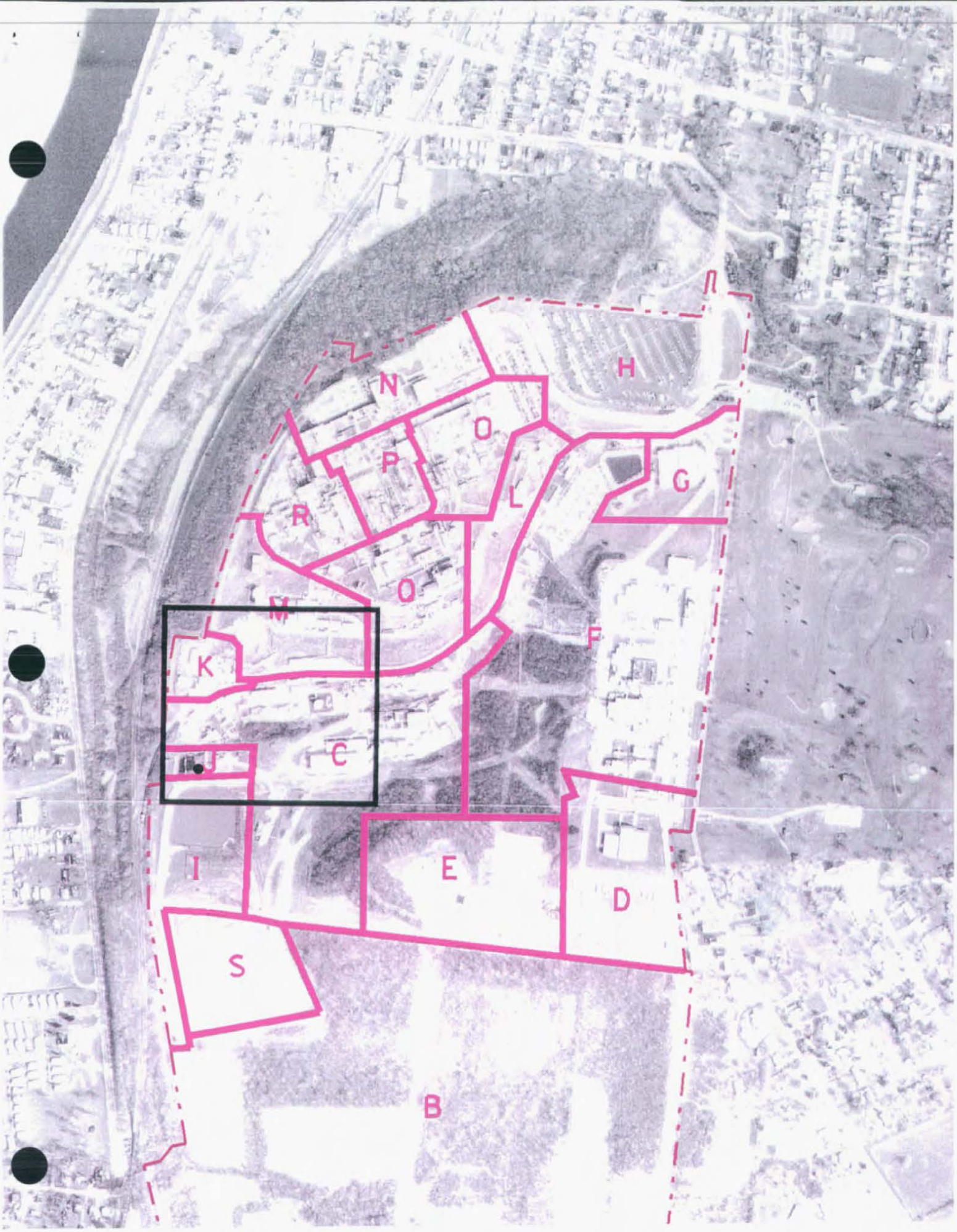
Potential Release Site

PRS 20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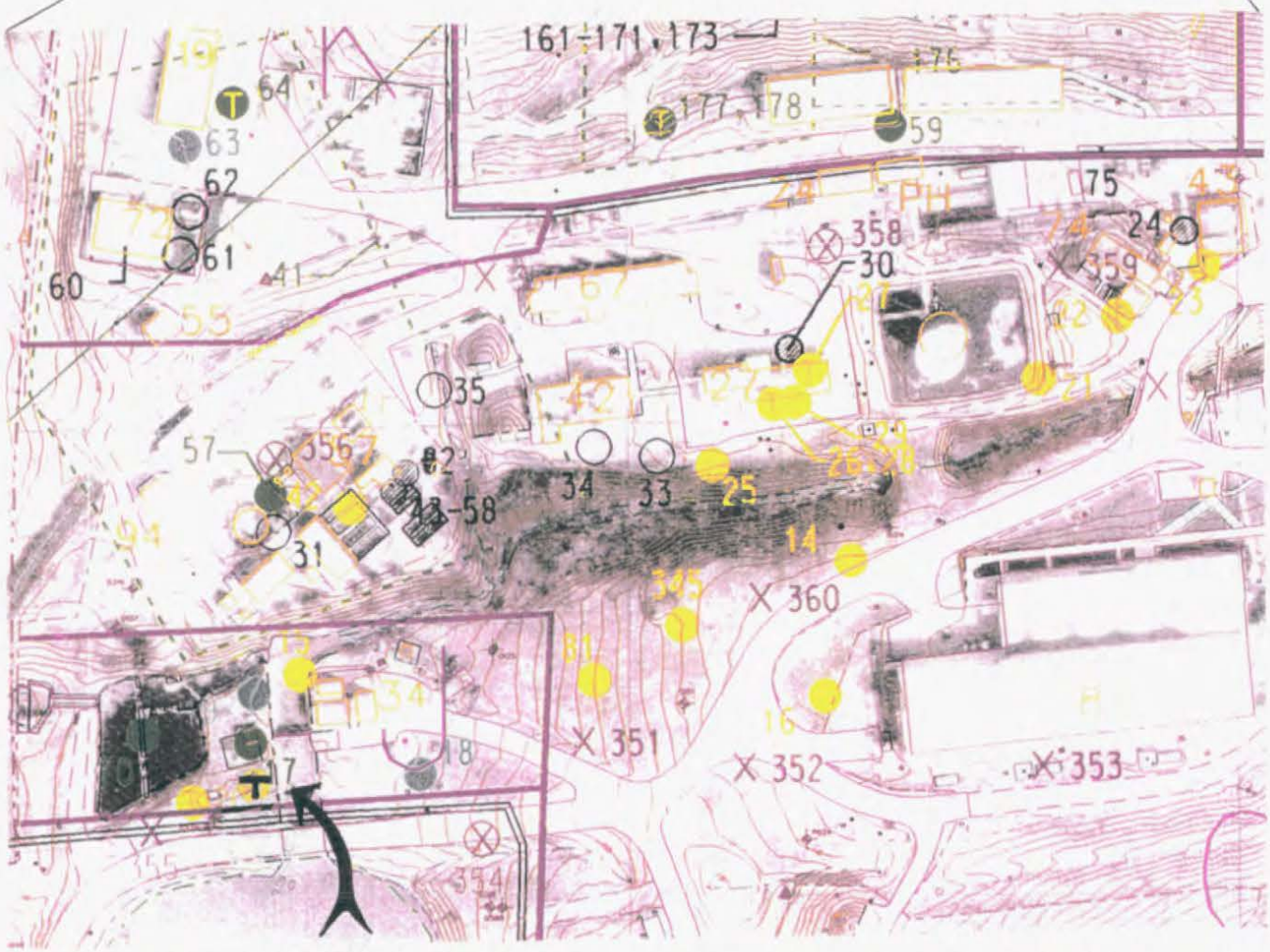
MOUND PLANT

Release Block J

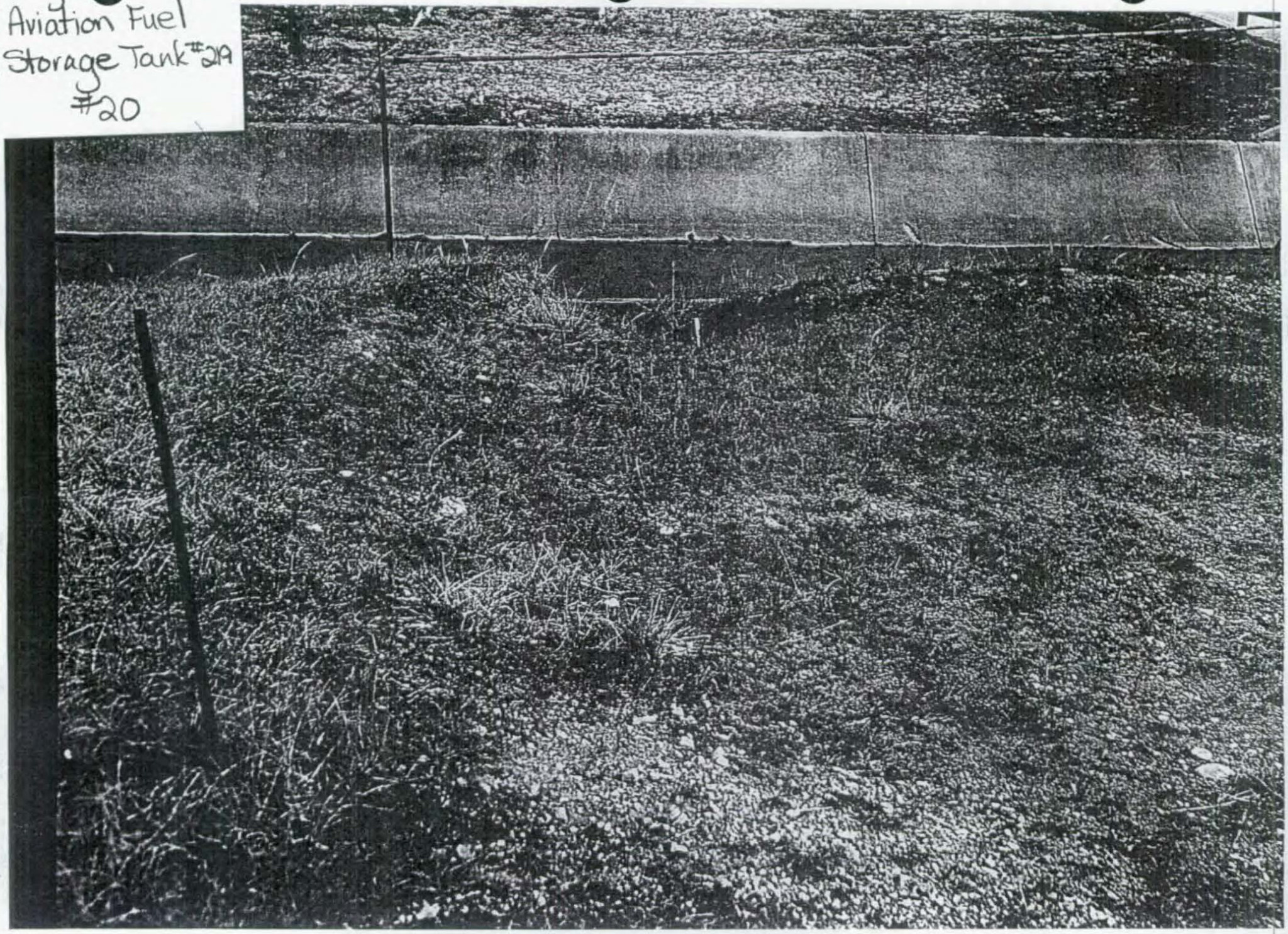
Potential Release Site

PRS 20



20

Bldg. 31
Aviation Fuel
Storage Tank #21A
#20



PRS 20

PRS HISTORY:

PRS 20 was the Bldg. 34, 5000 gallon aviation fuel storage tank.[1] It was installed in the early 1970s to supply aviation fuel through an underground pipe to the oil burn structure used to test barrels against Department of Transportation requirements. No leaks or spills were reported during operation. The tank was removed from service in 1975. The tank and about 80 ft. of piping was removed from the site in November, 1990, by Mound Plant Engineering Program (EP).[3]

PROCESS DESCRIPTION:

The tank supplied aviation fuel through an underground pipe to the oil burn structure.[3]

CONTAMINATION:

The contaminant of concern for this PRS was aviation fuel. There were two sampling efforts associated with this PRS. The Preliminary Closure Site Assessment occurred at the time the tank was removed in 1990 and the OU3 Limited Field Investigation (LFI) was conducted in 1991. In 1992 the Closure Report, Building 34-Aviation Fuel Storage Tank was developed which compared the sampling results of the two investigations and made recommendations for further action. Both investigations indicated levels of Volatile Organic Compounds and Semivolatile Organic Compounds below all guideline values. All Inorganics were below guideline values and/or Mound soil background levels with the exception of magnesium. The maximum concentration of magnesium found in the OU3 LFI was 62,500 mg/kg while Mounds background level for soils is 40,000 mg/kg. Sampling results at the time the tank was removed showed a concentration of Total Petroleum Hydrocarbons of 175 mg/kg, which exceeded the regulatory limit of 105 mg/kg. The OU3 LFI sampling taken nine months after the tank removal indicated a Petroleum Hydrocarbon level of 61 mg/kg which is below the regulatory limit of 105 mg/kg.[2] No radiological processes are known to have occured in the area of PRS 20. Data from groundwater monitoring well 379 indicated no petroleum compounds (BTEX: benzene, toluene, ethyl benzene, xylenes) were detected in the well which is downgradient of this area. Lead was detected at or below the USEPA Maximum Contaminant Level.[4]

READING ROOM REFERENCES:

1) OU9 Site Scoping Report: Volume 12- Site Summary Report, December 1994. (Pages 5-7)
2) Closure Report Building 34 - Aviation Fuel Storage Tank, August 1992. (Pages 8-58)
3) OU3, Miscellaneous Sites Limited Field Investigation Report, Final, July 1993 (Pages 59-73)
4) OU9, Hydrogeologic Investigation: Groundwater Sweeps Report, April 1995 (Pages 74-79)

PREPARED BY:

Dennis J. Gault, Member of EG&G Technical Staff

MOUND PLANT
PRS 20
AVIATION FUEL STORAGE TANK

RECOMMENDATION:

Potential Release Site (PRS) 20 was identified because of its use as an aviation fuel underground storage tank. The tank was removed in 1990.

The 1993 OU3, Limited Field Investigation showed all organics were below the 10^{-6} guideline values. Lead was detected below the USEPA residential guidance criteria of 400 mg/kg. Dioxin furans were also detected below ATSDR industrial guidance criteria of 20 ppb. There is no evidence that activities with radioactive materials have occurred in the area.

Therefore, NO FURTHER ASSESSMENT is recommended for PRS 20.

CONCURRENCE:

DOE/MB: Arthur W Kleinrath 11/26/96
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer 12/3/96
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel 12/17/96
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 1/9/97 to 2/13/97

☐ No comments were received during the comment period.

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

REFERENCE MATERIAL
PRS 20

Document Control No. _____

Environmental Restoration Program

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

MOUND PLANT
MIAMISBURG, OHIO

December 1994

Final

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

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
20	Building 34 Aviation Fuel Storage Tank (Tank 219)	H-5	Historical	Aviation fuel	3, 5, 18	Tank removed, VOC residuals		7, 18, 22	3, 4, 5, 6, 8	Tables B.6, B.7, and B.8	7, 22
21	Building 1 Leach Pit (Area I)	G-6	Surplus	Wastewater from explosives processes Organic solvents (primarily acetone)	1, 4, 5, 18	Suspected, not confirmed		7, 18	3, 4, 5, 6 14	Tables B.6, B.7, B.8, and B.9 RSS[c] Location S0504 (Appendix E in Ref. 6)	7 6
22	Building 1 Explosives Wastewater Settling Basin (Tank 200)	G-6	Surplus	Wastewater from explosives processes Organic solvents	3, 4, 5, 18	Suspected		7, 18	No Data		4
23	Building 43 Explosives Wastewater Settling Basin (Tank 201)	G-6	Surplus	Explosives production process wastes	3, 11	Suspected		7, 18	No Data		
24	Building 43 Solvent Storage Tank (Tank 221)	G-6	Never used Removed	None suspected (never used)	3	Suspected		7, 18	No Data		
25	Building 27 Leach Pit (Area I)	H-6	Surplus	Wastewater from explosives processes Organic solvents (primarily acetone)	1, 4, 5, 18	Suspected, not confirmed		7, 18	3, 4, 5, 6, 12	Tables B.6, B.7,and B.8	4, 7
26	Building 27 Concrete Flume (Tank 217)	G-6	Surplus	Wastewater from explosives processes Organic solvents (primarily acetone)	3, 5, 18	Suspected, not confirmed		7, 18	3, 4, 5, 6, 12	Tables B.6, B.7, and B.8	4, 7
27	Building 27 Settling Sump (Tank 218)	G-6	Surplus	Wastewater from explosives processes Organic solvents (primarily acetone)	3, 4, 5, 18	Suspected, not confirmed		7, 18	3, 4, 5, 6, 12	Tables B.6, B.7, and B.8	4, 7
28	Building 27 Solvent/Drum Storage Area	G-6	Surplus	Wastewater from explosives processes Organic solvents (acetone and ethanol)	4, 5, 18	Suspected, not confirmed		7, 18	3, 4, 5, 6, 12	Tables B.6, B.7, and B.8	7
29	Building 27 Filtration System	G-6	Inactive	Wastewater from explosives processes Organic solvents		Not Suspected		7, 18	No Data		

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. _____

23-01 -10 -06 -11 -9407140016

Environmental Restoration Program

CLOSURE REPORT BUILDING 34 - AVIATION FUEL 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

- Developing and evaluating remedial action alternatives to reduce these threats to acceptable levels.
- Implementing the selected remedial actions.

