K. Gunkle

300301-9805050010

BWX Technologies, Inc.
Babcock & Wilcox, a McDermott company

1 Mound Road
P.O. Box 3030
Miamisburg, Ohio 45343-3030
(937) 865-4020

ESC-114/98
April 28, 1998

Mr. Tim Fischer
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Mr. Brian Nickel
Ohio Environmental Protection Agency
Southwest District Office
401 E. Fifth Street
Dayton, Ohio 45402-2911

SUBJECT: Contract No. DE-AC24-97OH20044
PRSs 107/108/109 and 363: DELIVERY OF FINAL POTENTIAL RELEASE SITE DATA PACKAGES

REFERENCE: Statement of Work Requirement C 7.1 -- Regulator Data Requests

Dear Mr. Fischer and Mr. Nickel:

The attached Potential Release Site Data Packages for PRS 107/108/109 and PRS 363 have been authorized for release to USEPA, OEPA, ODH, MMCIC, and the Public Reading Room by Art Kleinrath of MEMP. These documents have been through the public review period and received no comments.

If you require further information, please contact Dave Rakel at extension 4203.

Sincerely,

Linda R. Bauer, Ph.D.
Department Manager, Environmental Safeguards & Compliance

LRB/nmg

Enclosures as stated

cc: Ray Beaumier, OEPA, (1) w/attachments
Ruth Vandegrift, ODH, (1) w/attachments
Dann Bird, MMCIC, (1) w/attachments
Administrative Record, (1) w/attachments
Public Reading Room, (5) w/attachments
DCC

MOUND

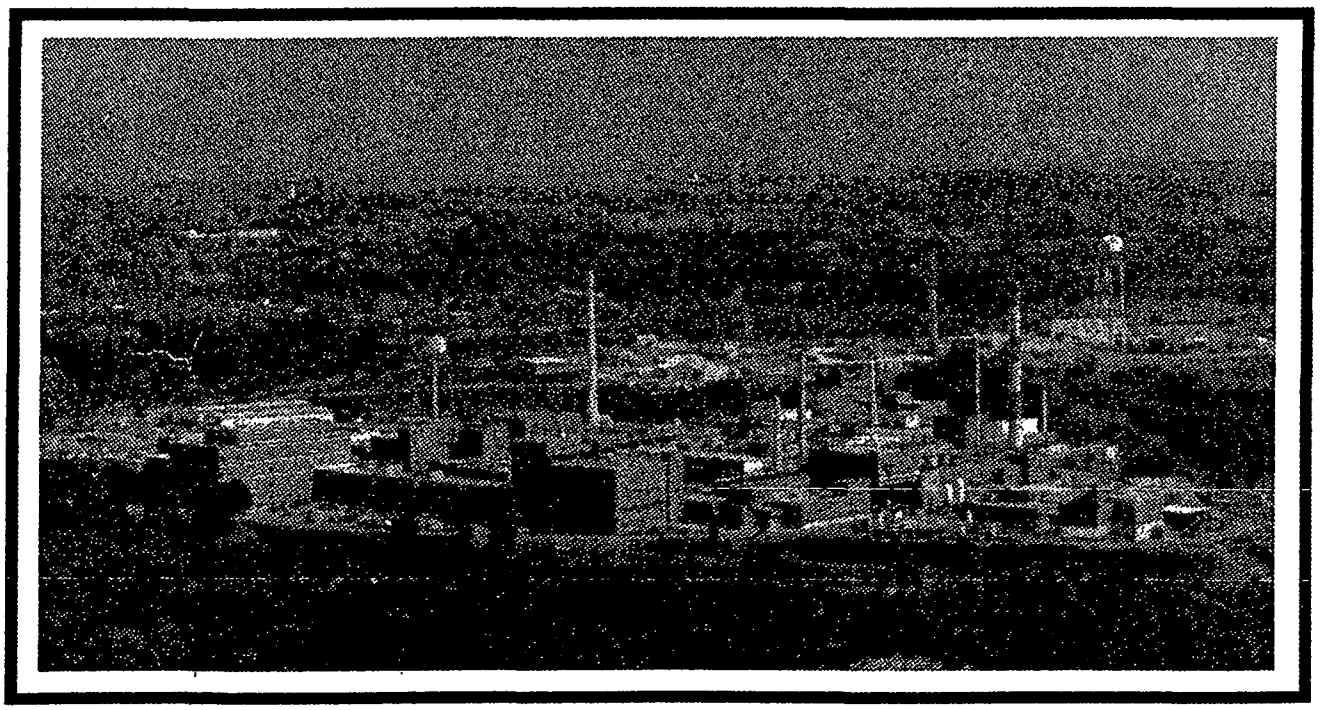
Environmental
Restoration
Program

OhioEPA

MOUND PLANT

Potential Release Site Package

PRS # 107/108/109



MOUND

Environmental Restoration Program

MOUND PLANT
PRS DATA PACKAGE
Notice of Public Review Period

OhioEPA

The following Potential Release site (PRS) Data Packages will be available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio beginning February 12, 1998. Public comment will be accepted on these packages from February 12, 1998, through March 16, 1998.

PRS 107/108/109; G Building Gasoline Tank
PRS 363; Elevated Soil Gas Location

Written comments may be sent to U.S. Department of Energy, c/o Jane Greenwalt, P.O. Box 66, Miamisburg, Ohio 45343-0066 or by E-Mail to: *jane.greenwalt@em.doe.gov*

Questions can be referred to DOE Office of Public Affairs at (937) 865-3116

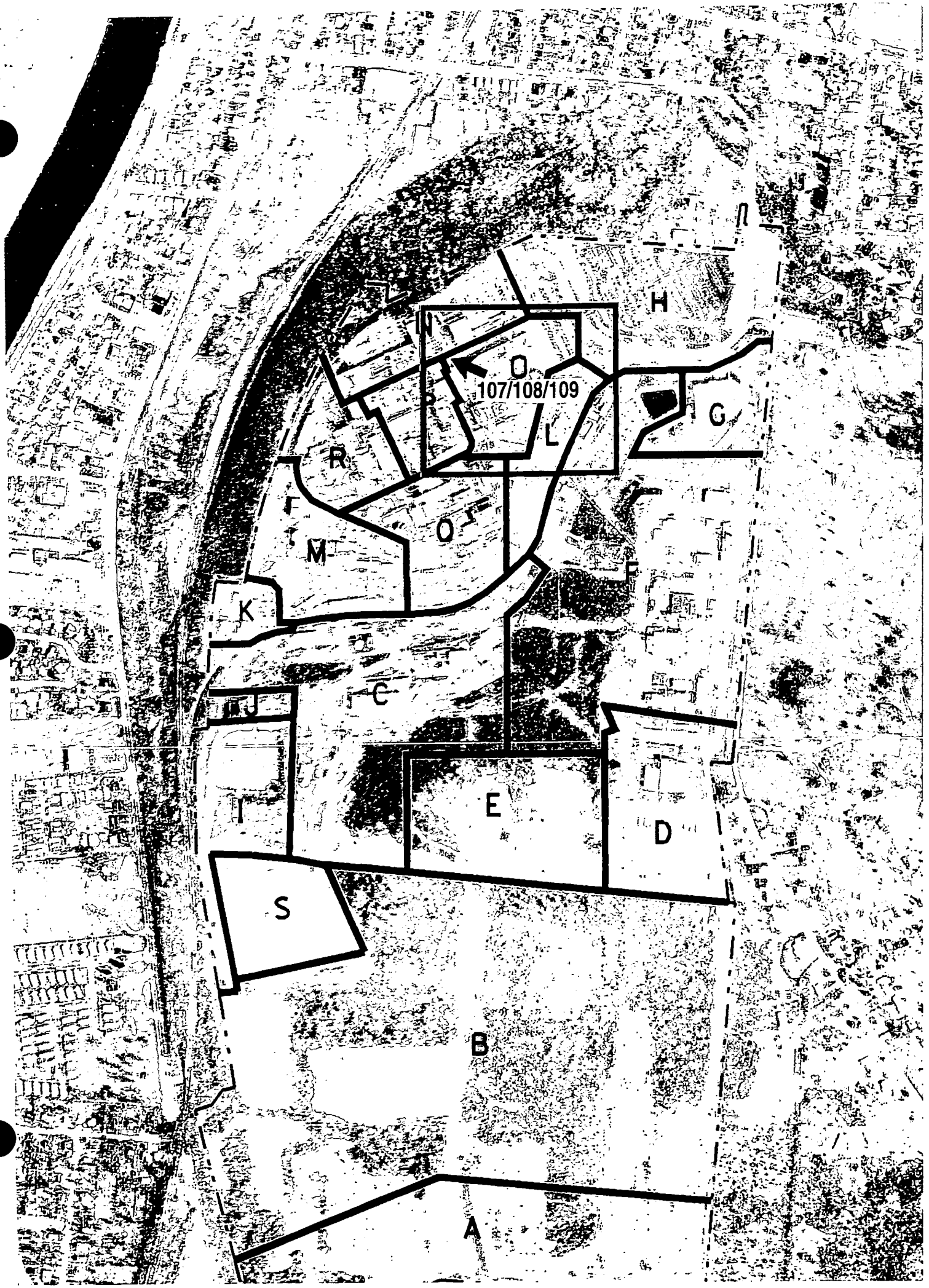
REV	DESCRIPTION	DATE
PUBLIC RELEASE **0**	Available for comment.	**Jan. 14, 1998**
FINAL RELEASE **1**	Comment period expired. No comments.	**Apr. 23, 1998**

MOUND PLANT

Release Block O,P

Potential Release Site

PRS 107/108/109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107/108/109

MOUND PLANT
PRS's 107, 108, 109

PRS HISTORY: Historical[1] location of three underground gasoline storage tanks. PRS 107, just north of G Building, is the site of the original tank (tank 202) installed in 1947. PRS 108, just north of PRS 107, is the site of a replacement tank (tank 203) installed in 1964. PRS 109, just north of PRS 108, is the site of a fiberglass tank (tank 204) installed in 1975 to provide the capability to supply both leaded and unleaded fuel. The report[5] issued in early 1986, stated that no further action was warranted.

However, in December 1986[1,2,4] a concrete truck wheel punctured the fiberglass tank. All three tanks were removed[7]. Soil around the tanks was excavated[1,3,4], spread out at a stockpile location to volatilize the gasoline, and disposed at the Mound construction spoils area.

PROCESS DESCRIPTION: Underground gasoline storage tanks installed near G Building (garage) to support plant vehicular fleet.

CONTAMINATION: Surface water that collected in the excavation had an oily sheen[4], source and constituents undocumented. Potential contaminants include oil, gasoline, and their associated degradation products. No contaminants of concern were present above guideline[2] and/or threshold values in nearby soil vapor samples[3]. The only soil vapor detection in the vicinity of the former tanks was Freon 11 at air concentrations less than 535.7 ppb. This is below the NIOSH (National Institute for Occupational Safety & Health) exposure limits of 1000 ppm.

Radiological data from the site survey[6] identified thorium 232 (TH-232) contamination less than 2 pCi/g and plutonium 238 (Pu-238) levels from 0.12 to 0.18 pCi/g, both of which are below guideline values.

