0105-1110130001

[redacted]

PRELIMINARY REVIEW / VISUAL SITE INSPECTION FOR RCRA FACILITY ASSESSMENT OF MOUND PLANT

JULY 1988

INDEX

TAB NO.		ITEM
1.	3-29-88:	RJJ Letter to DAO Re Upcoming RCRA Facility Assessment
2.	3-30-88:	DAO Letter to Pope-Reid Associates on RFA
3.	4-20-88:	Pope-Reid Letter to DAO on VSI Agenda and Information Needs
4.	4-25-88:	RJJ Internal Memo Re Upcoming Meeting with USEPA and Pope-Reid
5.	4-26-88:	RJJ Internal Memo to Meeting Participants
6.	5- 2-88:	CWT Internal Memo Re Photography Pass
7.	5- 3-88:	Attendance List from Meeting with USEPA and Pope-Reid
8.	5-10-88:	RJJ Letter to Pope-Reid Providing Technical Information Requested
9.	7-15-88:	Pope-Reid/A. T. Kearney Preliminary Review/Visual Site Inspection Report
[illegible].	7-28-88	RJJ Internal Memo on VSI Report
11.	8-22-88	RJJ Internal Memo on Telecommunication with Kae Lee
12.	2-21-89:	OEPA Letter to DAO Requesting Information on Certain SWMUs.
	3-16-89:	RKB Letter to DAO Providing Response to OEPA Request for Information

© 1991 Wilson Jones Company

MRC-MOUND

Operated for the United States
Department of Energy

MAR 29 1988

Mr. James A. Morley
Area Manager
U. S. Department of Energy
Dayton Area Office
P. O. Box 66
Miamisburg, Ohio 45342

Dear Mr. Morley:

FACILITY ASSESSMENT AS PART OF RCRA PERMIT APPLICATION

U.S. EPA Region V is processing Mound's application for a site RCRA permit to store and treat hazardous waste. The Hazardous and Solid Waste Amendments of 1984 authorize EPA to require that the owner and operator of a facility seeking or subject to a RCRA permit complete corrective action for releases of hazardous wastes or constituents that pose a threat to human health or the environment. EPA is authorized to require corrective action beyond the facility boundary; federal facilities are subject to RCRA corrective action requirements.

"Release" includes any spilling, leaking, pouring, discharging, escaping, leaching, dumping or disposing into the environment. "Facility" includes all contiguous property under the control of the owner or operator at which the units subject to permitting are located.

To determine whether corrective action is required, EPA employs a contractor to conduct a facility assessment to identify actual or potential releases from RCRA-regulated and other solid waste management units (SWMU's). "SWMU" is any discernible waste management unit from which hazardous constituents may migrate, irrespective of whether the unit was intended for the management of solid or hazardous wastes. Examples of SWMU's include landfills, incinerators, tanks, container storage areas, and certain areas associated with production processes that have become contaminated as a result of routine, systematic and deliberate releases of wastes or hazardous constituents from wastes.

MONSANTO RESEARCH CORPORATION P.O. BOX 32 Miamisburg, Ohio 45342 (513) 865-4020

a subsidiary of Monsanto Company

EPA Region V has employed A. T. Kearney to assist in conducting a facility assessment of Mound; Kearney in turn, subcontracted the assessment to Pope-Reid Associates. Region V has asked that we send to Bill Rohrer of Pope-Reid, for pre-assessment review, copies of the drawings and maps which were submitted to the Agency in our permit application that describe Mound and our waste management units. Accordingly, please forward the enclosed drawings to Mr. Rohrer at the address shown on the suggested transmittal letter to him.

I informed Mr. Rohrer that DOE has evaluated Mound under Phase I of CEARP with respect to inactive waste disposal sites, accidentally contaminated sites, current waste management practices, existing and potential surface and groundwater contamination, and compliance with applicable environmental regulations. Mr. Rohrer indicated that he had a copy of our CEARP Phase I report and that he intends to use it with respect to the facility assessment.

Mr. Rohrer will send us a letter requesting authorization to visit Mound to conduct the assessment, tentatively scheduled for the week of May 2.

Sincerely,

Richard J. Janowiecki

Richard J. Janowiecki
Engineering Specialist

Approved: _____

L. R. Baird
Associate Director, Mound
Director, Administration

Encl.
cc: J. A. Morley (2)

bcc: R. K. Blauvelt
C. S. Friedman
R. A. Neff

Mr. Bill Rohrer
Pope-Reid Associates
245 East Sixth Street
Suite 813
St. Paul, MN 55101

Dear Mr. Rohrer:

As requested by U.S. EPA, Region V, enclosed please find copies of the site maps and drawings that had been submitted to the Agency as part of our RCRA Part B permit application.

We understand that you have been commissioned to conduct a RCRA facility assessment of Mound for A. T. Kearney and Region V. We look forward to receipt of your letter regarding the on-site assessment, identifying the specific units to be evaluated, and indicating any Mound support that you may require.

If you have any questions, please contact Mr. Allen D. Bickerton, (513) 865-3597.

Sincerely,

James A. Morley
Area Manager

JAM:

2

© 1991 Wilson Jones Company

Department of Energy
Albuquerque Operations Office
Dayton Area Office
P.O. BOX 66
Miamisburg, Ohio 45342

March 30, 1988

Mr. Bill Rohrer
Pope-Reid Associates
245 East Sixth Street
Suite 813
St. Paul, MN 55101

Dear Mr. Rohrer:

As requested by U.S. EPA, Region V, enclosed please find copies of the site maps and drawings that had been submitted to the Agency as part of our RCRA Part B permit application.

We understand that you have been commissioned to conduct a RCRA facility assessment of Mound for A. T. Kearney and Region V. We look forward to receipt of your letter regarding the on-site assessment, identifying the specific units to be evaluated, and indicating any Mound support that you may require.

If you have any questions, please contact Mr. Allen D. Bickerton, (513) 865-3597.

Sincerely,

for James A. Morley
Area Manager

Enclosure: a/s

cc:
R. Janowiecki

3

© 1991 Wilson Jones Company

Pope - Reid Associates Inc.

Environmental Engineering

245 E. 6th St., Suite 813 • St. Paul, MN 55101 • 612/227/6500

April 20, 1988

Mr. James Morley
Area Manager
Department of Energy
Albuquerque Operations Office
Dayton Area Office
P.O. Box 66
Miamisburg, OH 45342

Dear Mr. Morley:

At the request of Kae Lee of U.S. EPA Region V, I am enclosing copies of the Visual Site Inspection (VSI) Agenda and Information Needs letter for the RCRA Facility Assessment for the US DOE Mound facility. Credential letters for Steve Heikkila and myself will be mailed to you under separate cover. If you have questions, please contact me directly at (612) 227-6500. I look forward to meeting with you and your staff on May 3, 1988.

Sincerely,

William L. Murphy Rohrer
Vice President

WLMR/vas
enc

cc: R. Janowiecki, U.S. DOE Mound
K. Lee, U.S. EPA Region V
A. Anderson, ATK Chicago
PRA file 105.17 R25-01-21

PRA

RCRA FACILITY ASSESSMENT
VISUAL SITE INSPECTION AGENDA

FACILITY: U.S. DOE Mound
Miamisburg, Ohio

EPA ID NO.: OH6890008984

FACILITY CONTACT: Dick Janowiecki

DATES OF INSPECTION: May 3-6, 1988

PERSONNEL: Kae Lee, U.S. EPA Region V
W.L. Murphy Rohrer, Pope-Reid Associates, Inc.
S. Heikkila, Pope-Reid Associates, Inc.

PURPOSE OF THE VISUAL SITE INSPECTION

The Hazardous and Solid Waste Amendments of 1984 (HSWA) broaden the scope of EPA's authority under RCRA by requiring corrective action for releases of hazardous wastes and constituents at facilities that manage hazardous wastes. The authority requires corrective action for releases to the environment from any Solid Waste Management Unit (SWMU), including hazardous or non-hazardous wastes. The RCRA Facility Assessment includes a desk-top review of available file information of the facility, Visual Site Inspection (VSI), and, if necessary, a sampling visit. The preliminary review (PR) has been completed for this facility and a VSI has been determined to be necessary. The purpose of the VSI is to:

1. Confirm, by visual inspection, information collected during the PR;
2. Survey the site for additional SWMUs and other areas of concern, and identify potential sample points for possible future sampling activities; and
3. Review site information with facility representatives and collect additional information to address the information needs identified during the PR. Photographs are to be taken of all units and areas of concern.

Please note that the proposed agenda is based on information gathered during a desk-top review of the Ohio EPA files. Only units identified in the PR with

known locations are included in the proposed agenda. Many additional units have been identified but their specific locations are unknown. It is also likely that various SWMUs or processes have not been identified in the file review, or that one unit might be listed under two different names.