The FFA contains both the procedural and substantive requirements for RI/FS work. The DOE is proposing 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 34 former aviation fuel tank site is currently assigned to OU3).

Mound Plant facility was formed in 1943 for use by a technical organization working as part of the Manhattan Engineering District to determine the chemical and metallurgical properties of polonium (DOE, 1986). This work was also 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. Total acreage of Mound Plant was later expanded to 305 acres; however, there was no development of the new property.

The successive United States government agencies that have been the owners of 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 EG&G Mound Applied Technologies succeeded Monsanto as the plant operator.

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 develops small heat sources for the space and defense programs.

1.3. TANK SITE HISTORY

The Building 34 aviation fuel storage tank was located southwest of Building 34 in the lower valley area, directly north of the overflow pond (Figure 1-2). The 5,000-gallon tank supplied aviation fuel through an underground pipe to the oil burn structure, that was used to test barrels against Department

of Transportation requirements. Use of the tank began in the early 1970s and was reportedly taken out of service in 1975. Approximately 230 gallons were pumped from the aviation fuel tank in 1988 and transported off site for reformulation, leaving approximately 20 gallons in the fuel tank.

The Building 34 aviation fuel storage tank was removed by the Engineering Program (EP) as part of the Mound Plant underground tank program in November 1990. Prior to the removal, notice was provided to the Ohio Department of Commerce, Division of the State Fire Marshall, Bureau of Storage Tank Regulation (BUSTR). In addition, notice that the Building 34 tank was being removed was provided to the Ohio Environmental Protection Agency (OEPA), Division of Emergency and Remedial Response.

Based on the EP tank removal report, the part of the tank that had been in contact with the sand fill was in good condition while the part of the tank that had been surrounded by gravelly clay-type soils was severely corroded. Several small holes were detected in the upper third of the tank where it had been in contact with the clayey soils (Bowser-Morner, 1991). Although the tank was operational less than 10 years, it is evident that some leakage may have occurred while the tank was in the ground and out of service. Approximately 20 gallons of aviation fuel and 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 (Bower-Morner, 1991). Therefore, between the early 1970s and 1990, there was a potential, albeit limited potential, for leakage of residual materials to occur. The surrounding soil was sampled as part of the EP tank removal, and analytical results are discussed in Section 3.2.1.

1.4. SITE LOCATION AND SETTING

The Building 34 former aviation fuel storage tank site is located southwest of Building 34 in the lower valley area directly north of the overflow pond (Figure 1-2). The lower valley area is located in the west central portion of the Mound Plant site, adjacent the southern portion of the main drainage ditch. Currently, the area is largely comprised of a series of buildings, paved parking lots, and retention basins. The lower valley area has undergone numerous changes to accommodate Plant growth and has a long history of debris disposal (DOE, 1991c). The lower valley area also includes numerous sites that are known to have been used for the storage or staging of radioactive and hazardous materials (DOE, 1991a). The lower reach of the Plant drainage ditch has undergone extensive local engineering since the ditch was built to control surface water discharge from the Mound Plant.

In 1965, Building 34 was constructed near the container testing facilities to serve as a center for training emergency personnel. The fire fighter training pits would typically be flushed with diesel fuel

and ignited. Emergency personnel training activities did not involve the aviation fuel storage tank used for container testing. The area surrounding Building 34 appears to have been regularly disturbed since 1959. The activities involved with the disturbance include the re-routing of drainage patterns, expansion of the paved roadway system, and miscellaneous clearing and filling operations.

1.5. GEOLOGY

The Building 34 aviation fuel storage tank is located along the western edge of 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, 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. The deposits in the Buried Valley Aquifer are greater than 150 feet at its maximum thickness, 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 geologic logs of two soil borings located near the Building 34 aviation fuel storage tank site, soils in the immediate vicinity are generally comprised of gravelly clays to a depth of 8 feet below ground surface (DOE, 1992b). The percentage of gravel in the soil gradually increases from ground surface to 6 feet below ground surface and then the percentage begins to decrease. Based upon visual observations, the soils consist entirely of clay at a depth of 8 feet below ground surface.

The gravel fraction of the clay is subangular to angular and the clay is firm and moist. The clay darkens in color downward from tan to brown to dark gray to black. Based upon monitoring well information available for the area, groundwater may be encountered at approximately 32 feet below ground surface. Additional detail on the Mound Plant setting is available in RI/FS reports (DOE, 1991a; 1991b).

2. CONTAMINANT CHARACTERIZATION

2.1. FIELD SAMPLING

The Building 34 aviation fuel storage 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
yn 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. (Appendix A), an attempt was made to sample the contents of the aviation fuel storage tank on October 26, 1990; however, the tank was nearly empty and therefore no sample could be obtained.

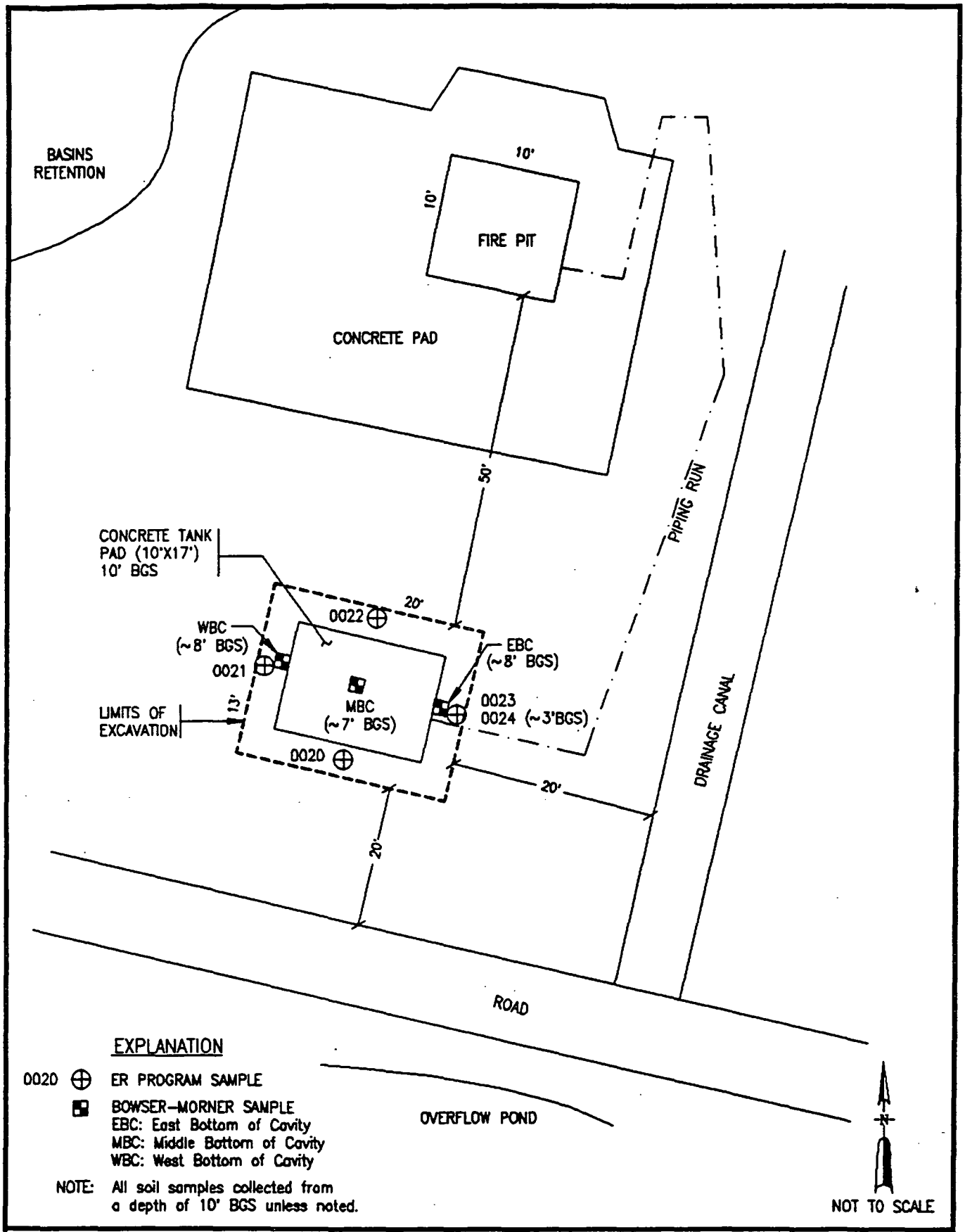
The aviation fuel storage tank system at Building 34 was removed by the Mound Plant EP on November 29, 1990. Once the tank was removed, three soil samples were collected in the excavation pursuant to BUSTR guidelines. One soil sample was collected at each end of the concrete tank pad at an approximate depth of 8 to 8½ feet below ground surface (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 (Figure 2-1).

Soil samples collected from the tank excavation were 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.

Excavated soils and soil samples were monitored for volatile organic compounds (VOC) using a photoionization detector (PID). No volatile organics were measured with a PID in the soils of the tank cavity, although PID measurements ranged up to 160 RRU near the valves for the test fire units.

2.1.2. OU3 Limited Field Investigation Sampling

On August 29, 1991, as part of the OU3 LFI, ER Program personnel were present on site to observe the re-opening of the excavation associated with the Building 34 aviation fuel storage tank removal. Since the hole excavated to remove the tank was never backfilled, the re-opening involved excavating



MOUND PLANT ENVIRONMENTAL RESTORATION PROGRAM CLOSURE REPORT	SOIL EXCAVATION SAMPLING LOCATIONS BUILDING 34 AVIATION FUEL TANK EXCAVATION AREA	FIGURE 2-1

2744005.PJMB030692

additional soil at the tank site, because the walls of the original hole had caved in by December 1990. This new excavation was 13 feet wide by 20 feet long and 10 feet deep. An approximately 1-foot thick concrete tank pad was discovered at a depth of 10 feet bgs. The dimensions of the pad were 10 feet by 17 feet. Based on field observations, light brown to tan silty clay-type soils were observed in the excavation beginning at a depth approximately 6 feet bgs. Soils above 6 feet bgs were comprised of fill materials and were not classified.

Subsurface samples were collected and screened for VOCs using a PID and a flame ionization detector (FID). Soil samples were collected with a stainless steel scoop according to the OU3 Work Plan (DOE, 1991a). One soil sample was collected from the base of each of the four walls within the excavation and a fifth sample was collected 3 feet bgs on the east wall at approximately the location of the fuel distribution pipe. The sample locations are shown in Figure 2-1. No water was encountered within the excavation. 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 34 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 with 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 at the Building 34 aviation fuel tank site was extended deeper than the 0 to 6 inches below the base of the excavation 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.

- 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, subject to discretionary changes made by the field manager.

Table II.1

Summary of OU3 Sample Collection, Bldg. 34
OU3 Limited Field Investigation

Sample Location	Sample Number	Sample Description
Location 0020	MND33-0020-0001 (MND33-0020)	Interval 1 to 2 feet below base of excavation next to cement foundation pad; 29 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCB, TAL Metals (including cyanide), EPH.
Location 0021	MND33-0021-0001 (MND33-0021)	Interval 1 to 2 feet below base of excavation next to cement foundation pad, 29 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL metals (including cyanide), EPH.
Location 0022	MND33-0022-0001 (MND33-0022)	Interval 1 to 2 feet below base of excavation next to cement foundation pad; 29 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide), EPH.
Location 0023	MND33-0023-0001	Interval 1 to 2 feet below base of excavation next to cement foundation pad; 29 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide), EPH.
	MND33-0023-1001 (MND33-0023)	Interval 1 to 2 feet below base of excavation next to cement foundation pad. (Duplicate); 29 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide), EPH.
Location 0024	MND33-0024-0001	Interval 1 to 2 feet below former tank discharge pipe location on side wall of excavation; 29 August 1991; analyses requested - TCL VOCs, SVOCs, and Pesticides/PCBs, TAL Metals (including cyanide), EPH.
	MND33-0024-5001 (MND33-0024)	Ambient blank; 29 August 1991; analyses requested - TCL VOCs.

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

2.1.2.2. Regulatory Agency Sample Collection

An OEPA representative was on site August 29, 1991, to observe OU3 sampling activities and to collect a split sample at the Building 34 site. The split sample taken at sample location 0021 was 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. briefly discusses the analytical results of the investigations described in Section 2.1.

2.2.1. Engineering Program Tank Removal Results

Table II.2 presents the laboratory results from the EP tank removal investigation for the soil samples collected at the Building 34 aviation fuel storage tank site. As noted in Section 2.1.1., the tank contained insufficient contents to allow collection of a sample.

No VOCs were identified in the soil samples. Each metal analyzed was detected with the exception of mercury and selenium. TPH ranged as high as 175 milligrams per kilogram (mg/kg), which was found in the sample from the middle of the concrete pad (Figure 2-1).

Laboratory reports for the 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.

2.2.2. OU3 Limited Field Investigation

Tables II.3, II.4, II.5, II.6, and II.7 present the analytical results from the OU3 LFI for VOCs, semivolatile organic compounds (SVOC), pesticides and PCBs, inorganics, and extractable petroleum

Table II.2
Laboratory Results of Soil Samples Collected
During Engineering Program BUSTP Tank Removal
Building 34 -- Aviation Fuel Storage Tank

PARAMETER	Unit	Building End of Cavity	Middle of Cavity	Lot End of Cavity
Benzene	ug/kg	<2	<2	<2
Chloroform	ug/kg	<10	<10	<10
Ethylbenzene	ug/kg	<2	<2	<2
Methylene Chloride	ug/kg	<50	<50	<50
Tetrachloroethylene	ug/kg	<25	<25	<25
Toluene	ug/kg	<2	<2	<2
trans-1,2-Dichloroethylene	ug/kg	<25	<25	<25
1,1,1-Trichloroethane	ug/kg	<25	<25	<25
Trichloroethene	ug/kg	<25	<25	<25
Xylene	ug/kg	<2	<2	<2
Acetone	ug/kg	<500	<500	<500
Methyl Ethyl Ketone	ug/kg	<1000	<1000	<1000
Methyl Isobutyl Ketone	ug/kg	<500	<500	<500
Mercury	mg/kg	<0.02	<0.02	<0.02
Arsenic	mg/kg	4.3	5.2	5.8
Selenium	mg/kg	<0.4	<0.4	<0.4
Silver	mg/kg	3.1	1.7	0.33
Barium	mg/kg	44	23	37
Cadmium	mg/kg	0.23	0.26	0.26
Chromium	mg/kg	11	10	13
Lead	mg/kg	3.0	3.0	3.2
Sodium	mg/kg	150	200	250
Iron	mg/kg	11000	9900	11000
Manganese	mg/kg	210	190	170
Total Petroleum Hydrocarbons	mg/kg	50	175	60

General
Chemistry

Table II.2 (Continued)
Laboratory Results of Soil Samples Collected
During Engineering Program BUSTR Tank Removal
Building 34 -- Aviation Fuel Storage Tank

PARAMETER	Unit	Building End of Cavity	Middle of Cavity	Lot End of Cavity
Phenol	mg/kg	<0.15	<0.15	<0.15
Cyanide	mg/kg	<0.1	<0.1	<0.1
Sulfide	mg/kg	<1	<1	<1
Total Solids	%	94	95	95
PCBs	mg/kg	<0.04	<0.04	<0.04
pH	S.U.	8.2	8.3	8.2
Flash Point	Degrees F	None to 210	None to 210	None to 210

Key

mg/kg = milligrams per kilogram
S.U. = Standard Units
ug/kg = micrograms per kilogram

Source: Bowser-Morner, 1991

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General Chemistry

Table II.3
Data Table For Volatile Organic Compounds, Bldg 34*
Ou3 Limited Field Investigation

