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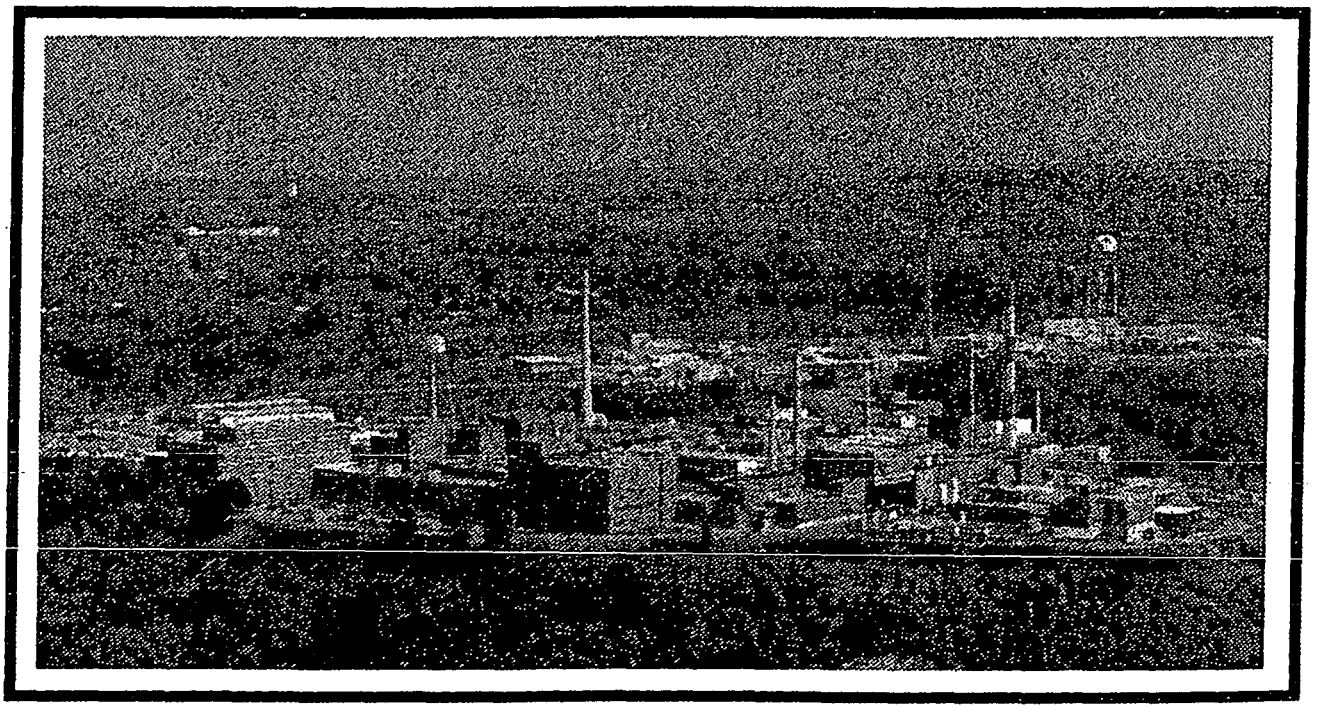
MOUND

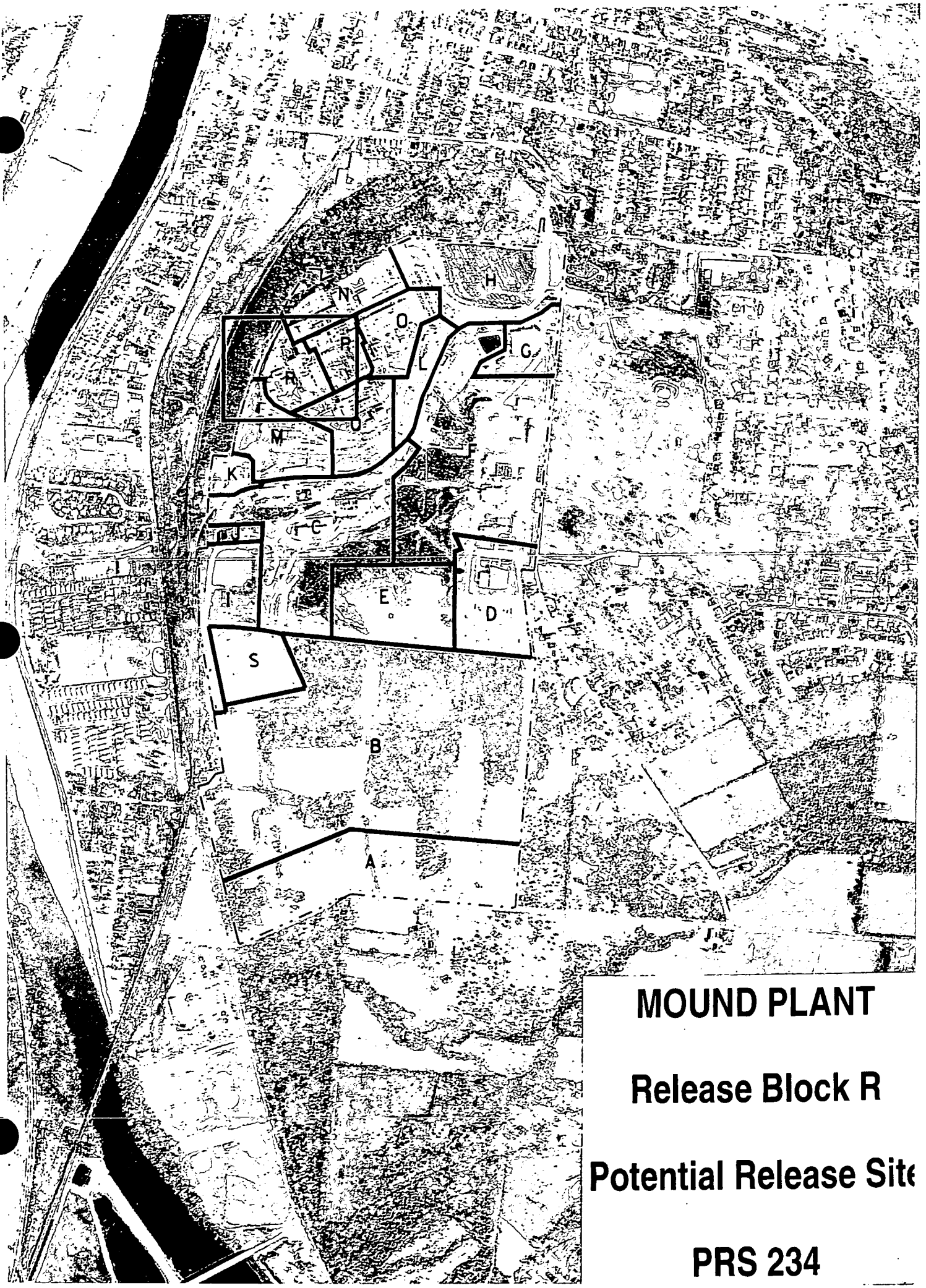
Environmental
Restoration
Program

MOUND PLANT
Potential Release Site Package
PRS # 234



PRS 234

REV	DESCRIPTION	DATE
PUBLIC RELEASE **0**	Available for comment.	**Aug. 20, 1996**
FINAL **1**	Comment period expired. No comments. Recommendation page annotated.	**Oct. 16, 1996**