READING ROOM REFERENCES:

1) Operable Unit 9, Site Scoping Report, Volume 12 - Site Summary Report, December 1994. (pages 5-8)
2) Operable Unit 9, RI/FS, Site-Wide Work Plan, May 1992. (pages 9-11)
3) Operable Unit 2, Soil Vapor Reconnaissance, Main Hill OU-2 Phase 1 Technical Memorandum, February 1995. (pages 12-20)
4) Operable Unit 2, Technical Memorandum No. 1, Preinvestigation Evaluation of Remedial Action Technologies (PERAT) (DRAFT), August 1991. (pages 21-22)
5) Comprehensive Environmental Assessment and Response Program - Phase 1: Installation Assessment, Mound, April 1986. (pages 23-26)
6) OU-9 Site Scoping Report, Vol. 3 - Radiological Site Survey, Final, June 1993. (pages 27-30)

OTHER REFERENCES:

7) Active Underground Storage Tank Plan (DRAFT) May 1994. (pages 31-35)

PREPARED BY: Gerry F. Maul, Member of EG&G Technical Staff

SUPPLEMENT-1
PRS 107/108/109

An investigation was designed and implemented to determine if gasoline-related contaminants remained in or around the tank cavities. The investigation discovered that bedrock is very shallow in the area around these PRSs. Chemical results from the investigation are summarized below. Detection levels for benzene were higher than action levels for two samples.

During data validation and data review, it was observed that the sample reporting limits for BTEX were elevated above the State Fire Marshal, Bureau of underground Storage Tank Regulations (BUSTR) action limit for benzene (0.006 mg/kg). When the raw data was reviewed, it was determined that the elevated reporting limits for two of the three affected samples were caused by high levels of interferents during the GC analysis which required the laboratory to dilute the samples.

Table 3.1. Soil and Water Analytical Data Results

Chemical	Max. Concentration, mg/kg	State Fire Marshall Action Level, mg/kg	Background Value, mg/kg
Benzene	ND (< 0.11)	0.006	--
Toluene	ND (< 0.11)	4	--
Ethylbenzene	ND (< 0.11)	6	--
Xylenes	ND (< 0.11)	28	--
TPH (GRO)	43	105	--
Lead	15.8	--	48

Notes:
"—" indicates data not available.
"ND" indicates not detected.

REFERENCES

8) Further Assessment Sampling at PRS Nos. 107/108/109, Revision 1, May 1997. (page 36 - 44)

MOUND PLANT
PRS 107, 108, 109
Former Tank Sites

RECOMMENDATION:

PRSs 107, 108, and 109 are the location of three historical underground gasoline storage tanks. In December 1986 a truck wheel punctured one of the tanks. All three tanks were removed. Soil around the tanks was excavated, spread out at a stockpile location to volatilize the gasoline, and disposed at the Mound construction spoils area.

In 1996, an investigation was designed and implemented to determine if gasoline-related contaminants remained in or around the tank cavities. Three out of the five sample results indicate that both Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) are below State Fire Marshal action levels implemented under Bureau of Underground Storage Tanks Regulations (BUSTR). The other two samples had laboratory detection limits above the action level for Benzene. However, since the other constituents of gasoline are below their action levels in these two samples, it is expected that the actual Benzene level is also below its action level. In addition, Benzene was not detected in a water sample collected within a telecommunications pit adjacent to soil boring 02.

Therefore, NO FURTHER ASSESSMENT is recommended for PRSs 107, 108, and 109.

CONCURRENCE:

DOE/MEMP: Arthur W. Kleinrath 12/17/97
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer 12/17/97
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel 12/17/97
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 2/12/98 to 3/16/98

☒ No comments were received during the comment period.

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

REFERENCE MATERIAL

PRS's 107, 108, 109

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

MOUND PLANT
MIAMISBURG, OHIO

December 1994

U.S. DEPARTMENT OF ENERGY
OHIO FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL

Table A.1. Comprehensive Tabulation of Potential Release Sites

Description of History and Nature of Waste Handling						Hazardous Conditions and Incidents			Environmental Data		
No.	Site Name	Location	Status	Potential Hazardous Substances	Ref	Releases	Media	Ref	Analytes[a]	Results	Ref
102	Cooling Tower Drum Storage Area	E-7 E-8	In service	Contaminants listed under Cooling Tower Basins Ethylene glycol	4, 5				No Data		
103	E Building Soils	E-6 E-7 F-7	Grounds			Indicated by Soil Gas Survey	S	12	1 14	SGS[b] Table B.4 Locations 1046, 1047, 1048, 1066, 1067 Table B.9 RSS[c] Locations S0152, S0153, S0164 (Appendix E in Ref. 6)	12 6
104	Scintillation Vial Storage Area	E-6	In service	Tritium, Trimethylbenzene	4, 5, 18	None suspected (within E Building)			No Data		
105	E Building Solvent Storage Shed	F-6	Historical	Trichloroethene, Ethanol, Methanol	4, 5, 18	Closed before construction of E Building Annex, soil removed	S	4	1	SGS[b] Table B.4 Location 1066	12
106	G Building Soils (AKA Garage Area)	E-7	Grounds	Waste oil, Waste antifreeze, Automotive batteries Asbestos	1, 4, 18	Suspected petroleum products			1 14	SGS[b] Table B.4 Locations 1019 Table B.9 RSS[c] Locations S0137 and S0141 (Appendix E in Ref. 6)	12 6
107	G Building Gasoline Tank (Tank 202)	E-7	Historical	Gasoline	3, 18	Tanks removed 1986, petroleum contaminated soils removed		3, 18	No Data		
108	G Building Gasoline Tank (Tank 203)	E-7	Historical								

Table A.1. Comprehensive Tabulation of Potential Release Sites

Description of History and Nature of Waste Handling						Hazardous Conditions and Incidents			Environmental Data		
No.	Site Name	Location	Status	Potential Hazardous Substances	Ref	Releases	Media	Ref	Analytes[a]	Results	Ref
109	G Building Gasoline Tank (Tank 204)	E-7	Historical	(Cont.)	(Cont.)	(Cont.)		(Cont.)	(Cont.)		
110	I Building Soils	E-6 F-6	Grounds	Toluene, acetone, Freon	4	Indicated by Soil Gas Survey	S	12	1 14, 16	SGS[b] Table B.4 Locations 1075, 1227, 1228 Table B.9 RSS Locations S0171, S0178, S0181, S0182, S0186, S0187, S0190, S0193, S0195, S0255 (Appendix E in Ref. 6)	12 6
111	Monitor Well 0034	F-7	Surplus	Waste oil	5, 18	Suspected	GW	5	No Data		
112	Paint Shop Area	E-7	In service	Paints, Thinners, Solvents (including toluene and methylene chloride) Lead, Chromates	1, 4, 5, 18	Suspected, confirmed lead	S	5	3, 4, 5, 6, 16	Tables B.6, B.7, B.8, and B.9	7
113	Powerhouse Soils	E-7	Grounds	Calcium chloride, magnesium chloride, zinc chromate, PCBs	4	Indicated by Soil Gas Survey	S	12	1 14, 16	SGS[b] Table B.4 Location 1052 Table B.9 RSS[c] Locations S0155, S0156, S0158, S0253 (Appendix E in Ref. 6)	12 6
114	Powerhouse Fuel Oil Storage Tank (Tank 113)	E-7	In service	Fuel oil	1, 3, 5, 7, 18	Fuel Oil, confirmed EPH	S	10, 7	3, 4, 5, 6, 8	Tables B.6, B.7, and B.8	7
115	Powerhouse Fuel Oil Storage Tank (Tank 114)										
116	Powerhouse Fuel Oil Storage Tank (Tank 115)										
117	Powerhouse Fuel Oil Storage Tank (Tank 116)										

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: Vol. 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 Scping Report: Vol. 3 - Radiological Site Survey (FINAL)."
7. DOE 1993c "Operable Unit 3, Misc. 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 Scpoing Report: Vol. 9 - 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: Vol. 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 1976a, b "Potable Water Standards Project Mound Laboratory" and "Evaluation of the Buried Valley Aquifer Adjacent to Mound Laboratory."
22. DOE 1992l "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."

Environmental Restoration Program

REMEDIAL INVESTIGATION/FEASIBILITY STUDY OPERABLE UNIT 9, SITE-WIDE WORK PLAN

MOUND PLANT
MIAMISBURG, OHIO

VOLUME II

May 1992

FINAL

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
Technical Support Office
Los Alamos National Laboratory

FOR CIRCI

from the indurated bedrock on or adjacent to the Main Hill and have a history of VOC and tritium contamination (Table III.1).

The characterization of the tritium migration in the groundwater on Main Hill and subsequent tritium migration pathways is based on data generated by the routine monitoring program and by the Mound tritium groundwater assessment program (DOE 1989d). There are approximately five seeps located off Mound Plant property (Figure 3.3), but only two have significant flow (≤5 gallons per minute [gal/min]). It has been concluded that the tritium in the seeps originates from tritium in the soil moisture below the SW Building. See section 2 of this Work Plan for information on previous investigations and results. Low concentrations of volatile organic chemicals have also been found in all the seeps on the Main Hill.

Conceptually, the Site hydrogeology can be divided into two hydrostratigraphic units--the Buried Valley aquifer and the bedrock system. The Buried Valley aquifer consists of glacial sands and gravels associated with the Great Miami River. The bedrock system comprises the hills on which the Mound Plant is situated. The degree of hydraulic interconnection of this system with the Buried Valley aquifer is unknown at this time. Although several seeps discharge along the hillsides, it is possible that fractures also transmit water directly to the Buried Valley aquifer or that hidden seepage discharges below the hillside colluvial veneer. Whether the seeps are the result of an underlying impermeable shale that restricts the downward movement of groundwater or are the point at which the water table intersects the hillslope is unclear at this time.

Previous investigations have identified SW Building as the most likely source of tritium contamination. SW Building has been the principal tritium facility at the Mound Plant since the early 1960s (DOE 1989d). In 1977, Dames and Moore collected soil samples from under Buildings SW and T and analyzed soil moisture distillate for tritium. Based on their calculations, as much as 1,300 Ci of tritium was present in the soil moisture beneath SW Building (Dames and Moore 1977a). Even considering the tritium decay since 1977 (half-life = 12.3 years), the activity in 1990 would be about 625 Ci. Assuming no additional tritium was added to this inventory after 1970, there may be a sufficient quantity present (625 Ci) to explain the present levels of tritium observed in the seeps (DOE 1989d).

Sources for the VOCs are less certain. Six areas on the Main Hill are potential chemical release sites: ~~Building E (solvent storage shed)~~, Building G (garage area), ~~monitoring well 0034, Areas E and 6, the cooling tower basins, and the drum storage area. One of these sites has handled solvents (Building E Solvent Storage Shed), and soil cleanup was performed when the building was dismantled in 1988 (RFA 1988)~~. Building G ~~and Monitoring Well 0034~~ may be contaminated with fuel and/or waste oils. ~~The cooling tower site may be contaminated with waste oils, ethylene glycol, and various cooling water additives.~~ The presence and extent of VOC contamination at any of the sites is not known.