SAMPLE ID	0020-0001		0021-0001			0022-0001		0023-0001		0023-1001		0024-0001	
ANALYTE	Validated Data (a)	Form I Data (b)	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)	Validated Data (a)	Form I Data (b)
Chloromethane		12 U		11 U	10 U		11 U		12 U	12 UJ	12 U		11 U
Bromomethane		12 U		11 U	10 U		11 U		12 U	12 UJ	12 U		11 U
Vinyl Chloride		12 U		11 U	10 U		11 U		12 U	12 UJ	12 U		11 U
Chloroethane		12 U		11 U	10 U		11 U		12 U	12 UJ	12 U		11 U
Methylene Chloride	6 U	2 BJ	5 U	3 BJ	1100	6 U	3 BJ	6 U	5 BJ	8 UJ	8 B	5 U	4 BJ
Acetone	27 U	27 B	29 U	29 B	100 U	24 U	24 B	26 U	26 B	21 UJ	21 B	19 U	19 B
Carbon Disulfide		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
1,1-Dichloroethene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
1,1-Dichloroethane		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
1,2 Dichloroethane (total)		6 U		5 U			6 U		6 U	6 UJ	6 U		5 U
Chloroform		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
1,2-Dichloroethane		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
2-Butanone		12 U		3 J	100 U		11 U		12 U	12 UJ	12 U		11 U
1,1,1-Trichloroethane		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Carbon Tetrachloride		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Vinyl Acetate		12 U		11 U	10U		11 U		12 U	12 UJ	12 U		11 U
Bromodichloromethane		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
1,2-Dichloropropane		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
cis-1,3-Dichloropropene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Trichloroethene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Dibromochloromethane		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
1,1,2-Trichloroethane		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Benzene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
trans-1,3-Dichloropropene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
2-Chloroethyl vinyl ether					10U								
Bromoform		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
4-Methyl-2-pentanone		12 U		11 U	10U		11 U		12 U	12 UJ	12 U		11 U
2-Hexanone		12 U		11 U	10U		11 U		12 U	12 UJ	12 U		11 U
Tetrachloroethene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
1,1,2,2-Tetrachloroethane		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Toluene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Chlorobenzene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Ethylbenzene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Styrene		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U
Xylene (total)		6 U		5 U	5 U		6 U		6 U	6 UJ	6 U		5 U

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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General Chemistry

Table II.4
Data Table for Semivolatile Organic Compounds, Bldg. 34*
OU3 Limited Field Investigation

SAMPLE ID	0020-0001		0021-0001		0022-0001		0023-0001		0023-1001		0024-0001	
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)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)
3-Nitroaniline	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	1900 UJ	1900 U	1800 UJ	1800 U	1800 UJ	1800 U
Acenaphthene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2,4-Dinitrophenol	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	1900 UJ	1900 U	1800 UJ	1800 U	1800 UJ	1800 U
4-Nitrophenol	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	380 UJ	1900 U	380 UJ	1800 U	360 UJ	1800 U
Dibenzofuran	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2,4-Dinitrotoluene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Diethylphthalate	400 UJ	180 BJ	360 UJ	220 BJ	380 UJ	170 BJ	380 UJ	200 BJ	380 UJ	210 BJ	360 UJ	140 BJ
4-Chlorophenyl-phenylether	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Fluorene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
4-Nitroaniline	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	1900 UJ	1900 U	1800 UJ	1800 U	1800 UJ	1800 U
4,6-Dinitro-2-Methylphenol	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	1900 UJ	1900 U	1800 UJ	1800 U	1800 UJ	1800 U
N-Nitrosodiphenylamine	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
4-Bromophenyl-phenylether	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Hexachlorobenzene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Pentachlorophenol	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	1900 UJ	1900 U	1800 UJ	1800 U	1800 UJ	1800 U
Phenanthrene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Anthracene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Di-n-Butylphthalate	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Fluoranthene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Pyrene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Butylbenzylphthalate	400 UJ	400 U	53 J	53 J	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
3,3'-Dichlorobenzidine	810 UJ	810 U	720 UJ	720 U	750 UJ	750 U	760 UJ	760 U	760 UJ	760 U	730 UJ	730 U
Benzo(a)Anthracene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Chrysene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
bis(2-Ethylhexyl)Phthalate	400 UJ	400 U	360 UJ	82 BJ	380 UJ	41 BJ	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Di-n-Octyl Phthalate	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U

General
Chemistry

Table II.4 (Continued)
Data Table For Semivolatile Organic Compounds, Bldg 34*
OU3 Limited Field Investigation

SAMPLE ID	0020-0001		0021-0001		0022-0001		0023-0001		0023-1001		0024-0001	
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)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)
Benzo(b)Fluoranthene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Benzo(k)Fluoranthene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Benzo(a)Pyrene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Indeno(1,2,3-cd)Pyrene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Dibenz(a,h)Anthracene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Benzo(g,h,i)Perylene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Phenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
bis(2-Chloroethyl) Ether	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2-Chlorophenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
1,3-Dichlorobenzene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
1,4-Dichlorobenzene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Benzyl Alcohol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
1,2-Dichlorobenzene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2-Methylphenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
bis(2-Chloroisopropyl)Ether	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
4-Methylphenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
N-Nitroso-Di-n-Propylamine	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Hexachloroethane	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Nitrobenzene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Isophorone	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2-Nitrophenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2,4-Dimethylphenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Benzoic Acid	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	1900 UJ	1900 U	1800 UJ	1800 U	1800 UJ	1800 U
bis(2-Chloroethoxy)Methan	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2,4-Dichlorophenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U

Table II.4 (Continued)
Data Table For Semivolatile Organic Compounds, Bldg 34*
OU3 Limited Field Investigation

SAMPLE ID	0020-0001		0021-0001		0022-0001		0023-0001		0023-1001		0024-0001	
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)	Validated Data (a)	Form I Data (b)	Validated Data (a)	Form I Data (b)
1,2,4-Trichlorobenzene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Napthalene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
4-Chloroaniline	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Hexachlorobutadiene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
4-Chloro-3-Methylphenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2-Methylnaphthalene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Hexachlorocyclopentadiene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2,4,6-Trichlorophenol	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2,4,5-Trichlorophenol	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	1900 UJ	1900 U	1800 UJ	1800 U	1800 UJ	1800 U
2-Chloronaphthalene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2-Nitroaniline	2000 UJ	2000 U	1800 UJ	1800 U	1800 UJ	1800 U	1900 UJ	1900 U	1800 UJ	1800 U	1800 UJ	1800 U
Dimethyl Phthalate	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
Acenaphthylene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U
2,6-Dinitrotoluene	400 UJ	400 U	360 UJ	360 U	380 UJ	380 U	380 UJ	380 U	380 UJ	380 U	360 UJ	360 U

Key

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

(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.

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General Chemistry

Table II.5
Data Table for Pesticides and PCBs, Bldg 34*
OU3 Limited Field Investigation

SAMPLE ID	0020-0001		0021-0001			0022-0001		0023-0001		0023-1001		0024-0001	
ANALYTE	Validated Data (a)	Form I Data (b)	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 (b)	Validated Data (a)	Form I Data (b)
alpha-BHC	2.4 UJ	2.4 U	2.2 UJ	2.2 U	2 U	2.3 UJ	2.3 U	2.3 UJ	2.3 U	2.3 UJ	2.3 U	2.2 UJ	2.2 U
beta-BHC	4.9 UJ	4.9 U	4.4 UJ	4.4 U	2 U	4.6 UJ	4.6 U	4.6 UJ	4.6 U	4.6 UJ	4.6 U	4.4 UJ	4.4 U
delta-BHC	7.3 UJ	7.3 UY	6.5 UJ	6.5 UY	2 U	6.9 UJ	6.9 U	7 UJ	7 U	7 UJ	7 U	6.6 UJ	6.6 U
gamma-BHC (Lindane)	3.3 UJ	3.3 U	2.9 UJ	2.9 U	2 U	3.1 UJ	3.1 U	3.1 UJ	3.1 U	3.1 UJ	3.1 U	3 UJ	3 U
Heptachlor	2.4 UJ	2.4 U	2.2 UJ	2.2 U	2 U	2.3 UJ	2.3 U	2.3 UJ	2.3 U	2.3 UJ	2.3 U	2.2 UJ	2.2 U
Aldrin	3.3 UJ	3.3 U	2.9 UJ	2.9 U	2 U	3.1 UJ	3.1 U	3.1 UJ	3.1 U	3.1 UJ	3.1 U	3 UJ	3 U
Heptachlor epoxide	68 UJ	68 U	61 UJ	61 U	2 U	64 UJ	64 U	64 UJ	64 U	64 UJ	64 U	61 UJ	61 U
Endosulfan I	11 UJ	11U	10 UJ	10 U	2 U	11 UJ	11 U	11 UJ	11 U	11 UJ	11 U	10 UJ	10 U
Dieldrin	1.6 UJ	1.6 U	1.4 UJ	1.4 U	3.3 U	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.4 UJ	1.4 U
4,4'-DDE	3.3 UJ	3.3 U	2.9 UJ	2.9 U	3.3 U	3.1 UJ	3.1 U	3.1 UJ	3.1 U	3.1 UJ	3.1 U	3 UJ	3 U
Endrin	4.9 UJ	4.9 U	4.4 UJ	4.4 U	3.3 U	4.6 UJ	4.6 U	4.6 UJ	4.6 U	4.6 UJ	4.6 U	4.4 UJ	4.4 U
Endosulfan II	3.3 UJ	3.3 U	2.9 UJ	2.9 U	3.3 U	3.1 UJ	3.1 U	3.1 UJ	3.1 U	3.1 UJ	3.1 U	3 UJ	3 U
4,4'-DDD	9.0 UJ	9.0 U	8.1 UJ	8.1 U	3.3 U	8.5 UJ	8.5 U	8.6 UJ	8.6 U	8.6 UJ	8.6 U	8.1 UJ	8.1 U
Endosulfan sulfate	54 UJ	54 U	48 UJ	48 U	3.3 U	50 UJ	50 U	51 UJ	51 U	57 UJ	57 U	49 UJ	49 U
4,4'-DDT	9.7 UJ	9.7 U	8.7 UJ	8.7 U	3.3 U	9.1 UJ	9.1 U	9.3 UJ	9.3 U	9.3 UJ	9.3 U	8.8 UJ	8.8 U
Methoxychlor	140 UJ	140 U	130 UJ	130 U	17 U	130 UJ	130 U	140 UJ	140 U	140 UJ	140 U	130 UJ	130 U
Endrin ketone	19 UJ	19 U	18 UJ	18 U	3.3 U	18 UJ	18 U	19 UJ	19 U	18 UJ	18 U	18 UJ	18 U
alpha-chlordane	11 UJ	11 U	10 UJ	10 U	17 U	11 UJ	11 U	11 UJ	11 U	11 UJ	11 U	10 UJ	10 U
gamma-chlordane	11 UJ	11 U	10 UJ	10 U	17 U	11 UJ	11 U	11 UJ	11 U	11 UJ	11 U	10 UJ	10 U
Toxaphene	200 UJ	200 U	180 UJ	180 U	33.0 U	180 UJ	180 U	190 UJ	190 U	190 UJ	190 U	180 UJ	180 U
Aroclor-1016	97 UJ	97 U	87 UJ	87 U	17 U	92 UJ	92 U	93 UJ	93 U	93 UJ	93 U	88 UJ	88 U
Aroclor-1221	97 UJ	97 U	87 UJ	87 U	17 U	92 UJ	92 U	93 UJ	93 U	93 UJ	93 U	88 UJ	88 U
Aroclor-1232	97 UJ	97 U	87 UJ	87 U	17 U	92 UJ	92 U	93 UJ	93 U	93 UJ	93 U	88 UJ	88 U
Aroclor-1242	97 UJ	97 U	87 UJ	87 U	17 U	92 UJ	92 U	93 UJ	93 U	93 UJ	93 U	88 UJ	88 U
Aroclor-1248	97 UJ	97 U	87 UJ	87 U	17 U	92 UJ	92 U	93 UJ	93 U	93 UJ	93 U	88 UJ	88 U
Aroclor-1254	190 UJ	190 U	170 UJ	170 U	33.0 U	180 UJ	180 U	180 UJ	180 U	180 UJ	180 U	180 UJ	180 U
Aroclor-1260	190 UJ	190 U	170 UJ	170 U	33.0 U	180 UJ	180 U	180 UJ	180 U	180 UJ	180 U	180 UJ	180 U
Endrin aldehyde	19 UJ	19 U	17 UJ	17 U		18 UJ	18 U	18 UJ	18 U	18 UJ	18 U	17 UJ	17 U

Key

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

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

J = Estimated value.
U = Compound was analyzed for but not detected. The number is the method dectection limit for the sample.
Y = Detection limit determined from secondary column. Peaks observed on primary column quantitated at less than the CRDL on the secondary column.

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General Chemistry

Table II.6
Data Table For Inorganics, Bldg 34*
OU3 Limited Field Investigation

SAMPLE ID	0020-0001		0021-0001			0022-0001		0023-0001		0023-1001		0024-0001	
ANALYTE	Validated Data (a)	Form I Data (b)	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 (b)	Validated Data (a)	Form I Data (b)
Aluminum		7020		7270	320		8510		6200		5970		9070
Antimony		5.3 U		4.4 U	<10	7.5 U	7.5	6.5 U	6.5 B		4.8 U		4.6 U
Arsenic		5.6 B		4.7 B	1.9		8.7		4.2 B		5.8		7.6
Barium	31.3 J	31.3	66.3 J	66.3	29	69.6 J	69.6	101 J	101	51.1 J	51.1	40.7 J	40.7
Beryllium		0.24 B		0.28 B	<0.5		0.42 B		0.18 B		0.21 B		0.34 B
Cadmium	0.47 UJ	0.47 U	0.40 UJ	0.40 U	<0.5	0.45 UJ	0.45 U	0.45 UJ	0.45 U	0.43 UJ	0.43 U	0.41 UJ	0.41 U
Calcium		162000		163000	140000		132000		149000		139000		130000
Chromium		7.6		7.6	5.7		8.9		6.1		6.1		9.7
Cobalt		4.1 B		3.6 B	3		4.7 B		3.7 B		4.7 B		5.3
Copper	11.9 J	11.9	11.2 J	11.2	8.3	15.1 J	15.1	11.6 J	11.6	10.6 J	10.6	13.4 J	13.4
Iron	11500 J	11500	11900 J	11900	12000	14600 J	14600	10400 J	10400	10700 J	10700	14600 J	14600
Lead		8.0		7.4	<10		8.2		7.7		8.9		9.4
Magnesium		62500		58600	50000		44100		61400		53400		48100
Manganese		238		226	190		254		234		250		265
Mercury		0.06 U		0.05 U	<0.25		0.05 U		0.06 U		0.05 U		0.05 U
Nickel	11.7 J	11.7	9.7 J	9.7	8.7	12.1 J	12.1	12.3 J	12.3	13.0 J	13.0	12.7 J	12.7
Petroleum Hydrocarbons					<25								
Percent Solids (%)					86								
Potassium		2230		2270	610		2610		2000		1720		2390
Selenium	0.12 UJ	0.12 U	0.10 UJ	0.10 U	0.3	0.12 J	0.12 B	0.12 UJ	0.12 U	0.11 UJ	0.11 U	0.11 UJ	0.11 U
Silver	0.46 U	0.46 B	0.30 UJ	0.30 U	<2	0.34 UJ	0.34 U	0.34 UJ	0.34 U	0.32 UJ	0.32 U	0.57 U	0.57 B
Sodium		225 B		195 B	120		184 B		272 B		224 B		183 B
Thallium		0.37 B		0.32 B	<0.25		0.35 B		0.35 B		0.24 B		0.22 B
Vanadium		14.1		14.3	120		16.3		11.7		12.4		16.8
Zinc		35.7		35.1	29		43.0		32.9		36.0		42.3
Cyanide		0.61 U		0.55 U			0.57 U		0.58 U		0.58 U		0.55 U

Key

* All data presented in milligrams per kilograms (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.

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General Chemistry

Table II.7
Data Table For Petroleum Hydrocarbons, Bldg 34 (a)
OU3 Limited Field Investigation

SAMPLE	VALIDATED DATA	IT LAB EPH (DIESEL)	IT LAB EPH (MOTOR OIL) (b)
0020	6	6	27
0021	17 J	17 M	44
0022		5 U	20 U
0023	8 J	8 M	34
0023-1001	7	7	29
0024		5 U	20 U

Key

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

(b) Not validated. See discussion in section 3.3.

J = Estimated value.

U = Compound was analyzed for but not detected. The number is the method detection limit for the sample.