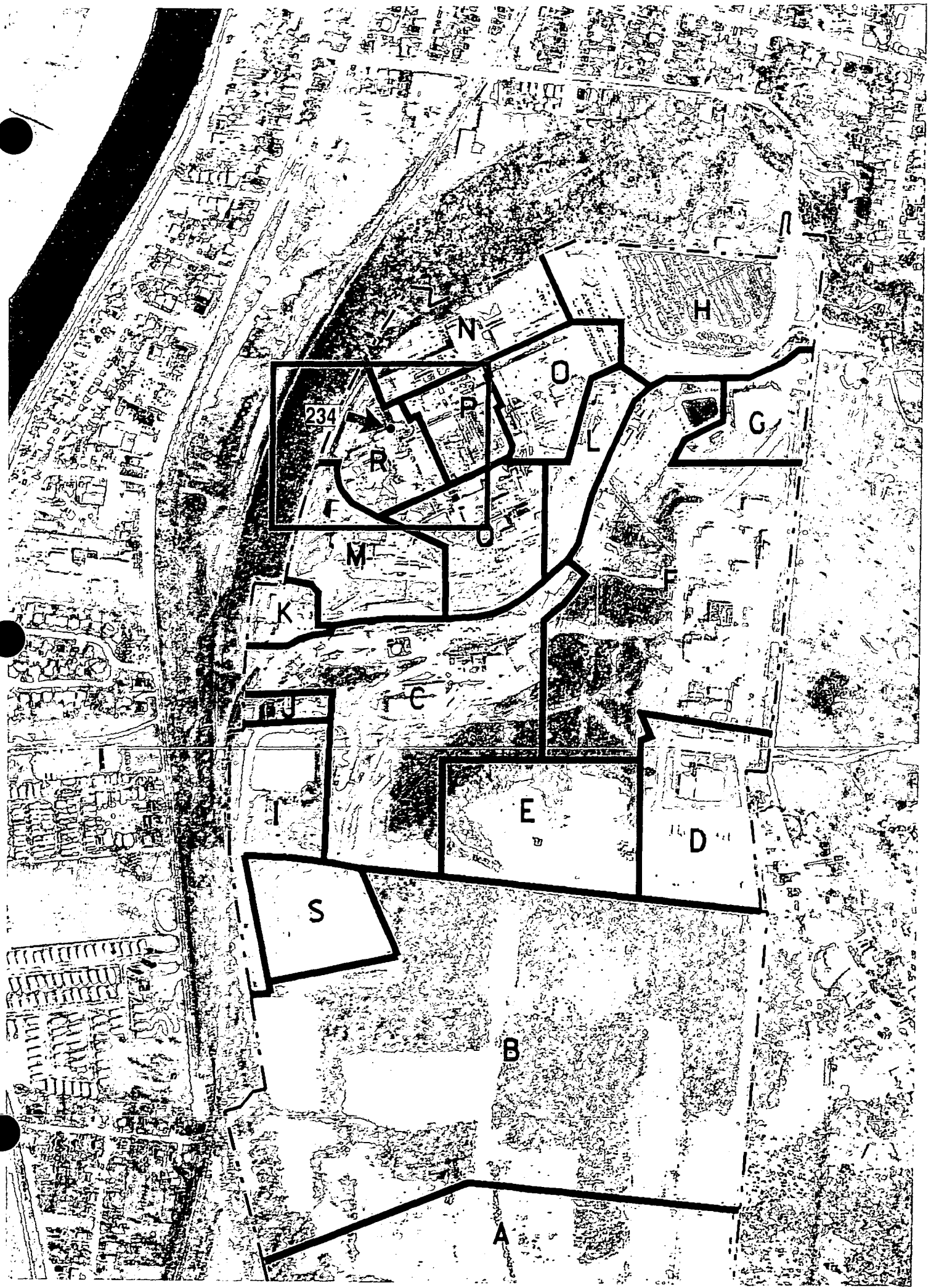


MOUND PLANT

Release Block R

Potential Release Site

PRS 234



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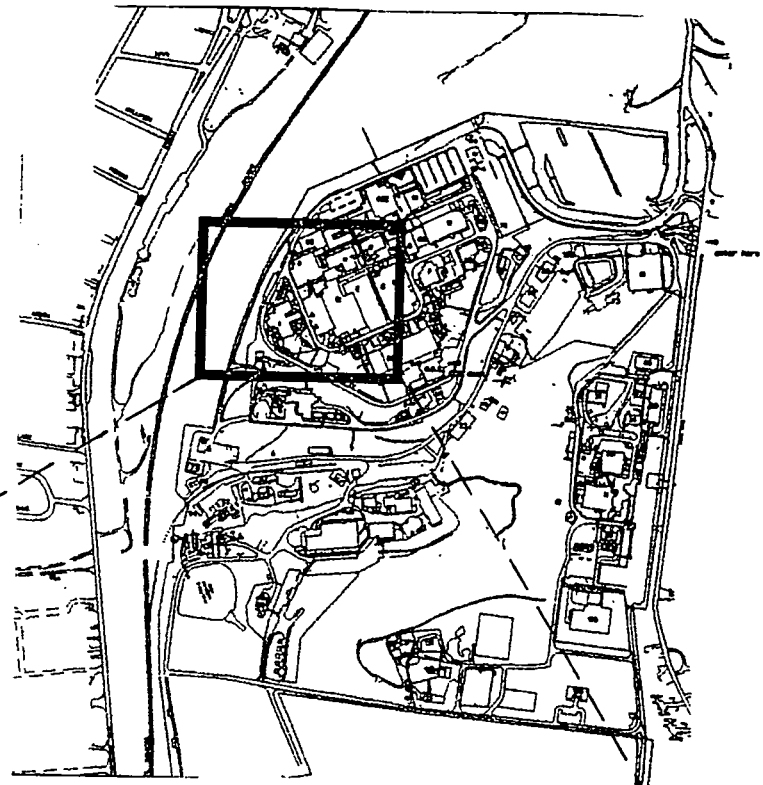
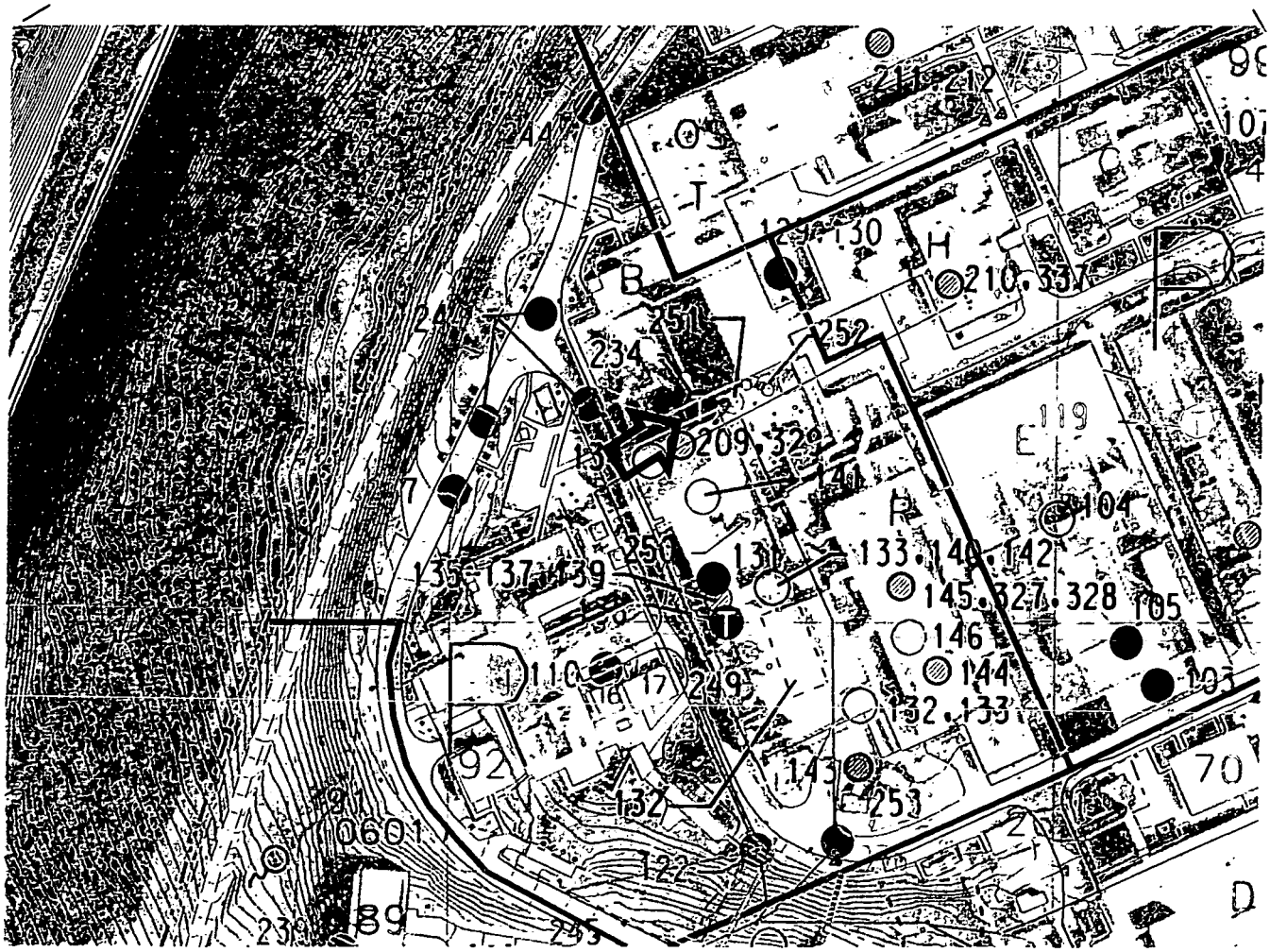
MOUND PLANT

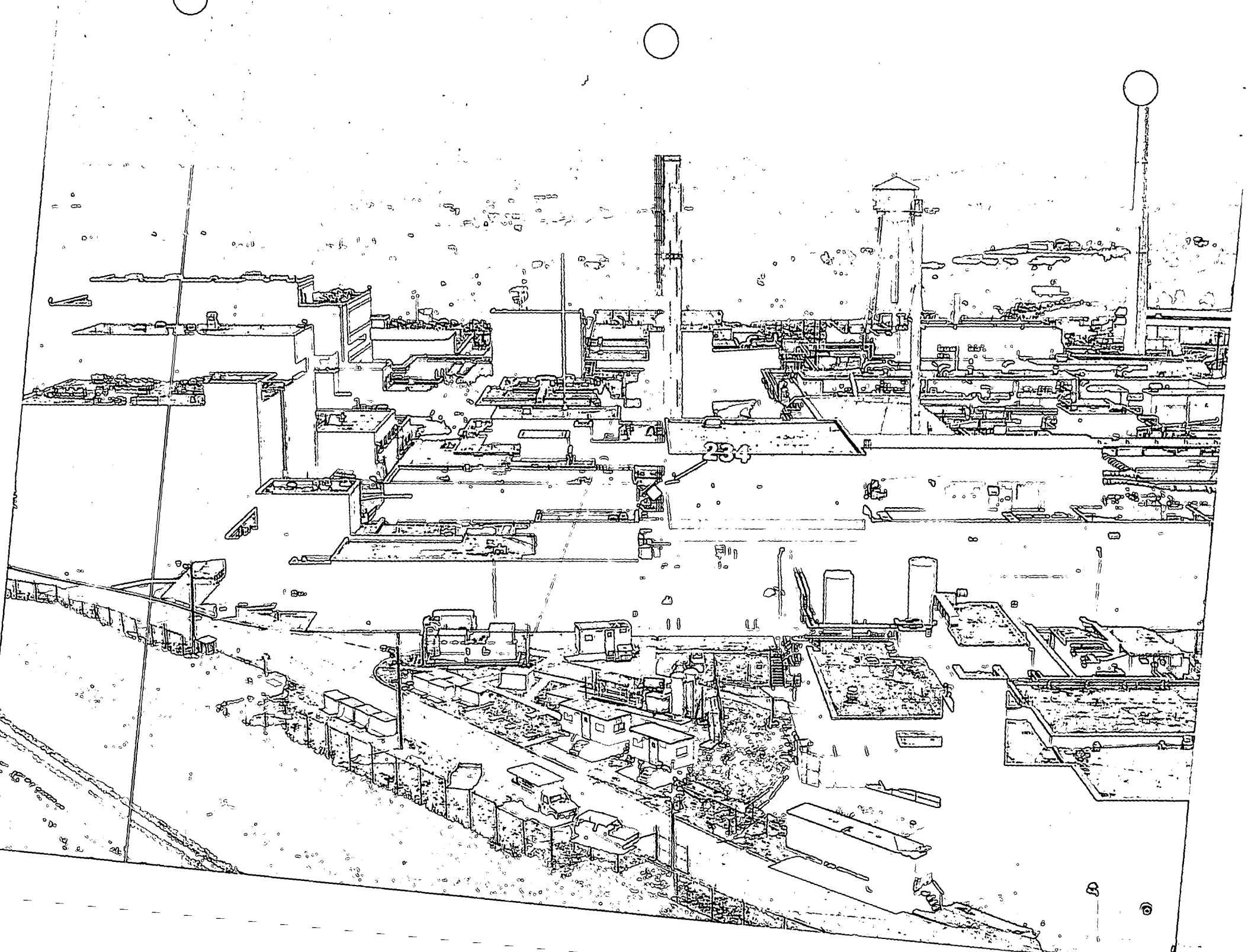
Release Block R

Potential Release Site

PRS 234






234

PRS 234

PRS HISTORY:

Potential Release Site (PRS) 234 [1] was identified in the Mound Plant Underground Storage Tank Program Plan and Regulatory Status Review.[2] The site was the location of a 3,000 gallon unlined steel tank that was used to supply diesel fuel to an emergency generator. The tank (No. 222) was located between Building 58 and B Building on the Main Hill. The tank was closed by removal in December 1989 [4] and is not included in the Mound Active Underground Storage Tank Plan (Mound AUST [5]). During removal and cleaning, it was found to have a concrete slab beneath it and an abandoned waste line adjacent to it that was damaged during the excavation.

CONTAMINATION:

During closure and removal, 3 soil samples were collected from the base, east and west walls of the open excavation.[4] Laboratory analyses for total petroleum hydrocarbons (TPH) indicated no contamination above the detection limit of 5 parts per million (ppm).[4] The BUSTR residential guideline for TPH in soils is 105 ppm. Radiological analyses of the 3 soil samples, as well as samples collected during the evaluation of the adjacent waste line, by the Mound soil screening facility indicated no plutonium-238 or thorium-232 above guideline criteria of 25 and 5 pCi/g, respectively.[6]

In 1992, a reconnaissance soil gas survey analyzed 3 samples (sample location 1076, 1099, and 1203) surrounding approximately 120 feet from PRS 234.[3] All samples were collected at 5-foot depths. Results are summarized in Table 1 below. The other parameter [5] detected during the reconnaissance soil gas survey is 1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113) detected at a maximum concentration of 2.9 ppm (soil gas).[3] The guideline criteria for Freon-113 is not attainable.