These issues will be resolved during the initial meeting on Day 1 of the VSI. A more efficient agenda may be arranged in order to assure that all SWMUs identified in the file review and during the VSI will be inspected.

A list of proposed SWMUs and other Areas of Concern is included in Tables 1 and 2, respectively.

PROPOSED INSPECTION SCHEDULE

DAY 1	A.M.	8:30 a.m.-12:00 p.m. Arrive at Facility	o Introductory Meeting o Review Safety and Monitoring Protocol o Discuss Information Needs and Preliminary Findings o Revise Agenda as Needed
DAY 1	P.M.	1:00-5:00 p.m. Hazardous Waste Storage Areas Mixed Waste Storage Areas Solid Waste Salvage and Reclamation Wastewater Treatment Plant	
DAY 2		8:30 a.m.-12:00 p.m. 1:00 p.m.-5:00 p.m. Thermal Treatment Units Landfills Surface Impoundments	
DAY 3		SM/PP Area Seeps and Past Spill Areas Drainage Ditches NPDES Outfalls	
DAY 4		Waste Accumulation and Staging Areas in Production Areas Miscellaneous Solid Waste Management Units Other Areas of Concern Debriefing	

Table 1

Solid Waste Management Units

1. Open Burning Area
2. Past Landfill 1
3. Waste Solvent Incinerator
4. Waste Solvent Incinerator Scrubber
5. Lined Landfill
6. Past Disposal Area 2
7. Past Disposal Area 3
8. Plant Drainage System
9. Drainage Flume
10. Waste Disposal Pipeline
11. Waste Disposal Facility
12. Retaining/Settling Basins
13. Solution Discard Areas
14. Wastewater Treatment Plant
15. Overflow Pond
16. Test Firing Tanks
17. Oil Burn Structure
18. Past Hazardous Waste Storage Area
19. Current Hazardous Waste Storage Area
20. Explosive Storage Area
21. Glass Melt Furnace
22. Fire Fighting Training Facility
23. Wastewater Treatment Plant Sand Filters (2)
24. Asphalt-Lined Pond
25. Concrete-Lined Ponds
26. Dredged Material Disposal Site
27. Spoils Area
28. Solvent Storage Shed
29. Process Area Solvent Storage Areas
30. Photoprocessing Waste Storage
31. Radioactive Mixed Waste Consolidation Areas

32/33. Building 23 Waste Staging Area

34. Stagnant Water Area
35. Leach Bed
36. Chromium Trench

Table 1 (continued)

37. Pyro Waste Disposal Area
38. Building 38 Hillside Disposal Area
39. WD Building USTs
40. Cooling Tower Basins
41. Recreation Ponds (2)
42. Pyrotechnic Waste Shed
43. Glass Melter Off-Gas Deluge Tank
44. Off-Gas Venturi Scrubber
45. Off-Gas Cyclone Demister
46. Off-Gas Recycle Tank
47. Iodine Adsorption Bed
48. Off-Gas HEPA Filter
49. Off-Gas Leaf Solution Filler
50. Strainer
51. WD Filter Bank
52. Retort
53. Building 90 Blockhouse
54. Thermal Treatment Unit
55. Biodegradation Unit
56. Drum Carts/Collection Vehicles
57. Solvent Leach Beds
58. Building 1 Leach Pit
59. Building 27 Leach Pit
60. Former Solvent Drum Storage Area
61. Building 28 Solvent Storage Area
62. DS Solvent Storage Shed
63. B Building Solvent Storage Shed
64. E Building Solvent Storage Shed
65. Sludge Drying Beds
66. Waste Oil Drumfield
67. Waste Solvent Storage Tank
68. Ventilation Hoods
69-71. Refuse Piles
72. Air Pollution Control Device
73. Solid Waste Salvage and Reclamation Building

Other Areas of Concern

Name	Contaminant	Location	Volume/Area	Cause	Reference
Plutonium Spill Area	Plutonium	See Figure V.1., Page V-19, Ref. 66	Unknown	Spilled Solutions	55
Paint Shop Spills	Paint, paint wastes	Soil adjacent to Paint Shop	Unknown	Leaks, spills, or dumping	55
Powerhouse Spills	Oil	Soil adjacent to Powerhouse	Unknown	Spills	55
WD Building Underground Tanks (4)	Radioactive Wastes	WD Building	Unknown	Corrosion leaks (suspected)	55
Building 61 Spills	Waste Oil	Soil adjacent to Building 61	Unknown	Dumping (suspected)	55
Building 9 Spills	Waste Oil	Soil adjacent to Building 9	Unknown	Dumping	55
Valley-3 area	Sand Containing Cobalt-60	Between the Overflow Pond and Well No. 1	15,000 ft^2	Contaminated Soil dumping area	81
Main Hill-6	Sand Containing polonium-210 and cobalt-60	North of Building 76 east of Building 65	2,100 ft^2	Soil dumping area	81
SM/PP Hill-4	Thorium-238 contaminated dirt	West of Building 30	25,000 ft^2	Dumping area for contaminated dirt	81
SM/PP Hill-5	Polonium contaminated concrete	West of Building 30	13,000 ft^2	Dumping area	81

Table

Other Areas of Concern (continued)

SM/PP Hill-6	Dirt containing thorium and plutonium	West of SM Building	19,000 ft^2	Dumping area	81
Valley-4 Area	Polonium-contaminated concrete	Northeast of Building 49	9,000 ft^2	Dumping area	81
SM/PP Hill-7	Soil contaminated with cobalt-60	Unknown	9,000 ft^2	Dumping area	81
SW Building	Tritium	Releases from beneath the building	Unknown	Leaks	13
HH Building	Tritium	Releases from beneath the building	Unknown	Leaks	13
North Pond	Plutonium-contaminated runoff	East of north end of North Canal	Unknown	Spill	7
South Pond	Plutonium-contaminated runoff	East of north end of North Canal	Unknown	Spill	7

PRELIMINARY ASSESSMENT NEEDS FOR
RCRA FACILITY ASSESSMENT

U.S. DOE Mound
Miamisburg, Ohio
OH6890008984

- Provide flowcharts depicting the movement of waste through the Wastewater Treatment Plant, the Waste Disposal Facility, and any other waste treatment facilities not identified in this letter. Include the fate of both wastewater and sludge, indicate where wastes are generated, and identify any hazardous constituents present in the waste.

- Provide the location of any waste accumulation, treatment, or disposal areas (historic or current) not identified in this letter. Include dimensions, capacity, dates of operation, materials of construction release control mechanisms, waste types, hazardous constituents and history of releases.

- Identify waste management practices for waste streams generated in the past which differ from current waste streams such as those made due to changes in technology.

- Provide a map of the site which will be suitable for locating all SWMUs identified in this letter and during the VSI.

- Provide status of all on-going remedial activities.

- Provide results of any health-risk studies of employees and nearby residents.

- Identification of any units regulated under an NRC permit.

- A reference was made in the file material regarding Pond 13 and Pond 17 but there was not sufficient information to determine whether these were Solid Waste Management Units. Provide the status of each of these units along with their location, dimensions, capacity, materials of construction, wastes handled, hazardous constituents, and release control mechanisms for these units.

- Provide the location, dimensions, capacity, materials of construction, and release control mechanism for any sump, tanks, or other units used to store or treat boiler blowdown prior to discharge from the facility.

- Specific information needs for all SWMUs identified in this letter are provided in Table 3.