M = Hydrocarbon quantified and reported as diesel fuel; however, motor oil may also be present.

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General Chemistry

hydrocarbons (EPH), respectively. The only VOC detected was 2-butanone, in an estimated concentration of 3 micrograms per kilogram (μg/kg); the only SVOC found was butylbenzylphthalate in an estimated concentration of 53 μg/kg, which is below the contract required detection limit. Various metals were also identified in the soil samples, such as beryllium which was found in concentrations up to 0.428 mg/kg, although many were estimated values.

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.
- Y – Detection limit determined from secondary column. Peaks observed on primary column quantitated at less than contract-required detection limit on the secondary column.

Analytical results presented in Tables II.3 through II.6 include a compilation of Form I data, the data 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 LFI 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 34 former tank site were reviewed and evaluated in accordance with the QAPP (DOE, 1991e). Results of this review and evaluation are presented in preliminary form in Appendix C. A final report on the 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. However, certain differences between the investigation results 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 reflect the condition of relatively undisturbed excavation soils. In addition, the EP tank removal samples were taken from soils 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 where the tank had been positioned and conceivably represent soils most recently contaminated with the tank contents. At the time of the tank excavation, no product was reported on the tank pad, nor were there any stained soils found in the excavation area. During the tank removal process, no PID readings were noted.

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 as much as 1 foot 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 in the EP tank removal activities, because the OU3 LFI results were from deeper samples, and because of the physical evidence noted at the time of the tank excavation, the extent of contamination may be very limited.

Although analytical parameters differed somewhat between the two investigations, both included testing for VOCs, cyanide, PCBs, and metals; some of the specific parameters varied. In addition, the OU3 LFI included testing for SVOCs that would roughly correspond with the TPH testing performed in the EP tank removal investigation, as both analyses may provide data reflecting the presence of potentially hazardous heavy hydrocarbon compounds. The OU3 LFI also included testing for EPH, quantified as diesel fuel and motor oil that, when combined, provide a result comparable to the TPH

results from the tank removal effort. However, because of the potential for overlap of the motor oil and diesel fuel quantitations, the combination of EPH results may indicate more petroleum hydrocarbons than are actually present.

EP tank removal results (Table II.2) reported no detection of volatile organics. The OU3 LFI analyses did, however, report finding 2-butanone (methyl ethyl ketone) in a concentration of 3 J μg/kg at sample location 0021 (see Figure 2-1).

With the exception of phenol, which was not detected, and TPH, EP tank removal analyses did not include SVOCs. OU3 LFI results report butylbenzylphthalate in the trace concentration of 53 J μg/kg at sample location 0021, combined EPH results of up to 61 mg/kg, and also several tentatively identified compounds (TIC). Appendix B presents the laboratory results for the OU3 LFI testing, including SVOCs, which report the qualitative detection of some non-target compound list compounds reported as 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 and SVOC target compound 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 detected concentrations 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.

Beryllium is the exception, which was detected in the OU3 LFI analysis 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 use of metal from roughly 1953 to 1965 (DOE, 1991d) and is not thought to be a tank-related contaminant. The beryllium is thought to be associated with an ineffective air filtration system used in Building 51 in conjunction with machining operations and is not considered to be a tank-related contaminant.

3.2. REMOVAL ACTION EVALUATION

Since the concentration of contaminants in the soil at the Building 34 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 structures, 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 public health and welfare" exists. At the former Building 34 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:

- 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 soils by native vegetation.

The only pathway of possible significance is contamination of groundwater. Although the Building 34 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 34 tank is expected to be small.

- Total depth to ground water is expected to be approximately 32 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 34 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 34 former tank site. Because action levels based on ARARs or risk studies have not yet been established at Mound Plant, possible action levels were established based on available regulatory and policy thresholds.

Section 1. provides that 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 34 results in context and support a decision about whether further action 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.

"Relevant and appropriate requirements," also 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, while not 'applicable' to a hazardous substances, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and that are more stringent than federal requirements may be relevant and appropriate.

According to CERCLA § 121(d)(2), in order to be considered an ARAR, a state requirement must have been "promulgated." As defined in 40 CFR 300.400(g)(4) of the NCP, the term "promulgated" means that the requirement is of general applicability and is legally enforceable.

In addition to ARARs, advisories, criteria, or guidance may be identified as "to be considered" (TBC) for a particular release. As defined in 40 CFR 300.400(g)(3), the TBC category consists of advisories, criteria, or guidance developed by EPA, other federal agencies, or states that may be useful in developing remedies. Use of TBCs is discretionary rather than mandatory, as opposed to ARARs, with which compliance is mandatory.

3.3.1. ARAR Categories

In general, there are three categories of ARARs. These categories are:

- Ambient or chemical-specific requirements set health- or risk-based concentration limits in various environmental media for specific hazardous substances or pollutants. At present, chemical-specific ARARs do not exist for contaminated soils and, accordingly, no regulatory numeric action levels can be established for evaluation of tank site investigation data.

- Location-specific requirements are limits placed on the concentration of hazardous substances or the conduct of activities solely because they occur in certain locations. Because this report presents an evaluation of an existing condition at Mound Plant, a detailed analysis of location-specific ARARs is not inappropriate.

- Performance, design, or other action-specific requirements set controls or restrictions on particular kinds of activities related to management of hazardous substances or pollutants. Because this report presents an evaluation of an existing condition at Mound Plant, a detailed analysis of action-specific ARARs is not appropriate.

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 34 waste tank. Table III.1 presents a summary of the contaminants together with possible interim 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, Annual, FY 1991 (EPA, 1991) and 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 most restrictive (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 34 aviation fuel 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 levels, they are also below the adverse effect levels for systemic toxicants.

If it becomes necessary to remove contaminated soils from the Building 34 tank site, ARARs governing the management and disposal of such soils would have to be proposed. However, because no regulatory restrictions currently exist for the tank site contaminants, 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).

Table III.1
Summary Compounds Detected in Mound Plant Bldg. 34 Aviation Fuel
Storage Tank Soils Compared with Selected Regulatory Thresholds

PARAMETER	UNIT	20-0001	21-0001	22-0001	23-0001	23-1001	24-0001	BMBEC	BMMOC	BMLEC	OEPA02	OEPA SOIL PETROLEUM CLEAN UP POLICY (ug/kg)	PROPOSED 264 SUBPART S (mg/kg)
Aluminum	mg/kg	7020	7270	8510	6200	5970	9070				320		(a)
Arsenic	mg/kg	5.6B	4.7B	8.7	4.2B	5.8	7.6	4.3	5.2	5.8	1.9		80
Barium	mg/kg	31.3J	66.3J	69.6J	101J	51.1J	40.7J	44	23	37	29		4000
Beryllium	mg/kg	0.24B	0.28B	0.42B	0.18B	0.21B	0.34B				<0.5		0.2
Butylbenzlphthalate			53J										
Cadmium	mg/kg	0.47UJ	0.4UJ	0.45UJ	0.45UJ	0.43UJ	0.41UJ	0.23	0.26	0.26	<0.5		40
Calcium	mg/kg	162000	163000	132000	149000	139000	130000				140000		(a)
Chromium	mg/kg	7.6	7.6	8.9	6.1	6.1	9.7	11	10	13	5.7		400
Cobalt	mg/kg	4.1B	3.6B	4.7B	3.7B	4.7B	5.3				3		(a)
Copper	mg/kg	11.9J	11.2J	15.1J	11.6J	10.6J	13.4J				8.3		2960
Flash Point	degrees F							None to 21	None to 21	None to 210			(a)
Iron	mg/kg	11500J	11900J	14600J	10400J	10700J	14600J	11000	9900	11000	12000		(a)
Lead	mg/kg	8	7.4	8.2	7.7	8.9	9.4	3.0	3.0	3.2	<10		(a)
Magnesium	mg/kg	62500	58600	44100	61400	53400	48100				50000		(a)
Manganese	mg/kg	238	226	254	234	250	265	210	190	170	190		8000
Methyl Ethyl Ketone	ug/kg	12U	3J	11U	12U	12UJ	11U	<1000	<1000	<1000	100U		4000
Methylene chloride	ug/kg	6U	5U	6U	6U	8UJ	5U	<50	<50	<50	1100		90
Nickel	mg/kg	11.7J	9.7J	12.1J	12.3J	13.0J	12.7J				8.7		2000
Potassium	mg/kg	2,230	2270	2610	2000	1720	2390				610		(a)
Selenium	mg/kg	0.12UJ	0.10UJ	0.12B	0.12UJ	0.11UJ	0.11UJ	<0.4	<0.4	<0.4	0.3		(a)
Silver	mg/kg	0.46U	0.3UJ	0.34UJ	0.34UJ	0.32UJ	0.57U	3.1	1.7	0.33	<2		(a)
Sodium	mg/kg	225B	195B	184B	272B	224B	183B	150	200	250	120		(a)
Thallium	mg/kg	0.37B	0.32B	0.35B	0.35B	0.24B	0.22B				<0.25		5.6
Toluene	ug/kg	6U						<2	<2	2	5.0U	4000	20000
Total Petroleum Hydrocarbon	mg/kg		61(b)	U(c)	42(b)	36(b)	U(c)	50	175	60	<25	40000	
Total Solids	%							94	95	95	86		
Vanadium	mg/kg	14.1	14.3	16.3	11.7	12.4	16.8				120		560
Zinc	mg/kg	35.7	35.1	43.0	32.9	36.0	42.3				29		16000
pH	S.U.							8.2	8.3	8.2			

Key

20-0001: IT Labs split, sample #020
21-0001: IT Labs split, sample #021
22-0001: IT Labs split, sample #022
23-0001: IT Labs split, sample #023
23-1001: IT Labs split, duplicate sample #023
24-0001: IT Labs split, sample #024
BMBEC: Bowser-Morner sample, East Bottom of Cavity
BMMOC: Bowser-Morner sample, Middle Bottom of Cavity
BMLEC: Bowser-Morner sample, West Bottom of Cavity
OEPA021: Ohio EPA's split, sample #021

(a) No oral RFD or carcinogenic slope factor found. Standard was not available, nor could it be calculated.
(b) May be biased high. Combined diesel and motor oil quantitation results.
(c) See Laboratory Results in Appendix B

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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General Chemistry

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. The OU3 LFI detected beryllium in concentrations ranging from 0.18B to 0.42B mg/kg with an action level of 0.2. Applying the equation used to derive the possible action level, the maximum beryllium detected equates to a carcinogenic risk of 2.6×10^{-6}. As noted in Section 3.1., beryllium contamination is thought to have resulted from Mound Plant historic manufacturing activities, such as beryllium machining area operations, rather than tank usage, and was likely a result of an ineffective air filtration system used in Mound Plant beryllium machining areas from roughly 1953 to 1965 (DOE, 1991d). Because Mound Plant soils will continue to be sampled and analyzed in forthcoming investigations, beryllium found in soils from the Building 34 former tank site should be revisited in the future to determine the extent of the contamination. However, beryllium is not considered to be a tank-related contaminant and as such is not considered a concern relative to tank closure activities.

When investigation results are compared to the OEPA petroleum-contaminated soil standards, the TPH results from the EP tank removal activities and two of the OU3 LFI results exceed the OEPA standard. However, the petroleum hydrocarbon results from the OU3 LFI represent a combining of the diesel fuel and motor oil quantitations and could be biased high. The two high OU3 results, reported as 42 and 61 mg/kg, are quite close to the OEPA standard of 40 mg/kg. When the petroleum hydrocarbon results are compared with the revised OEPA standard of 105 mg/kg, only one result from the tank removal investigation, 175 mg/kg as found in the soils on top of the tank pad, exceeds the state standard. The later OU3 LFI samples do not exceed the latter standard. As discussed in Section 3.1, the more toxic constituents, petroleum hydrocarbon compounds, were not detected in significant concentrations 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 and the environment. Accordingly, further investigation or remediation should not be necessary. This determination will be re-evaluated as the overall RI/FS effort at Mound Plant 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 interim 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 or remediation at the

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 did not identify VOCs in soil samples. The only VOC detected during the OU3 LFI was 2-butanone at a concentration of 3 μg/kg.

- The EP tank removal investigation did not identify SVOCs in soil samples. The only SVOC found during the OU3 LFI was butyl benzyl phthalate at an estimated concentration of 53 mg/kg.

- The EP tank removal investigation found low levels of arsenic barium, cadmium, chromium, lead, manganese, and silver 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 site. The exception to this is beryllium which was found at levels up to 0.42 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 34 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 34 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 tank site soil data in the OU3 Remedial Investigation where it will be addressed by the risk assessment/risk management process (DOE, 1992a).

APPENDIX A

BOWSER-MORNER, INC. PRELIMINARY CLOSURE SITE ASSESSMENT

Preliminary Closure Site Assessment,
Three (3) Underground Storage Tanks,
U.S. Department of Energy's Mound Plant,
Miamisburg, Ohio

For

Reliable Construction Services
1639 Stanley Avenue
Dayton, Ohio 45404

Report No. 10813-491-174

April 9, 1991

BOWSER MORNER

2.0 PURPOSE OF REPORT

This report, prepared for Reliable Construction Services, describes the removal of three (3) underground storage tanks (UST's) at the above location and provides data and conclusions on the preliminary closure site assessments of these tanks.

3.0 LOCATIONS AND DESCRIPTIONS OF UST'S

UST #1 was to the east of the test fire facility on the south central part of the site. This 5000-gallon steel tank had been used to store aviation gasoline to fire burners in the shipping container test facility. Approximately 80 feet of supply line piping were associated with this tank.

UST #3 was directly behind Building #51. This tank had been used to store waste solvents and oils. The UST was a 1200-gallon steel tank with approximately 10 feet of associated piping.

UST #7 was next to Building #43 and had never been in service. Water found in the tank was reportedly from leak testing after the tank was installed. This 1000-gallon UST was constructed of stainless steel. All of the piping for this tank was above the ground.

The attached site plan shows the locations of these UST's.

4.0 WORK PERFORMED

On October 26, November 29, November 30, and December 4, 1990, a Bowser-Morner Associates, Inc. hydrogeologist, Mr. Jeffrey D. Floyd, was present during tank closure activities at the site. The specific tasks to be accomplished were:

- Obtain samples of the contents of the tanks for laboratory analysis
- Observe the excavation and removal of the tanks
- Obtain soil samples for laboratory analysis
- Provide a closure site assessment and final report

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(TABLE 1, LABORATORY RESULTS OF SAMPLES OF UST CONTENTS, Continued)

	Result		
Parameter	BLDG 51 UST #3	BLDG 43 UST #7	Unit
Sulfide	18	16	mg/L
Total Solids	14,330	19	mg/L
PCB's	150 PCB 1268	< 0.8	ug/L
pH	9.6	7.0	S.U**
Flash Point	None to 210	None to 210	Degrees F

*Below Practical Quantification Limits

**Standard Units

5.3 Waste Characterization and Disposal

The contents of the tanks were identified and disposed of as follows:

UST #1 had reportedly only held aviation gasoline. Approximately 20 gallons of gasoline and sludge were pumped from the tank before the tank was removed. Reliable Construction Services put these waste materials in D.O.T.-approved drums and arranged for proper disposal.

UST #3 contained volatile organic compounds that are listed hazardous materials. The contents were characterized as hazardous waste, spent solvents. The contents were pumped into D.O.T. 17E approved drums for temporary storage at the site until EG&G Mound Applied Technologies could arrange for disposal.

UST #7, which was never put into service, apparently contained deionized water from the original leak testing. Mr. Richard Burdge, EG&G Project Manager, said that

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~~phenols indicated from the laboratory tests of this substance were probably residuals from disinfecting cleansers used to clean the tank after it was installed. The common household cleaner, "Lysol," contains phenols. The tank contents were pumped out into the site's storm water management system.~~

6.0 UST REMOVAL

6.1 Permits

A permit to remove the UST's was obtained from the City of Miamisburg Fire Department.

6.2 Excavation and Removal of UST

Reliable Construction Services was contracted by EG&G to remove the UST's. On November 29, November 30, and December 4, 1990, the UST's were removed. A trackhoe and a backhoe were used for the excavations, which were left open pending laboratory reports.

6.3 Field Observations

6.3.1 UST #1 BLDG 34, AVIATION GAS TANK

UST #1 was removed on November 29, 1990. The tank was pumped to remove as much liquid and sludge as possible. Approximately 20 gallons of liquid and sludge were removed and placed into D.O.T. 17E approved drums. The tank was purged until the vapor levels were less than 20% of the lower explosive limit as measured by an explosive gas meter. To ensure that explosive vapors did not regenerate, the UST was monitored several times during the removal operations.