Table 1 Results for which Contaminant Concentration can be Compared to Guideline Criteria:

Contaminant	Maximum Concentration Detected	Guideline Criteria As Listed or Calculated*
1,1,1 Trichloroethane (1,1,1 TCA)	2,934 ppb [3] (soil gas)	173,400 ppb* [7] (soil gas)
Trichloroethylene (TCE)	148 ppb [3] (soil gas)	2,400 ppb* [7] (soil gas)
Toluene	8 ppb [3] (soil gas)	414,600 ppb* (soil gas)
Thorium	0.8 pCi/g [6]	5 pCi/g (in surface soil)
Plutonium	17 pCi/g [6]	25 pCi/g (Mound ALARA in surface soil)

NOTE: ppb = parts per billion, ALARA = as low as reasonably achievable, pCi/g = picocurries/gram

READING ROOM REFERENCES:

1) OU9, Site Scoping Report: Volume 12 - Site Summary Report, December 1994. (pages 6-8)
2) Mound Plant Underground Storage Tank Program Plan and Regulatory Status Review, November 1992. (pages 9-11)
3) Reconnaissance Sampling Report Soil Gas Survey & Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill, February 1993. (pages 39-42)

OTHER REFERENCES:

4) Final Report, Underground Tank Removal, Hoosier Environmental Services, January 1990. (pages 12-30)
5) Mound Active Underground Storage Tank Plan, July 1994. (pages 31-32)
6) Mound Soil Screening Facility - Daily Report. (pages 33-38)
7) Comparison of Actual Soil Gas Values with Calculated Acceptable Soil Gas Values. (pages 43-45)

PREPARED BY:

George Liebson, Member of EG&G Technical Staff

MOUND PLANT
PRS 234
FORMER TANK SITE
BUILDING 58 DIESEL FUEL

RECOMMENDATION:

This Potential Release Site (PRS) is the former location of a 3,000 gallon unlined, steel tank that was used to supply diesel fuel to an emergency generator. The tank was identified as a PRS because of its inclusion in the Mound Plant Underground Storage Tank Program Plan and Regulatory Status Review. Components of diesel fuel are the contaminants of concern associated with this PRS.

The tank was removed in December, 1989. During closure and removal, three soil samples were collected from the base, and the east and west walls of the open excavation. Lab analysis for Total Petroleum Hydrocarbon (TPH) indicated no contamination above the detection limit of 5 ppm as compared to the Bureau of Underground Storage Tank Regulations (BUSTR) guideline criteria of 105 ppm. Soil gas samples in the vicinity of PRS 234 detected trichloroethane (111-TCA), trichloroethene (TCE) and toluene. Calculations converting the 10^{-6} Risk Based Guideline Values for these compounds (given in mg contaminant per kg soil) into a corresponding 10^{-6} Risk Based Guideline Values for soil gas concentrations (parts contaminant per parts soil gas) showed the 111 TCA detection was approximately 60 times less than the guideline criteria, the TCE detection approximately 16 times less than the guideline criteria , and the toluene detection approximately 50,000 times less then guideline criteria. Radiological analysis also indicated Pu-238 and Th-232 below their guideline criteria of 25 pCi/g and 5 pCi/g respectively.

Therefore, since the VOC soil gas detections establishing this soils location as a PRS do not show evidence of contamination above guideline criteria and since there is no additional lab data or history to support evidence of contamination, PRS 234 requires NO FURTHER ASSESSMENT.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, Remedial Project Manager — 8/20/96 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager — 8/20/96 (date)

OEPA: Brian K. Nickel, Project Manager — 8/20/96 (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 9/15/96 to 10/15/96

☒ No comments were received during the comment period.

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

REFERENCE MATERIAL
PRS 234

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

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
231	T Building, Corridor 8 Alpha Wastewater Sump (Tank 233)	F-7	Historical Filled with concrete 1982	Alpha wastewater from process area floor drains	3, 4	Unknown - filled with concrete			No Data		
232	T Building, Corridor 7 Alpha Wastewater Sump (Tank 234)	F-7	Historical Filled with concrete 1982	Alpha wastewater from process area floor drains	3, 4	Unknown - filled with concrete			No Data		
233	Room T-63 Alpha Wastewater Sump (Tank 235)	F-7	Historical Filled with concrete 1982	Alpha wastewater from process area floor drains	3, 4	Unknown - filled with concrete			No Data		
234	Building 58 Diesel Fuel Storage Tank (Tank 222)	E-6	Historical	Diesel fuel	3	Tank Removed			No Data		
235	Area of Possible Elevated Thorium Activity	E-8	Grounds	Thorium	6	Possible fugitive dust	S	4, 6	1	SGS[b] Table B.3 Locations 2021, 2148, and 2149	12
									14, 15	Table B.1	6
236	Site Survey Project Potential Hot Spot Location S0166	F-6	Grounds	Plutonium-238	6	Isolated activity from unknown sources			13	Table B.9 (Appendix E in Ref. 6)	6
	Site Survey Project Potential Hot Spot Location S0175	E-5 E-6	Grounds	Cobalt-60, Cesium-137	6				14, 15	Table B.9 (Appendix E in Ref. 6)	6
	Site Survey Project Potential Hot Spot Location S1092	G-7	Grounds	Thorium	6				14	Table B.9 (Appendix E in Ref. 6)	6
	Site Survey Project Potential Hot Spot Location S0208	F-5	Grounds	Plutonium-238	6				13	Table B.9 (Appendix E in Ref. 6)	6
	Site Survey Project Potential Hot Spot Location S0472	G-6	Grounds	Thorium	6				14	Table B.9 (Appendix E in Ref. 6)	6

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

Table A.2. Assignment of Regulatory Authorities to Potential Release Sites and Recommendations for Further Action

				Operational Jurisdiction				Historic Activities			
No.	Site Name	Location	Status	Regulated Units	Regulatory Authority	Spill Response	SWMU	Evidence Of Release	Response Authority	Further Action Recommended	FFA OU
227	Room T-40 Alpha Wastewater Sump (Tank 229)	F-7	Historical Filled with concrete		NA			No	AEA	D&D	
228	Room T-41 Alpha Wastewater Sump (Tank 230)	F-7	Historical Filled with concrete		NA			No	AEA	D&D	
229	Room T-50 Alpha Wastewater Sump (Tank 231)	F-7	Historical Filled with concrete 1975		NA			No	AEA	D&D	
230	Room T-50 Alpha Wastewater Sump (Tank 232)	F-7	Historical Filled with concrete 1975		NA			No	AEA	D&D	
231	T Building, Corridor 8 Alpha Wastewater Sump (Tank 233)	F-7	Historical Filled with concrete 1982		NA			No	AEA	D&D	
232	T Building, Corridor 7 Alpha Wastewater Sump (Tank 234)	F-7	Historical Filled with concrete 1982		NA			No	AEA	D&D	
233	Room T-63 Alpha Wastewater Sump (Tank 235)	F-7	Historical Filled with concrete 1982		NA			No	AEA	D&D	
234	Building 58 Diesel Fuel Storage Tank (Tank 222)	E-6	Historical		NA			No	CERCLA	Yes	2
238	Area of Possible Elevated Thorium Activity	E-8	Grounds		AEA	AEA		Yes	AEA	Yes	6
[illegible]	Site Survey Project Potential Hot Spots Location S0166	F-6	Grounds		AEA			Yes	CERCLA	Yes	2
	Site Survey Project Potential Hot Spots Location S0175	E-5 E-6	Grounds		AEA			Yes	AEA	Yes	6
	Site Survey Project Potential Hot Spot Location S1092	G-7	Grounds		AEA			Yes	AEA	Yes	6
	Site Survey Project Potential Hot Spot Location S0208	F-5	Grounds		AEA			Yes	CERCLA	Yes	2

Circulates

Document Control No. _____

Environmental Restoration Program

MOUND PLANT UNDERGROUND STORAGE TANK PROGRAM PLAN AND REGULATORY STATUS REVIEW

MOUND PLANT
MIAMISBURG, OHIO

November 1992

FINAL

(Revision 0)

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

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

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

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

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

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

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

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

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

APPENDIX A (continued)
UST OWNERSHIP/SPONSORSHIP AND PRIMARY REGULATORY JURISDICTION

Tank #	NUS#*	Capacity (gallons)	Location	Purpose	Comments	Last date used*	Tentative Tank Sponsor	Spill Jurisdiction	Primary Regulatory Jurisdiction
222	1.3-2 #6	3,000	Bldg. 58	Diesel fuel storage tank	Unlined steel tank used to supply diesel fuel to Emergency Generator No. 1.	Unknown (c/r Dec. 1989)	ER (2*)	FFA	FFA
223	1.3-2 #8	825	Bldg. 56	Diesel fuel storage tank	Unlined steel tank used to supply diesel fuel to an emergency generator.	Unknown (c/r Dec. 1989)	ER (2*)	FFA	FFA
224	N/A	1,500*	East of Bldg. 29	Historic septic tank	Poured concrete septic tank. Used in late 1950s for disposal of radioactive soil.	Unknown (c/l late 1950s*)	ER (5*)	AEA	FFA
225	N/A	350	M-38	Metal plating rinse sump	Concrete* sump sanitary waste line. Used for NPDES sampling.	1984*(l/l)	Operations	AEA	CWA (NPDES)
226	N/A	100*	SW-10	Beta waste-water sump	Stainless-steel* sump used to collect beta waste-water from floor drains in SW-10.	Unknown (l/l)	Operations	AEA	AEA
227	N/A	350	T-23	Beta waste-water sump	Steel-lined concrete* sump used to collect beta waste-waters.	Unknown (c/l 1975*)	Operations	AEA	AEA
228	N/A	350	T-3	Floor drain sump	Steel-lined concrete* sump used to collect nonradiological waste-water from floor drains.	Unknown (c/l 1985*)	Operations	AEA	AEA
229	N/A	350	T-40	Alpha waste-water sump	Steel-lined concrete* sump used to collect alpha waste-waters from process area floor drains.	Unknown (c/l)	Operations	AEA	AEA
230	N/A	350	T-41	Alpha waste-water sump	Steel-lined concrete* sump used to collect alpha waste-waters from process area floor drains.	Unknown (c/l)	Operations	AEA	AEA
231	N/A	60*	T-50	Alpha waste-water sump	Sump used to collect process alpha waste-waters.	Unknown (c/l 1975*)	Operations	AEA	AEA

HOOSIER ENVIRONMENTAL SERVICES, INC.