2.5. COOLING TOWER BASINS

The cooling tower basins are small, above-ground impoundments located beneath the cooling towers near the powerhouse, Building P (Figure A.2). The basins are still in service and consist of below-ground concrete sumps covered with a concrete top that recycle water from the towers back to the cooling system. Blowdown water is discharged to the plant drainage ditch, which discharges at the NPDES Outfall 002 or recycles it back into the noncontact cooling system. It is not known whether solids accumulate in the basins or if they are ever cleaned out. The cooling water historically contained additives that included rust inhibitors such as zinc chromate, and organics, and algacides including ANCO algacide No. 1 (Anderson Chemical Co.), 2-benzyl-4-chlorophenol, Siltex (Anderson Chemical Co.), ANCO Microbicide 77 (Anderson Chemical Co.), 5-chloro-2-methyl-4-isothiazolin-3-one, 2-methyl-4-isothiazolin-3-one, organo-phosphonate, triazol and polyacrylate (ref. 2). The chemicals added to the cooling water changed as new water treatment chemicals were developed and environmental regulations were revised. Some of the chemicals presently added to the cooling water include ANCO 3310, ANCOSPERSE 3830, ANCOCIDE 4070, and ANCOCIDE 4020 manufactured by Anderson Chemical Company.

2.6. BUILDING E SOLVENT STORAGE SHED

The Building E solvent storage shed was located on the south side of Building E, on the Main Hill in the north-central portion of the Mound Plant (Figure A.2) until taken out of service in April 1988 (RFA 1988). The shed was a metal roofed and walled structure with a concrete floor and a surface area of approximately 100 ft^2. The concrete floor was sloped to a drain that routed spilled material to storm sewers and to the plant drainage ditch (RFA 1988). The shed was used for temporary storage of waste solvents (most likely ethanol, methanol, and trichloroethene) generated in Building E. During dismantling operations conducted by Mound Plant personnel, soil around the building contaminated with trichloroethene was identified, removed, drummed, and shipped offsite for disposal in accordance with 40 CFR 262 and 263.

2.7. BUILDING G GARAGE AREA

Building G is located next to GW Building, on the Main Hill in the north-northwest part of Mound Plant (Figure A.2) and is approximately 3,200 ft^2 in size. Garage work was performed at Building G. Building G had three adjacent underground gasoline tanks that were removed in December 1986. The soil around the tanks was excavated, spread out at a stockpile location to allow volatilization of gasoline, and disposed of at the Mound Plant Spoils Disposal Area (Operable Unit 5). Building G and vicinity may be contaminated with gasoline constituents as a result of these activities (DOE 1986).

Environmental Restoration Program

SOIL VAPOR RECONNAISSANCE OPERABLE UNIT 2, MAIN HILL OU-2 PHASE I TECHNICAL MEMORANDUM

MOUND PLANT
MIAMISBURG, OHIO

February 1995

FINAL

(Revision 0)

Department of Energy
Ohio Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

EXECUTIVE SUMMARY

Mound Plant is a research and manufacturing facility for the production of radioactive power sources and military detonators. It is located in Miamisburg, Ohio and is operated by EG&G Mound Applied Technologies (EG&G) for the Department of Energy (DOE). Mound Plant was placed on the Comprehensive Environmental Response, Conservation and Liability Act (CERCLA) National Priority List (NPL) in November of 1989 and a Federal Facility Agreement (FFA) was signed between the Department of Energy and the Environmental Protection Agency (EPA) in October of 1990. In response to being placed on the NPL, Mound was divided into Operable Units (OU) to simplify program management. The Main Hill of Mound Plant is Operable Unit 2.

A remedial investigation (RI) of Operable Unit 2 (OU-2) was started in April, 1994. The first part of the investigation, Phase I, was conducted to collect data to help in scoping the remaining phases of the RI. As part of the Phase I reconnaissance, a soil vapor investigation was performed.

The soil vapor investigation of Operable Unit 2, Main Hill was performed during April of 1994. The objective of the soil vapor investigation was to identify areas of the Main Hill that would require additional sampling during Phase II of the remedial investigation. A hydraulically driven sample probe was used to collect soil vapor from soil pore spaces. Samples were analyzed for the contaminants of concern which include several chlorinated compounds. Samples were analyzed using gas chromatography utilizing a wide-bore DB-624 column with a flame ionization detector.

Samples were obtained from areas surrounding or near several buildings: Paint Shop, M, WD, DS, G and GW. Locations were based on the historical and current use of the buildings, the environmental conditions on the Main Hill, physical and chemical characteristics of the contaminants, and data gaps from previous investigations. A previous investigation had detected soil vapor contamination in several areas including B Building, Building 28, H Building and Building 17. Contamination found at the B Building is currently being remediated under an interim remedial action by soil vapor extraction. A review of the results of the previous investigation and building use indicated samples should be collected from near G Building, the Paint Shop, M Building, WD Building, Building 28, and the DS Building. Environmental factors such as geology, soils, climate and underground utilities had little affect on the sample locations for several reasons. The nature of the geology, the unknown distribution of site soils, the wide coverage of the site limiting the affect of climate, and the numerous utilities limited the use of these factors in considering sample locations. Building use and chemical parameters of contaminants had the greatest influent on sample locations in addition to areas that had not been previously investigated. Samples were obtained at 2.5 foot intervals until bedrock was encountered.

Detectable levels of contamination were found in all areas investigated. Freon 11 was detected most often while toluene and cis-1,2-DCE were detected almost as frequently. Trichloroethene, chloroform, bromoform, and bromodichloromethane were not detected at any location.

Their was no indication that environmental factors such as soil, geology, climate or underground utilities influenced the pattern of contamination. The results indicate that the soil vapor contamination corresponds to the historical use of the buildings. Based on the results, additional soil sampling is warranted during the Phase II investigation to augment the sampling already planned.

from three to 28,142 ppb. Most of the detections were in the B Building Solvent Storage Shed area, HH Building and Building 17.

Based on the results of this investigation, "hot spots" of contamination were centered at the B Building Solvent Storage Shed, Building 17, and the west side of the B Building.

The contamination at the B Building Solvent Storage Shed lead to an interim remedial action to remediate the soils in the area (DOE 1993). Soil vapor extraction (SVE) was the selected method of remediation and remedial efforts began in May of 1994. Initial soil vapor results indicated that concentrations of TCE ranged from less than 50 ppb to 2,650 ppb and 1,2-DCE (cis and trans) ranged from 100 ppb to 277.9 ppm (DOE 1994b). Since remediation began, concentrations of TCE have dropped to a maximum of 1,560 ppb and 1,2-DCE to 1,410 ppb.

1.4. FACTORS INFLUENCING SAMPLE LOCATIONS

1.4.1. Historical and Current Use of Buildings

Historical and current use of buildings, along with the data gaps from previous investigations, had the greatest influence on sample locations. Contaminants of concern had been or had potentially been used in all of the buildings investigated. The exceptions are the degradation products of tetrachloroethene and trichloroethene which are 1,2-dichloroethene (cis and trans) and 1,1-dichloroethane. Toluene may not have been used in a building but is a chemical found in gasoline and oil. The following sections describe the historical and current use of buildings to provide a rationale for their use in selecting sample locations. Specific sample locations are shown in Figure 1.3.

1.4.1.1. G Building - Garage

The garage is used to maintain the automobiles, trucks, buses, and heavy duty equipment used at Mound. The building is approximately 122 ft by 62 ft and is made of structural steel and brick with concrete floors. The building contains a new parts storage area, offices, restrooms, and a custodial operations storage area. Maintenance operations include oil changes, antifreeze replacement, vehicle repair, and tire and battery replacement. Building G is also used to store janitorial supplies such as floor strippers, floor finishes, cleansers, deodorizers, hand soaps, sponges, and mops that are used throughout Mound. These materials are stored in locked cabinets and caged areas. The historical and current use of this building indicated that the underlying soils may be contaminated with either motor oil, antifreeze, or organic based cleaning material. For that reason, samples were collected from locations that were

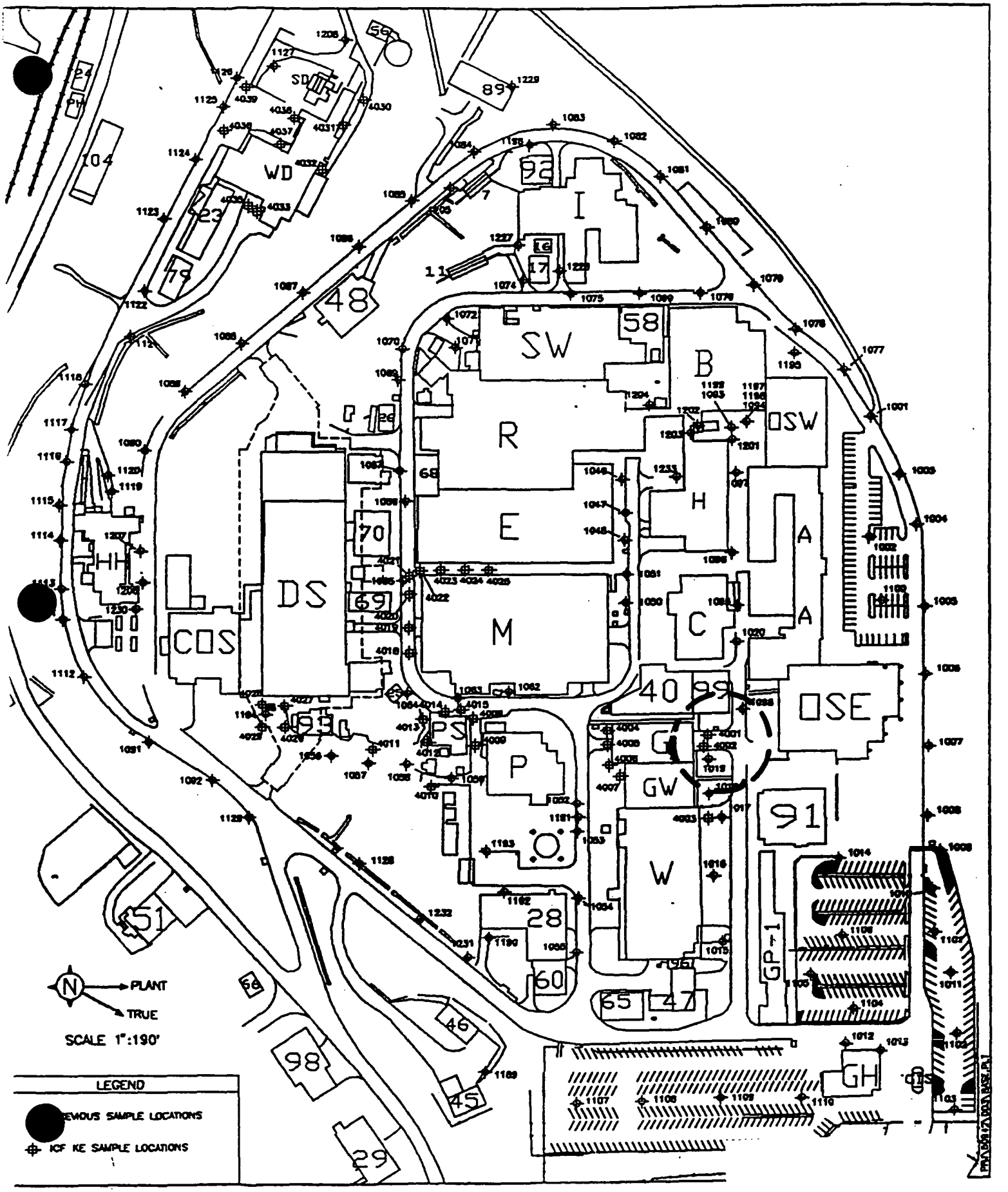

Figure 1.3. Sample Locations

judged to be areas where spills could collect or enter the soil. Specific locations were selected based on surface drainage patterns and obvious cracks in the overlying concrete.