A large trackhoe was used to excavate the UST. A concrete slab that lay over the tank and the fill materials around the tank were removed. Once the UST was exposed, it

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7.2 Details of Sample Collection

All of the samples were collected by hand. Three soil samples were collected from each tank cavity for laboratory analyses. One sample was collected from the middle of each cavity on top of the concrete slab. Two samples, one from each end of the cavity, were collected 6 to 12 inches below the top of the slab in each cavity.

The samples to be tested for volatile organics were placed in glass containers with septum lids; the samples for the rest of the analyses were placed in glass containers with Teflon-lined lids. All of the samples were placed on ice for transport. The site plan, showing sample locations, is attached.

7.3 Sample Screening

The soil samples and excavated materials were screened with a photo-ionization detector (PID) to measure the levels of organic vapors. The calibration curve for the PID is attached.

The PID showed no readings for the UST #1 cavity. PID readings were taken at 20-foot intervals along the piping to the test fire units. (Please see the attached drawing for exact sample collection locations and PID readings for these samples.)
Although the PID readings were minimal along the piping, readings up to 160 parts per million (ppm) were noted near the valves for the test fire units.

~~The PID readings of some of the excavated soils from the UST #3 cavity ranged from 10 to 15 ppm. The readings for the three soil samples from the bottom of the cavity were all 4 ppm.~~

~~No readings were found for any of the excavated materials or samples associated with UST #7.~~

7.4 Chain-of-Custody

Strict chain-of-custody was achieved by obtaining proper signatures as the samples were taken to the laboratory for analysis. Chain-of-custody documentation is attached.

7.5 Name and Affiliation of Person Collecting Samples

Mr. Jeffrey Floyd, a Bowser-Morner Associates, Inc. hydrogeologist, collected all of the samples.

7.6 Name and Affiliation of Third-Party Observer

Mr. Steve Meadows, Fire Inspector for the Miamisburg Fire Department, observed all of the UST removals.

7.7 Name, Address, and Telephone Number of Laboratory

Bowser-Morner, Inc., 4518 Taylorsville Road, Dayton, Ohio 45401
Telephone: (513) 236-8805

7.8 Laboratory Analyses and Results

Soil samples from the UST #1 (Building 34) cavity show elevated levels of iron. The total petroleum hydrocarbon levels are also elevated. No other parameters are higher than the expected background levels for the clay-type soils tested.

The analyses of the soil samples from the UST #3 (Building 51) cavity show low levels of organic solvents. All of the other parameters are within background levels for the clay-type soils tested.

Soil samples from the UST #7 cavity show very low levels of organic solvents. All of the other parameters are within background levels for the clay-type soil tested. The results of the laboratory tests of the samples collected when the UST's were removed are summarized in Tables 2-4. The laboratory reports are attached.

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TABLE 2

LABORATORY RESULTS OF SAMPLES COLLECTED

DURING INITIAL EXCAVATION

UST #1 (BLDG 34)

Result

Parameter	East Bottom Cavity	Middle Bottom Cavity	West Bottom Cavity	Unit
Benzene	< 2	< 2	< 2	ug/kg
Chloroform	< 10	< 10	< 10	ug/kg
Ethylbenzene	< 2	< 2	< 2	ug/kg
Methylene Chloride	< 50	< 50	< 50	ug/kg
Tetrachloroethylene	< 25	< 25	< 25	ug/kg
Toluene	< 2	< 2	2	ug/kg
Trans-1,2-Dichloroethylene	< 25	< 25	< 25	ug/kg
1,1,1-trichloroethane	< 25	< 25	< 25	ug/kg
Trichloroethylene	< 25	< 25	< 25	ug/kg
Xylene	< 2	< 2	< 2	ug/kg
Acetone	< 500	< 500	< 500	ug/kg
Methyl Ethyl Ketone	< 1000	< 1000	< 1000	ug/kg
Methyl Isobutyl Ketone	< 500	< 500	< 500	ug/kg
Mercury	< 0.02	< 0.02	< 0.02	mg/kg
Arsenic	4.3	5.2	5.8	mg/kg
Selenium	< 0.4	< 0.4	< 0.4	mg/kg

General Chemistry

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(TABLE 2, LABORATORY RESULTS OF SAMPLES COLLECTED DURING INITIAL EXCAVATION, UST #1, Continued)

Parameter	Result: East Bottom Cavity	Result: Middle Bottom Cavity	Result: West Bottom Cavity	Unit
Silver	3.1	1.7	0.33	mg/kg
Barium	44	23	37	mg/kg
Cadmium	0.23	0.26	0.26	mg/kg
Chromium	11	10	13	mg/kg
Lead	3.0	3.0	3.2	mg/kg
Sodium	150	200	250	mg/kg
Iron	11,000	9,900	11,000	mg/kg
Manganese	210	190	170	mg/kg
Total Petroleum Hydrocarbons	50	175	60	mg/kg
Phenol	< 0.15	< 0.15	< 0.15	mg/kg
Cyanide	< 0.1	< 0.1	< 0.1	mg/kg
Sulfide	< 1	< 1	< 1	mg/kg
Total Solids	94	95	95	%
PCB's	< 0.04	< 0.04	< 0.04	ug/kg
pH	8.2	8.3	8.2	S.U**
Flash Point	None to 210	None to 210	None to 210	Degrees F

*Below Practical Quantification Limits

**Standard Units

General Chemistry

BOWSER MORNER

8.0 CONCLUSIONS

Based on the findings of this preliminary closure assessment, additional remedial actions will be required at the former locations of Building 34 UST #1 and Building 51 UST #3. Elevated levels of petroleum hydrocarbons (TPH) are the primary concern that needs to be addressed.

The higher-than-normal level of TPH found in the UST #1 Building 34 cavity indicates that a small release of product has occurred. This TPH level exceeds the Ohio State Fire Marshal's allowable level for clean closure (<40mg/kg). The elevated level of iron in the samples collected from the UST #1 Building 34 cavity are probably due to rust from the tank. The excavated soils from this cavity will need to be remediated as waste materials. Mr. R.E. Burdge of EG&G Mound said they will remediate the tank site soil by bioremediation. This soil, and probably soils from further remedial actions, will be permitted to be disposed of in a sanitary landfill.

The low levels of organic solvents found in the soil samples from the Building 51 UST #3 cavity will not show toxicity in Toxic Characteristic Leaching Procedure (TCLP) testing and these soils are not likely to be classified as hazardous waste. The State Fire Marshal will require additional remedial action to reduce the elevated levels of total petroleum hydrocarbons found at this location (<40mg/kg). All of the other parameters are within background levels for the clay-type soils tested. The excavated soils from this cavity will need to be remediated as waste materials. Mr. R.E. Burdge of EG&G Mound said they will remediate the tank site soil by bioremediation. The soils should be tested using the TCLP method to determine the proper method of disposal although they will probably be allowed to be disposed of in a sanitary landfill.

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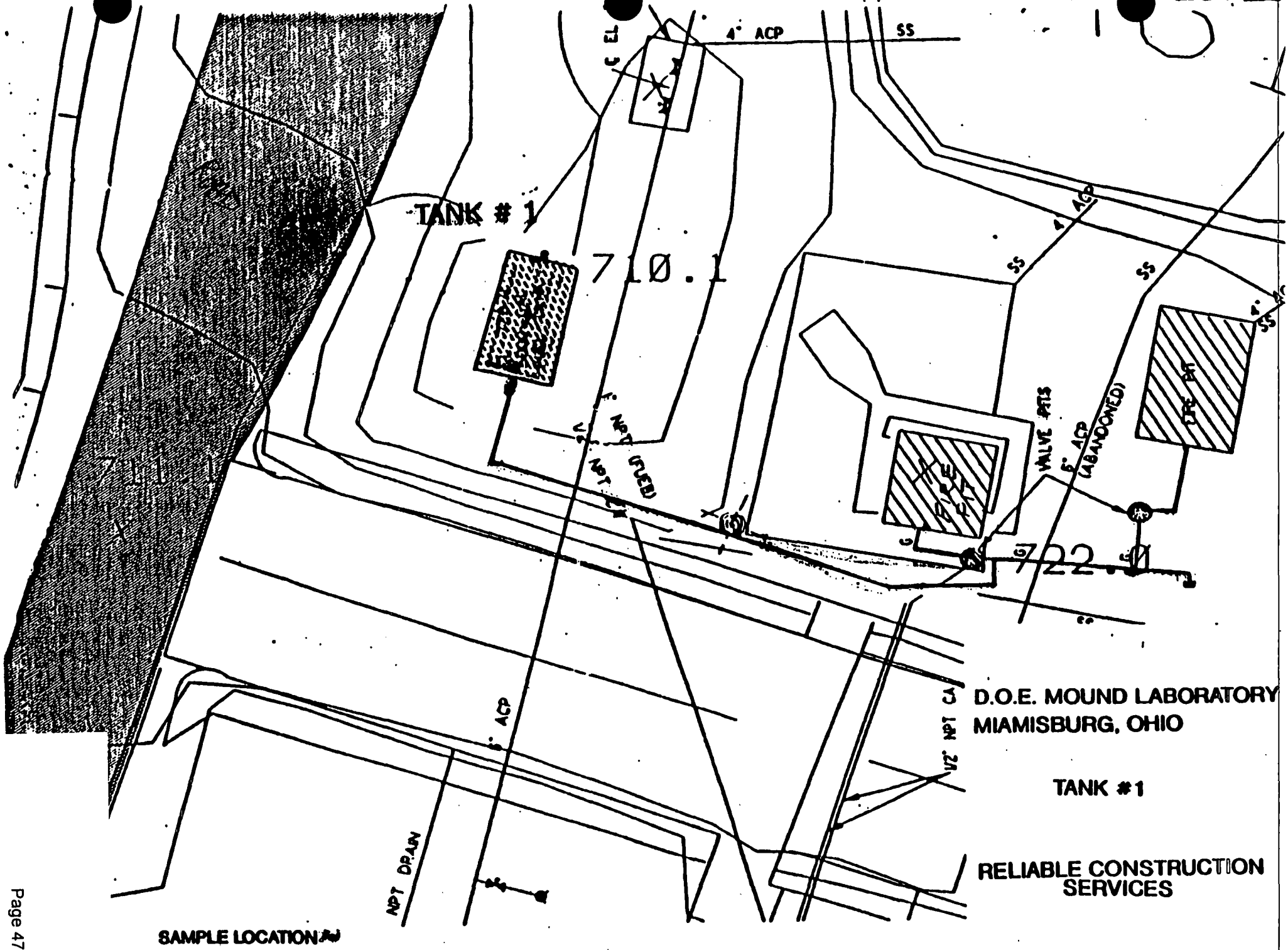
LABORATORY REPORTS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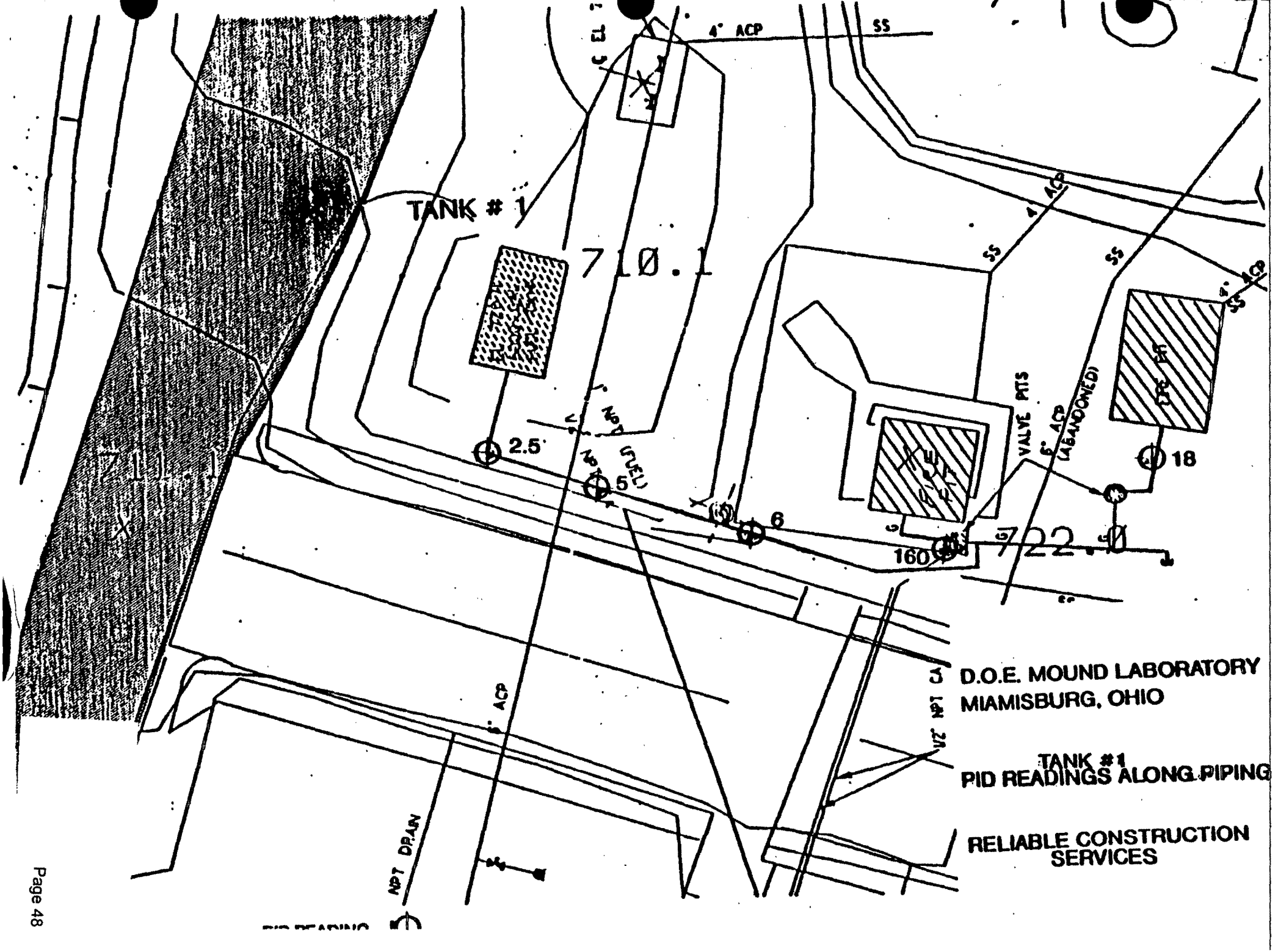
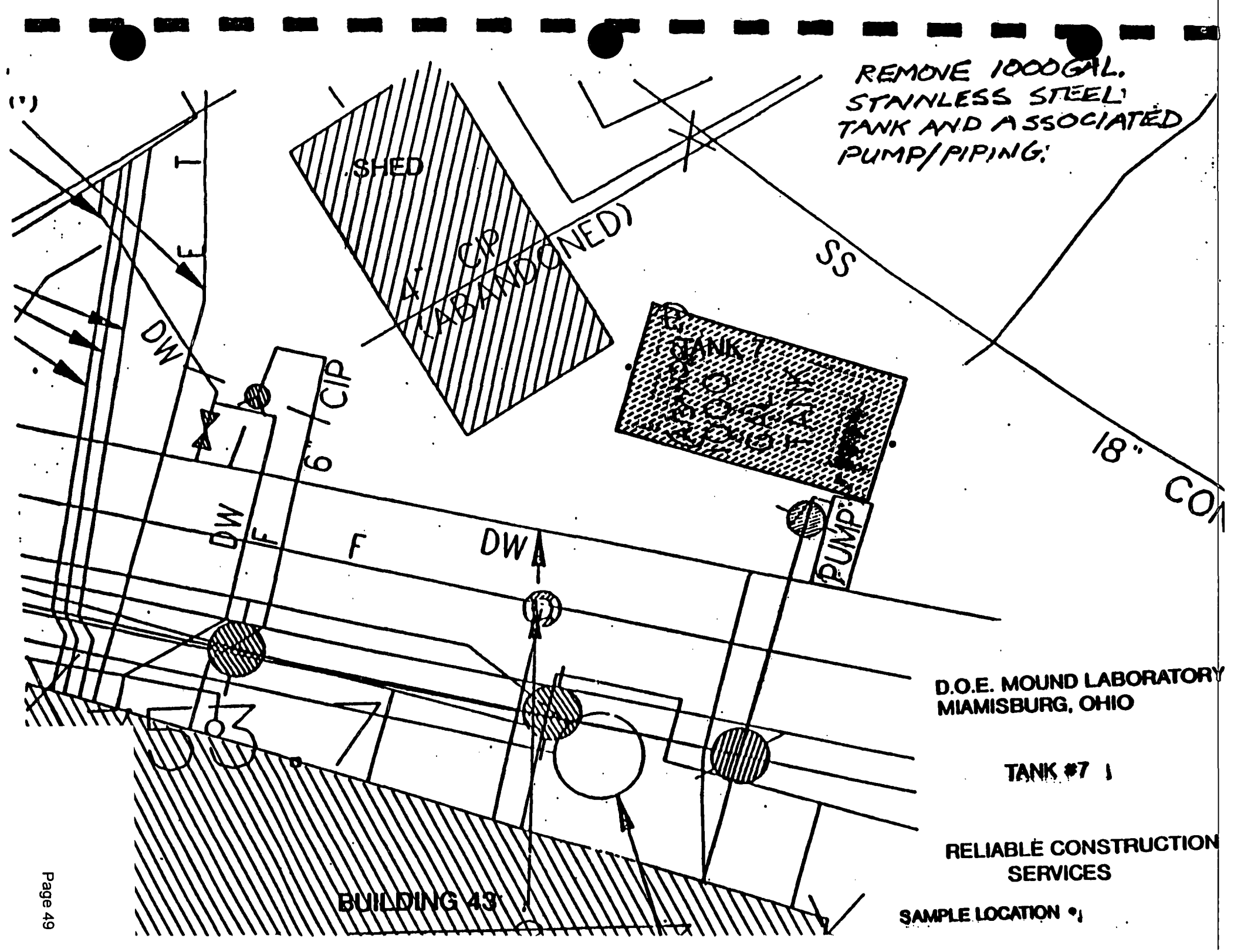
710.1
4" ACP
SS
3" EL
4" ACP
SS
SS
SS
VALVE PITS
6" ACP (ABANDONED)
722.0
NPT (FILED)
NPT
NPT DRAIN
ACP
1/2" NPT
SAMPLE LOCATION
D.O.E. MOUND LABORATORY
MIAMISBURG, OHIO
TANK #1
RELIABLE CONSTRUCTION SERVICES