8021 CASTLETON RD.
INDIANAPOLIS, IN 46250
TEL (317) 579-7400 FAX (317) 579-7.

January 28, 1990

Mr. Richard Blauvelt
EG & G Mound Applied Technologies, Inc.
P.O. Box 3000
Miamisburg, Ohio 45343-0987

Re: Final Report
Underground Tank Removal
EG&G Quote No.: 511278-5541
Miamisburg, Ohio
Hoosier Project Number 90017B

Dear Mr. Blauvelt,

Hoosier Environmental Services, Inc. (Hoosier) has completed the removal of two underground storage tanks at the above-referenced facility. All tanks were removed and cleaned in accordance with American Petroleum Institute and National Fire Protection Association guidelines and disposed of as scrap. The excavation area for each tank was also assessed for releases in accordance United States Environmental Protection Agency, the Ohio Environmental Protection Agency (OEPA) and the Ohio Bureau of Underground Storage Tank Regulations (BUSTR) guidelines. The following report describes all activities performed relative to this project.

I apologize for any inconvenience the timing of this project has caused you and appreciate the opportunity to work with you on this project. Please feel free to contact us if you have any questions.

Sincerely,

Bryan K. Petriko

Bryan K. Petriko, P.E.
Senior Environmental Engineer

Tank 222 AUSTP'94 3000gal Diesel No 2 BD58

~~Tank 223 AUSTP'94 825gal Diesel No 2 BD56~~

FINAL REPORT
UNDERGROUND STORAGE TANK REMOVAL
EG&G MOUND APPLIED TECHNOLOGIES
MIAMISBURG, OHIO
HOOSIER PROJECT NUMBER 90017B

Table of Contents

INTRODUCTION.....1

TANK REMOVAL CLEANING AND INSPECTION.....3
Removal Activities.....3
Tank Cleaning Activities.....6

AUSTP '94 EXCAVATION AREA ASSESSMENT.....8
~~Tank 223 Tank Pit #1 Inspection.....9~~
TANK 222 Tank Pit #2 Inspection.....9
Testing Result 10

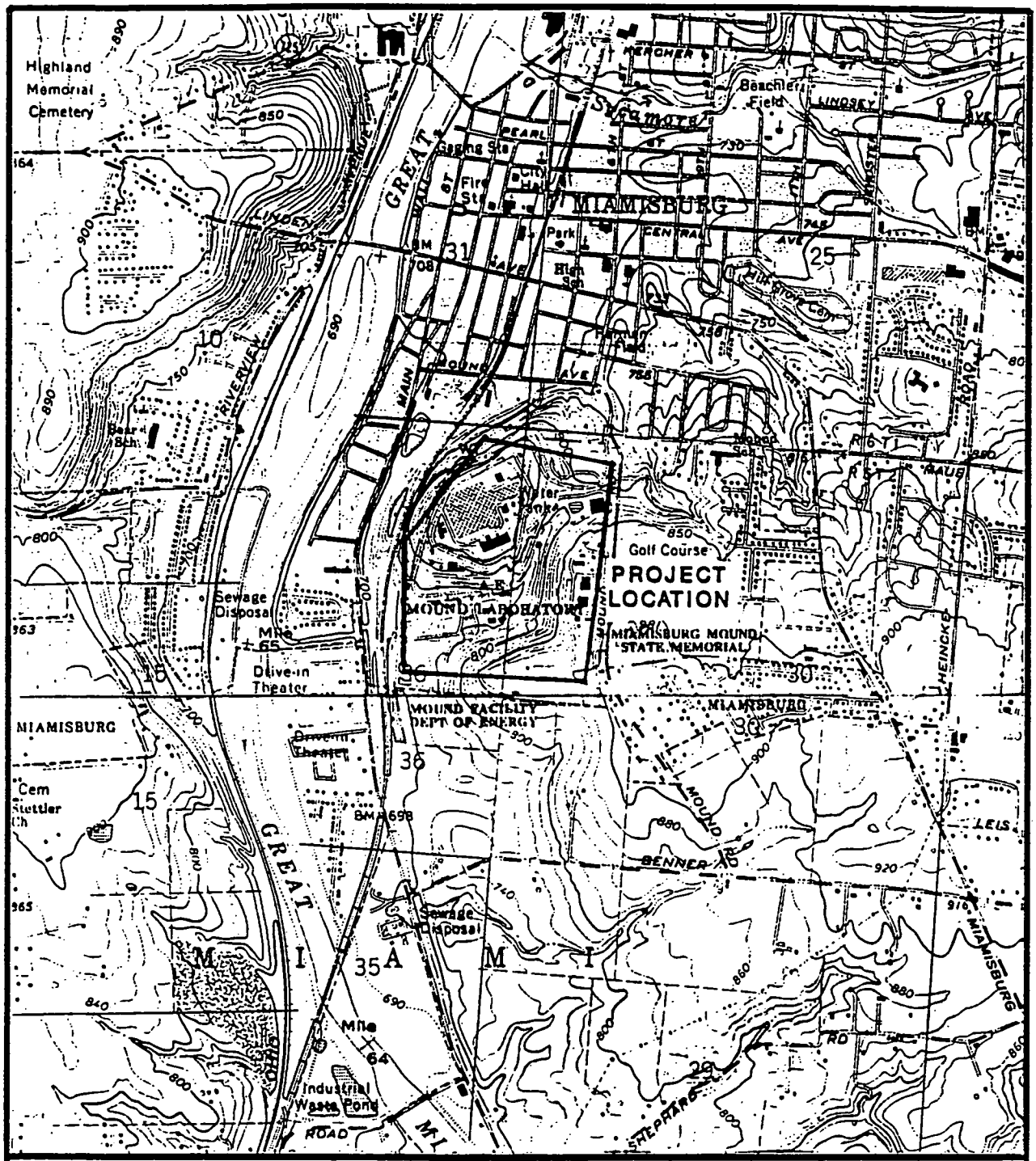
BACKFILLING OF THE EXCAVATION AND SITE RESTORATION.....11

List of Figures

Figure 1 - Vicinity Map.....2
~~Tank 223 Figure 2 - Tank Pit #1 Site Plan.....4~~
TANK 222 Figure 3 - Tank Pit #2 Site Plan.....5

List of Appendices

Appendix A - Tank Disposal Documentation
Appendix B - Confirmatory Laboratory Results



HOOSIER ENVIRONMENTAL SERVICES, INC.

VICINITY MAP

EG&G MOUNDS
MIAMISBURG, OHIO

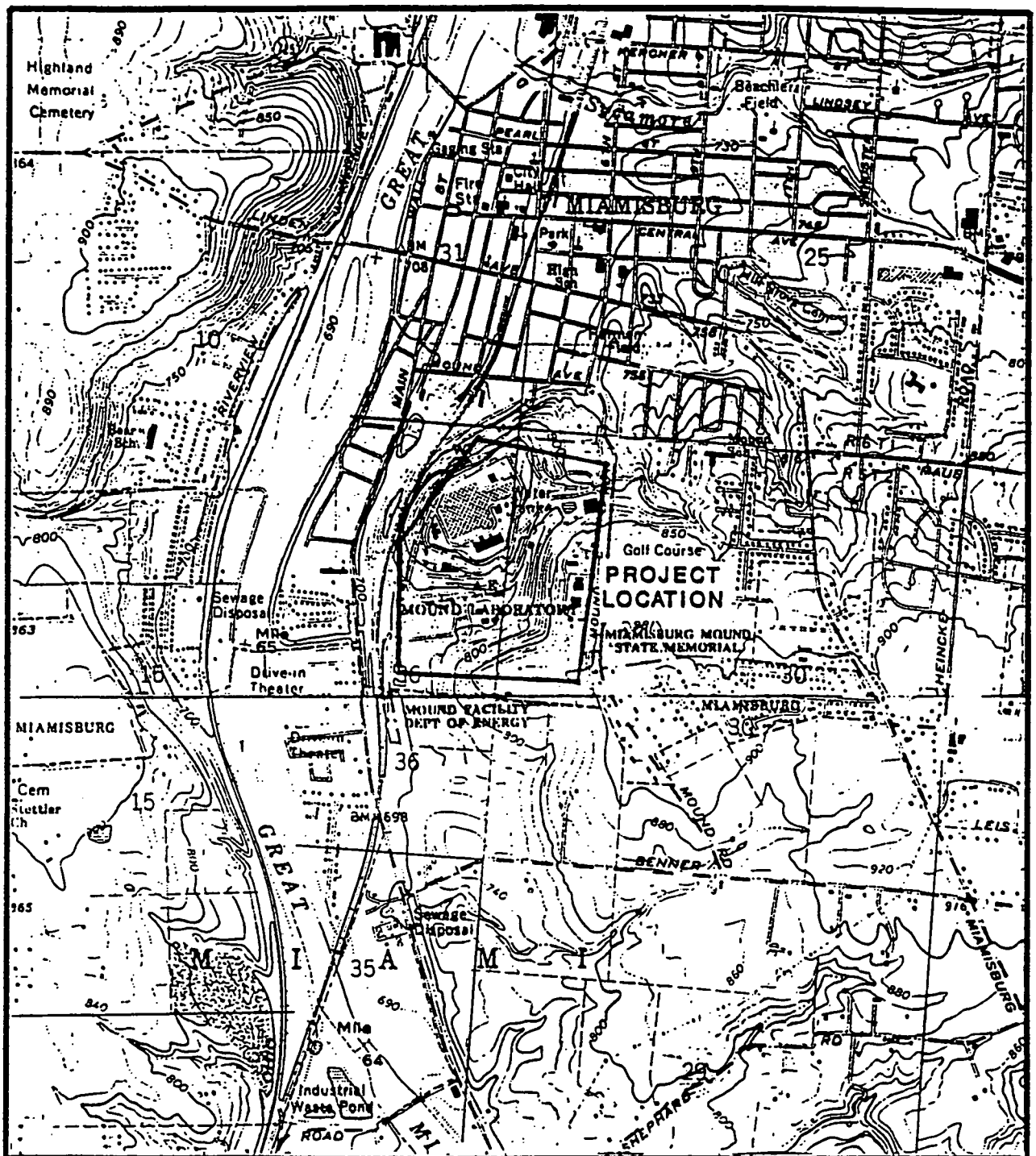
PROJECT NO. 90017

SCALE 1:24000

FIGURE NO. 1

Final Report
Underground Storage Tank Removal
EG&G Mound Applied Technologies
Miamisburg, Ohio

This report serves to document all activities relating to the removal of two underground storage tanks at the United States Department of Energy's (DOE's) facility located on Mounds Rd. in Miamisburg, Ohio (see Figure 1). The tanks consisted of ~~one double walled fiberglass tank with a capacity of approximately 800 gallons and~~ TANK 222 AUSTP94 one steel tank with the capacity of TANK 222-AUSTP94 3,000 gallons. Both tanks were used to store diesel fuel to operate emergency power generators. The removal was performed due to the failure of these tanks during Petro-Tite integrity testing. The tanks were removed from separate excavations and cleaned in accordance with the guidelines established by the American Petroleum Institute (API) in its publication Number 1604 entitled "Recommended Practice for Abandonment or Removal of Used Underground Service Station Tanks", with the requirements established by the United States Environmental Protection Agency (EPA) in 40 CFR Part 280 and with the requirements set forth by the Ohio Bureau of Underground Storage Tank Regulations (BUSTR). Each



HOOSIER ENVIRONMENTAL SERVICES, INC.