TABLE 3. INFORMATION NEEDS FOR SPECIFIC SWMUs

	Status of Remedial Activities or Closure	Waste Quantity	Regulatory Status	Dimensions	Dates of Operation	Waste Analysis	Release Controls	Location	Sampling Results	Waste Disposition	Materials of Construction	History of Releases
1. Open Burning Area					o		o					o
2. Past Landfill 1			o	o					o			
3. Waste Solvent Incinerator			o			o	o			o	o	
4. Waste Solvent Incinerator Scrubber			o			o				o		
5. Lined Landfill	o		o	o	o	o	o	o				
6. Past Disposal Area 2	o		o	o		o	o					
7. Past Disposal Area 3	o		o	o		o	o					
8. Plant Drainage System			o	o	o	o	o		o		o	
9. Drainage Flume			o	o	o	o	o					
10. Waste Disposal Pipeline	o		o	o	o	o			o			
11. Waste Disposal Facility			o	o	o	o	o					
12. Retaining/Settling Basins	o		o	o	o		o			o		
13. Solution Discard Areas	o		o	o	o	o						
14. Wastewater Treatment Plant				o	o	o	o					
15. Overflow Pond		o		o		o	o				o	
16. Test Firing Tanks			o	o	o	o				o		
17. Oil Burn Structure			o	o	o			o			o	
18. Past Hazardous Waste Storage Area												
19. Current Hazardous Waste Storage Area			o				o					
20. Explosive Storage Area					o	o				o		

TABLE 3. INFORMATION NEEDS FOR SPECIFIC SWMUs
(Continued)

	Status of Remedial Activities or Closure	Waste Quantity	Regulatory Status	Dimensions	Dates of Operation	Waste Analysis	Release Controls	Location	Sampling Results	Waste Disposition	Materials of Construction	History of Releases
21. Glass Melt Furnace					o							
22. Fire Fighting Training Facility				o	o	o	o					
23. Wastewater Treatment Plant Sand Filters (2)				o	o	o	o			o		
24. Asphalt-Lined Pond				o	o	o						
25. Concrete-Lined Ponds			o	o	o	o						
Dredged Material Disposal Site		o		o	o	o	o					
27. Spoils Area			o	o		o	o					
28. Solvent Storage Shed		o	o	o	o	o	o	o				
29. Process Area Solvent Storage Areas		o	o	o	o	o	o	o				
30. Photoprocessing Waste Storage		o	o	o	o	o	o	o				
31. Radioactive Mixed Waste Consolidation Areas	o	o	o	o	o	o	o	o		o		
32/33. Building 23 Waste Staging Area		o			o							
34. Stagnant Water Area	o	o			o	o		o	o			
35. Leach Bed	o			o	o	o						
36. Chromium Trench	o		o	o			o		o			
37. Pyro Waste Disposal Area	o	o	o	o	o	o	o					
38. Building 38 Hillside Disposal Area				o	o	o	o					
39. WD Building USTs	o		o	o	o	o			o		o	
40. Cooling Tower Basins				o	o	o		o		o		

TABLE 3. INFORMATION NEEDS FOR SPECIFIC SWMUs
(Continued)

	Status of Remedial Activities or Closure	Waste Quantity	Regulatory Status	Dimensions	Dates of Operation	Waste Analysis	Release Controls	Location	Sampling Results	Waste Disposition	Materials of Construction	History of Releases
41. Recreation Ponds (2)			o	o	o	o	o		o			
42. Pyrotechnic Waste Shed			o		o	o						
43. Glass Melter Off-Gas Deluge Tank			o	o	o				o			
44. Off-Gas Venturi Scrubber			o		o						o	
45. Off-Gas Cyclone Demister			o	o	o		o				o	
46. Off-Gas Recycle Tank			o	o	o	o	o				o	
47. Iodine Adsorption Bed			o	o	o	o			o	o	o	
48. Off-Gas HEPA Filter			o	o	o		o		o	o	o	
49. Off-Gas Leaf Solution Filler			o	o	o	o			o	o	o	
50. Strainer			o		o	o				o	o	
51. WD Filter Bank			o	o	o	o			o	o		
52. Retort					o	o			o	o		
53. Building 90 Blockhouse		o		o	o	o	o				o	
54. Thermal Treatment Unit		o			o	o				o		
55. Biodegradation Unit		o			o	o	o	o	o	o		
56. Drum Carts/Collection Vehicles					o							
57. Solvent Leach Beds	o						o				o	
58. Building 1 Leach Pit	o	o					o				o	
59. Building 27 Leach Pit			o	o	o	o	o	o			o	

TABLE 3. INFORMATION NEEDS FOR SPECIFIC SWMUs
(Continued)

	Status of Remedial Activities or Closure	Waste Quality	Regulatory Status	Dimensions	Dates of Operation	Waste Analysis	Release Controls	Location	Sampling Results	Waste Disposition	Materials of Construction	History of Releases
60. Former Solvent Drum Storage Area	o				o	o	o			o	o	
61. Building 28 Solvent Storage Area			o		o	o		o			o	
62. DS Solvent Storage Shed			o		o	o		o		o	o	
63. B Building Solvent Storage Shed			o		o	o		o			o	
64. E Building Solvent Storage Shed			o			o		o		o	o	
65. Sludge Drying Beds			o		o		o			o	o	
Waste Oil Drumfield			o			o				o		o
67. Waste Solvent Storage Tank	o		o		o	o		o		o	o	
68. Ventilation Hoods			o		o							
69-71. Refuse Piles			o	o	o	o	o					
72. Air Pollution Control Device					o					o		
73. Solid Waste Salvage and Reclamation Building			o	o	o	o	o					

4

© 1991 Wilson Jones Company

MOUND

Inter-Office Correspondence

From : R. J. Janowiecki
Technical Support

cc : W. D. Ross

Date : April 25, 1988

Subject : EPA Contractor Assessment of Mound

Reference :

TO :
R. M. Munson-DOE/DAO
A. D. Bickerton-DOE/DAO
R. A. Neff
C. S. Friedman
J. W. Doty
L. W. Metcalf
R. K. Blauvelt
D. G. Carfagno
D. G. Draper
G. E. Round

U.S. EPA is processing our application for a RCRA permit to conduct hazardous waste management activities at Mound. As part of that process, Region V has asked a vendor, Pope-Reid Associates, to conduct a Facility Assessment of Mound to identify actual or potential releases from regulated and other waste management units. If such releases pose a threat to human health or the environment, EPA is authorized to require that corrective action be completed as part of the RCRA permit conditions.

You are invited to attend the initial meeting with Kae Lee of U.S. EPA Region V and Bill Rohrer and Steve Heikkila of Pope-Reid Associates, which will be held at 8:30 a.m. on Tuesday, May 3 in the DOE Conference Room (Room 423, OSE-4). Pope-Reid's proposed meeting and inspection schedule, which is attached, may be revised after we better understand the contractor's information needs and the extent of proposed work.

Kae Lee of EPA plans to visit Mound only on May 3.

Doug Draper and Gerry Round are asked to provide a review of safety and monitoring protocol for the visitors at the initial meeting.

Appropriate MRC personnel who are knowledgeable in the specific areas to be visited and assessed are being contacted and asked to be available.

Dick

R. J. Janowiecki

RJJ:ar

PROPOSED INSPECTION SCHEDULE

DAY 1 A.M. MAY 3	8:30 a.m.-12:00 p.m. Arrive at Facility	o Introductory Meeting o Review Safety and Monitoring Protocol o Discuss Information Needs and Preliminary Findings o Revise Agenda as Needed
DAY 1 P.M. MAY 3	1:00-5:00 p.m. Hazardous Waste Storage Areas Mixed Waste Storage Areas Solid Waste Salvage and Reclamation Wastewater Treatment Plant	EPA REQUESTED VISITS TO GLASS MELTER AND OPEN BURNING AREA BE SCHEDULED FOR MAY 3. RJJ
DAY 2 MAY 4	8:30 a.m.-12:00 p.m. 1:00 p.m.-5:00 p.m. ~~Thermal Treatment Units~~ Landfills Surface Impoundments	
DAY 3 MAY 5	SM/PP Area Seeps and Past Spill Areas Drainage Ditches NPDES Outfalls	
DAY 4 MAY 6	Waste Accumulation and Staging Areas in Production Areas Miscellaneous Solid Waste Management Units Other Areas of Concern Debriefing	

5

© 1991 Wilson Jones Company

MOUND

Inter-Office Correspondence

From : R. J. Janowiecki
Technical Support

Date : April 26, 1988

Subject : Facility Assessment

Reference :

cc : A. D. Bickerton-DOE/DAO
R. K. Blauvelt
C. S. Friedman
D. L. Heitz
R. M. Munson-DOE/DAO
R. A. Neff

TO : M. E. Babcock
G. L. Ball
D. G. Carfagno
R. B. Hampel
J. L. Harrison
C. W. Izor
L. M. Klingler
T. M. Mills
N. W. Mott
D. R. Hopkins

As part of U.S. EPA's processing of Mound's application for a permit to conduct hazardous waste activities on site, Region V has asked Pope-Reid Associates to conduct a Facility Assessment of Mound to identify actual or potential releases from regulated and other solid waste management units (SWMU). A SWMU includes equipment and areas that may have become contaminated by hazardous waste or hazardous constituents. If actual or potential releases pose a threat to human health or the environment, EPA is authorized to require that we complete corrective action as part of our waste permit conditions.

The Facility Assessment is primarily a review of available file information. Its purpose is to confirm information already collected by EPA and make available to the vendor, to survey the site and identify possible future sampling activities, and to collect additional information including photographs.