TANK # 1
710.1
711.1
722.0
4" ACP
SS
4" ACP
SS
SS
4" ACP
SS
VALVE PITS
6" ACP (ABANDONED)
NPT (FUEL)
2.5
5
6
160
18
NPT DRAIN
6" ACP
D.O.E. MOUND LABORATORY
MIAMISBURG, OHIO
TANK #1
PID READINGS ALONG PIPING
RELIABLE CONSTRUCTION SERVICES


REMOVE 1000GAL.
STAINLESS STEEL
TANK AND ASSOCIATED
PUMP/PIPING.
SHED
CIP
(ABANDONED)
SS
TANK 7
PUMP
18"
CO
DW
F
DW
F
DW
F
6" CIP
BUILDING 43
D.O.E. MOUND LABORATORY
MIAMISBURG, OHIO
TANK #7
RELIABLE CONSTRUCTION
SERVICES
SAMPLE LOCATION

BOWSER-MORNER, INC.

CORPORATE: 4518 Taylorsville Rd. • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

LABORATORY REPORT

To: 10813 Reliable Const-Mound
Attn: Jeffrey Floyd

Date: 12/20/90
Lab. No.: 9011421 001
Sample No.: 58267
Authorization: WO#10813

On: One (1) Soil Sample Submitted November 29, 1990 for Chemical Analysis.

Sample Identification: #1 11-29-90 East Bottom TANK 1

ANALYTE	RESULT	UNITS
Volatile Organics		
Benzene	<25	ug/Kg
Bromodichloromethane	<50	ug/Kg
Bromoform	<50	ug/Kg
Bromomethane	<25	ug/Kg
Carbon Tetrachloride	<50	ug/Kg
Chlorobenzene	<25	ug/Kg
Chloroethane	<50	ug/Kg
2-Chloroethylvinyl Ether	<100	ug/Kg
Chloroform	<10	ug/Kg
Chloromethane	<50	ug/Kg
cis-1,3-Dichloropropene	<25	ug/Kg
Dibromochloromethane	<25	ug/Kg
1,1-Dichloroethane	<25	ug/Kg
1,2-Dichloroethane	<25	ug/Kg
1,1-Dichloroethylene	<25	ug/Kg
1,2-Dichloropropane	<25	ug/Kg
Ethylbenzene	<25	ug/Kg
Methylene Chloride	<50	ug/Kg
1,1,2,2-Tetrachloroethane	<25	ug/Kg
Tetrachloroethylene	<25	ug/Kg
Toluene	<25	ug/Kg
trans-1,2-Dichloroethylene	<25	ug/Kg
trans-1'3-Dichloropropene	<25	ug/Kg
1,1,1-Trichloroethane	<25	ug/Kg
1,1,2-Trichloroethane	<25	ug/Kg
Trichloroethylene	<25	ug/Kg
Trichlorofluoromethane	<25	ug/Kg
Vinyl Chloride	<50	ug/Kg

General Chemistry

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.3 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

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CORPORATE: 4518 Taylorsville Rd. • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

Xylene	<50	ug/Kg
Acetone	<500	ug/Kg
Acrolein	<100	ug/Kg
Acrylonitrile	<1000	ug/Kg
Carbon Disulfide	<50	ug/Kg
Dibromomethane	<50	ug/Kg
Dichlorodifluoromethane	<50	ug/Kg
Methyl Butyl Ketone	<500	ug/Kg
Methyl Ethyl Ketone	<1000	ug/Kg
Methyl Isobutyl Ketone	<500	ug/Kg
Stryene	<50	ug/Kg
1,2,3 Trichloropropane	<100	ug/Kg
Vinyl Acetate	<100	ug/Kg

.....
SURROGATE STANDARD
...1,2-dichloroethane-d4
...Fluorobenzene
...Pentafluorobenzene
PERCENT RECOVERY 119 %
.....
-- NOTES --
BPQL = Below Practical
Quantitation Limits

General Chemistry

Arsenic	4.3	mg/Kg
Barium	44	mg/Kg
Cadmium	0.23	mg/Kg
Chromium	11	mg/Kg
Lead	3.0	mg/Kg
Mercury	<0.02	mg/Kg
Selenium	<0.4	mg/Kg
Silver	3.1	mg/Kg
Iron	11000	mg/Kg
Manganese	210	mg/Kg
Total Petroleum Hydrocarbons	50	mg/Kg
Free Liquids	None	
Phenol	<0.15	mg/Kg
Cyanide	<0.1	mg/Kg
Sulfide	<1	mg/Kg
Total Solids	94	%
PCB	<0.04	mg/Kg

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LABORATORY REPORT Lab No.: 9011421 001
Page 3

pH	8.2		
Flash Point Testing	No Flash	to 210' F	
Sodium	150	mg/Kg	
Benzene	<2	ug/Kg	GC/PID
Toluene	<2	ug/Kg	GC/PID
Ethylbenzene	<2	ug/Kg	GC/PID
Xylene	<2	ug/Kg	GC/PID

Respectfully Submitted,
BOWSER-MORNER, INC.
Analytical Sciences Division

Eric C. Wiegert, Manager
Environmental Sciences Laboratory

ECW/ECW
1 -Client
2 -File

General
Chemistry

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.3 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER-MORNER, INC.

CORPORATE: 4518 Taylorsville Rd. • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

LABORATORY REPORT

To: 10813 Reliable Const-Mound
Attn: Jeffrey Floyd

Date: 12/20/90
Lab. No.: 9011421 002
Sample No.: 58268
Authorization: WO#10813

On: One (1) Soil Sample Submitted November 29, 1990 for Chemical Analysis.

Sample Identification: #2 11-29-90 Middle Bottom _TANK 1

ANALYTE	RESULT	UNITS
Volatile Organics		
Benzene	<25	ug/Kg
Bromodichloromethane	<50	ug/Kg
Bromoform	<50	ug/Kg
Bromomethane	<25	ug/Kg
Carbon Tetrachloride	<50	ug/Kg
Chlorobenzene	<25	ug/Kg
Chloroethane	<50	ug/Kg
2-Chloroethylvinyl Ether	<100	ug/Kg
Chloroform	<10	ug/Kg
Chloromethane	<50	ug/Kg
cis-1,3-Dichloropropene	<25	ug/Kg
Dibromochloromethane	<25	ug/Kg
1,1-Dichloroethane	<25	ug/Kg
1,2-Dichloroethane	<25	ug/Kg
1,1-Dichloroethylene	<25	ug/Kg
1,2-Dichloropropane	<25	ug/Kg
Ethylbenzene	<25	ug/Kg
Methylene Chloride	<50	ug/Kg
1,1,2,2-Tetrachloroethane	<25	ug/Kg
Tetrachloroethylene	<25	ug/Kg
Toluene	<25	ug/Kg
trans-1,2-Dichloroethylene	<25	ug/Kg
trans-1'3-Dichloropropene	<25	ug/Kg
1,1,1-Trichloroethane	<25	ug/Kg
1,1,2-Trichloroethane	<25	ug/Kg
Trichloroethylene	<25	ug/Kg
Trichlorofluoromethane	<25	ug/Kg
Vinyl Chloride	<50	ug/Kg

General Chemistry

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CORPORATE: 4518 Taylorsville Rd. • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

Xylene	<50	ug/Kg
Acetone	<500	ug/Kg
Acrolein	<100	ug/Kg
Acrylonitrile	<1000	ug/Kg
Carbon Disulfide	<50	ug/Kg
Dibromomethane	<50	ug/Kg
Dichlorodifluoromethane	<50	ug/Kg
Methyl Butyl Ketone	<500	ug/Kg
Methyl Ethyl Ketone	<1000	ug/Kg
Methyl Isobutyl Ketone	<500	ug/Kg
Stryene	<50	ug/Kg
1,2,3 Trichloropropane	<100	ug/Kg
Vinyl Acetate	<100	ug/Kg

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SURROGATE STANDARD
...1,2-dichloroethane-d4
...Fluorobenzene
...Pentafluorobenzene
PERCENT RECOVERY 99 %

.....

-- NOTES --
BPQL = Below Practical
Quantitation Limits

General Chemistry

Arsenic	5.2	mg/Kg
Barium	23	mg/Kg
Cadmium	0.26	mg/Kg
Chromium	10	mg/Kg
Lead	3.0	mg/Kg
Mercury	<0.02	mg/Kg
Selenium	<0.4	mg/Kg
Silver	1.7	mg/Kg
Iron	9900	mg/Kg
Manganese	190	mg/Kg
Total Petroleum Hydrocarbons	175	mg/Kg
Free Liquids	None	
Phenol	<0.15	mg/Kg
Cyanide	<0.1	mg/Kg
Sulfide	<1	mg/Kg
Total Solids	95	%
PCB	<0.04	mg/Kg

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.3 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER-MORNER, INC.

CORPORATE: 4518 Taylorsville Rd. • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

LABORATORY REPORT

Lab No.: 9011421 002

pH	8.3		
Flash Point Testing	No Flash	to 210' F	
Sodium	200	mg/Kg	
Benzene	<2	ug/Kg	GC/PID
Toluene	<2	ug/Kg	GC/PID
Ethylbenzene	<2	ug/Kg	GC/PID
Xylene	<2	ug/Kg	GC/PID

Respectfully Submitted,
BOWSER-MORNER, INC.
Analytical Sciences Division

Eric C. Wiegert, Manager
Environmental Sciences Laboratory

ECW/ECW
1 -Client
2 -File

General
Chemistry

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BOWSER-MORNER, INC.

CORPORATE: 4518 Taylorsville Rd. • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

LABORATORY REPORT

To: 10813 Reliable Const-Mound
Attn: Jeffrey Floyd

Date: 12/20/90
Lab. No.: 9011421 003
Sample No.: 58269
Authorization: WO#10813

On: One (1) Soil Sample Submitted November 29, 1990 for Chemical Analysis.

Sample Identification: #3 11-29-90 West Bottom TANK 1

ANALYTE	RESULT	UNITS
Volatile Organics		
Benzene	<25	ug/Kg
Bromodichloromethane	<50	ug/Kg
Bromoform	<50	ug/Kg
Bromomethane	<25	ug/Kg
Carbon Tetrachloride	<50	ug/Kg
Chlorobenzene	<25	ug/Kg
Chloroethane	<50	ug/Kg
2-Chloroethylvinyl Ether	<100	ug/Kg
Chloroform	<10	ug/Kg
Chloromethane	<50	ug/Kg
cis-1,3-Dichloropropene	<25	ug/Kg
Dibromochloromethane	<25	ug/Kg
1,1-Dichloroethane	<25	ug/Kg
1,2-Dichloroethane	<25	ug/Kg
1,1-Dichloroethylene	<25	ug/Kg
1,2-Dichloropropane	<25	ug/Kg
Ethylbenzene	<25	ug/Kg
Methylene Chloride	<50	ug/Kg
1,1,2,2-Tetrachloroethane	<25	ug/Kg
Tetrachloroethylene	<25	ug/Kg
Toluene	<25	ug/Kg
trans-1,2-Dichloroethylene	<25	ug/Kg
trans-1'3-Dichloropropene	<25	ug/Kg
1,1,1-Trichloroethane	<25	ug/Kg
1,1,2-Trichloroethane	<25	ug/Kg
Trichloroethylene	<25	ug/Kg
Trichlorofluoromethane	<25	ug/Kg
Vinyl Chloride	<50	ug/Kg

General Chemistry

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.3 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER-MORNER, INC.
CORPORATE: 4518 Taylorsville Rd. • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

Xylene	<50	ug/Kg
Acetone	<500	ug/Kg
Acrolein	<100	ug/Kg
Acrylonitrile	<1000	ug/Kg
Carbon Disulfide	<50	ug/Kg
Dibromomethane	<50	ug/Kg
Dichlorodifluoromethane	<50	ug/Kg
Methyl Butyl Ketone	<500	ug/Kg
Methyl Ethyl Ketone	<1000	ug/Kg
Methyl Isobutyl Ketone	<500	ug/Kg
Stryene	<50	ug/Kg
1,2,3 Trichloropropane	<100	ug/Kg
Vinyl Acetate	<100	ug/Kg

.....

SURROGATE STANDARD
...1,2-dichloroethane-d4
...Fluorobenzene
...Pentafluorobenzene
PERCENT RECOVERY 104 %

.....

— NOTES —
BPQL = Below Practical Quantitation Limits

General Chemistry

Arsenic	5.8	mg/Kg
Barium	37	mg/Kg
Cadmium	0.26	mg/Kg
Chromium	13	mg/Kg
Lead	3.2	mg/Kg
Mercury	<0.02	mg/Kg
Selenium	<0.4	mg/Kg
Silver	0.33	mg/Kg
Iron	11000	mg/Kg
Manganese	170	mg/Kg
Total Petroleum Hydrocarbons	60	mg/Kg
Free Liquids	None	
Phenol	<0.15	mg/Kg
Cyanide	<0.1	mg/Kg
Sulfide	<1	mg/Kg
Total Solids	95	%
PCB	<0.04	mg/Kg

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.3 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

BOWSER-MORNER, INC.

CORPORATE: 4518 Taylorsville Rd. • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

LABORATORY REPORT

Lab No.: 9011421 003

pH	8.2		
Flash Point Testing	No Flash	to 210' F	
Sodium	250	mg/Kg	
Benzene	<2	ug/Kg	GC/PID
Toluene	2	ug/Kg	GC/PID
Ethylbenzene	<2	ug/Kg	GC/PID
Xylene	<2	ug/Kg	GC/PID

Respectfully Submitted,
BOWSER-MORNER, INC.
Analytical Sciences Division

Eric C. Wiegert, Manager
Environmental Sciences Laboratory

ECW/ECW
1 -Client
2 -File

General
Chemistry

The above analysis was performed in accordance with procedures listed in Title 40 of the Code of Federal Regulations, Parts 136.3 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be retained at this laboratory for a period of 30 days. All reports remain the confidential property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, except as authorized by contract.

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

823-9670

Building 34. Based upon this information, lithium analysis was included for all soil samples collected at the Building 34 Historical Fire-Fighting Training Pit.

Based on recently obtained information concerning a cleanup of depleted uranium at the Building 34 area, surface and near surface soils were analyzed via gamma spectroscopy. The samples, archived at IT Laboratories, were analyzed for cesium-137; potassium-40; radium-224, -226, and -228; and thorium-234, a daughter of uranium-238.

Soil sample collection at the Building 34 Historical Fire-Fighting Training Area was conducted by WESTON representatives on 12 and 13 February 1992. Samples were shipped to IT Laboratories for analysis. Table II.14 summarizes the samples collected including the sample identification number, sample depth interval, date sampled, and the analytical parameters requested. Sampling protocol at the site followed approved OU 3 LFI procedures.