VICINITY MAP

EG&G MOUNDS
MIAMISBURG, OHIO

PROJECT NO. 90017

SCALE 1:24000

FIGURE NO. 1

-2-

of these activities is described in detail below along with a discussion on the management of all residuals generated during this project.

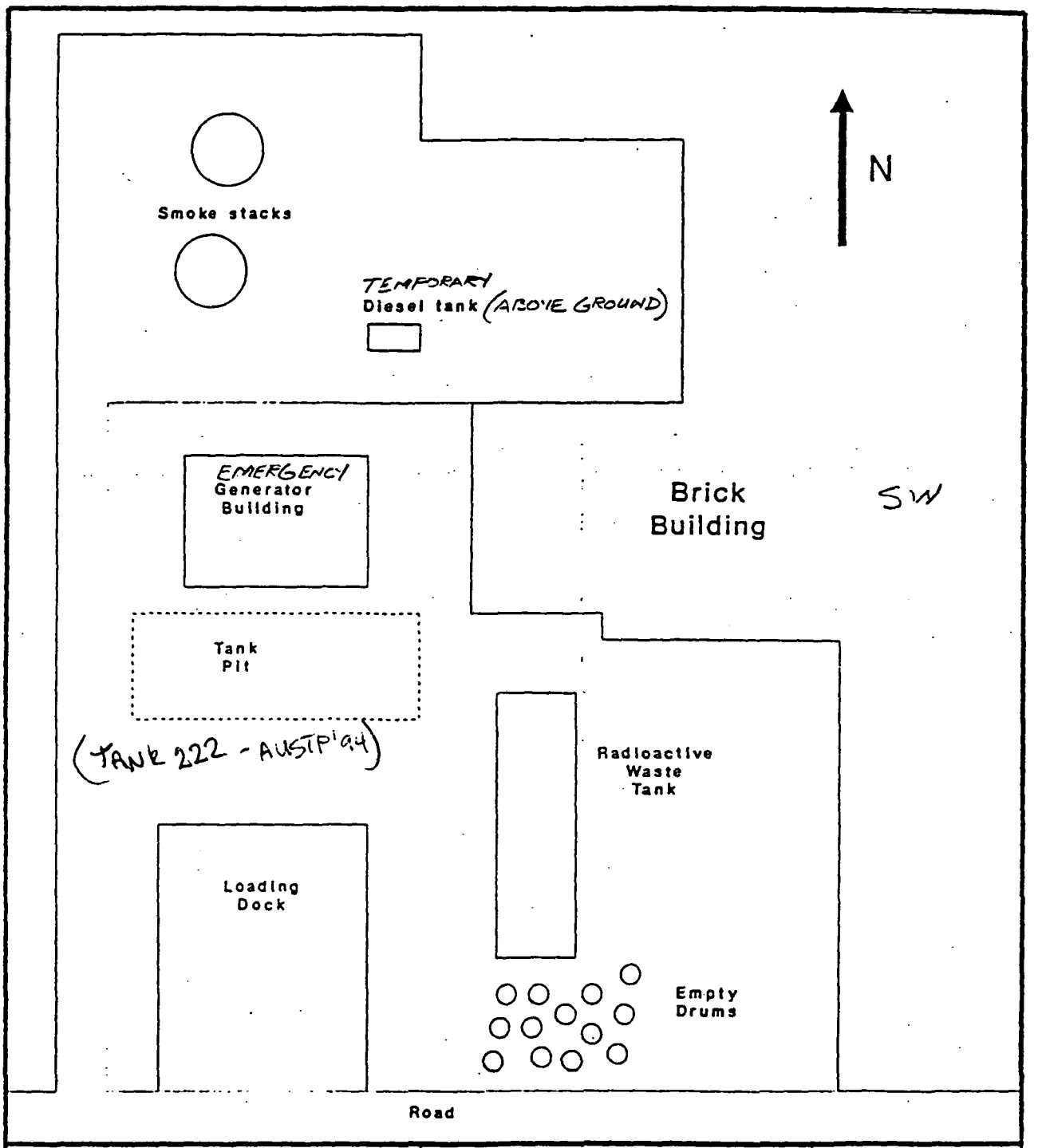
TANK REMOVAL, CLEANING AND INSPECTION

Work crews arrived on site with a Case 580 "Extendahoe" Backhoe. All safety precautions necessary on this job were reviewed at this time. The tank area was inspected for access and the routes of exit and entry were designated along with work zones. A site plan of each of the tank areas are provided in Figures 2 and 3.

Removal Activities

The tanks were each located directly adjacent to the building housing the emergency generators. The ~~TANK 223-AUSTP'94~~ ~~800 gallon tank provided fuel for the generator located in building 56 and the~~ TANK 222-AUSTP'94 3,000 gallon tank provided fuel for the generator located in building 58. ~~TANK 223-AUSTP'94~~ ~~Tank #1 (800 gallon) was approximately 2 feet south of the building and was covered with approximately 18-24 inches of soil.~~ Tank #2 (3,000 gallon) was approximately 3

Tank 222-AUSTP'94



OOSIER ENVIRONMENTAL SERVICES, INC.	TANK PIT #2 EG&G MOUNDS MIAMISBURG, OHIO BLDG 58	PROJECT NO. 90017 SCALE N.T.S. FIGURE NO. 3

TANK 222 - AUSTP'94

-5-

feet south of the generator building and was covered with approximately 6-10 inches of concrete and 12-18 inches of soil. The soil covering the tanks was visually inspected for evidence of contamination as it was removed. Inspection of the soil indicated no evidence of contamination and was stockpiled on site to be used as backfill material.

In order to remove the tanks from the excavations, a chain was attached to the tank either through the lift lugs used to install the tank or by removing the plugs from adjacent bungs and running the chain through the two bung holes. The tanks were removed from the excavations by wrapping the chain around the arm of the backhoe and lifting them out of the excavations.

Tank Cleaning Activities

After removal from the excavations, the tanks were set adjacent to the excavation and prepared for cleaning. ~~It was discovered that the 000 gallon tank was a double walled fiberglass tank which had contained product in the interstitial (containment) zone and that the ancillary equipment had been improperly installed.~~ TANK 223 AUSTP'94 The 3,000 gallon tank was constructed of steel and exhibited signs of corrosion. While no specific

TANK 222 - AUSTP'94

failure location was observed, many potential failure locations existed. The tanks were cut and cleaned on site.

Once set for cleaning, the level of oxygen and combustible vapors within the vessels were measured. These measurements revealed that levels were within the acceptable ranges. The tanks were purged of any remaining vapors using a small gas exhauster. An access port was then cut into the sides of each tank so that the inside could be cleaned. Cleaning involved removing as much residual material as possible with a compressed air powered vacuum and then scraping up the remaining material with shovels and scrapers. The final cleaning step involved spreading absorbent material along the interior walls of the tank, allowing it to soak up the residuals and then collecting the material by sweeping. All residuals were contained and placed in United States Department of Transportation (DOT) approved Type 17H 55-gallon capacity drums for reclamation and/or disposal as special waste. The ~~fiberglass tank was demolished and disposed of as tank debris and the~~ steel tank was then discarded as scrap as evidenced by the documentation provided in Appendix A.

EXCAVATION AREA ASSESSMENT

Following removal of the tanks, Hoosier visually inspected the two excavations and collected soil samples from the base and sidewalls for field screening. Visual inspection of both of the excavations revealed clean fill sand material throughout the excavation zones. ~~Reddish brown sandy clay exists immediately below the fill material to the bottom of the excavation of tank #1 and~~ TANK 222-AUSTP94 a concrete slab was discovered at the bottom of the excavation at tank #2. TANK 222-AUSTP'94

Initially, samples were screened in the field using a model P101A H-Nu Photoionizable vapor monitor to measure total photoionizable vapors (TPVs). Head space analysis was performed on the collected samples. In order to prepare the samples for headspace analysis, an aliquot was placed in a 250 ml glass sample container until it was three quarters full and the container was sealed with aluminum foil and capped. Following placement in the sample container, the concentration of TPVs within the headspace above the sample was allowed to equilibrate for ten minutes. The TPV monitoring probe was then inserted through the aluminum foil seal into the sample container and the maximum instrument response was recorded as the TPV level.

Tank Pit #1 Inspection

TANK 223-AUSTP 94

During the initial tank pit investigation, TPV readings at building 56 ranged from 5 parts per million (ppm) to 40 ppm. It has been our experience that TPV concentrations below 100 ppm do not represent gross contamination. Furthermore, the product losses observed during the integrity testing of this system can be accounted for by the discovery of product in the interstitial zone of the tank therefore, the decision was made to backfill this excavation.

Tank Pit #2 Inspection

TANK 222-AUSTP'94

Initial TPV readings in the excavation at building 58 ranged from 5 ppm to 20 ppm. Although these readings indicated only minor contamination, the results of the integrity testing of the system reveal that some contamination should be present. It was therefore determined that further excavation was necessary to determine any migration paths for this product. The excavation investigation revealed sand and gravel material in all directions and was ceased due to the possibility of structural failure in the area. Also during the excavation, a clay-tile sewer line was uncovered. The sewer

line had failed and arrangements were made to repair the line prior to backfilling. Based upon this field information, it was decided to backfill this area and perform further investigation using a drill rig equipped with hollow stem augers for sampling.

These field screening results represent an approximate concentration of the TPH in soil and provide only a general indication of soil conditions at the time of tank removal. Accurate quantification of petroleum hydrocarbon concentrations can only be provided by laboratory analysis. Therefore, the samples collected ~~from the north wall, west wall and base of tank #1 excavation and~~ Tank 222 AUSTP 94 from the north wall, east wall and the base of tank #2 excavation were transported to NET Midwest, Incorporated in Indianapolis, Indiana for analysis. These samples were chosen based on the exhibition of the highest potential for contamination during field screening.

TANK 222 AUSTP'94

Testing Results

BUSTR has set standards of 100 ppm TPH in soils as a level which requires reporting to them. Given the conditions at this site and the guidance referenced above, a 100 ppm

limit for TPH was selected as the maximum level of residual petroleum hydrocarbons in the excavation areas.

Each ~~of the three samples from the tank #1 excavation (BASE, NORTH WALL, WEST WALL) and each~~ of the three samples from the west excavation (BASE, NORTH WALL, EAST WALL) were analyzed for TPH by a gas chromatograph with a flame ionization detector (GC/FID) (See Appendix B for Laboratory Results). NET Midwest, Inc. reported no concentrations of petroleum hydrocarbons above a quantification limit 5.0 ppm in any of the collected samples. Since these laboratory results do not indicate hydrocarbon concentrations above the established limits for this project, it is believed that the environment has not been adversely affected due to previous operations of these tank systems.

BACKFILLING OF THE EXCAVATIONS AND SITE RESTORATION

~~TANK 223 AUSTP 94~~

Following soil sample collection, ~~the tank #1 excavation was backfilled with sand and excavated soil.~~ The tank #2 excavation was backfilled with fill sand. Following backfilling, EG&G replaced the concrete over the tank #2 excavation area.