1.4.1.2. Paint Shop

The paint shop began operating in 1963. The shop is used for both maintenance and production parts painting. Maintenance work includes the painting of such items as racks and furniture. Production work includes the painting of metal shipping containers, styrofoam shipping trays, and test panels. All painting is done inside spray booths. Based on the high use of solvents in this building, it was determined that samples should be collected around the building. Specific locations were based on the drainage patterns from the building to the surrounding areas, the surface drainage patterns of the surrounding areas and obvious cracks in the concrete. Some locations were also influenced by underground utilities.

1.4.1.3. Building M - Plating Shop

The Mound plating shop started in the M Building in the late 1940s (Figure 1.2). Plating processes and metal purification experiments were performed there. The shop itself consisted of eight to ten 150-gallon plating solution tanks that were handmade from boiler plate steel (Shawhan 1991). Sulfuric acid anodizing solution wastes and sodium hydroxide cleaning wastes were regenerated on an infrequent basis. The plating solutions were reused and generally recycled; but, when necessary, they were dumped into a large underground tank. The tank consisted of a concrete vault structure west of the original M Building that connected to the plant sanitary sewer. The cascade rinse systems also drained to the underground tank. The condition of this tank will be discussed in the OU-2 subsurface utility investigation. Soil sampling will be conducted as part of Phase II activities.

In 1962, a production plating shop and a general plating shop were installed in the M Building and the old plating shop was dismantled. During the dismantling process, the plating solutions were removed from the equipment and neutralized. All of the old tanks and equipment were removed. The underground tank was retained and reconnected to the new equipment.

In 1981, a new production plating shop was built on the south end of the M Building. In 1985 or 1986, a new general plating shop was built next to it. The new shops were built to upgrade the old equipment and use modern technology. The old equipment still exists in the M Building, but has been cleaned out. The waste products were drummed and disposed of off-plant through the waste management system.

Soil Vapor Analytical Results, M Building								
Location	Depth (ft)	1,1,1-TCA (ppb)	Toluene (ppb)	PCE (ppb)	Freon 11 (ppb)	Trans-1,2-DCE (ppb)	Cis-1,2-DCE (ppb)	Total VOC (ppb)
4019	5.0	ND	ND	ND	<3,035.7	ND	ND	<3,035.7
4019	7.5	ND	ND	ND	<3,035.7	ND	ND	<3,035.7
4018	2.5	ND	526.3	ND	4,285.7	ND	ND	4,812
4018	5.0	ND	<526.3	3,235.3	ND	ND	ND	<3,761.6
4020	2.5	3,333.3	1,052.6	ND	22,500	4,297.9	3,787.9	34,966.8
4020	5.0	<1,403.5	789.5	ND	3,750	<2,020	<1,767.7	<9,730.9
4020	7.5	ND	789.5	ND	9,107.1	<2,020	1,767.7	<13,684.5
4020	12.5	1,403.5	ND	ND	6,428.6	ND	ND	7,832.1
4020	15.0	<1,430.5	ND	ND	5,714.3	ND	<1,767.7	<8,885.5
4020	17.5	ND	ND	ND	5,535.7	<2,020	2,777.8	<10,333.7
4020	19.7	ND	ND	ND	<2,857.1	ND	ND	<2,857.1

ND - Nondetect ppb - parts per billion J - qualified as estimated

3.5. G AND GW BUILDINGS

Six compounds were detected around G and GW Buildings. Freon 11 was detected at three locations at concentrations ranging from less than 536 to 2,321 ppb. Cis and trans-1,2-DCE were each detected at one location at a concentration of 1,768 ppb. 1,1,1-TCA was detected at two locations at concentrations of 1,404 and 2,983 ppb. Toluene was detected at one location at a concentration of less than 526 ppb. 1,1-DCA was detected at one location with a concentration of less than 1,482 ppb. The total volatile organics detected ranged from less than 536 to 7,787 ppb. The analytical results for these buildings are presented in the appendices and are summarized in the following table.

Soil Vapor Analytical Results, G and GW Building								
Location	Depth (ft)	1,1,1-TCA (ppb)	Toluene (ppb)	trans-1,2-DCE (ppb)	cis-1,2-DCE (ppb)	Freon 11 (ppb)	1,1-DCA (ppb)	TVOC (ppb)
4002	2.0	ND	ND	ND	ND	<535.7	ND	<535.7
4003	7.5	1,403.5	<526.3	1,767.7	1,767.7	2,321.4	ND	<7,786.6
4004	2.0	2,982.5	ND	ND	ND	ND	ND	2,982.5
4005	2.0	ND	ND	ND	ND	ND	<1,481.5	<1,481.5
4006	2.5	ND	ND	ND	ND	<535.7	ND	<535.7

ND - Nondetect ppb - parts per billion J - qualified as estimated

The G and GW Buildings did not display elevated levels of compounds associated with their historical use at a frequency expected. Elevated levels of toluene, which is found in gasoline and motor oil, were only seen in one location. Detections of other compounds were also limited in frequency and concentration. Since some samples will be obtained from the area immediately adjacent to the buildings during Phase II, no additional sampling other than the planned Phase II sampling is recommended near the G and GW Buildings.

Based on results of nondetect in several areas with historical usage of VOCs, it is recommended that one confirmatory soil sample be collected in each of these areas (G, GW, WD, PS and M Buildings) during Phase II activities.

A summary of recommendations is provided in Table V.1. Specific sample locations, the number of samples and analytical parameters will be discussed in the modification to the Work Plan and Field Sampling Plan.

SAMPLE I.D.	Hole	DATE	DEPTH	Chloroform ppb	1,1,1-TCA ppb	TCE ppb	BDCM ppb	Toluene ppb	PCE ppb	Bromoform ppb	Comments
BUILDING [illegible]											
M204-4002-0002.0	PH-02	4-18-94	2.0'	ND	2982.5	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4005-0002.0	PH-05	4-18-94	2.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4007	NA	4-18-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4006-0002.5	PH-06	4-19-94	2.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4002-0002.0	PH-02	4-19-94	2.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4001-0002.5	PH-01	4-19-94	2.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4009	NA	4-19-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
BUILDING [illegible]											
M204-4000-4007	NA	4-19-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4007-3000	PH-07	4-19-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-PROBE ROD BLANK
M204-4007-0002.5	PH-07	4-19-94	2.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4007-0005.0	PH-07	4-19-94	5.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4007-1005.0	PH-07	4-19-94	5.0'	ND	ND	ND	ND	ND	ND	ND	QC-DUPLICATE SAMPLE
M204-4003-0001.5	PH-03	4-19-94	1.5'	ND	1403.5	ND	ND	< 526.3	ND	ND	SOIL-GAS SAMPLE
BUILDING [illegible]											
M204-4019-0002.5	PH-19	4-27-94	2.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0005.0	PH-19	4-27-94	5.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0007.5	PH-19	4-27-94	7.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0010.0	PH-19	4-27-94	10.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0012.5	PH-19	4-27-94	12.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-1012.5	PH-19	4-27-94	12.5'	ND	ND	ND	ND	ND	ND	ND	QC-DUPLICATE SAMPLE
M204-4019-0015.0	PH-19	4-27-94	15.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0016.0	PH-19	4-27-94	16.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4021	NA	4-27-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4000-4022	NA	4-28-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4018-3000	PH-18	4-28-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-PROBE ROD BLANK
M204-4018-0002.5	PH-18	4-28-94	2.5'	ND	ND	ND	ND	526.3	ND	ND	SOIL-GAS SAMPLE
M204-4018-0005.0	PH-18	4-28-94	5.0'	ND	ND	ND	ND	< 526.3	3235.3	ND	SOIL-GAS SAMPLE
M204-4018-0006.0	PH-18	4-28-94	6.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0002.5	PH-20	4-28-94	2.5'	ND	3333.3	ND	ND	1052.6	ND	ND	SOIL-GAS SAMPLE
M204-4020-0005.0	PH-20	4-28-94	5.0'	ND	< 1403.5	ND	ND	789.5	ND	ND	SOIL-GAS SAMPLE
M204-4020-0007.5	PH-20	4-28-94	7.5'	ND	ND	ND	ND	789.5	ND	ND	SOIL-GAS SAMPLE
M204-4020-0010.0	PH-20	4-28-94	10.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0012.5	PH-20	4-28-94	12.5'	ND	1403.5	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0015.0	PH-20	4-28-94	15.0'	ND	< 1403.5	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0017.5	PH-20	4-28-94	17.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0019.7	PH-20	4-28-94	19.7'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4023	NA	4-28-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4000-4026	NA	5-3-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4021-3000	PH-21	5-3-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-PROBE ROD BLANK
M204-4021-0001.0	PH-21	5-3-94	1.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4022-0003.0	PH-22	5-3-94	3.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4023-0002.0	PH-23	5-3-94	2.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4024-0002.0	PH-24	5-3-94	2.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4025-0003.0	PH-25	5-3-94	3.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4027	NA	5-3-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK

ND Non Detect

NA Not Applicable

QC Quality Control

J Qualified as Estimated

ppb Parts Per Billion

< Less Than

SOIL GAS DATA (ABSOLUTE)

Table A.1. Soil Vapor Analytical Results

ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 2
TECHNICAL MEMORANDUM #1
PREINVESTIGATION EVALUATION OF REMEDIAL ACTION TECHNOLOGIES (PERAT)

MOUND PLANT
MIAMISBURG, OHIO

August 1991

DEPARTMENT OF ENERGY
ALBUQUERQUE OPERATIONS OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
TECHNICAL SUPPORT OFFICE
LOS ALAMOS NATIONAL LABORATORY

DRAFT
(REVISION 0)

3.1.5. G Building Garage Area

The G Building is located on the Main Hill between the GW Building and Building 40 at the Mound Plant (Figure 2.1). The surface area is approximately 3,200 ft^2. Automotive and equipment repair work is performed at the G Building. The building had three underground gasoline tanks at its northern end. On December 3, 1986, the wheels of a concrete truck went through the top of a 4,000-gallon fiberglass tank. The tank was pumped dry the same day. All three tanks were removed by December 10, 1986. The soil around the tanks was excavated, spread out at a stockpile location to allow volatilization of gasoline, and disposed of at the Mound Plant construction spoils area. Therefore, the G Building and the vicinity may have gasoline-contaminated soil (DOE 1986).

No documented disposal of waste oil has occurred at or near the G Building; however, during the tank removal activities, an oily sheen of unknown origin was observed on surface water that had collected in the excavation. The oily sheen may have been present due to the leaked petroleum fuel products resulting rom the damaged fiberglass tank. Therefore, potential contaminants include oil, gasoline, and their associated degradation products. Fuel components and/or fuel may exist in the soils near the G Building and in the soils under the removed tanks.