2.15. BUILDING 34 FORMER AVIATION FUEL TANK

2.15.1. Site History

2.15.1.1. Description of Building 34 Former Aviation Fuel Tank

The Building 34 Former Aviation Fuel Tank was located along the western edge of the tributary valley that trends east-west and occupies a lowland at the Mound Plant. The Building 34 Former Aviation Fuel Tank was located southwest of Building 34 and directly north of the overflow pond (Figure 2.12(a)). The 5,000-gallon underground storage tank supplied aviation fuel through an underground pipe to the Building 34 Oil Burn Structure. The aviation fuel tank was placed in service in the early 1970s and was removed from service in 1975.

Approximately 230 gallons were pumped from the tank in 1988 for proper disposal, leaving approximately 20 gallons of aviation fuel and sludge in the tank until the tank's removal on 29 November 1991 (DOE 1992c; Bowser-Morner 1991). A written closure report for the tank closing was provided to OEPA (DOE 1992c). On 29 August 1991, as part of the OU 3 LFI sampling program, the Building 34 Former Aviation Fuel Tank excavation was reopened for additional soil sampling 1 ft below and directly adjacent to the concrete foundation pad (depth of 10.0 ft BGS) and under the former tank piping.

Table II.14. Building 34 Historical Fire–Fighting Training Pit Sample Summary

Sample Location	Sample Number	Matrix	Date Sampled	Sample Interval (ft BGS)	Parameters Analyzed
MND33–0135	MND33–0135–0001	Soil	2/12/92	3.0–6.0	TCL VOCs, SVOCs, P/PCBs; TAL inorganics; lithium; dioxin/furans; EPH; gamma spec.
	MND33–0135–0002	Soil	2/12/92	8.0–10.0	TCL VOCs, SVOCs, P/PCBs; TAL inorganics; lithium; dioxin/furans; EPH; gamma spec.
	MND33–0135–5001	Water	2/12/92	---	TCL VOCs.
MND33–0136	MND33–0136–0001	Soil	2/13/92	3.0–6.0	TCL VOCs, SVOCs, P/PCBs; TAL inorganics; lithium; dioxin/furans; EPH; gamma spec.
	MND33–0136–1001	Soil	2/13/92	3.0–6.0	TCL VOCs, SVOCs, P/PCBs; TAL inorganics; lithium; dioxin/furans; EPH.
	MND33–0136–0002	Soil	2/13/92	8.0–12.0	TCL VOCs, SVOCs, P/PCBs; TAL inorganics; lithium; dioxin/furans; EPH; gamma spec.
	MND33–0136–4001	Water	2/13/92	---	TCL VOCs, SVOCs, P/PCBs; TAL inorganics; lithium; dioxin/furans; EPH.

BGS – Below Ground Surface
ft – Feet
EPH – Extractable Petroleum Hydrocarbons
P/PCBs – Pesticides/Polychlorinated Biphenyls
SVOCs – Semivolatile Organic Compounds
TAL – Target Analyte List
TCL – Target Compound List
VOCs – Volatile Organic Compounds

2.15.1.2. Potential Area Contaminants

The former tank that was located at Building 34 contained aviation fuel. No leaks or spills were reported during the tank operation. Based on visual observations during tank removal, the part of the tank that was in contact with the sand fill was in good condition. However, the part of the tank that was in contact with the surrounding gravelly clay was severely corroded (DOE 1992c). Several small holes were observed in the upper third of the tank (Bowser-Morner 1991). One of the conclusions of the Bowser-Morner report was that some leakage may have occurred while the tank was in operation and/or out of service. In addition, PID readings were taken along the exposed tank pipeline before removal of the piping. Elevated PID readings up to 160 units were reported by Bowser-Morner at a location east of the tank near the valves for the test fire units.

Prior environmental soil gas samples have been collected near Building 34, one at Station 31 near the fire-fighting training facility, and at Station 30, which was near the former aviation fuel tank. The samples were collected as part of the Area B OU 1 Investigation. The samples were analyzed for TCE, 1,2-trans-dichloroethene, chloroethene, toluene, benzene, and ethylbenzene. At Station 30, toluene was found at 0.24 µg/L.

2.15.2. Field Investigation Procedures

The objective of sampling at the Building 34 Former Aviation Fuel Tank was to assess whether the site is or has been a source of hazardous contaminant releases to the environment. The Building 34 Former Aviation Fuel Tank sampling activities included the excavation of soil and sampling of the soils at five locations by use of stainless steel scoops. Sampling locations included four samples from the bottom of the excavation at a depth of approximately 1 ft below the top of the concrete tank foundation pad. One soil sample was collected along each side of the rectangular concrete pad. An additional soil sample was collected from the side wall of the excavation, directly below the former location of fuel discharge piping (MND33-0024). Sample locations are presented in Figure 2.15. The soils in the vicinity of the Building 34 Former Aviation Fuel Tank are generally composed of gravelly and sandy clays to a depth of 8.0 ft BGS (DOE 1992c). Groundwater was not encountered in the tank excavation during either of the two sampling rounds.

Soil sample collection at the Building 34 site was conducted by WESTON representatives on 29 August 1991. 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 interval, date sampled, and requested analytical parameters is presented in Table II.15.

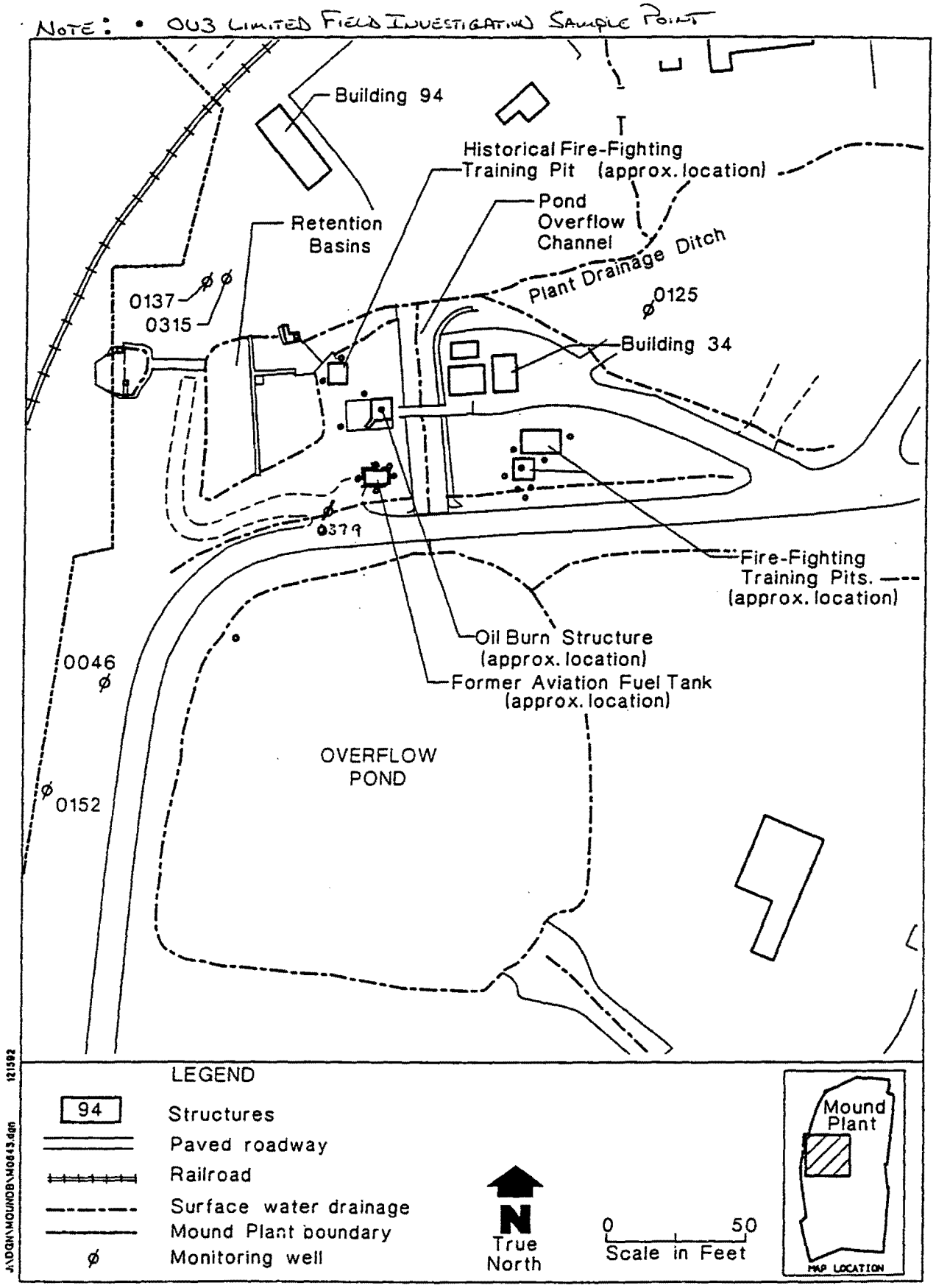

Figure 2.12(a). Building 34 sites.

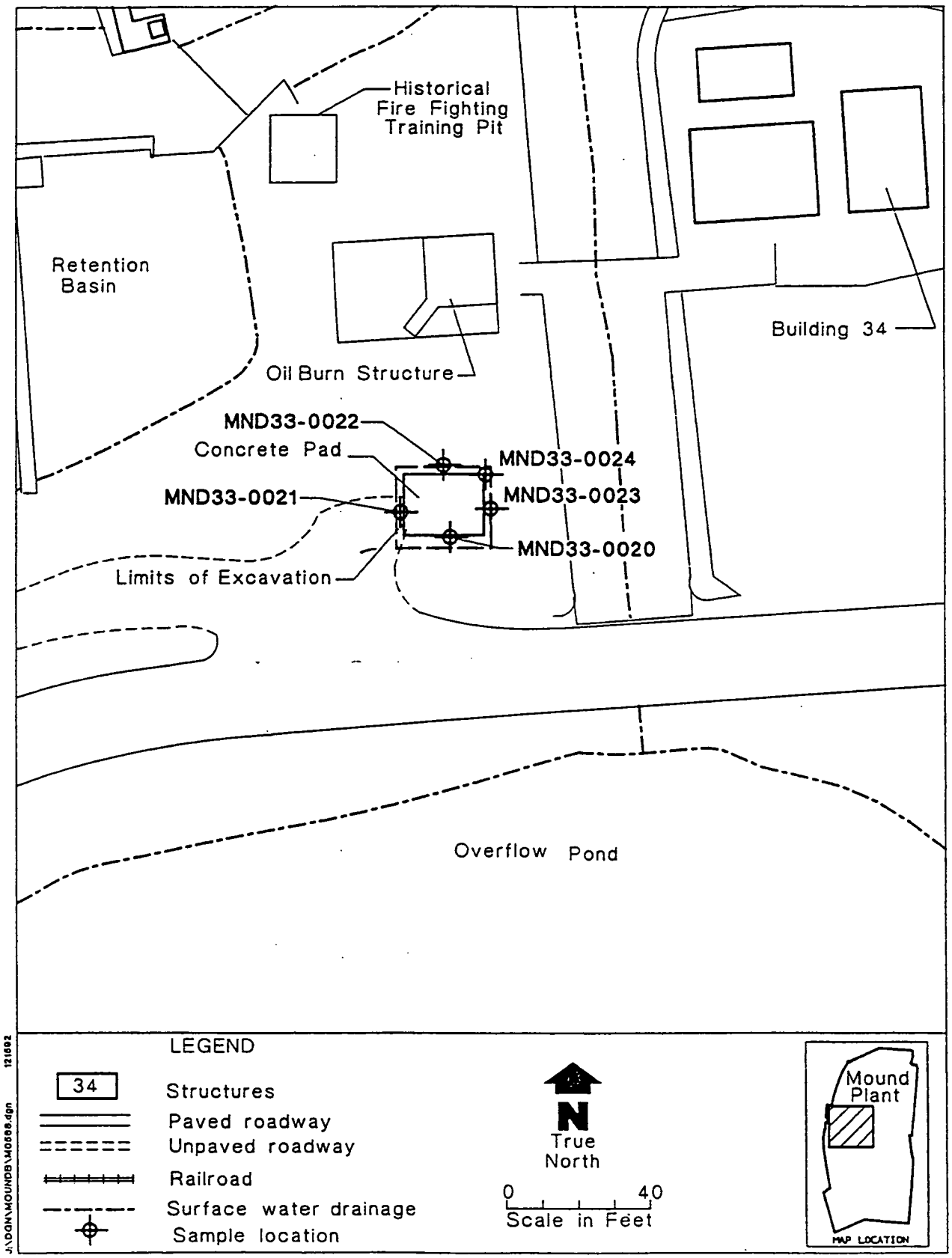

Figure 2.15. Building 34 Former Aviation Fuel Tank soil sample locations.

Table II.15. Building 34 Former Aviation Fuel Tank Sample Summary

Sample Location	Sample Number	Matrix	Date Sampled	Sample Interval (ft BGS)	Parameters Analyzed
MND33-0020	MND33-0020-0001	Soil	8/29/91	1.0-2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics; EPH.
MND33-0021	MND33-0021-0001	Soil	8/29/91	1.0-2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics; EPH.
MND33-0022	MND33-0022-0001	Soil	8/29/91	1.0-2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics; EPH.
MND33-0023	MND33-0023-0001	Soil	8/29/91	1.0-2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics; EPH.
	MND33-0023-1001	Soil	8/29/91	1.0-2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics; EPH.
MND33-0024	MND33-0024-0001	Soil	8/29/91	1.0-2.0[a]	TCL VOCs, SVOCs, P/PCBs; TAL Inorganics; EPH.
	MND33-0024-5001	Water	8/29/91	---	TCL VOCs.

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

3.15. BUILDING 34 FORMER AVIATION FUEL TANK

The Building 34 Former Aviation Fuel Tank is located southwest of Building 34 and north of the overflow pond in the lower valley in the west central portion of Mound Plant.

The former aviation fuel tank was a 5,000-gallon underground tank that supplied aviation fuel through an underground pipe to the oil burn structure. The tank was put in service in the early 1970s; service was discontinued in 1975. The former aviation fuel tank was removed on 29 November 1990 as part of Mound Plant tank removal activities. At that time, initial sampling was conducted. A summary description of the Building 34 Aviation Fuel Tank history and the field investigation procedures is presented in subsection 2.15.

Additional soil sampling took place at the former aviation fuel tank as part of the OU 3 LFI on 29 August 1991. The original excavation was not completely backfilled; some side wall collapse had occurred since tank removal. Soils were excavated to expose the 10-ft by 17-ft concrete pad on which the tank was located. Five samples and one duplicate sample were collected for analyses. Samples were analyzed for TCL VOCs, SVOCs, and P/PCBs; TAL inorganics; and EPH to assess whether the site is or has been a source of environmental contamination through spillage or leakage. The validated analytical results for all analytes detected above the laboratory reporting limits in each sample are presented in Table III.19.

3.15.1. Volatile Organic Compounds

VOCs were not detected in soil samples from the former aviation fuel tank at concentrations above laboratory reporting limits.

3.15.2. Semivolatile Organic Compounds

SVOCs were not detected in site soil samples at concentrations above laboratory reporting limits.

3.15.3. Pesticides and Polychlorinated Biphenyls

P/PCBs were not detected in site soil samples at concentrations above laboratory reporting limits.

3.15.4. Extractable Petroleum Hydrocarbons

EPH compounds were not detected in site soils at concentrations above laboratory reporting limits.

3.15.5. TAL Inorganics

Inorganic compounds were not detected in soil samples from the Building 34 Former Aviation Fuel Tank at concentrations above PRGs or proposed action levels.

3.15.6. Summary

Analytical results for soil samples collected at the Building 34 Former Aviation Fuel Tank indicate that previous site activities involving the former aviation fuel tank have not impacted soil quality in the area, and therefore, no further action involving site characterization or soil remediation is recommended.