TANK 222 AUSTP '9

Tank 222 AUSTP-94

It is Hoosier Environmental's recommendation that at least one additional soil boring be installed directly down gradient of the excavation area for tank #2 and to a depth of approximately 20 feet to verify that contamination has not migrated into the naturally occurring soils. This was not possible with the excavation equipment due to the collapse of soils surrounding the excavation and the fear of causing structural damage to the surrounding buildings.

TANT222 AUSTP'94

APPENDIX A

Tank Disposal Documentation

K & F INDUSTRIES, INC.
Iron and Steel Scrap / Metals / Useable Steel
(317) 783-2385
2115 S. WEST ST. / P. O. BOX 1206 / INDIANAPOLIS, IN 46206

scrap iron
steel
metals

(Name of Contractor) Hoosier Equipment
Certifies that the tank/tanks listed below, which were removed from (Owners Name and Location of Tank) EG+G Miamisburg, Ohio, have been purged in accordance with API Bulletin 1604 and

1. the tank never contained leaded gasoline or,
2. the tank has been cleaned in accordance with API Bulletin 2015 and 2015 A and any interior surfaces which might have been in contact with sludge have been cleaned to bare metal in accordance with API 2202 .

TANK 222
AUSTP '94

Assigned Tank No. (NO. TO BE PRINTED ON ACTUAL TANKS)	Tank Size	Tank Contents
1. ~~1-900086-B~~ 1-890154-B	3,000	Diesel
2.		
3.		
4.		

Signed by: (Acting Agent For Contractor) Christopher W Flem
Title: _____ Date: 1/15/90

K&F INDUSTRIES,INC., certifies that the above listed tanks are being purchased for remelting purposes only, and to the best of our knowledge meet all State and Federal requirements for cleaning.

Signed by: Howard S. [illegible]
Title: _____ Date: 1-15-90

Hoosier Equipment Service
incorporated

Put Us to the Test

Date 1/15/80

To Whom It May Concern:

Hoosier Equipment Service, Inc. certifies that tank number(s) 1-890154-B has (have) been properly purged and cleaned in accordance with the guidelines established in API Bulletin #1604. Tank number(s) 1-890154-B contain(s) no sludge or hazardous residues and has (have) been disposed of at K+F Industries located at 2125 S West St Indianapolis In. 46206.

Substance stored in tank - [ ] unleaded gasoline [ ] leaded gasoline [X] diesel [ ] motor oil [ ] kerosene other substances _____.

This tank is to be cut up and processed as scrap steel.

[signature]

K & F INDUSTRIES, INC.
Iron and Steel Scrap / Metals / Useable Steel
2115 S. WEST ST. / INDIANAPOLIS, IND. 46225
OFFICE (317) 783-2385 DISPATCH (317) 783-4154

108205

LOAD NO. _____
CUSTOMER NAME Hoosier Equip Ser
TIME IN DATE _____
ADDRESS _____
TIME OUT _____
MATERIAL Torching TANK

ID 0045 WT037280LB 14:35 01/15/9

ID 0045 14:47 01 15/90
GROSS 037280LB
TARE W 033680LB
NET 003600LB

GROSS
TARE
NET

DRIVER HOS ON OFF TR #
REMARKS 1-900005-A - 1900005-B
NONFERROUS TOTAL 1890154-B
AMOUNT TOTAL _____
PAID CHECK _____ PAID CASH _____
WEIGHER [illegible]
RECEIVED BY X _____

APPENDIX B
Laboratory Test Results

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Indianapolis Division
6964 Hillsdale Court
Indianapolis, IN 46250
Tel: (317) 842-4261
Fax: (317) 842-4286

ANALYTICAL REPORT

Mr. Mike Casper
HOOSIER ENV. SERVICES, INC
8021 Castleton Road
Indianapolis, IN 46250

01-15-90

Sample No.: SEE BELOW

P.O. NO.: 90017
EG & G TANK #2
(Tank 222-AUSTP '94)

Sample Description: SEE BELOW

Date Taken: SEE BELOW

Date Received: 01-11-90

PARAMETER: TPH (by GC/FID)*

Sample No.	Sample I.D.	Results	Units	Sample Date
20028	BASE	<5.	ug/g	01-10-90
20029	EAST	<5.	ug/g	01-10-90
20030	NORTH	<5.	ug/g	01-10-90

* Semivolatile analysis quantitated against alkane standards.

Joseph D. Shafer
Division Manager

EG&G MOUND APPLIED TECHNOLOGIES

Final Draft

Active Underground Storage Tank Plan

July 20, 1994

Prepared for:

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

DAMES & MOORE - INSPECTION & DOCUMENT REVIEW NOTES

CLIENT	JOB NUMBER	DATE
EG&G Mound Applied Technologies	10805-794	4/21/94

JOB TITLE	D&M TEAM
Active Underground Storage Tank Program	Grantelli

TANK NO.	BLDG/LOCATION	EG&G SPONSOR	OWNER
222	58	ER Program	U.S. DOE

TANK STATUS	TANK CAPACITY (gallons)	INSTALLATION DATE	INTERVIEWED WITH	INTERVIEW DATE
Removed	3000	1973		

TANK DESCRIPTION, Purpose of Tank Diesel Fuel Storage Tank.

Tank Material
- [x] 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
- [x] None

Inlet of Tank
Fill Cap

Outlet of Tank
fuel for emergency generator in building 58

History of ~~Spills~~ Release
No

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
- [x] Unknown

Substance Currently/Last Stored
- [ ] Gasoline
- [x] Diesel
- [ ] Kerosene
- [ ] Used Oil
- [ ] Hazardous Substances - Specify
- [ ] Other - Specify
- [ ] Unknown

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

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
~12/19/89
~~Intended Replacement~~
~1/15/90
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; NUS, 1989; "Final Report Underground Storage Tank Removal," January 28, 1990; Dwg No A-9 Rev A.

COMMENTS: Formerly used to supply diesel fuel to Emergency Generator No 1. The Tank was closed by removal in December 1989. (The tank was removed, cut up and disposed of as scrap. The soils were checked but no visible contamination). The tanks were removed and cleaned in accordance with API & Natl Fire Protection Assoc. guidelines. ~~Except~~ The location is part of ER Program, OU2
December 19, 1989 - tank was found to leak. Removed by January 15, 1991

SIGNATURE AS Grantelli

SOIL SCREENIG FACILITY
Data Management System

CONT Sample's, taken by [redacted] 5604
DAILY REPORT FOR December 19,1989

	SAMPLE NUMBER	DATE SCREEN	SAMPLER	SAMPLE TYPE	TH 232 pCi/g	PU 238 pCi/g	GRID & SAMPLE LOCATION	WELL ID
1	8912196	12/19/89	[redacted] 5604	CONT	0.7	0	W 3400 X S 1400 #1 SURFACE	C
2	8912197	12/19/89	[redacted] 5604	CONT	0.4	17	W 3400 X S 1400 #2 SURFACE	B
3	8912198	12/19/89	[redacted] 5604	CONT	0.8	4	W 3400 X S 1400 #3 AT 12"	C
4	8912199	12/19/89	[redacted] 5604	CONT	0.6	4	W 3400 X S 1400 #4 AT 18"	B

Samples taken During Excavation of fuel tank under BLD-58 (under Canopy) No fidler Readings Above Normal BKG. All Samples were within Mound's Guidelines.

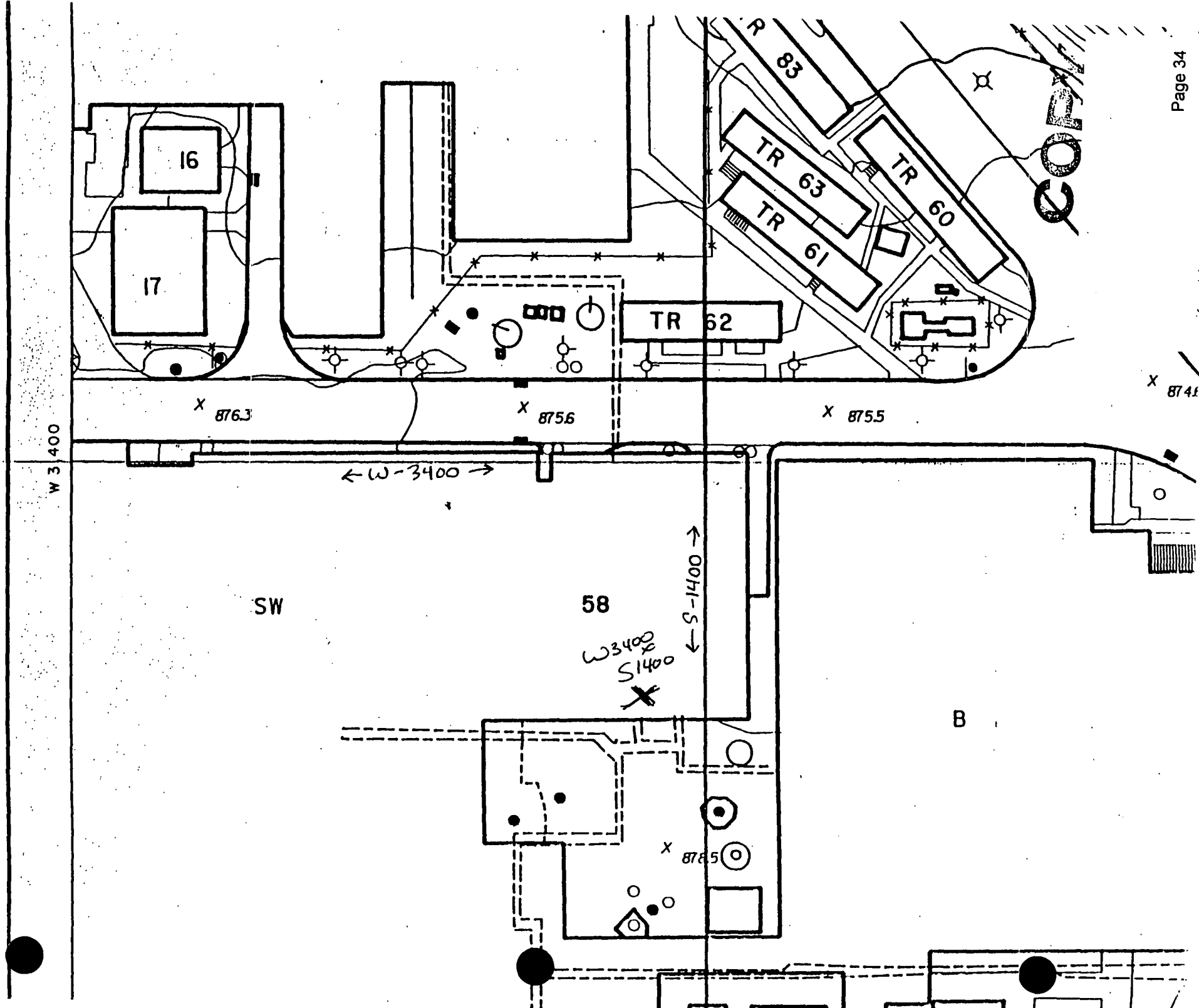
[redacted]

HP 5604
x3937

COPY

PREPARED BY : TROY J. PEARSON III

ALL SOIL SAMPLE ARE RAN FOR 400 SEC UNLESS SPECIFIED IN


16
17
TR 62
TR 63
TR 61
TR 60
83
876.3
875.6
875.5
W 3400
← W-3400 →
← S-1400 →
SW
58
W3400
S1400
B
876.5

At 5:30 pm on January 10, 1990 Hoosier Enviromental was digging at emergency generator #6 (under Building-58) when I [redacted]) noticed a small piece of clay pipe in the back-hoe bucket. I scanned the bucket with my fidler and found no sign of contamination. The operator took one more bucket full out of the hole and a clump of wet clay came out of the hole, still no contamination readings were present. The contractors decided to stop for the night.