3.1.6. Cooling Tower Basins and Cooling Tower Drum Storage Area

The cooling towers are just south of the Powerhouse (P Building) on the Main Hill (Figure 2.1). The cooling tower basins are small, above-ground impoundments located beneath the four cooling towers. The basins collect cooling tower blowdown and discharge it to the plant drainage ditch or recycle it back into the non-contact cooling system. The basins are constructed of concrete or metal with typical dimensions of approximately 30 ft by 15 ft and are 1 ft to 3 ft deep. The facility representative did not know if the basins are ever cleaned out (Kearney 1988). The ground surface adjacent to and beneath the basins is covered with asphalt.

The cooling tower water contains additives including algicide, rust inhibitors such as zinc chromate, organics, and sodium hydroxide. The following chemical additives are listed in file information (Kearney 1988):

- ANCO Algicide No. 1, Andersen Chemical Company (EPA Registration No. 3031-3);
- 2-benzyl-4-chlorophenol;
- aqueous solution of 21-benzyl-4-chlorophenol and sodium hydroxide;

ALBUQUERQUE OPERATIONS OFFICE
ENVIRONMENT, SAFETY AND HEALTH DIVISION
ENVIRONMENTAL PROGRAMS BRANCH

COMPREHENSIVE ENVIRONMENTAL ASSESSMENT AND RESPONSE PROGRAM

PHASE I:
INSTALLATION ASSESSMENT
MOUND

NOT FOR PUBLIC DISSEMINATION

May contain unclassified controlled nuclear information subject to Section 148 of the AEA, as amended (42 USC 2168). Approval by the Department of Energy prior to release is required.

April 1986

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Table V.2 (cont)

Area	Planned Future Actions (PFA)
Bldg. G	Garage work is done at Bldg. G and the local area might be contaminated as a result of these activities. Dumping of waste oil has not been reported in the Bldg. G area and prior to utilizing an offsite vendor the standard operating procedure was to dispose of waste oil in the Mound area B landfill. Additionally, no major spills have been reported in Bldg. G. Therefore, the likelihood of residual oils in concentrations sufficient to pose environmental problems is remote. (Interviews 1985.) CERCLA Finding--Negative for FFSDIF, PA, and PSI; therefore, a HRS Migration Mode Score is not calculated. PFA--No further action is warranted.

Table V.4. Potential CERCLA Sites Identified During CEARP Phase I

Site	USDOE CEARP Phase I		Planned Future Action	
	FFSDIF/PA/PSI[a] Finding	HRS[b] Score	USEPA CERCLA Program Element	USDOE CEARP/CERCLA Order Phase
Category 1[c]				
Area A	Negative	NA[d]	None	None
Area B	Positive	13	None	Confirmation (Phase II)
Area C	Uncertain	NE[e]	None	Installation Assessment (Supplemental Phase I)
Area D	Positive	NA	None	Remedial Action (Phase IV)
Area E	Negative	NA	None	None
Area F	Negative	NA	None	None
Area G	Positive	NA	None	Remedial Action (Phase IV)
Area H	Negative	NA	None	None
Area I	Uncertain	NE	None	Installation Assessment (Supplemental Phase I)
Area J	Negative	NA	None	None
Category 2[f]				
Paint Shop	Negative	NA	None	None
Powerhouse	Negative	NA	None	None
WD Bldg	Negative	NA	None	None
Bldg 61	Negative	NA	None	None
Bldg G	Negative	NA	None	None
Category 3[g]				
Area 1	NA	NA	None	Remedial Action (Phase IV)
Area 2	Negative	NA	None	None
Area 3	NA	NA	None	Remedial Action (Phase IV)
Area 4	NA	NA	None	Remedial Action (Phase IV)

Table V.4 (cont)

Site	USDOE CEARP Phase I: FFSDIF/PA/PSI[a] Finding	USDOE CEARP Phase I: HRS[b] Score	Planned Future Action: USEPA CERCLA Program Element	Planned Future Action: USDOE CEARP/CERCLA Order Phase
Historical Monsanto Facilities[j]				
Unit I	Negative	NA	None	None
Unit II	Negative	NA	None	None
Unit III	Negative	NA	None	None
Unit IV	Negative	NA	None	None
Warehouse	Negative	NA	None	None
Marion	Negative	NA	None	None

[a] Federal Facility Site Discovery and Identification Findings/Preliminary Assessments/Preliminary Site Inspections.
[b] USEPA Hazard Ranking System (for HRS scoring details see Appendix D).
[c] Category 1 (see Section V.A.1.a; Table V.1).
[d] Not Applicable.
[e] Not Evaluated.
[f] Category 2 (see Section V.A.1.a; Table V.2).
[g] Category 3 (see Section V.A.1.a; Table V.3).
[h] See Section V.A.1.b.
[i] See Section V.A.1.c.
[j] See Section V.A.2.

ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 9, SITE SCOPING REPORT: VOLUME 3 - RADIOLOGICAL SITE SURVEY

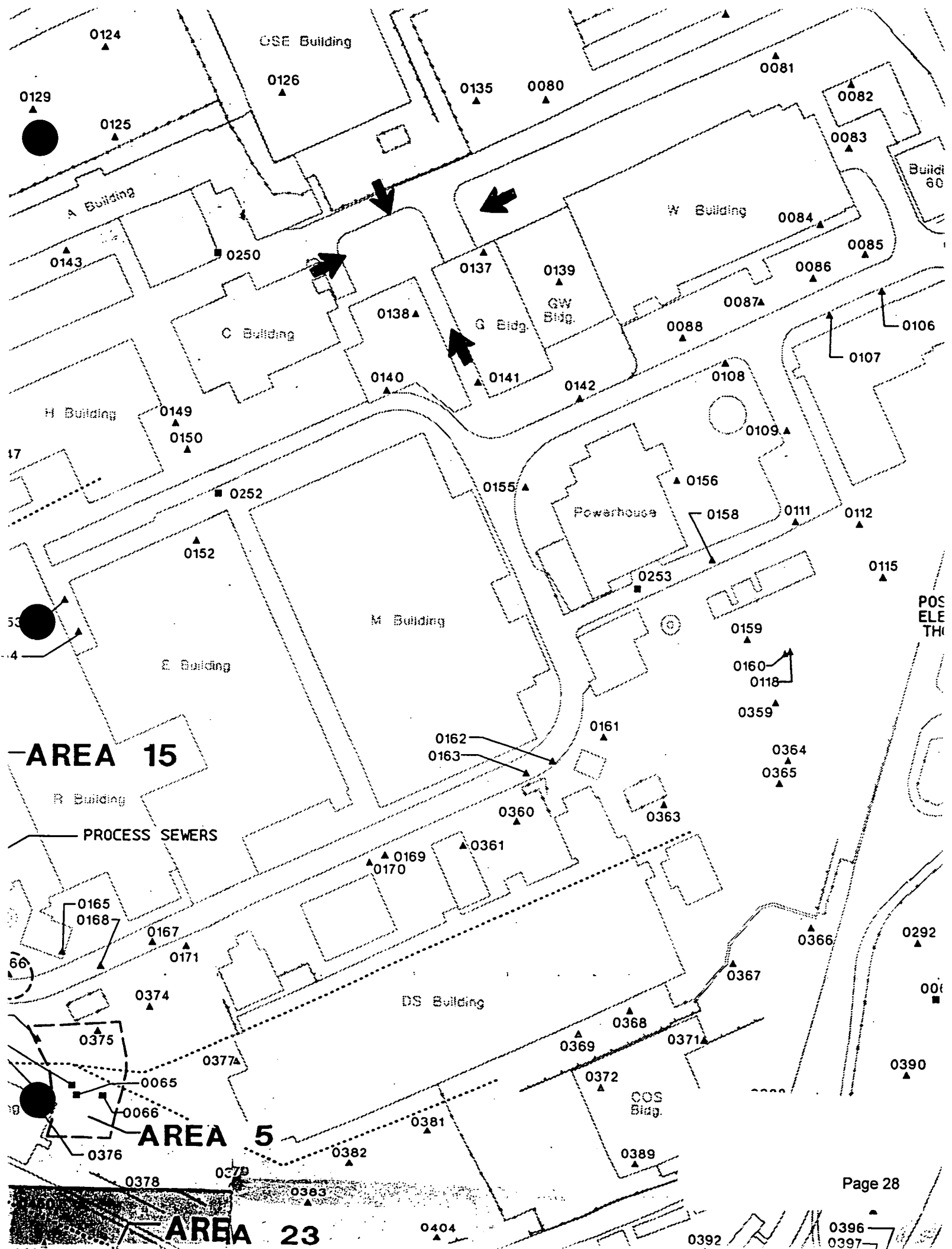
MOUND PLANT
MIAMISBURG, OHIO

June 1993

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL


0124
OSE Building
0126
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0080
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0125
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0083
A Building
W Building
0084
0143
0250
0137
0139
0085
0086
0138
GW Bldg.
0087
0088
0106
C Building
G Bldg.
0107
0140
0141
0142
0108
H Building
0149
0150
0109
0155
0156
0252
Powerhouse
0158
0111
0112
0152
0253
0115
M Building
0159
E Building
0160
0118
0359
0161
0162
0163
AREA 15
0364
0365
R Building
0360
0363
PROCESS SEWERS
0361
0169
0170
0165
0168
0167
0366
0292
0171
0367
0374
DS Building
0368
0375
0369
0371
0377
0390
0065
0372
0066
COS Bldg.
AREA 5
0381
0376
0382
0389
0378
0379
0383
AREA 23
0404
0392
0396
0397

Map Location[a]	Coordinates South	West	MRC ID No.	Mo-Yr	Depth (inch)	Pu-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Co-60 (pCi/g)	Cs-137 (pCi/g)	Ra-226 (pCi/g)	Am-241 (pCi/g)
C0251	0980	2850	8509	12-84	36	0.05	b					
S0124	1050	2945	4071	10-83	0	0.30	b	0.75				
S0125	1125	2970	4072	10-83	0	0.25	b					
S0126	1150	2920	4073	08-83	0	0.40	b					
S0127	1000	3050	4075	10-83	0	0.30	b					
S0128	1050	3250	4077	10-83	0	0.26[c]	b					
S0129	1075	3025	4074	10-83	0	0.51	b	0.20				
S0130	1075	3075	7101	09-84	0	0.95	b					
S0131	1075	3100	4076	10-83	0	0.26	b					
S0132	1100	3100	7100	09-84	0	0.67	b					
S0133	1100	3225	4078	10-83	0	0.03	b					
S0134	1175	3375	4079	10-83	0	0.47	b					
S0135	1225	2670	3033	10-83	0	0.64	b					
C0250	1255	2930	8395	12-84	36	0.01	b					
S0137	1350	2720	6177	08-84	0	0.18[c]	b					
S0138	1375	2795	6178	08-84	0	0.12	b					
S0139	1400	2670	3034	10-83	0	0.23	b					
S0140	1425	2845	3037	10-83	0	0.36	b					
		2770	6179	08-84	0	0.68	b					