Bill Rohrer and Steve Heikkila of Pope-Reid will visit Mound on May 3 through May 6; Kae Lee of EPA will visit on May 3. The attached Proposed Inspection Schedule was provided by the contractor and may be revised during the initial meeting. The SWMUs designated for assessment are listed in Table 1; the specific information needed for each SWMU is shown in Table 3. For each SWMU, I have indicated the person who seems best qualified to discuss the equipment or area with the visitor and to provide the desired information.

I ask each of you to find the areas on Table 1 that are marked with your initials. Then, before May 3, gather together the kind of information desired for those areas as shown on Table 3 and as may be indicated on the Preliminary Assessment Needs described on the final pages of the attachment.

I sincerely appreciate your assistance in this forthcoming visit, particularly in view of the short notice that we received regarding the specifics of the visit.

Dick

R. J. Janowiecki

RJJ:ar
Att.

PROPOSED INSPECTION SCHEDULE

DAY 1 A.M. MAY 3	8:30 a.m.-12:00 p.m. Arrive at Facility	o Introductory Meeting o Review Safety and Monitoring Protocol o Discuss Information Needs and Preliminary Findings o Revise Agenda as Needed
DAY 1 P.M. MAY 3	1:00-5:00 p.m. Hazardous Waste Storage Areas Mixed Waste Storage Areas Solid Waste Salvage and Reclamation Wastewater Treatment Plant	EPA REQUESTED VISITS TO GLASS MELTER AND OPEN BURNING AREA BE SCHEDULED FOR MAY 3. RJJ
DAY 2 MAY 4	8:30 a.m.-12:00 p.m. 1:00 p.m.-5:00 p.m. ~~Thermal Treatment Units~~ Landfills Surface Impoundments	[illegible]
DAY 3 MAY 5	SM/PP Area Seeps and Past Spill Areas Drainage Ditches NPDES Outfalls	
DAY 4 MAY 6	Waste Accumulation and Staging Areas in Production Areas Miscellaneous Solid Waste Management Units Other Areas of Concern Debriefing	

Table 1

Solid Waste Management Units

JLH 1. Open Burning Area

DGC 2. Past Landfill 1

LMK/TKM 3. Waste Solvent Incinerator

LMK/TKM 4. Waste Solvent Incinerator Scrubber

5. Lined Landfill - SAME AS #2

GLB 6. Past Disposal Area 2 - ~~SUMP/POND AT BLDGS. 1 + 27~~

DGC 7. Past Disposal Area 3

DGC 8. Plant Drainage System

DGC 9. ? Drainage Flume

WPD/DGC 10. Waste Disposal Pipeline

TKM 11. Waste Disposal Facility

DGC 12. Retaining/Settling Basins

JLH 13. Solution Discard Areas - BURN AREA

DGC 14. Wastewater Treatment Plant

DGC 15. Overflow Pond

MEB 16. Test Firing Tanks

DGC 17. Oil Burn Structure

RBH 18. Past Hazardous Waste Storage Area - ~~SAME AS #60~~

RBH 19. Current Hazardous Waste Storage Area

JLH 20. Explosive Storage Area

LMK/TKM 21. Glass Melt Furnace

DGC/CWI 22. Fire Fighting Training Facility

DGC 23. Wastewater Treatment Plant Sand Filters (2)

DGC 24. Asphalt-Lined Pond

? 25. Concrete-Lined Ponds ?

DGC 26. Dredged Material Disposal Site - ~~SAME AS #5, 24 OR 25~~ ?

DGC 27. Spoils Area - SAME AS #7 ?

RBH 28. Solvent Storage Shed

RBH 29. Process Area Solvent Storage Areas

RBH 30. Photoprocessing Waste Storage

RBH/DRH 31. Radioactive Mixed Waste Consolidation Areas

DRH 32/33. Building 23 Waste Staging Area

? 34. Stagnant Water Area ?

? 35. Leach Bed - ~~SAME AS #59~~ ?

DGC 36. Chromium Trench - PLATING SHOP BATHS DISPOSAL ?

MEB : MEL BABCOCK
GLB : GEORGE BALL
DGC : DAN CARFAGNO
RBH : RICK HAMPEL
JLH : JIM HARRISON
CWI : CHUCK IZOR
LMK : LARRY KLINGLER
TKM : TOM MILLS

Table 1 (continued)

JLH 37. Pyro Waste Disposal Area

38. Building 38 Hillside Disposal Area - SAME AS #7 ~~+27~~?

TKM 39. WD Building USTs

? 40. Cooling Tower Basins ? Water + Small ponds ~ Measuring pond

DGC 41. Recreation Ponds (2)

JLH 42. Pyrotechnic Waste Shed

LMK/TKM 43. Glass Melter Off-Gas Deluge Tank

LMK/TKM 44. Off-Gas Venturi Scrubber

LMK/TKM 45. Off-Gas Cyclone Demister

LMK/TKM 46. Off-Gas Recycle Tank

LMK/TKM 47. Iodine Adsorption Bed

LMK/TKM 48. Off-Gas HEPA Filter

LMK/TKM 49. Off-Gas Leaf Solution Filler

LMK/TKM 50. Strainer

LMK/TKM 51. WD Filter Bank

JLH 52. Retort

JLH 53. Building 90 Blockhouse

JLH 54. Thermal Treatment Unit - Incinerator

JLH 55. Biodegradation Unit

RBH 56. Drum Carts/Collection Vehicles - mobile, not fixed

57. Solvent Leach Beds

58. Building 1 Leach Pit } SAME AS #6 AND/OR #35?

59. Building 27 Leach Pit

60. Former Solvent Drum Storage Area - SAME AS #18

RBH 61. Building 28 Solvent Storage Area

RBH 62. DS Solvent Storage Shed

RBH 63. B Building Solvent Storage Shed } Same as #28 #29

RBH 64. E Building Solvent Storage Shed

DGC 65. Sludge Drying Beds

RBH 66. Waste Oil Drumfield

DGC 67. Waste Solvent Storage Tank

DGC 68. Ventilation Hoods

? ~~69-71.~~ Refuse Piles ? Tag 10-1 [illegible]

? 72. Air Pollution Control Device ? HEPA at WD

NWM 73. Solid Waste Salvage and Reclamation Building - BLDG. 19

DGC: DAN CARFAGNO
RBH: RICK HAMPEL
JLH: JIM HARRISON
LMK: LARRY KLINGLER
TKM: TOM MILLS
NWM: NORB MOTT

TABLE 3. INFORMATION NEEDS FOR SPECIFIC SWMUs

	Status of Remedial Activities or Closure	Waste Quantity	Regulatory Status	Dimensions	Dates of Operation	Waste Analysis	Release Controls	Location	Sampling Results	Waste Disposition	Materials of Construction	History of Releases
1. Open Burning Area					o		o					o
2. Past Landfill 1			o	o					o			
3. Waste Solvent Incinerator			o			o	o			o	o	
4. Waste Solvent Incinerator Scrubber			o			o				o		
5. Lined Landfill	o		o	o	o	o	o	o				
6. Past Disposal Area 2	o		o	o		o	o					
7. Past Disposal Area 3	o		o	o		o	o					
8. Plant Drainage System			o	o	o	o	o		o		o	
9. Drainage Flume			o	o	o	o	o					
10. Waste Disposal Pipeline	o		o	o	o	o			o			
11. Waste Disposal Facility			o	o	o	o	o					
12. Retaining/Settling Basins	o		o	o	o		o			o		
13. Solution Discard Areas	o		o	o	o	o						
14. Wastewater Treatment Plant				o	o	o	o					
15. Overflow Pond		o		o		o	o				o	
16. Test Firing Tanks			o	o	o	o				o		
17. Oil Burn Structure			o	o	o			o			o	
18. Past Hazardous Waste Storage Area												
1[illegible] Current Hazardous Waste Storage Area			o				o					
20. Explosive Storage Area					o	o				o		

TABLE 3. INFORMATION NEEDS FOR SPECIFIC SWMUs
(Continued)

	Status of Remedial Activities or Closure	Waste Quantity	Regulatory Status	Dimensions	Dates of Operation	Waste Analysis	Release Controls	Location	Sampling Results	Waste Disposition	Materials of Construction	History of Releases
21. Glass Melt Furnace					o							
22. Fire Fighting Training Facility				o	o	o	o					
23. Wastewater Treatment Plant Sand Filters (2)				o	o	o	o			o		
24. Asphalt-Lined Pond				o	o	o						
25. Concrete-Lined Ponds			o	o	o	o						
26. Dredged Material Disposal Site		o		o	o	o	o					
27. Spoils Area			o	o		o	o					
28. Solvent Storage Shed		o	o	o	o	o	o	o				
29. Process Area Solvent Storage Areas		o	o	o	o	o	o	o				
30. Photoprocessing Waste Storage		o	o	o	o	o	o	o				
31. Radioactive Mixed Waste Consolidation Areas	o	o	o	o	o	o	o	o		o		
32/33. Building 23 Waste Staging Area		o			o							
34. Stagnant Water Area	o	o			o	o		o	o			
35. Leach Bed	o			o	o	o						
36. Chromium Trench	o		o	o			o		o			
37. Pyro Waste Disposal Area	o	o	o	o	o	o	o					
38. Building 38 Hillside Disposal Area				o	o	o	o					
39. WD Building USTs	o		o	o	o	o			o		o	
40. Cooling Tower Basins				o	o	o		o		o		