At 7:00 am on January 11, 1990 I took a look at the utilities drawing and found that a hot waste water line ran in the same area that we were digging. At that time there was no digging to be done and I contacted Frank Thomas and had him meet me at the excavation at 8:00. At that point Frank Thomas called Dick Blavault and George Galloway to determine if we could go into the excavation without any shoring. George Galloway stated that if they cleaned off the concrete over the edge no shoring would be needed. I than took three more samples from the area of the clay pipe and they showed no contamination. We contacted Ray Brashear at 11:00 am.

Ray Brashear, Keith McMahan, Dick Blavault, and Lowell Hopkins looked into the situation to deterimine what Health Physics problems could arise if they did hit the old hot waste line. Ray Brashear told Dick Blavault to contact Mr. Coco and let them know the potential of the situation. I took wipes of of the old clay pipe and the back-hoe bucket and gave them to Jim Anderson to run through the Tri-Carb. The wipes came back 40dpm beta on the pipe and 23dpm beta on the bucket. We also took wipes on the equipment and they were <20 dpm alpha, fidler readings were not over background. Direct readings were also background. We than decided to let the contractors to continue on hand digging until contamination levels exceeded contractor guidelines, but no contamination was found.

After lunch the contractors readied the hole for hand digging. I contacted George Galloway to give the ok to enter the excavation. After that one of the contractors and myself entered the hole and after approximatly four shovels of sand we than had water entering the hole. I immediatly asked the contractors to leave the hole and called Keith to get Lowell Hopkins to come out and sample the water. At 2:30 the results came back cold and the contractors went in to look for the broken pipe but too much water was coming in. We contacted Dan Carfagno on what to do with the water. After all the water analysis Dan Carfagno decided to let them pump the water into the storm sewer in front of the loading dock. Ken De Vilbiss took care of closing the gates.

Ed Szeman, Jon Yonko, Dan Carfagno and Lowell Hopkins determined that the problem existed from a domestic water line leak in R-Building court yard and was leaking into the abandoned hot waste manhole, which was dumping into the already broken abandoned hot waste line.

I took direct readings, wipes and fidler readings of the surounding area and there was no contamination found. After the water was pumped out the contractors found both ends of the waste line. I took wipes and fidler readings on the pieces of clay pipe and they came up cold, using that information the contractors repaired the pipe with a piece of pvc and cement to seal the pipe. The contractors left the hole and I used a pac 1SA to check for direct on their hands, feet and clothing, no contamination was found on anyone. Utility Operations and Environmental will decide today on the status of what is to be done to correct this problem.

[redacted]
HP 5604 ext. 3937 COPY

SOIL SCREENIG FACILITY
Data Management System

CONT Sample's, taken by [redacted] 5604
DAILY REPORT FOR January 10,1990

SAMPLE NUMBER	DATE SCREEN	SAMPLER	SAMPLE TYPE	TH 232 pCi/g	PU 238 pCi/g	GRID & SAMPLE LOCATION	WELL ID
1 90011050	01/10/90	[redacted] 5604	CONT	0.5	11	W3400 X S1400 #1 @ 8'	B
2 90011051	01/10/90	[redacted] 5604	CONT	0.8	5	W3400 X S1400 #2 @ 8'	C

Samples taken During Excavation & Removal of fuel tank at BLD-58 and for Removal of two Samples to be taken offsite for fuel Contamination Evaluation

[redacted]

HP 5604

X 3937

COPY

PREPARED BY : TROY J. PEARSON III

SOIL SCREENIG FACILITY
Data Management System

CONT Sample's, taken by [redacted] 5604
DAILY REPORT FOR January 11,1990

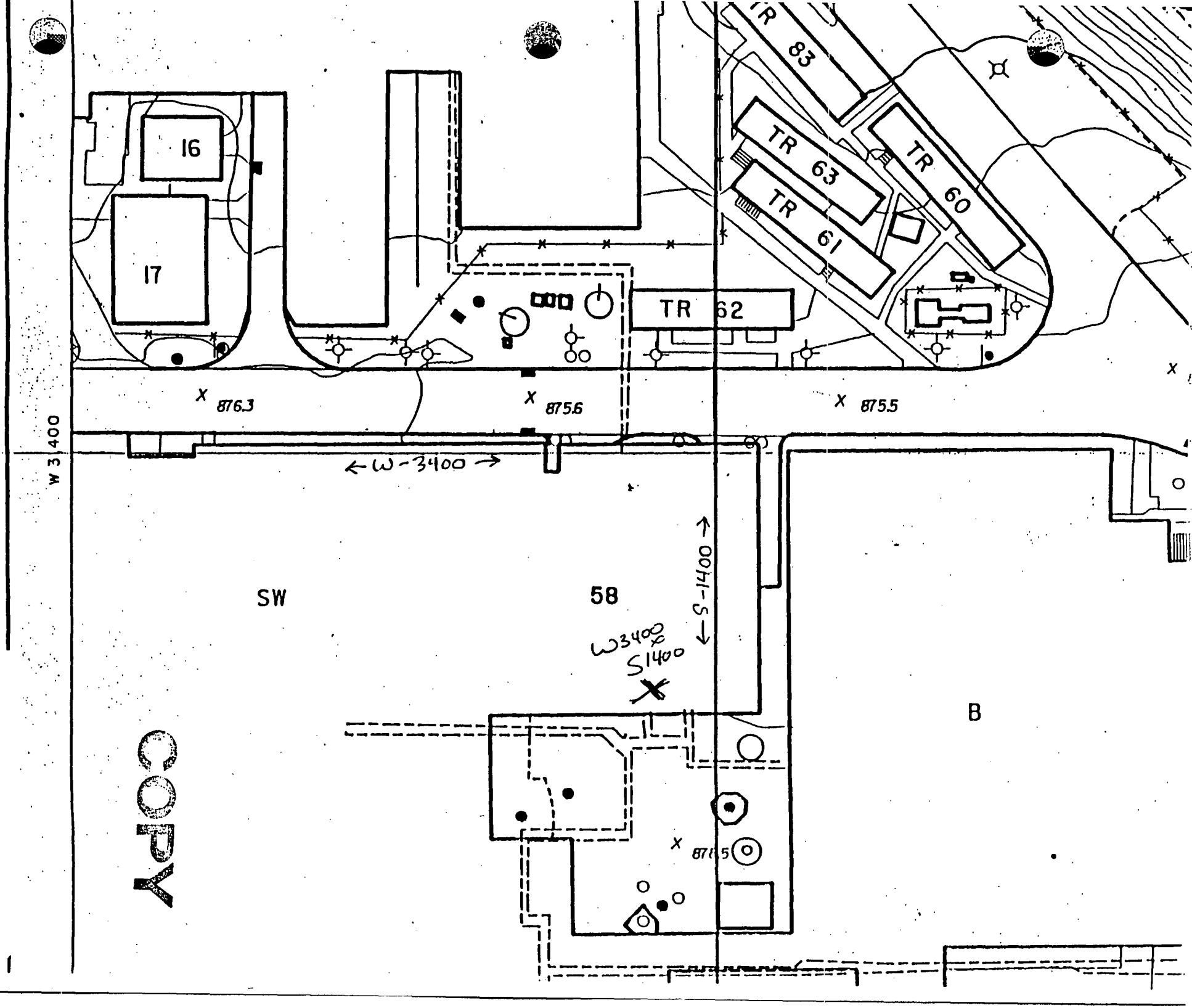
SAMPLE NUMBER	DATE SCREEN	SAMPLER	SAMPLE TYPE	TH 232 pCi/g	PU 238 pCi/g	GRID & SAMPLE LOCATION	WELL ID
1 9001113	01/11/90	[redacted] 5604	CONT	0.8	9	W 3400 X S 1400 #1 6'	B
2 90011131	01/11/90	[redacted] 5604	CONT	0.8	0	W 3400 X S 1400 #1 @ 6'	C
3 90011132	01/11/90	[redacted] 5604	CONT	0.6	8	W 3400 X S 1400 #2 @ 7'	B
4 90011133	01/11/90	[redacted] 5604	CONT	0.7	4	W 3400 X S 1400 #3 @ 7'	C
5 90011165	01/11/90	[redacted] 5604	CONT	0.3	4	W 3400 X S 1400 #4 @ 8'	B
6 90011166	01/11/90	[redacted] 5604	CONT	1.1	0	W 3400 X S 1400 #5 @ 8'	C

Soil Sample Results From Excavation Of Abandoned Hot waste line At Emergency Gen. #6 (BLD-58) All were within Guidelines

[redacted]