GAMMA SPECTROSCOPY

Map Location[a]	Coordinates South	West	MRC ID No.	Mo-Yr	Depth (inch)	Pu-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Co-60 (pCi/g)	Cs-137 (pCi/g)	Ra-226 (pCi/g)	Am-241 (pCi/g)
C0289	2422.7	2081.0	None[d]	07-84	0	NR	0.6					
			None[d]	07-84	12	NR	1.1					
			None[d]	07-84	24	NR	0.5					
			None[d]	07-84	36	NR	0.8					
			None[d]	07-84	48	NR	1.0					
			None[d]	07-84	60	NR	0.8					
C0290	2401.5	2102.1	None[d]	07-84	0	NR	0.7					
			None[d]	07-84	12	NR	0.8					
			None[d]	07-84	24	NR	0.8					
			None[d]	07-84	36	NR	0.8					
			None[d]	07-84	48	NR	0.6					
			None[d]	07-84	60	NR	0.9					
			None[d]	07-84	72	NR	0.8					
C0291	2915.3	2490.3	None[d]	07-84	0	NR	0.6					
			None[d]	07-84	12	NR	0.4					
			None[d]	07-84	24	NR	0.5					
			None[d]	07-84	36	NR	0.4					
			None[d]	07-84	48	NR	0.4					
			None[d]	07-84	60	NR	0.3					
			None[d]	07-84	72	NR	0.5					
			None[d]	07-84	84	NR	0.4					
			None[d]	07-84	96	NR	0.7					
			None[d]	07-84	108	NR	0.6					
			None[d]	07-84	120	NR	0.3					
			None[d]	07-84	132	NR	0.3					
S1092	2185	3362	8413	12-84	f	0.31	323.5[g]					

[a] C denotes core location and S denotes surface sample location on Plate 1.

[b] Thorium results of ≤ 2 pCi/g are listed as "b".

[c] Verification sample analyzed for QA/QC.

[d] No MRC ID assigned because *in situ* gamma spectrometry was performed for thorium-232.

[e] Gamma results could not be confirmed using the gamma spectroscopy printout given in this appendix.

[f] The depth for this sample was given as "SS". For mapping purposes (Plates 1 and 5), this is assumed to be a surface sample.

[g] Sample results were given isotopically for this sample and included 0.99 pCi/g thorium-228; 321 pCi/g thorium-230; and 1.5 pCi/g thorium-232, for a total of 323.5 pCi/g.

EG&G MOUND APPLIED TECHNOLOGIES

Revised Draft

Active Underground Storage Tank Plan

May 16, 1994

Prepared for:

Project Management and Planning
EG&G Mound Applied Technologies
One Mound Road
Miamisburg, Ohio

Tank No	Proposed Program	Bldg	Status	Date Installed	Estimated Total Capacity (gallons)	Purpose	Primary Regulatory Jurisdict	Spill Jurisdict
135	AUSTP	WD	in service	1967	400	sanitary waste sump	CWA	AEA
136	ER	85	inactive	Unknown	450	waste solvent tank	FFA	FFA
200	ER	1	inactive	1956	500	explosives wastwewater settling basin	FFA	FFA
201	ER	43	inactive	1969	500	explosives wastwewater settling basin	FFA	FFA
202	ER	G	removed	1947	4,000	leaded gasoline storage	FFA	FFA
203	ER	G	removed	1964	4,000	leaded gasoline storage	FFA	FFA
204	ER	G	removed	1975	5,000	unleaded gasoline storage	FFA	FFA
205	D&D	WD	inactive	1947	7,500	sanitary waste treatment	AEA	AEA
206	D&D	WD	inactive	1947	30,000	sanitary waste treatment	AEA	AEA
207	D&D	WD	inactive	1947	7,500	sanitary waste treatment	AEA	AEA
208	D&D	41	removed	1968	3,466	alpha wastewater pump station	AEA	AEA
209	D&D	41	removed	1968	3,466	alpha wastewater pump station	AEA	AEA
210	D&D	SM	removed	1962	5,000	alpha wastewater collect tank	AEA	AEA
211	D&D	SM	removed	1962	3,000	alpha wastewater collect tank	AEA	AEA
212	D&D	SM	removed	1959	1,000	alpha wastewater collect tank	AEA	AEA
213	D&D	SM	removed	1959	1,000	alpha wastewater collect tank	AEA	AEA
214	D&D	WD	inactive	1968	3,750	alpha effluent storage	AEA	AEA
215	D&D	WD	inactive	1968	3,750	alpha effluent storage	AEA	AEA
216	D&D	WD	inactive	1968	3,750	alpha effluent storage	AEA	AEA
217	ER	27	inactive	1966	100	waste flume sump	FFA	FFA
218	ER	27	inactive	1966	500	explosives settling sump	FFA	FFA
219	ER	34	removed	1965	5,000	aviation fuel storage	FFA	FFA
220	ER	51	removed	1972	1,000	waste storage tank	FFA	FFA
222	ER	58	removed	1973	3,000	diesel fuel storage	FFA	FFA
223	ER	56	removed	1972	825	diesel fuel storage	FFA	FFA
224	ER	29	closed in place	1947	1,500	historic septic tank	FFA	FFA
225	ER	M	inactive	1969	350	metal plating rinse sump	FFA	FFA
226	D&D	SW	inactive	1967	100	beta wastewater sump	AEA	AEA
227	D&D	T	closed in place	1947	350	beta wastewater sump	AEA	AEA
228	D&D	T	closed in place	1947	350	floor drain sump	AEA	AEA
229	D&D	T	closed in place	1947	350	alpha wastewater sump	AEA	AEA
230	D&D	T	closed in place	1947	350	alpha wastewater sump	AEA	AEA
231	D&D	T	closed in place	1947	60	alpha wastewater sump	AEA	AEA
232	D&D	T	closed in place	1947	350	alpha wastewater sump	AEA	AEA
233	D&D	T	closed in place	1947	350	alpha wastewater sump	AEA	AEA
234	D&D	T	closed in place	1947	350	alpha wastewater sump	AEA	AEA
235	D&D	T	closed in place	1947	350	alpha wastewater sump	AEA	AEA
236	D&D	HH	inactive	1967	100	beta wastewater sump	AEA	AEA
237	D&D	HH	closed in place	1947	100	alpha wastewater sump	AEA	AEA
238	ER	19	removed	1947	Unknown	historic gasoline storage tank	FFA	FFA
239	ER	36	removed	1948	Unknown	historic gasoline storage tanks	FFA	FFA
240	ER	36	removed	1948	Unknown	historic gasoline storage tanks	FFA	FFA
241	D&D–Proposed	SM	removed	1959	3,000	historic septic tank	AEA	AEA
250	D&D–Proposed	T	closed in place	1947	350	wastewater sump	AEA	AEA
251	D&D–Proposed	T	closed in place	1947	350	wastewater sump	AEA	AEA
254	AUSTP	38	in service	1965	350	sanitary sump	CWA	AEA
255	D&D–Proposed	R	inactive	1967	55	calorimeter bath	AEA	AEA
258	AUSTP	62	in service	1973	350	hot waste sump	AEA	AEA
260	ER–Proposed	2	removed	1956	1,000	fuel oil storage	FFA	FFA
261	D&D–Proposed	2	closed in place	1956	450	septic tank	AEA	AEA
262	D&D–Proposed	G	inactive	1947	550	waste oil storage	AEA	AEA
263	AUSTP	87	in service	1984	51,700	explosive surge tank	CAA	RCRA/AEA
264	AUSTP	87	in service	1984	51,700	explosive surge tank	CAA	RCRA/AEA
265	AUSTP	87	in service	1984	51,700	explosive surge tank	CAA	RCRA/AEA
266	D&D–Proposed	R	inactive	1967	55	calorimeter bath	AEA	AEA
267	D&D–Proposed	37	inactive	1966	500	low risk waste tank	AEA	AEA
268	AUSTP	H	in service	1947	350	condensate sump	CWA	AEA
269	AUSTP	T	in service	1947	350	condensate sump	CWA	AEA
270	D&D–Proposed	29	inactive	1965	1,000	historic septic tank	AEA	AEA
271	AUSTP	T	in service	1947	10,000	hot side fire water tanks	CWA	AEA
272	AUSTP	T	in service	1947	200	fire water sump	CWA	AEA
273	AUSTP	T	in service	1947	200	fire water sump	CWA	AEA

DAMES & MOORE - INSPECTION & DOCUMENT REVIEW NOTES

CLIENT	JOB NUMBER	DATE
EG&G Mound Applied Technologies	10805-794	4/14/94
JOB TITLE	**D&M TEAM**	
Active Underground Storage Tank Program	Giantelli & Dispirito	

TANK NO.	BLDG/LOCATION	EG&G SPONSOR	OWNER
202	G	ER Program	U.S. DOE

TANK STATUS	TANK CAPACITY (gallons)	INSTALLATION DATE	INTERVIEWED WITH	INTERVIEW DATE
Removed	4,000	1947	—	

TANK DESCRIPTION, Purpose of Tank Leaded gasoline storage.

Tank Material
- ✓ Bare Steel (unprotected)
- ___ Composite (steel & FRP)
- ___ Fiberglass Reinforced Plastic
- ___ Stainless Steel Lined Concrete
- ___ Steel Lined Concrete
- ___ Concrete
- ___ Other - Specify
- ___ Unknown

Tank Cathodic Protection
- ___ Internal Lining - Specify
- ___ Sacrificial Anodes
- ___ Impressed Current
- ___ Composite (Steel & FRP)
- ___ Other - Specify
- ___ Unknown
- ✓ None

Inlet of Tank
n/a

Outlet of Tank
n/a

History of Spills
Yes

Spill/Overfill Prevention
- ___ Float Vent Valve
- ___ High Level Alarm
- ___ Auto Shutoff
- ___ Other - Specify
- ___ None n/a

Piping Material
- ___ Cathodically Protected Steel
- ___ Bare Steel (unprotected)
- ___ Fiberglass Reinforced Plastic
- ___ Double Walled or Jacketed
- ___ Other - Specify
- ___ Unknown

n/a

Substance Currently/Last Stored
- ✓ Gasoline
- ___ Diesel
- ___ Kerosene
- ___ Used Oil
- ___ Hazardous Substances - Specify
- ___ Other - Specify
- ___ Unknown

Tank Site Description
- ___ Indoor
- ___ Outdoor
- ___ Soil
- ___ Asphalt/Concrete
- ___ Storm Drains, Potential Surface water runoff
- ___ Soil Staining

n/a

DOE / AEC / PM No:
n/a

Calibration Records

Maintenance Records

Tank Release Detection Method
- ___ Inventory Control
- ___ Manual Tank Gauging
- ___ Tank Tightness Testing
- ___ Automatic In-Tank Monitor & Inventory Control
- ___ Vapor Monitoring
- ___ Groundwater Monitoring
- ___ Secondary Containment with Interstitial Monitoring
- ___ Other - Specify
- ___ None n/a

Piping Release Detection Method
- ___ Pressure Piping Automatic Line Flow Restrictor
- ___ Pressure Piping Automatic Line Shutoff Device
- ___ Line Tightness Test (Pressure Annual, Suction Every 3 yrs)
- ___ Vapor Monitoring
- ___ Groundwater Monitoring
- ___ Approved Suction Piping
- ___ Other - Specify
- ___ None n/a

Closure
Date of Last use
1964
Intended Replacement
Removed 1986
Closure Plan

Part of Operable Unit
OU2

Primary Regulatory Jurisdiction
FFA

Spill Jurisdiction
FFA

Regulated Units

DOCUMENTS, REFERENCES USED: DOE, 1992a; DOE, 1993; UST Inspection Sheet

COMMENTS: As a closed tank, the locations are subject to the FFA to the extent that the potential for hazardous substances released to the environment.