TABLE 3. INFORMATION NEEDS FOR SPECIFIC SWMUs
(Continued)

	Status of Remedial Activities or Closure	Waste Quantity	Regulatory Status	Dimensions	Dates of Operation	Waste Analysis	Release Controls	Location	Sampling Results	Waste Disposition	Materials of Construction	History of Releases
41. Recreation Ponds (2)			o	o	o	o	o		o			
42. Pyrotechnic Waste Shed			o		o	o						
43. Glass Melter Off-Gas Deluge Tank			o	o	o				o			
44. Off-Gas Venturi Scrubber			o		o						o	
45. Off-Gas Cyclone Demister			o	o	o		o				o	
46. Off-Gas Recycle Tank			o	o	o	o	o				o	
Iodine Adsorption Bed			o	o	o	o			o	o	o	
48. Off-Gas HEPA Filter			o	o	o		o		o	o	o	
49. Off-Gas Leaf Solution Filler			o	o	o	o			o	o	o	
50. Strainer			o		o	o				o	o	
51. WD Filter Bank			o	o	o	o			o	o		
52. Retort					o	o			o	o		
53. Building 90 Blockhouse		o		o	o	o	o				o	
54. Thermal Treatment Unit		o			o	o				o		
55. Biodegradation Unit		o			o	o	o	o	o	o		
56. Drum Carts/Collection Vehicles					o							
57. Solvent Leach Beds	o						o				o	
58. Building 1 Leach Pit	o	o					o				o	
59. Building 27 Leach Pit			o	o	o	o	o	o			o	

TABLE 3. INFORMATION NEEDS FOR SPECIFIC SWMUs
(Continued)

	Status of Remedial Activities or Closure	Waste Quality	Regulatory Status	Dimensions	Dates of Operation	Waste Analysis	Release Controls	Location	Sampling Results	Waste Disposition	Materials of Construction	History of Releases
60. Former Solvent Drum Storage Area	o				o	o	o			o	o	
61. Building 28 Solvent Storage Area			o		o	o		o			o	
62. DS Solvent Storage Shed			o		o	o		o		o	o	
63. B Building Solvent Storage Shed			o		o	o		o			o	
64. E Building Solvent Storage Shed			o			o		o		o	o	
65. Sludge Drying Beds			o		o		o			o	o	
66. Waste Oil Drumfield			o			o				o		o
67. Waste Solvent Storage Tank	o		o		o	o		o		o	o	
68. Ventilation Hoods			o		o							
69-71. Refuse Piles			o	o	o	o	o					
72. Air Pollution Control Device					o					o		
73. Solid Waste Salvage and Reclamation Building			o	o	o	o	o					

PRELIMINARY ASSESSMENT NEEDS FOR
RCRA FACILITY ASSESSMENT

U.S. DOE Mound
Miamisburg, Ohio
OH6890008984

- Provide flowcharts depicting the movement of waste through the Wastewater Treatment Plant, the Waste Disposal Facility, and any other waste treatment facilities not identified in this letter. Include the fate of both wastewater and sludge, indicate where wastes are generated, and identify any hazardous constituents present in the waste.

- Provide the location of any waste accumulation, treatment, or disposal areas (historic or current) not identified in this letter. Include dimensions, capacity, dates of operation, materials of construction release control mechanisms, waste types, hazardous constituents and history of releases.

- Identify waste management practices for waste streams generated in the past which differ from current waste streams such as those made due to changes in technology.

- Provide a map of the site which will be suitable for locating all SWMUs identified in this letter and during the VSI.

- Provide status of all on-going remedial activities.

- Provide results of any health-risk studies of employees and nearby residents.

- Identification of any units regulated under an NRC permit.

- A reference was made in the file material regarding Pond 13 and Pond 17 but there was not sufficient information to determine whether these were Solid Waste Management Units. Provide the status of each of these units along with their location, dimensions, capacity, materials of construction, wastes handled, hazardous constituents, and release control mechanisms for these units.

- Provide the location, dimensions, capacity, materials of construction, and release control mechanism for any sump, tanks, or other units used to store or treat boiler blowdown prior to discharge from the facility.

- Specific information needs for all SWMUs identified in this letter are provided in Table 3.

6

© 1991 Wilson Jones Company

MOUND

Inter-Office Correspondence

From : C. W. Taylor, Security Education & Quality Audits

cc : Duty Officers
File

Date : May 2, 1988

Subject : On-site Photography

Reference :

TO : Mark Gibson

The following personnel will be on Mound property in all areas representing the Environmental Protection Agency:

Bill Rohrer - Pope Reid Associates
Steve Heikkila - Pope Reid Associates

They will be taking pictures with 35mm cameras. They are approved to do so.

The period of time they will be on site is May 3, 1988 through May 8, 1988.

They will be escorted at all times by Mr. R. J. Janowiecki, Mr. R. ~~Heckathorn,~~ Mr. Richard Blauvelt, or Mr. D. Carfagno.
Hampel per CWT

Clyde W. Taylor
Clyde W. Taylor

CWT:lg

Approved: P. C. Adams
P. C. Adams

7

© 1991 Wilson Jones Company

May 3, 1988

ATTENDANCE LIST

Name	Organization/Position	Phone
DICK JANOWIECKI	MRC, ENGR. SPECIALIST	865-4715
Douglas G Draper	MRC Health Physics	865-4501
JAY W. DOTY	MRC Health Physics Manager	865-3296
DICK BLAUVELT	MOUND WASTE MGMNT Spec.	865-3698
JERRY ROUND	MOUND SAFETY OFFICE	865-3923
DAN CARFAGNO	MRC - ENVIRONMENTAL	865-3931
DICK NEFF	MGR, ES&H	865-3928
Lane Metcalf	MRC, Safety	865-3924
BILL ROHRER	DPRA (POPE-REID)	(612) 227-6500
STEVEN HEIKKILA	DPRA (Pope-Reid Assoc)	(612) 227-6500
Kae H Lee	U.S. EPA	(312) 886-6182
Richard Munson	U.S.D.O.E.	865-3270
Scott Shane	Ohio EPA	449-6357
Chul Kim-McGuire	Ohio EPA	449-6357
Robert J Bolich	Ohio EPA	(614) 644-2950
Robert D. Carey	Ohio EPA	(614)-644-2973

8

© 1991 Wilson Jones Company

MRC-MOUND

Operated for the United States
Department of Energy

May 10, 1988

Mr. Bill Rohrer
Pope-Reid Associates
245 East Sixth Street
Suite 813
St. Paul, MN 55101

Dear Mr. Rohrer:

During your Visual Site Inspection of Mound last week, you requested the following additional technical information:

- WD Pipeline - The waste transfer system was built in 1967 and used starting in 1968. Usage of one pipe, which carried non-recoverable process distillate, was discontinued in 1974; usage of a second pipe, which carried wastewater from showers, drains, etc., was discontinued in 1976. Both pipes were removed in 1986; soil is still being removed.

- WD Sludge - Analytical data for three cemented WD sludge samples are enclosed. All of the parameters measured were below the corresponding RCRA values for the EP toxicity characteristic.

- SD Plant - The old sanitary waste disposal plant was operated from 1948 to the 1970s. Drawing No. 351700-02001, showing dimensions and basic features of the old facility, is enclosed.

- "Refuse Piles" - Figure 10-1 of our Part B permit application shows three areas designated "refuse piles." Two of the areas, located below Magazine 53, are orphan soil consisting of soil and rock which were shown to you during your visit. The third area, located across the road, consists of sand and gravel and is used by Mound for onsite repair work.

MONSANTO RESEARCH CORPORATION P.O. BOX 32 Miamisburg, Ohio 45342 (513) 865-4020

a subsidiary of Monsanto Company

- Environmental Monitoring Reports - Copies of Environmental Monitoring Reports for the past five years, 1982-1986, are enclosed.

You also requested clarification of statements in your Reference No. 50, which seemed to indicate that an old incinerator, which had been located in Building 51 and operated for only a short time some years ago, was listed on our Part A permit application. Please send us a copy of the referenced Mary Walker letter so that we can resolve this question.

If you require additional information, please contact me.