COPY

PREPARED BY : TROY J. PEARSON III


16
17
TR 83
TR 63
TR 61
TR 60
TR 62
X 876.3
X 875.6
X 875.5
W 3400
← W-3400 →
SW
58
S-1400
W3400
S1400
B
COPY

Environmental Restoration Program

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

REPORT
APPENDICES A, B AND D

MOUND PLANT
MIAMISBURG, OHIO

February 1993

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

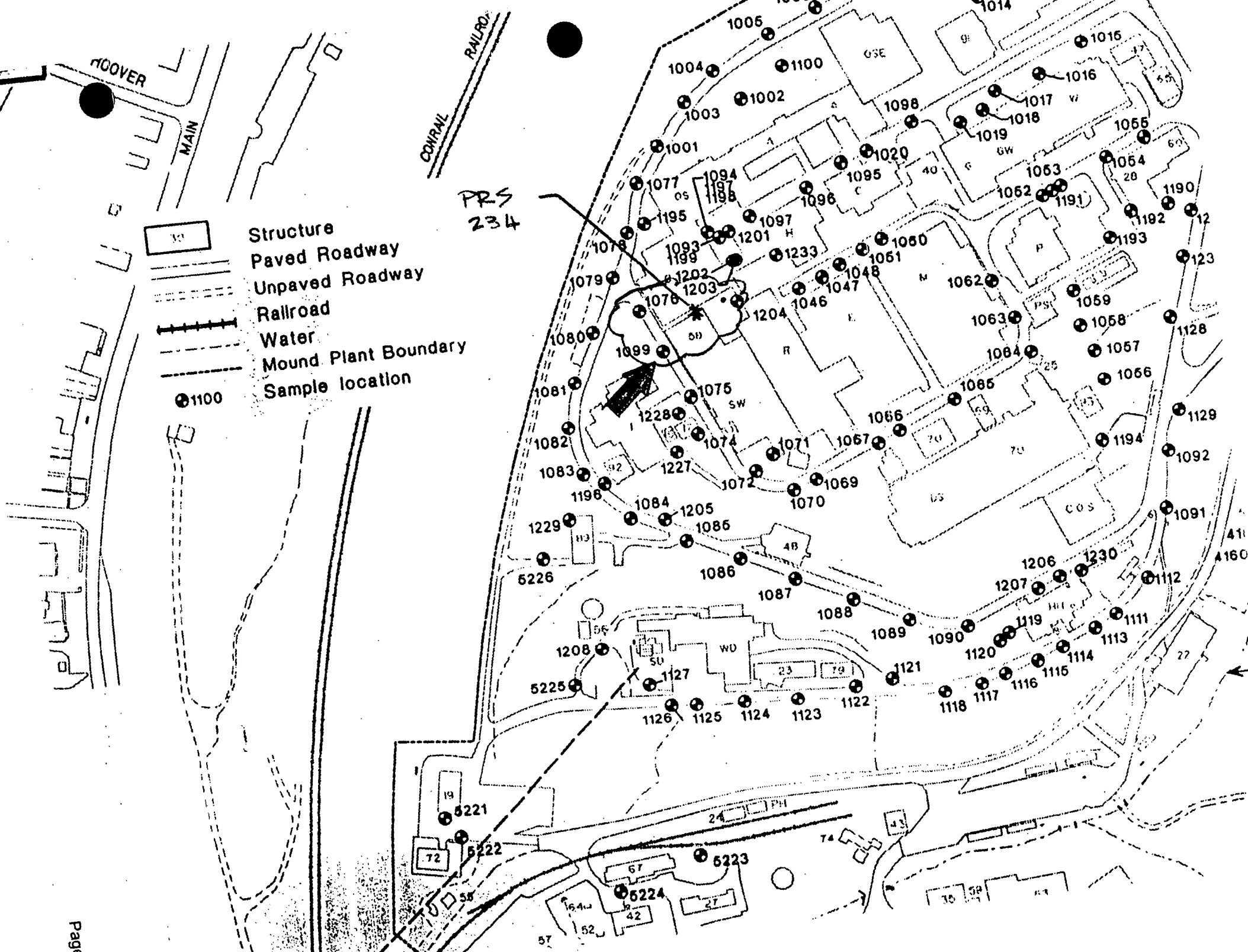

HOOVER
MAIN
CONRAIL RAILROAD
PRS 234
Structure
Paved Roadway
Unpaved Roadway
Railroad
Water
Mound Plant Boundary
Sample location
1100

TABLE II.4. SUMMARY OF POSITIVE DETECTIONS–MAIN HILL
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11	FREON 113	TRAN–12DCE	CIS–12DCE	111TCA	PCE	TCE	TOLUENE
MND–01–1002–1003	28 JUL 92	---	---	---	---	---	---	---	40
MND–01–1003–0005	28 JUL 92	---	---	---	---	---	---	---	3 *
MND–01–1005–0005	28 JUL 92	---	---	---	---	---	---	---	21 *
MND–01–1007–0005	29 JUL 92	---	---	---	---	---	---	2	---
MND–01–1008–0005	29 JUL 92	---	---	---	---	---	---	---	5
MND–01–1008–1005	29 JUL 92	---	---	---	---	---	---	---	3
MND–01–1009–0005	29 JUL 92	---	---	---	---	---	---	4	19
MND–01–1010–0005	29 JUL 92	---			---	---	---	---	13
MND–01–1014–0005	29 JUL 92	---						---	8
MND–01–1016–0003	30 JUL 92	---						2	8
MND–01–1046–0005	4 AUG 92	---						188	3 *
MND–01–1047–0005	4 AUG 92	---						4	---
MND–01–1048–0005	4 AUG 92	---						4	---
MND–01–1050–0003	4 AUG 92	---						8	---
MND–01–1050–1003	4 AUG 92	---	---					17	27 *
MND–01–1051–0003	4 AUG 92	---	---	---	---	---	---	8	5 *
MND–01–1052–0003	4 AUG 92	---	---	---	---	---	---	---	13 *
MND–01–1053–0002	5 AUG 92	2	---	---	---	---	---	---	447
MND–01–1054–0005	5 AUG 92	4	---	---	---	7	---	226 *	11
MND–01–1055–1005	5 AUG 92	---	---	---	---	---	---	4 *	5
MND–01–1057–0005	5 AUG 92	---	---	---	---	---	---	---	24
MND–01–1062–0003	5 AUG 92	---	---	---	---	13	---	6	---
MND–01–1064–0005	11 AUG 92	---	---	---	---	---	---	---	19
MND–01–1066–0005	11 AUG 92	---	---	---	---	6	---	---	226
MND–01–1067–0005	11 AUG 92	---	---	---	---	---	---	11	133
MND–01–1069–1005	12 AUG 92	---	---	---	---	---	---	---	37
MND–01–1070–0005	12 AUG 92	---	---	---	---	---	---	---	5
MND–01–1070–1005	12 AUG 92	---	---	---	---	---	---	---	5
MND–01–1072–0005	12 AUG 92	---	---	---	---	---	---	---	106
MND–01–1074–0005	12 AUG 92	---	799	---	---	---	1191	---	5
MND–01–1074–1005	12 AUG 92	---	812	---	---	---	1117	---	5
MND–01–1076–0005	12 AUG 92	---	2934	---	---	148	---	---	---
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MND–01–1079–0005	13 AUG 92	---	13	---	---	---	---	---	---
MND–01–1080–0005	13 AUG 92	---	13	---	---	---	---	---	---
MND–01–1085–0005	13 AUG 92	---	102	---	---	22	---	41	---
MND–01–1086–0005	13 AUG 92	---	47	---	---	---	---	---	---
MND–01–1093–0005	15 AUG 92	---	**131000	247	40800	---	---	**34780	53 *
MND–01–1094–0005	14 AUG 92	---	83	13	485	---	---	978	---
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MND–01–1099–0005	15 AUG 92	---	---	---	---	---	---	4	8 *
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MND–01–1102–0005	16 AUG 92	---	419	---	---	---	---	---	13
MND–01–1106–0003	16 AUG 92	---	329	---	---	---	---	6	---
MND–01–1108–0005	16 AUG 92	---	---	---	---	---	---	6	---
MND–01–1109–0005	16 AUG 92	---	---	---	---	---	---	8	13
MND–01–1110–0005	16 AUG 92	---	---	---	---	---	---	---	255

SOIL GAS DATA
(ABSOLUTE)

TABLE II.4. SUMMARY OF POSITIVE DETECTIONS–MAIN HILL
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11	FREON 113	TRAN–12DCE	CIS–12DCE	111TCA	PCE	TCE	TOLUENE
MND–01–1113–0005	17 AUG 92	---	---	---	---	---	---	11	---
MND–01–1114–0005	17 AUG 92	---	9	---	---	315	10	357	5 *
MND–01–1114–1005	17 AUG 92	---	---	---	---	259	9	263	3 *
MND–01–1115–0005	17 AUG 92	---	---	---	---	56	---	13	---
MND–01–1117–0005	18 AUG 92	---	---	---	---	---	12	8	---
MND–01–1117–1005	18 AUG 92	---	---	---	---	---	15	9	---
MND–01–1118–0005	18 AUG 92	---	---	---	---	---	3	---	---
MND–01–1119–0005	18 AUG 92	---	---	---	---	---	---	---	213
MND–01–1122–0005	18 AU					---	---	---	---
MND–01–1123–0005	18 AU					---	---	---	5 *
MND–01–1124–0005	18 AU					---	---	---	8884 *
MND–01–1127–0005	18 AU					---	4	---	27 *
MND–01–1129–0005	18 AU					37	12	4	11 *
MND–01–1190–0005	24 SEP					---	---	---	3 *
MND–01–1190–1005	24 SEP					---	---	---	3 *
MND–01–1192–0005	24 SEP					---	---	---	5 *
MND–01–1193–0005	24 SEP 92	---	---	---	---	---	---	---	16 *
MND–01–1196–0005	25 SEP 92	---	---	---	---	---	---	4	64
MND–01–1197–0002	25 SEP 92	---	---	---	---	---	---	23	5
MND–01–1198–0006	25 SEP 92	---	24	13	518	33	---	474	5
MND–01–1199–0002	25 SEP 92	---	10218	---	120	---	---	479	---
MND–01–1201–0007	25 SEP 92	---	4716	13	811	---	---	130	48
MND–01–1201–1007	25 SEP 92	---	5895	---	612	---	---	117	43
MND–01–1202–0002	25 SEP 92	---	6419	66	2499	9	---	1921	3
MND–01–1202–1002	25 SEP 92	---	9301	41	1706	---	---	1737	---
MND–01–1203–0002	25 SEP 92		[illegible]		[illegible]			[illegible]	[illegible]
MND–01–1204–0005	25 SEP 92	---	453	---	---	---	---	11	5
[illegible]	[illegible]								
MND–01–1206–0005	26 SEP 92	---	---	---	---	---	---	---	23142
MND–01–1207–0005	26 SEP 92	---	---	---	---	---	---	---	90
MND–01–1227–0005	28 SEP 92	---	10	---	---	---	---	---	4788
MND–01–1228–0005	28 SEP 92	---	---	---	---	---	---	---	11
MND–01–1230–0005	28 SEP 92	---	---	---	---	---	---	---	13
MND–01–1230–1005	28 SEP 92	---	---	---	---	---	---	---	5
MND–01–1231–0005	28 SEP 92	---	48	---	---	---	34	21	5
MND–01–1232–0005	28 SEP 92	---	4	---	---	---	13	8	24
MND–01–1233–0002	29 SEP 92	---	29	---	---	---	---	---	72
MND–01–1233–1002	29 SEP 92	---	29	---	---	---	---	---	64

SOIL GAS DATA (ABSOLUTE)

Notes:

Only sample locations having positive detections are shown.
*: Associated trip, ambient, equipment or field blank contained specified compound.
B: Indicates blank sample.
w: Indicates water sample.
**: Freon 113 & TCE Off–Scale

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

SCREENING POTENTIAL RELEASE SITES BASED ON SOIL GAS READINGS

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

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

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

where

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

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

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

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

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

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

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

Typical chemicals that are detected with soil gas sampling are:					
NAME	H	Kd	Calculated Acceptable	Calculated Acceptable	Calculated Acceptable
			Soil Screening Level Value	Soil Gas Reading	Soil Gas Reading
		ml/g	mg/kg (ppm)	ng/ml	ppb
Toluene	2.52E-01	3.42	22.06	1.56E+03	414600
Trichloroethene (TCE)	4.35E-01	2.24	0.07	1.26E+01	2400
111 Trichloroethane (TCA)	7.63E-01	2.2	3.01	9.46E+02	173400
Trans-1,2 Dichloroethene (DCE)	2.29E-01	1	0.70	1.41E+02	35700
cis-1,2 Dichloroethene (DCE)	1.85E-01	2.78	0.31	1.97E+01	5000
Freon 11	NA	NA			
Freon 113	NA	NA			
Tetrachloroethene (PCE)	7.09E-01	2.78	0.09	2.13E+01	3100

na not available

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

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