This tank has been recommended for inclusion in the ER Program under OU2.

SIGNATURE Art Giantelli

DAMES & MOORE - INSPECTION & DOCUMENT REVIEW NOTES

Page ___ of ___

CLIENT	JOB NUMBER	DATE
EG&G Mound Applied Technologies	10805-794	4/14/94
JOB TITLE	**D&M TEAM**	
Active Underground Storage Tank Program	Giantelli & Dispirito	

TANK NO.	BLDG/LOCATION	EG&G SPONSOR	OWNER	
203	G	ER Program	U.S. DOE	
TANK STATUS	**TANK CAPACITY (gallons)**	**INSTALLATION DATE**	**INTERVIEWED WITH**	**INTERVIEW DATE**
Removed	4000	1964		

TANK DESCRIPTION, Purpose of Tank Leaded Gasoline Storage

Tank Material
- ✓ Bare Steel (unprotected)
- ___ Composite (steel & FRP)
- ___ Fiberglass Reinforced Plastic
- ___ Stainless Steel Lined Concrete
- ___ Steel Lined Concrete
- ___ Concrete
- ___ Other - Specify
- ___ Unknown

Tank Cathodic Protection
- ___ Internal Lining - Specify
- ___ Sacrificial Anodes
- ___ Impressed Current
- ___ Composite (Steel & FRP)
- ___ Other - Specify
- ___ Unknown
- ✓ None

Inlet of Tank
n/a

Outlet of Tank
n/a

History of Spills
Yes

Spill/Overfill Prevention
- ___ Float Vent Valve
- ___ High Level Alarm
- ___ Auto Shutoff
- ___ Other - Specify
- ___ None

n/a

Piping Material
- ___ Cathodically Protected Steel
- ___ Bare Steel (unprotected)
- ___ Fiberglass Reinforced Plastic
- ___ Double Walled or Jacketed
- ___ Other - Specify
- ___ Unknown

n/a

Substance Currently/Last Stored
- ✓ Gasoline
- ___ Diesel
- ___ Kerosene
- ___ Used Oil
- ___ Hazardous Substances - Specify
- ___ Other - Specify
- ___ Unknown

Tank Site Description
- ___ Indoor
- ___ Outdoor
- ___ Soil
- ___ Asphalt/Concrete
- ___ Storm Drains, Potential Surface water runoff
- ___ Soil Staining

n/a

DOE / AEC / PM No:
n/a

Calibration Records

Maintenance Records

Tank Release Detection Method
- ___ Inventory Control
- ___ Manual Tank Gauging
- ___ Tank Tightness Testing
- ___ Automatic In-Tank Monitor & Inventory Control
- ___ Vapor Monitoring
- ___ Groundwater Monitoring
- ___ Secondary Containment with Interstitial Monitoring
- ___ Other - Specify
- ___ None

n/a

Piping Release Detection Method
- ___ Pressure Piping Automatic Line Flow Restrictor
- ___ Pressure Piping Automatic Line Shutoff Device
- ___ Line Tightness Test (Pressure Annual, Suction Every 3 yrs)
- ___ Vapor Monitoring
- ___ Groundwater Monitoring
- ___ Approved Suction Piping
- ___ Other - Specify
- ___ None

n/a

Closure
Date of Last use
1964
~~Intended Replacement~~
Removed 1986
Closure Plan

Part of Operable Unit
OU2

Primary Regulatory Jurisdiction
FFA

Spill Jurisdiction
FFA

Regulated Units

DOCUMENTS, REFERENCES USED: DOE, 1992a; DOE, 1993; UST Inspection Sheet

COMMENTS: As a closed tank, the location is subject to the FFA to the extent that the potential for hazardous substances are released to the environment.

This tank has been recommended for inclusion in the ER Program under OU2.

SIGNATURE R.S. Giantelli

DAMES & MOORE - INSPECTION & DOCUMENT REVIEW NOTES

Page ___ of ___

CLIENT	JOB NUMBER	DATE
EG&G Mound Applied Technologies	10805-794	4/14/94

JOB TITLE	D&M TEAM
Active Underground Storage Tank Program	Giantelli & DiSpirito

TANK NO.	BLDG/LOCATION	EG&G SPONSOR	OWNER
204	G	ER Program	U.S. DOE

TANK STATUS	TANK CAPACITY (gallons)	INSTALLATION DATE	INTERVIEWED WITH	INTERVIEW DATE
Removed	5000	1975	—	—

TANK DESCRIPTION, Purpose of Tank Unleaded Gasoline Storage

Tank Material
- ✓ Bare Steel (unprotected)
- ___ Composite (steel & FRP)
- ___ Fiberglass Reinforced Plastic
- ___ Stainless Steel Lined Concrete
- ___ Steel Lined Concrete
- ___ Concrete
- ___ Other - Specify
- ___ Unknown

Tank Cathodic Protection
- ___ Internal Lining - Specify
- ___ Sacrificial Anodes
- ___ Impressed Current
- ___ Composite (Steel & FRP)
- ___ Other - Specify
- ___ Unknown
- ✓ None

Inlet of Tank
n/a

Outlet of Tank
n/a

History of Spills
Yes

Spill/Overfill Prevention
- ___ Float Vent Valve
- ___ High Level Alarm
- ___ Auto Shutoff
- ___ Other - Specify
- ___ None

n/a

Piping Material
- ___ Cathodically Protected Steel
- ___ Bare Steel (unprotected)
- ___ Fiberglass Reinforced Plastic
- ___ Double Walled or Jacketed
- ___ Other - Specify
- ___ Unknown

n/a

Substance Currently/Last Stored
- ✓ Gasoline
- ___ Diesel
- ___ Kerosene
- ___ Used Oil
- ___ Hazardous Substances - Specify
- ___ Other - Specify
- ___ Unknown

Tank Site Description
- ___ Indoor
- ___ Outdoor
- ___ Soil
- ___ Asphalt/Concrete
- ___ Storm Drains, Potential Surface water runoff
- ___ Soil Staining

n/a

DOE / AEC / PM No:
n/a

Calibration Records

Maintenance Records

Tank Release Detection Method
- ___ Inventory Control
- ___ Manual Tank Gauging
- ___ Tank Tightness Testing
- ___ Automatic In-Tank Monitor & Inventory Control
- ___ Vapor Monitoring
- ___ Groundwater Monitoring
- ___ Secondary Containment with Interstitial Monitoring
- ___ Other - Specify
- ___ None

n/a

Piping Release Detection Method
- ___ Pressure Piping Automatic Line Flow Restrictor
- ___ Pressure Piping Automatic Line Shutoff Device
- ___ Line Tightness Test (Pressure Annual, Suction Every 3 yrs)
- ___ Vapor Monitoring
- ___ Groundwater Monitoring
- ___ Approved Suction Piping
- ___ Other - Specify
- ___ None

n/a

Closure
Date of Last use
1964

~~Intended Replacement~~
Removed - 1986

Closure Plan

Part of Operable Unit
OU2

Primary Regulatory Jurisdiction
FFA

Spill Jurisdiction
FFA

Regulated Units

DOCUMENTS, REFERENCES USED: DOE, 1992a; DOE, 1993 UST Inspection Sheet

COMMENTS: As a closed tank, the location is subject to the FFA to the extent that the potential for hazardous substances are released to the environment.

This tank has been recommended for inclusion in the ER Program under OU2

SIGNATURE A Giantelli

FURTHER ASSESSMENT

Sampling at PRS Nos. 107/108/109

Revision 1

May 1997

Department of Energy
EG&G Mound Applied Technologies
Mound Plant
Miamisburg, Ohio

1.0 INTRODUCTION

Potential Release Sites (PRS) 107, 108, and 109 represent three former underground storage tank (USTs) locations on the Main Hill adjacent to Building G. The USTs were used to store gasoline for EG&G Mound vehicles. The three USTs are denoted as Nos. 202, 203, and 204 in the site underground tank management plan. The contents and installation of these USTs are as follows: UST No. 202 contained leaded gasoline and was installed in 1947; UST No. 203 contained gasoline and was installed in 1964; and UST No. 204 contained unleaded gasoline and was installed in 1975. Figure 1-1 shows the location of PRS 107/108/109. The tanks were later abandoned and the fueling station relocated to its present position near Building 51.

In 1986 a concrete truck wheel punctured the fiberglass tank (UST No. 204). Subsequently, all three USTs were removed. The soil from around the USTs was excavated, spread out to allow contaminants to volatilize, and disposed of at the Mound spoils area. During the UST removal activities, an oily sheen of unknown origin was observed on the water surface that had collected in the excavation of UST No. 204. According to EG&G Mound records, the excavation for UST No. 204 was filled with concrete during the construction of the Building 99's foundation. The other two tank cavities were also filled at the same time.

A soil gas investigation, *Reconnaissance Sampling Report Soil Gas Survey and Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill 1993*, was conducted in this area to determine if any contaminants were present. Attempts to evaluate the soil gas analytical results from this vicinity indicated no concentrations of volatile organic compounds detected in the subsurface. The investigation failed to locate any of the tank cavities.

The Core Team determined that further assessment of PRS 107/108/109 was necessary. They felt that additional information was required to determine if gasoline-related contaminants remained in the tank cavities and to determine if remediation should be considered for the soils.

To address the objective, a Sampling and Analysis Plan (SAP) was prepared and executed.