Sincerely,

Richard J. Janowiecki

Richard J. Janowiecki
Engineering Specialist

RJJ:km
Enclosure

cc: A. D. Bickerton, DOE/DAO
R. A. Neff
C. S. Friedman
R. K. Blauvelt

9

© 1991 Wilson Jones Company

A.T. Kearney, Inc.
222 South Riverside Plaza
Chicago, Illinois 60606
312 648 0111

Management
Consultants

RECEIVED
OCT 1 1988
OFFICE OF RCRA
Waste Management Division
U.S. EPA REGION 5

ATKEARNEY

July 15, 1988

Ms. Pat Vogtman
Regional Project Officer
Environmental Protection Agency
230 South Dearborn Street
Chicago, IL 60604

Reference: EPA Contract No. 68-01-7374; Work Assignment No. R25-01-21; U.S. DOE-Mound, Miamisburg, Ohio; EPA I.D. #OH6899008984; PR/VSI Report

Dear Ms. Vogtman:

Enclosed is the Preliminary Review/Visual Site Inspection Report for the U.S. DOE-Mound facility in Miamisburg, Ohio. The report presents the results of the Preliminary Review (PR) and the Visual Site Inspection (VSI) portions of the RCRA Facility Assessment (RFA) for this facility. The PR report, VSI trip report, VSI field notes, and VSI photograph log are included as attachments to this report. A Summary of Suggested Further Actions is included separately in Section VII at the EPA's Technical Monitor's request.

The PR and VSI resulted in identification of 86 Solid Waste Management Units (SWMUs) and 38 Other Areas of Concern. Release of hazardous constituents was documented in the file material or observed during the VSI from the following SWMUs:

Building 1 Leach Pit (SWMU SI-4)
Building 27 Leach Pit (SWMU SI-5)
Building E Solvent Storage Shed (SWMU CS-2)
Waste Oil Drumfield (SWMU CS-6)
Pyrotechnic Waste Disposal Area (SWMU OB-8)
Waste Disposal Pipeline (SWMU MI-2)
Fire Fighting Training Facility (SWMU MI-5)
Lithium Carbonate Disposal Area (SWMU MI-6)
Chromium Trench (SWMU MI-7)
Acid Leach Field (SWMU MI-11)
Monitoring Well 34-1 (SWMU MI-13)

We suggest that a subsurface investigation be conducted at the following units to determine the magnitude and extent of the contamination in underlying soil and groundwater.

The potential for release to soil, groundwater, surface water, air or potential for generation of subsurface gas is moderate to high for several other SWMUs:

Past Landfill (SWMU LF-2)
Dredged Material Disposal Area (SWMU LF-4)
South Property Dump (SWMU LF-5)
Retention Basins (SWMU SI-1)
Overflow Pond (SWMU SI-2)
Asphalt-Lined Pond (SWMU SI-3)
Building 1 Leach Pit (SWMU SI-4)
Building 27 Leach Pit (SWMU SI-5)
Hillside Catch Basin (SWMU SI-6)
Building E Solvent Storage Area (SWMU CS-2)
Waste Oil Drumfield (SWMU CS-6)
Old Firing Range Drum Storage Area (SWMU CS-10)
Cooling Tower Drum Storage Area (SWMU CS-16)
WD Building Drum Staging Area (SWMU CS-18)
Waste Solvent Incinerator (SWMU IN-3)
Waste Solvent Incinerator Scrubber (SWMU AP-10)
Trash Burner (SWMU OB-1)
Thermal Treatment Unit (SWMU OB-2)
Pyrotechnic Waste Disposal Area (SWMU OB-8)
Alpha Wastewater Influent Tanks (SWMU WD-1)
Sludge Drying Beds (SWMU SD-9)
Underground Sewer Lines (SWMU SD-10)
Plant Drainage Ditch (SWMU MI-1)
Waste Disposal Pipeline (SWMU MI-2)
Oil Burn Structure (SWMU MI-3)
Fire Fighting Training Facility (SWMU MI-5)
Lithium Carbonate Disposal Area (SWMU MI-6)
Chromium Trench (SWMU MI-7)
Acid Leach Field (SWMU MI-11)
Monitoring Well 34-1 (SWMU MI-13)
Dredge Spoil Drying Beds (SWMU MI-15)

We suggest that soil, sediment, surface water, or air samples be taken in these areas to determine whether hazardous constituents have been released.

Release of radioactive materials was documented at all the Other Areas of Concern and it is suggested that soil samples be taken to determine whether releases of hazardous constituents have occurred.

Please call me or William Rohrer, the Work Assignment Manager at 612/227-6500, if you have any questions.

Sincerely,

Ann L. Anderson

Ann L. Anderson
Assistant Technical Director

J. W. Grieve FOR
James E. Levin
Program Director

Enclosure

cc: K. Lee, U.S. EPA Region VI
J. Levin
J. Grieve
J. Gers (w/o attachments)
A. Williams(w/o attachments)
W. Rohrer, DPRA

1781E-CH

PRELIMINARY REVIEW/VISUAL SITE INSPECTION

U.S. DOE MOUND
Miamisburg, Ohio

EPA I.D. OH6899008984

PREPARED FOR

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN STREET
CHICAGO, IL 60604

PREPARED BY

A. T. KEARNEY, INC.
225 REINEKERS LANE
ALEXANDRIA, VA 22313

AND

DPRA, INC.
245 EAST 6TH STREET
SUITE 813
ST. PAUL, MN 55101

EPA CONTRACT NUMBER 68-01-7374

WORK ASSIGNMENT NUMBER R25-01-21

JULY 1988

PRELIMINARY REVIEW/VISUAL SITE INSPECTION
OF
U.S. DOE MOUND
MIAMISBURG, OHIO

TABLE OF CONTENTS

		PAGE
I.	EXECUTIVE SUMMARY	1
II.	INTRODUCTION	19
III.	ENVIRONMENTAL SETTING	20
	A. Meteorology	20
	B. Floodplain and Surface Water	20
	C. Geology and Soils	24
	D. Groundwater	30
	E. Receptor Information	32
IV.	RELEASE PATHWAYS	34
	A. Soil/Groundwater	34
	B. Surface Water	35
	C. Air Emissions	36
	D. Subsurface Gas	36
V.	SOLID WASTE MANAGEMENT UNITS	38
VI.	OTHER RELEASE INFORMATION	233
VII.	SUMMARY OF SUGGESTED FURTHER ACTIONS	234
VIII.	REFERENCES	251

IX. ATTACHMENTS

A. Attachment 1 - Visual Site Inspection Field Notebooks
B. Attachment 2 - Visual Site Inspection Summary
C. Attachment 3 - Visual Site Inspection (VSI) Photographs
D. Attachment 4 - Waste Analysis
E. Attachment 5 - Preliminary Review (PR)

facility:

- Characteristic wastes D001 through D011, organic wastes D018 through D055, and listed wastes F001 through F009 and K044.

- Liquid or soil residues involving generic names listed in CFR 261.33(e) or CFR 261.33(f).

- Small quantity laboratory wastes and excess or spent chemical products having generic names listed in CFR 261.33(e) or CFR 261.33(f).

- Radioactive mixed wastes, primarily including scintillation vials containing solvents.

Table 1 from the Phase 1: Installation Assessment draft report, 1986 (Ref. 55) lists the RCRA-regulated wastes managed at the facility.

Non-radioactive hazardous wastes generated at the facility include photo-processing wastes, solvents, non-radioactive liquids, and laboratory chemicals. Figure 2 indicates the disposition of these wastes. Photo-processing wastes are sent to an off-site vendor for treatment and disposal. Solid wastes (excluding those contaminated with explosives) include acetone, methylene chloride, methanol, ethanol, isopropanol, trichloroethylene, and chlorinated fluorocarbons (Ref. 55). These wastes are sent off-site for incineration. Vendors also collect and dispose of waste oils, paints and thinners, and spent plating bath solutions. Pyrotechnic wastes are treated and/or stored in the Open Burn Area (SWMUs OB-1 to OB-8).

Mixed low-level radioactive wastes (mostly scintillation cocktail vials) are currently being stored pending the permit approval of the Glass Melter Furnace (SWMU IN-1) or other off-site treatment alternatives.

High-level (or high specific-activity wastes) containing plutonium 238 and tritium are generated in production areas throughout the plant. High-level wastes are solidified in 55-gallon drum packages and sent to the Idaho National Engineering Laboratory (INEL).

Low-level plutonium 238 wastes are sent to the Alpha Wastewater Treatment Plant (SWMUs WD-1 and WD-2) for clarification, co-precipitation, and flocculation. The effluent is further treated with carbon adsorption and sand filters, prior to release to the Great Miami River. The sludge is solidified and sent to INEL.