TABLE III.19
BUILDING 34 FORMER AVIATION FUEL TANK
Location: MND33-0020
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
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	7010.		7.8E+05	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	5.57		2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	31.3	J	1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	.24		1.5E-01	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	161000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	7.6		1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	4.1		3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	11.9	J	1.0E+04	I
EXTRACTABLE HYD AS DIESEL FUEL	0001	S	mG/Kg	5.00	6.		105. total	I
IRON, TOTAL	0001	S	mG/Kg	.01	11500.	J	NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	8.		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	62400.		NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.002	237.		2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	.02	11.7	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	2230.		NA	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	225.		NA	I
THALLIUM, TOTAL	0001	S	mG/Kg	.002	.37		NA	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	14.1		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.005	35.6		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

General Chemistry

TABLE III.19
BUILDING 34 FORMER AVIATION FUEL TANK
Location: MND33-0021
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
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	7250.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	.03	4.4		1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	4.7		2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	66.3	J	1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	.29		1.5E-01	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	162000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	7.6		1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	3.5		3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	11.2	J	1.0E+04	I
EXTRACTABLE HYD AS DIESEL FUEL	0001	S	mG/Kg	5.00	17.	J	105. total	I
IRON, TOTAL	0001	S	mG/Kg	.01	11900.	J	NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	7.4		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	58400.		NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.002	226.		2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	.02	9.7	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	2270.		NA	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	195.		NA	I
THALLIUM, TOTAL	0001	S	mG/Kg	.002	.32		NA	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	14.3		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.005	36.		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

General Chemistry

TABLE III.19
BUILDING 34 FORMER AVIATION FUEL TANK
Location: MWD33-0022
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
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	8550.		7.8E+05	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	8.67		2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	69.6	J	1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	.43		1.5E-01	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	132000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	8.9		1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	4.8		3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	15.1	J	1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	.01	14600.	J	NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	8.2		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	44300.		NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.002	255.		2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	.02	12.1	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	2620.		NA	I
SELENIUM, TOTAL	0001	S	mG/Kg	.002	0.12	J	1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	185.		NA	I
THALLIUM, TOTAL	0001	S	mG/Kg	.002	.35		NA	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	16.4		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.005	43.2		5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
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S - Soil
mG/Kg - Milligrams per Kilogram
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General Chemistry

TABLE III.19
BUILDING 34 FORMER AVIATION FUEL TANK
Location: MND33-0023
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
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	6220.		7.8E+05	I
ALUMINUM, TOTAL	1001	S	mG/Kg	.06	5950.		7.8E+05	I
ANTIMONY, TOTAL	1001	S	mG/Kg	.03	4.8		1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	4.14		2.1E+03	I
ARSENIC, TOTAL	1001	S	mG/Kg	.002	5.74		2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	101.	J	1.9E+04	I
BARIUM, TOTAL	1001	S	mG/Kg	.002	51.1	J	1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	.18		1.5E-01	I
BERYLLIUM	1001	S	mG/Kg	.002	.21		1.5E-01	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	149000.		NA	I
CALCIUM, TOTAL	1001	S	mG/Kg	.02	138000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	6.1		1.4E+03	I
CHROMIUM, TOTAL	1001	S	mG/Kg	.01	6.1		1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	3.7		3.9E+01	I
COBALT, TOTAL	1001	S	mG/Kg	.01	4.6		3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	11.6	J	1.0E+04	I
COPPER, TOTAL	1001	S	mG/Kg	.01	10.6	J	1.0E+04	I
EXTRACTABLE HYD AS DIESEL FUEL	0001	S	mG/Kg	5.00	8.	J	105. total	I
EXTRACTABLE HYD AS DIESEL FUEL	1001	S	mG/Kg	5.00	7.	J	105. total	I
IRON, TOTAL	0001	S	mG/Kg	.01	10400.	J	NA	I
IRON, TOTAL	1001	S	mG/Kg	.01	10700.	J	NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	7.7		5.3E+01	I
LEAD, TOTAL	1001	S	mG/Kg	.002	8.9		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	61600.		NA	I
MAGNESIUM, TOTAL	1001	S	mG/Kg	.05	53500.		NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.002	234.		2.7E+04	I
MANGANESE, TOTAL	1001	S	mG/Kg	.002	249.		2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	.02	12.3	J	5.4E+03	I
NICKEL, TOTAL	1001	S	mG/Kg	.01	13.0	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	2010.		NA	I
POTASSIUM, TOTAL	1001	S	mG/Kg	.1	1710.		NA	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	273.		NA	I
SODIUM, TOTAL	1001	S	mG/Kg	.1	223.		NA	I
THALLIUM, TOTAL	0001	S	mG/Kg	.002	.35		NA	I
THALLIUM, TOTAL	1001	S	mG/Kg	.002	.24		NA	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	11.7		1.9E+03	I
VANADIUM, TOTAL	1001	S	mG/Kg	.01	12.4		1.9E+03	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

General Chemistry

TABLE III.19
BUILDING 34 FORMER AVIATION FUEL TANK
Location: MWD33-0023
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
ZINC, TOTAL	0001	S	mG/Kg	.005	33.		5.4E+04	I
ZINC, TOTAL	1001	S	mG/Kg	.005	35.9		5.4E+04	I

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

General Chemistry

TABLE III.19
BUILDING 34 FORMER AVIATION FUEL TANK
Location: MND33-0024
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
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	9030.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	.03	4.6		1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	7.62		2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	40.7	J	1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	.34		1.5E-01	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	129000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	9.7		1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	5.3		3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	13.4	J	1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	.01	14600.	J	NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	9.4		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	48000.		NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.01	264.		2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	.01	12.7	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.01	2380.		NA	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	182.		NA	I
THALLIUM, TOTAL	0001	S	mG/Kg	.002	.22		NA	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	16.7		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.005	42.2		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

General Chemistry

Document Control No. _____

Environmental Restoration Program

Operable Unit 9 Hydrogeologic Investigation: Groundwater Sweeps Report

MOUND PLANT
MIAMISBURG, OHIO

April 1995

Technical Memorandum
(Revision 1)

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

Table III.2. (page 7 of 9)

ANALYTE	0356	0370	0372	0373	0375	0376	0377	0378	0379	0380	0381	0382	0383
Arsenic, Soluble													
Arsenic, Total													
Barium, Soluble													
Barium, Total													
Cadmium, Soluble	/ ●									/ ●			
Cadmium, Total													
Chromium, Soluble				/ ●			● / ●				/ ●		
Chromium, Total				/ ●			● / ●						
Lead, Soluble												/ ●	
Lead, Total		●	/ ●	●		●	●		●	●			
Mercury, Soluble													
Mercury, Total													
Selenium, Soluble													
Selenium, Total													
Silver, Soluble										/ ●			
Silver, Total													
Tritium	/ ●	● / ●		● / ●	/ ●	● / ●	● / ●	● / ●	● / ●				
Plutonium-238													
Uranium-234	/ ●												
Uranium-235/236								●					
Uranium-238	● / ●	● / ●		●									
1,1,1-Trichloroethane							● / ●	● / ●					
1,2-cis-Dichloroethene		● / ●		● / ●									
1,2-trans-Dichloroethene		●											
Bis(2-ethylhexyl)phthalate				●						●			
Tetrachloroethene		● / ●		● / ●									
Trichloroethene		● / ●		● / ●	● / ●				● / ●				
Trichlorofluoromethane		●		● / ●									
Trichloromethane		● / ●		● / ●									
Vinyl Chloride													

Notes:

● - indicates an analyte detection during the Fall sampling event

/● - indicates an analyte detection during the Spring sampling event

▒ - shading indicates analyte detections above maximum contaminant levels

GROUNDWATER QUALITY DATA BY LOCATION
SITE: SWP98 GROUNDWATER SWEEPS
LOCATION: 0379
NORTH COORDINATE: 597179.70 FT
EAST COORDINATE: 1495153.92 FT
09/10/93 TO 10/15/93
REPORT DATE: 04/03/95

FORMATION OF COMPLETION: ALLUVIUM (AL)
HYDRAULIC FLOW RELATIONSHIP: ON SITE (O)

PARAMETER NAME	LOG DATE	SAMPLE ID	UNITS OF MEASURE	PVI	LAB VALUE	PVI	VALIDATED VALUE	RUN TYPE
AMERICIUM-241	09/26/93	0001	PCI/L		.0783		REJECT	I
ANTIMONY, SOLUBLE	09/26/93	0001	UG/L	B	2.0		2.0	I
BARIUM, SOLUBLE	09/26/93	0001	UG/L	B	147.		147.	I
BARIUM, TOTAL	09/26/93	0001	UG/L	B	158.0		158.0	I
CALCIUM, SOLUBLE	09/26/93	0001	UG/L		146000.	J	146000.	I
CALCIUM, TOTAL	09/26/93	0001	UG/L		160000.	J	160000.	I
CHLORIDE	09/26/93	0001	MG/L		427.		427.	I
CHROMIUM, TOTAL	09/26/93	0001	UG/L		71.7	J	71.7	I
FLUORIDE	09/26/93	0001	MG/L		0.48		0.48	I
IRON, SOLUBLE	09/26/93	0001	UG/L		117.		117.	I
IRON, TOTAL	09/26/93	0001	UG/L		1360.	J	1360.	I
LEAD, TOTAL	09/26/93	0001	UG/L		16.0		16.0	I
LITHIUM, SOLUBLE	09/26/93	0001	UG/L	B	26.9	J	26.9	I
LITHIUM, TOTAL	09/26/93	0001	UG/L	B	28.6	J	28.6	I
MAGNESIUM, SOLUBLE	09/26/93	0001	UG/L		59700.	J	59700.	I
MAGNESIUM, TOTAL	09/26/93	0001	UG/L		63000.	J	63000.	I
MANGANESE, SOLUBLE	09/26/93	0001	UG/L	B	11.6		11.6	I
MANGANESE, TOTAL	09/26/93	0001	UG/L	B	12.7		12.7	I
MOLYBDENUM	09/26/93	0001	UG/L	B	4.6		4.6	I
MOLYBDENUM, SOLUBLE	09/26/93	0001	UG/L	B	4.0		4.0	I
NICKEL, SOLUBLE	09/26/93	0001	UG/L	B	26.3		26.3	I
NICKEL, TOTAL	09/26/93	0001	UG/L		40.9		40.9	I
NITRATE NITRITE	09/26/93	0001	MG/L		0.053		0.053	I
PLUTONIUM-239/240	09/26/93	0001	PCI/L		.136		REJECT	I
POTASSIUM, SOLUBLE	09/26/93	0001	UG/L	B	4010.		4010.	I
POTASSIUM, TOTAL	09/26/93	0001	UG/L	B	4060.		4060.	I
SODIUM, SOLUBLE	09/26/93	0001	UG/L		138000.	J	138000.	I
SODIUM, TOTAL	09/26/93	0001	UG/L		146000.	J	146000.	I
TETRACHLOROETHENE	09/26/93	0001	UG/L		2.4	J	2.4	I

PARAMETER VALUE INDICATOR (PVI): U - LESS THAN DETECTION LIMIT

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09/10/93 TO 10/15/93
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FORMATION OF COMPLETION: ALLUVIUM (AL)
HYDRAULIC FLOW RELATIONSHIP: ON SITE (O)

PARAMETER NAME	LOG DATE	SAMPLE ID	UNITS OF MEASURE	PVI	LAB VALUE	PVI	VALIDATED VALUE	RUN TYPE
TETRACHLOROMETHANE (CCL4)	09/26/93	0001	UG/L		2.6	J	2.6	I
THORIUM-228	09/26/93	0001	PCI/L		.625		REJECT	I
THORIUM-230	09/26/93	0001	PCI/L		.365		REJECT	I
TIN, SOLUBLE	09/26/93	0001	UG/L	B	21.5		21.5	I
TIN, TOTAL	09/26/93	0001	UG/L	B	18.8		18.8	I
TOTAL DISSOLVED SOLIDS	09/26/93	0001	MG/L		1230.		1230.	I
TOTAL ORGANIC CARBON	09/26/93	0001	MG/L		0.60		0.60	I
TOTAL PHOSPHATE	09/26/93	0001	MG/L		0.11		0.11	I
TOTAL SUSPENDED SOLIDS	09/26/93	0001	MG/L		9.0		9.0	I
TRICHLOROETHENE	09/26/93	0001	UG/L		1.4	J	1.4	I
TRITIUM	09/26/93	0001	PCI/L		5680.		5680.	I
URANIUM-234	09/26/93	0001	PCI/L		.52		.52	I
URANIUM-238	09/26/93	0001	PCI/L		.44		.44	I
VANADIUM, SOLUBLE	09/26/93	0001	UG/L		16.5		16.5	I
VANADIUM, TOTAL	09/26/93	0001	UG/L		17.1		17.1	I

PARAMETER VALUE INDICATOR (PVI): U - LESS THAN DETECTION LIMIT

General Chemistry

Radiochemical Analysis

GROUNDWATER QUALITY DATA BY LOCATION
SITE: SWP99 GROUNDWATER SWEEPS
LOCATION: 0379
NORTH COORDINATE: 597179.70 FT
EAST COORDINATE: 1495153.92 FT
03/08/94 TO 04/14/94
REPORT DATE: 04/03/95

FORMATION OF COMPLETION: ALLUVIUM (AL)
HYDRAULIC FLOW RELATIONSHIP: ON SITE (O)

PARAMETER NAME	LOG DATE	SAMPLE ID	UNITS OF MEASURE	PVI	LAB VALUE	PVI	VALIDATED VALUE	RUN TYPE
BARIUM, SOLUBLE	03/15/94	0001	UG/L	B	142.		142.	I
BARIUM, TOTAL	03/15/94	0001	UG/L	B	143.		143.	I
BERYLLIUM, SOLUBLE	03/15/94	0001	UG/L		0.58		0.58	I
BERYLLIUM, TOTAL	03/15/94	0001	UG/L		0.46		0.46	I
CALCIUM, SOLUBLE	03/15/94	0001	UG/L		139000.		139000.	I
CALCIUM, TOTAL	03/15/94	0001	UG/L		138000.		138000.	I
CHLORIDE	03/15/94	0001	MG/L		477.		477.	I
CHROMIUM, TOTAL	03/15/94	0001	UG/L		104.		104.	I
DIETHYL PHTHALATE	03/15/94	0001	UG/L	J	2.	J	2.	I
FLUORIDE	03/15/94	0001	MG/L		0.51		0.51	I
IRON, SOLUBLE	03/15/94	0001	UG/L		162.		162.	I
IRON, TOTAL	03/15/94	0001	UG/L		2090.		2090.	I
LITHIUM, SOLUBLE	03/15/94	0001	UG/L	B	38.8		38.8	I
LITHIUM, TOTAL	03/15/94	0001	UG/L	B	38.8		38.8	I
MAGNESIUM, SOLUBLE	03/15/94	0001	UG/L		57700.		57700.	I
MAGNESIUM, TOTAL	03/15/94	0001	UG/L		57300.		57300.	I
MANGANESE, SOLUBLE	03/15/94	0001	UG/L	B	6.6		6.6	I
MANGANESE, TOTAL	03/15/94	0001	UG/L	B	12.3		12.3	I
MOLYBDENUM	03/15/94	0001	UG/L	B	2.0		2.0	I
MOLYBDENUM, SOLUBLE	03/15/94	0001	UG/L	B	2.0		2.0	I
NICKEL, SOLUBLE	03/15/94	0001	UG/L	B	35.1		35.1	I
NICKEL, TOTAL	03/15/94	0001	UG/L		73.1		73.1	I
NITRATE NITRITE	03/15/94	0001	MG/L		0.15		0.15	I
POTASSIUM, SOLUBLE	03/15/94	0001	UG/L	B	3370.	J	3370.	I
POTASSIUM, TOTAL	03/15/94	0001	UG/L	B	3470.	J	3470.	I
RADIUM-226	03/15/94	0001	PCI/L		0.31		0.31	I
SODIUM, SOLUBLE	03/15/94	0001	UG/L		133000.		133000.	I
SODIUM, TOTAL	03/15/94	0001	UG/L		135000.		135000.	I
SULFATE	03/15/94	0001	MG/L		50.0		50.0	I

PARAMETER VALUE INDICATOR (PVI): U - LESS THAN DETECTION LIMIT

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PARAMETER NAME	LOG DATE	SAMPLE ID	UNITS OF MEASURE	PVI	LAB VALUE	PVI	VALIDATED VALUE	RUN TYPE
TETRACHLOROETHENE	03/15/94	0001	UG/L		3.2		3.2	I
TETRACHLOROMETHANE (CCL4)	03/15/94	0001	UG/L		2.8		2.8	I
THORIUM-228	03/15/94	0001	PCI/L		0.026		0.026	I
THORIUM-230	03/15/94	0001	PCI/L		0.009		0.009	I
TOTAL DISSOLVED SOLIDS	03/15/94	0001	MG/L		1260.		1260.	I
TOTAL ORGANIC CARBON	03/15/94	0001	MG/L		0.92		0.92	I
TOTAL PHOSPHATE	03/15/94	0001	MG/L		0.086		0.086	I
TRICHLOROETHENE	03/15/94	0001	UG/L		1.4		1.4	I
TRITIUM	03/15/94	0001	PCI/L		6070.		6070.	I
URANIUM-234	03/15/94	0001	PCI/L		0.450		0.450	I
URANIUM-235	03/15/94	0001	PCI/L		0.015		0.015	I
URANIUM-238	03/15/94	0001	PCI/L		0.358		0.358	I

PARAMETER VALUE INDICATOR (PVI): U - LESS THAN DETECTION LIMIT

General Chemistry

Radiochemical Analysis