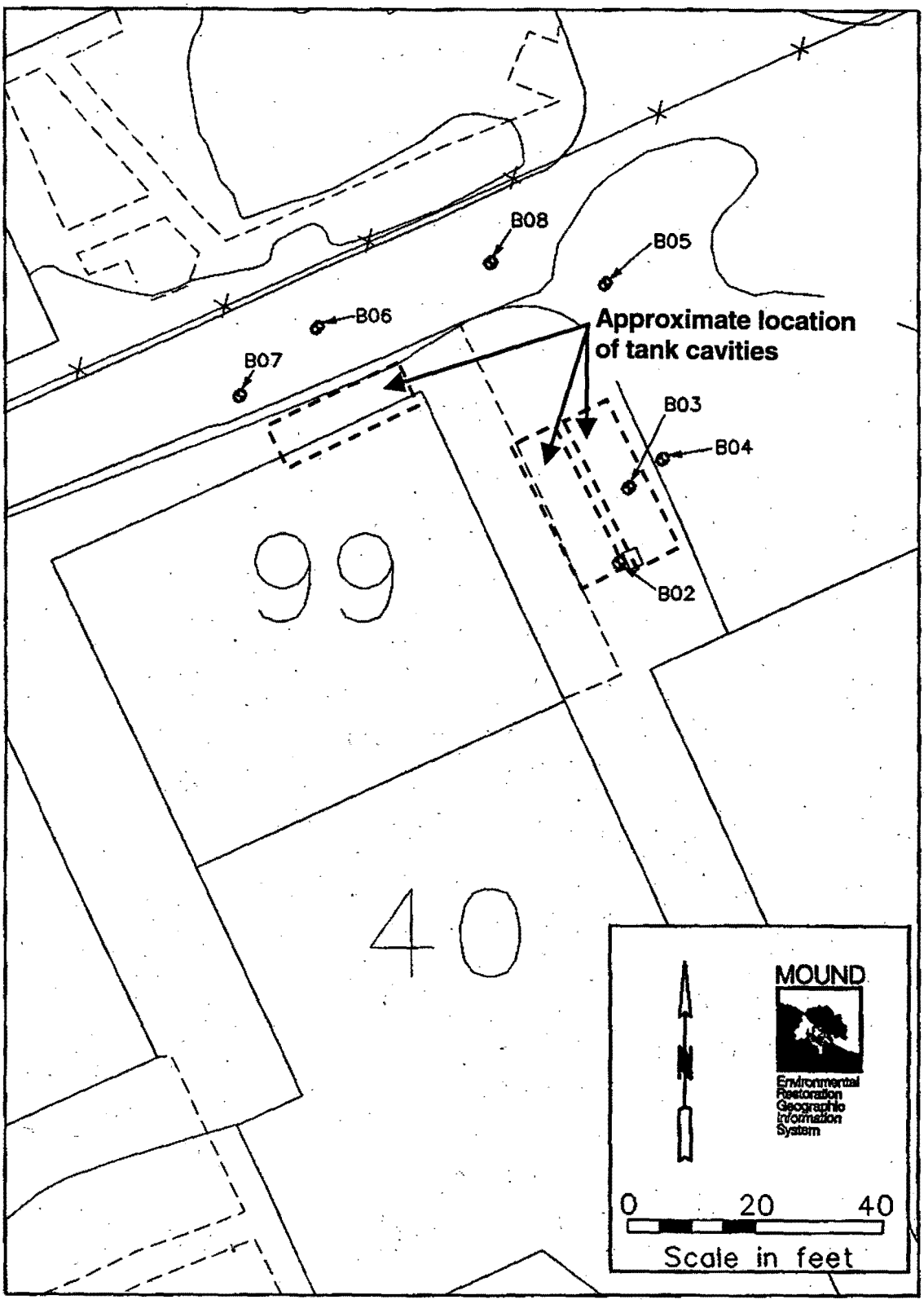

Figure 1-1. Location of PRS 107/108/109

2.0 INVESTIGATIVE ACTIVITIES

On 3 and 4 October 1996, Roy F. Weston, Inc. (WESTON®) conducted subsurface sampling at PRS 107/108/109. The sampling activities were in general accordance with the approved SAP.

2.1 BORING LOCATIONS AND SAMPLE COLLECTION

Seven borings, B02 through B08, were installed in and around the three former UST cavities using a hollow stem auger drill rig. The locations of the borings were adjusted slightly prior to installation to avoid underground utilities. The final coordinates of the borings are shown on Figure 1-1 and in Table 2.1.

Table 2.1. Survey Coordinates for Boring Locations

Boring Location	Survey Coordinate (X)	Survey Coordinate (Y)
B02	1465143.105	599406.14
B03	1465141.628	599413.796
B04	1465146.895	599418.363
B05	1465137.953	599446.373
B06	1465092.471	599439.323
B07	1465080.068	599428.304
B08	1465119.957	599449.76

Boring B01 was planned to be located at the cavity of Tank No. 204 along the foundation of Building 99. However, boring B01 was eliminated prior to investigation due to utilities and discovery of a drawing that indicated this tank cavity was filled with concrete during the construction of Building 99. This is discussed in Corrective Action Report (CAR) 006 at the end of this section.

Seven borings were installed during the subsurface investigation. At four the of borings, B05 through B08, refusal (i.e., bedrock) was encountered at 2-feet or less below ground surface (bgs). Soil samples could not be collected at these locations due to the lack of unconsolidated material to collect. Soil samples were collected from the three remaining borings; B02. B03, and B04 with

total depths to refusal of 9-feet, 8-feet, and 2-feet, respectively. The soil samples collected consisted of fill material comprised of sands, gravels, and some silt-sized material. Since borings B02 and B03 were completed at the indicated depths, the sampling objective for sample collection within two of the three tank cavities was achieved.

A large telecommunications pit was present near boring B02. It appeared that a portion of a tank cavity was converted into this pit. The pit contained several feet of water, from which a water sample was collected for laboratory analysis. This deviation from the SAP is discussed in the following section.

Deviations from the SAP with respect to the boring locations and collection of soil samples did not impact the data quality that supports the DQO and are summarized as follows:

- CAR002: Decontamination procedure for sampling equipment was revised to eliminate the use of hexane and methanol rinses.
- CAR006: Boring B01 was eliminated for two reasons. The discovery of drawings showing the tank cavity was filled-in with concrete, and the close proximity of underground utilities. Since the purpose of the boring was to target the cavity, the boring was not relocated.
- CAR007: Headspace results were not recorded in the field logbook. The headspace results were transcribed into the field logbook with justification.
- CAR009: Locations for soil borings, B02, B05, B07, and B08, were adjusted due to underground utilities and overhead obstructions.
- CAR010: A water sample was collected from a telecommunications manhole at the request of EG&G.
- CAR011: A malfunctioning OVM was not documented in the field logbook. Since the OVM was used for headspace screening, headspace results from collected samples could not be performed. The impact to the data was minimized because the two deepest sample intervals collected from B02 and B03 were submitted for analysis. This exceeds the SAP requirements. Only one sample was collected from boring B04 and it was submitted for analysis.

3.0 RESULTS OF ANALYSES

WESTON obtained geological information and soil analytical results from the subsurface investigation at PRS 107/108/109. This section summarizes the analytical results. Copies of the data validation and analytical results are presented in Appendices B and C, respectively.

3.1 ANALYTICAL RESULTS

A total of eight soil samples were collected. Based on the headspace selection criteria and prevalent odors, five soil samples and a field duplicate were selected for laboratory analysis. The soil target analytes included BTEX, TPH, and lead. The sample results for these analyses are listed in Table 3.1. Also shown in Table 3.1 are the results of the one water sample.

Table 3.1. Soil and Water Analytical Data Results

Sequential Id	000003	000004	000007	000009	000010	000011	000012
Sample Location	B02	B02	B04	B03	B03	B03	WP1[a]
Depth (ft, bgs)	5 to 7	7 to 9	0 to 2	4 to 6*	6 to 8	6 to 8**	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Water
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l
Benzene	< 0.0011	< 0.11	< 0.11	< 0.0011	< 0.0011	< 0.055	< 0.001
Toluene	< 0.0011	< 0.11	< 0.11	< 0.0011	0.0092	< 0.055	< 0.001
Ethylbenzene	< 0.0011	< 0.11	< 0.11	< 0.0011	0.0046	< 0.055	< 0.001
Xylenes	< 0.0011	< 0.11	< 0.11	< 0.0011	0.061	< 0.055	< 0.001
TPH (GRO)	0.049	43	19	< 0.044	1.1	7.4	N/A
Lead	8.3	8.8	15.8	7.9	8.3	7.8	19.3***

Notes:
[a] – indicates water sample collected from the telecommunications manhole
* - MS/MSD collected
** - Duplicate soil sample, see CAR005 for BTEX data clarification
*** - Qualified data. The recovery exceeded the upper control limit that indicates a potential positive bias: therefore the result is considered estimated.
N/A – Not analyzed

BTEX Analytical Results

BTEX analysis was performed following method 8020 for soil and method 602 for water. Sample 000010, collected at boring location B03, interval 6 to 8 feet, had concentrations of toluene at 0.0092 mg/kg, ethylbenzene at 0.0046 mg/kg, and xylene at 0.061 mg/kg. No other sample had detectable concentrations of BTEX.

TPH Analytical Results

TPH analysis was performed on each of the five soil samples and one duplicate soil sample following method 8015 (modified for gasoline range organic compounds). The sample concentrations ranged between 0.049 to 43 mg/kg, except for sample 000009 located at B03, 4 to 6 foot interval, which was below the reporting limit (< 0.044 mg/kg).

Lead Analytical Results

Lead analysis was performed following method CLP ILM 03.0. All of the soil samples had detectable levels of total lead. The sample concentrations ranged from 0.0078 to 0.0158 mg/kg. The water sample, WP1, collected from the telecommunications manhole had a lead concentration of 0.0193 mg/l.

3.2 DATA VALIDATION

After receiving the analytical results, one sample was submitted to QuantaLex, Inc. for data validation and all of the sample results and reported quality control checks (surrogates, matrix spikes, and laboratory control spike results) were reviewed.

During data validation and data review, it was observed that the sample reporting limits for BTEX were elevated above the State Fire Marshal, Bureau of Underground Storage Tank Regulations (BUSTR) action limit for benzene (0.006 mg/kg). When the raw data was reviewed, it was

determined that the elevated reporting limits for two of the three affected samples were caused by high levels of interferents during the GC analysis which required the laboratory to dilute the samples. However, the dilution of the field duplicate sample was determined to be unjustified and the laboratory was requested to re-analyze the sample fraction (CAR-005).

The subsequent re-analysis of the field duplicate achieved a significantly lower reporting limit. The re-analyzed field duplicate was reported as non-detect and did not confirm the positive results reported for the sample for which it was the duplicate. Because the re-analysis occurred outside allowable holding time and the results did not confirm the results for the sample for which it was a duplicate, the results were rejected (R) and no useful data on field precision could be assessed for the volatile organic analyses. No other qualifications were made to the data set.

In addition to the soil analyses, one water sample and two water quality control samples (field blank and trip blank) were submitted for analysis. The water target analytes included BTEX and lead. The sample results for these analyses are listed in Table 3.1. The results and associated reported quality control checks (surrogates, matrix spikes, and laboratory control spike results) were reviewed. No qualifications were assessed to these data results.

4.0 CONCLUSIONS

The data collected during the subsurface investigation was evaluated first to determine the completeness and usability, and second to determine if the DQO was met. Conclusions regarding this evaluation are discussed as follows:

- There is little to no soil present between the existing concrete and top of bedrock in the area around PRS 107/108/109.

- None of the soil samples analyzed had concentrations of BTEX or TPH detected above conservative action levels established by the State Fire Marshal. The State Fire Marshal action levels are 0.006 mg/kg for benzene, 4 mg/kg for toluene, 6 mg/kg for ethylbenzene, 28 mg/kg for xylene, and 105 mg/kg for TPH. Note that detection levels for benzene were higher than the action level for two samples.

- All soil samples had concentrations of lead detected above analytical reporting limit. However, they did not exceed the PRS comparison background value of 48 mg/kg for lead.

- The water sample collected from the manhole had a lead concentration of 0.0193 mg/l, which exceeds the Maximum Contaminant Level (MCL) of 0.015 mg/l for drinking water. The MCL is documented in the PRS comparison guideline values and in the federal regulations.