Low-level tritium liquids are treated at the Beta Wastewater Treatment Plant (SWMU WD-3). The

Table 1

Management of RCRA-Regulated Wastes

EPA Hazard Waste No.	Estimated Annual Quantity of Waste (lb/yr)	Process Treatment Code
D001	66,000	S01
F001	(included with D001)	S01
F003	(included with D001)	S01
F005	(included with D001)	S01
D002	18,000	S01
F007	(included with D002)	S01
F009	(included with D002)	S01
D003	4000	T04,T03
D004	300	S01
D005	300	S01
D006	1500	S01
D006	25	T03
D007	500	S01
D008	2000	S01
D009	12,000	S01
D010	100	S01
D011	20,000	S01
F002	15,000	S01
F003	20,000	S01
F004	300	S01
F005	5000	S01
F007	1000	S01
F008	1000	S01
F009	1000	S01
U003	2400	T03
U009	400	T03
U037	400	T03
U158	1500	S01
U211	400	T03
Misc.	50,000	S01

D001--A solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste in Subpart D.

F001--The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.

Table 1 (cont)

F001--The following spent nonhalogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobuyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.

F005--The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents.

D002--A solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in Subpart D.

F007--Spent cyanide plating bath solutions from electroplating operations.

F009--Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.

D003--A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in Subpart D.

D004--Arsenic.

D005--Barium.

D006--Cadmium.

D007--Chromium.

D008--Lead.

D009--Mercury.

D010--Selenium.

D011--Silver.

F002--The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents.

F004--The following spent nonhalogenated solvents: cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.

F008--Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process.

U003--Acetonitrile

U009--Acrylonitrile

Table 1 (cont)

U037--Benzene, chloro-

U158--4,4'-Methylenebis (2-chloroaniline)

U211--Carbon tetrachloride

S01--Storage container

T03--Treatment incinerator. (Explosives are treated in an incinerator on an occasional as-needed basis; estimated annual quantity: 300 lbs; process capacity: 12 lbs per burn.)

A "cyclone incinerator" and a "glass melter" are developmental units used for hazardous waste treatment. The incinerator includes a single-stage cyclonic combustion chamber, a wet off-gas treatment system, and a high-efficiency filter. The glass melter includes a refractory chamber with molten glass over which waste is burned, a wet off-gas treatment system, and a high efficiency filter. Each unit has a design capacity of 50 lbs/h of organic waste.

T04--Treatment/Other. (Open burning of explosive-contaminated waste is conducted on an occasional as-needed basis; estimated annual quantity: 1,000 lbs; process capacity: 40 lbs per day. Detonators and pellets are treated in a retort (propane fired kiln) on an occasional as-needed basis; estimated annual quantity: 2,000 lbs; process capacity 0.33 lb per 30 seconds.)

Misc.--Periodic lab wastes, primarily having D001, D002, D003, and EP toxicity characteristics, but also including listed wastes in small quantities. The mix and quantity is dependent upon program requirements.

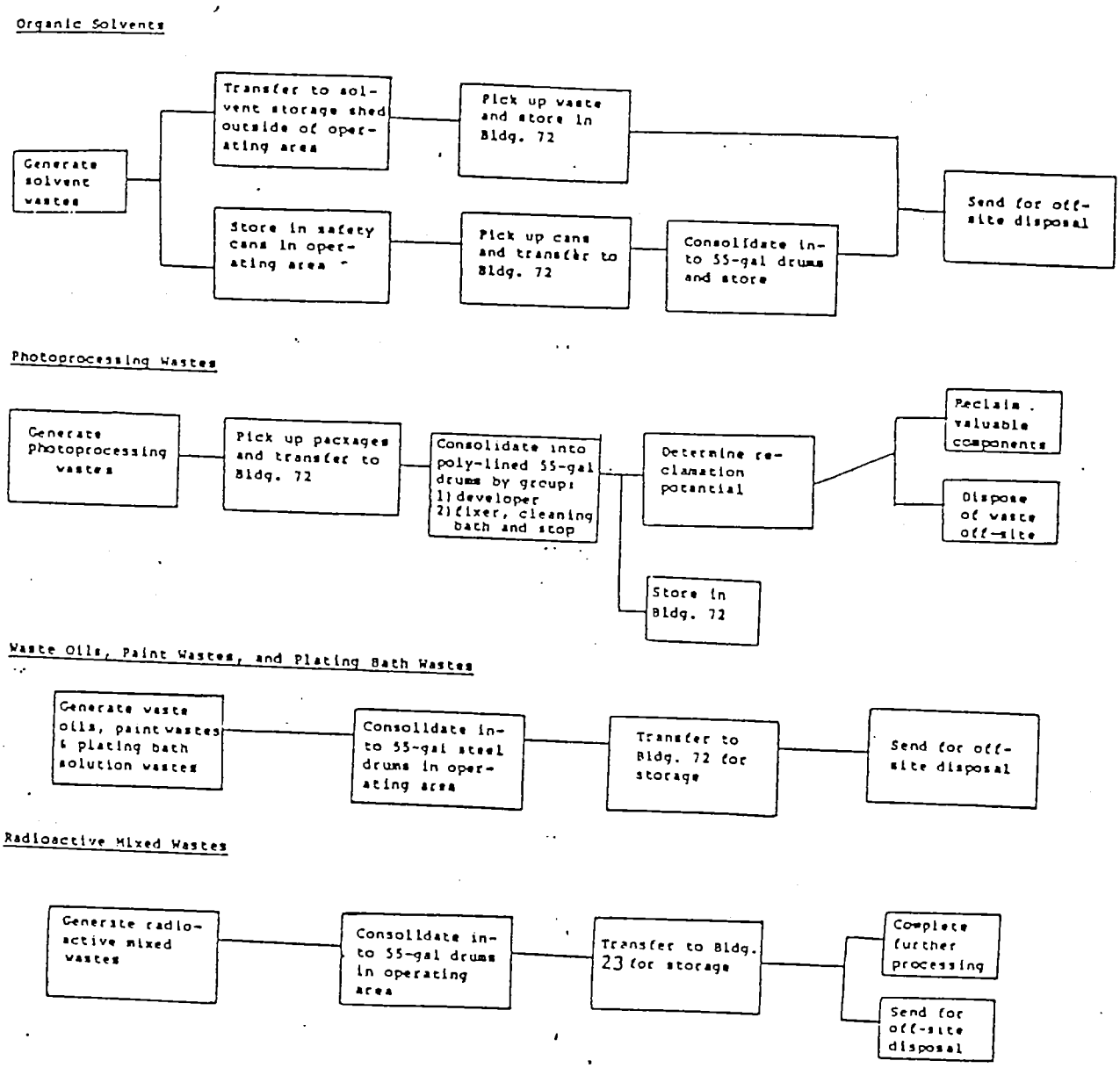


Figure 2 Waste Management Schemes for Hazardous Waste Streams.

(Ref.55)

liquid wastes are solidified with a gypsum plaster in 55-gallon drums and sent to an off-site burial site (Ref. 23).

U.S. DOE Mound submitted a RCRA Part A Application to USEPA Region V on August 15, 1980. A copy was sent to Ohio EPA on April 9, 1981. Revised versions of the Part A Application were submitted to Ohio EPA in November 1984, and January, March, and May, 1985. A Part B Application was submitted by the facility on November 7, 1986.

As a result of a large spill of plutonium 238 waste in 1969, the State of Ohio submitted a demand letter (under CERCLA authority) for $63,000,000 to U.S. DOE, MRC, and the Monsanto Company. Remedial activities were initiated soon after the spill and according to the Draft Phase I Installation Assessment Report (1986, Ref. 55), "subsequent studies and monitoring conducted by MRC [and] the State of Ohio . . . indicated that this is not a current or future threat to health or the environment and no further remedial action for this site is warranted." Negotiations between U.S. DOE and the State of Ohio are continuing in an effort to resolve the issue.

According to a summary of Mound Laboratory Documents (Ref. 18), numerous other releases of radioactive materials have occurred at the site, some resulting in exposure of plant personnel, contractors, and even visitors to excessive body burden levels. One incident on August 27, 1965 resulted from an explosion of plutonium containing an ion-exchange resin. This incident was characterized as "a 'near miss' accident." Another incident occurred in 1971 when improper storage of materials resulted in a spontaneous fire of solvents and plutonium.

A draft version of a Comprehensive Environmental Assessment and Response Program (CEARP, Ref. 55) completed by DOE lists ten areas potentially contaminated with hazardous substances (Figure 3) and 19 areas of radioactive contamination (Figure 4). Many of these areas are subject to ongoing and future remedial activities. These areas also served as a basis for identifying solid waste management units and other areas of concern.

The U.S. DOE Mound Site received a NPDES discharge permit from USEPA Region V in June 1975. NPDES-regulated effluent discharges are monitored at four stations at the facility.

Table 2 lists units which have been identified as Solid Waste Management Units or Other Areas of Concern. The locations of the units are depicted in Figure 5 and each unit is described in detail in Section VI.

The Preliminary Review (PR) (included in Attachment 4) was based upon a review of Part B Application for the facility and files from EPA Region V and Ohio EPA. Seventy-three Solid Waste Management Units and Seventeen Other Areas of Concern were identified in the PR. As a

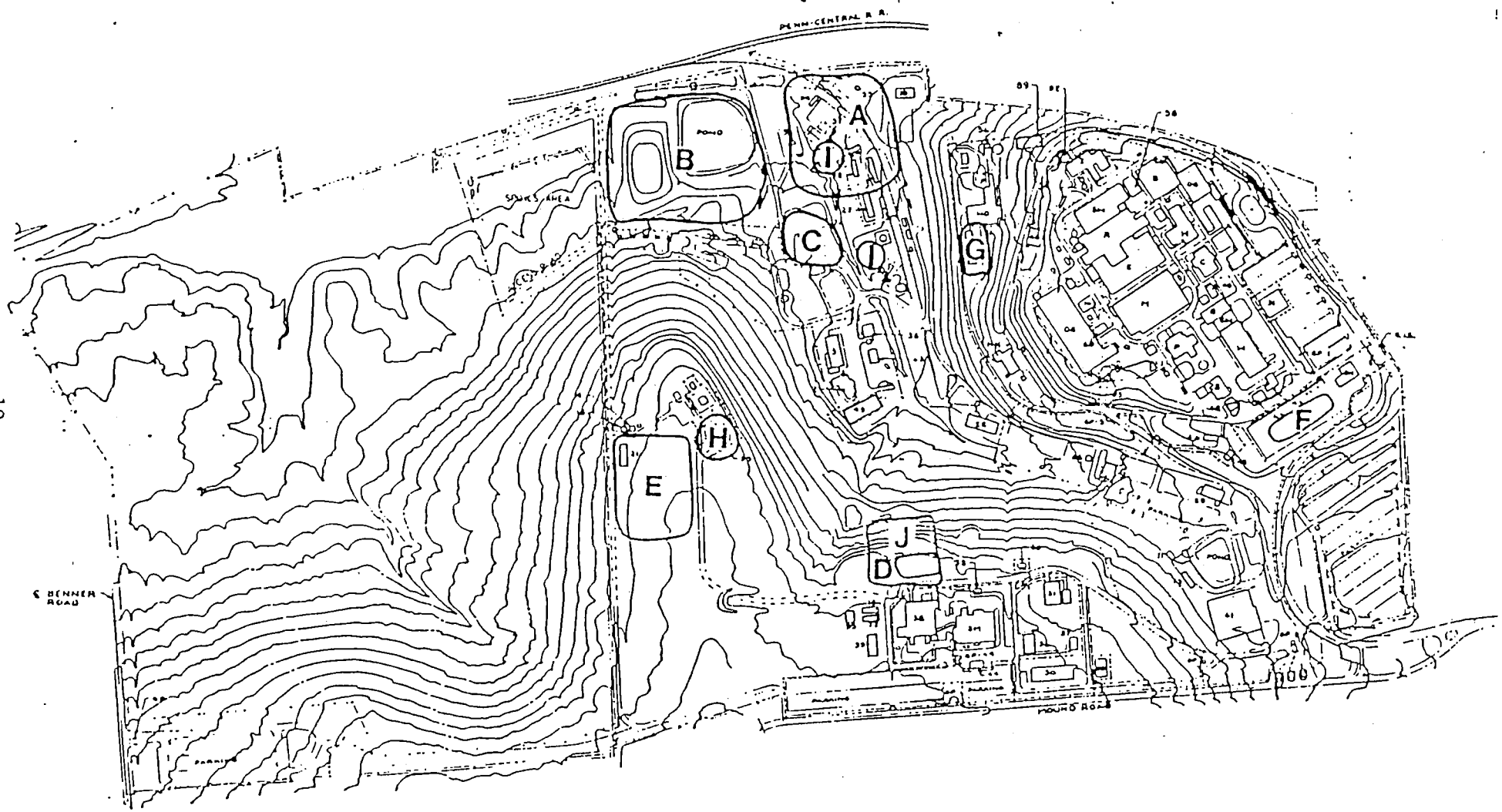
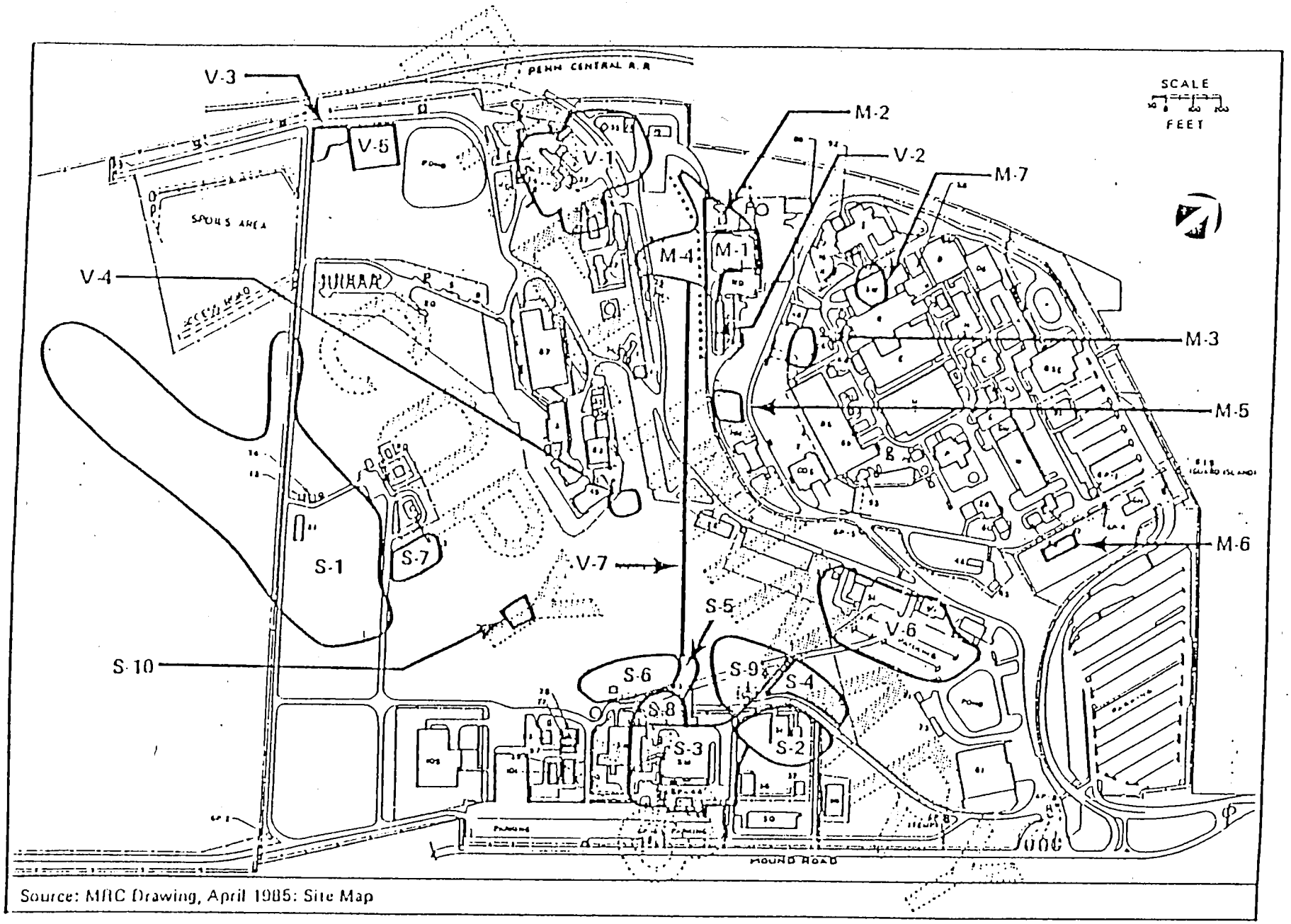


Figure 3 Areas Potentially Contaminated with Hazardous Substances.
(Ref.55)



Source: MRC Drawing, April 1985: Site Map

Identified Radioactively Contaminated Areas at the Mound Plant

Figure 4
(Ref. 81)

DOE SURVEY-MOUND

AUGUST 1986

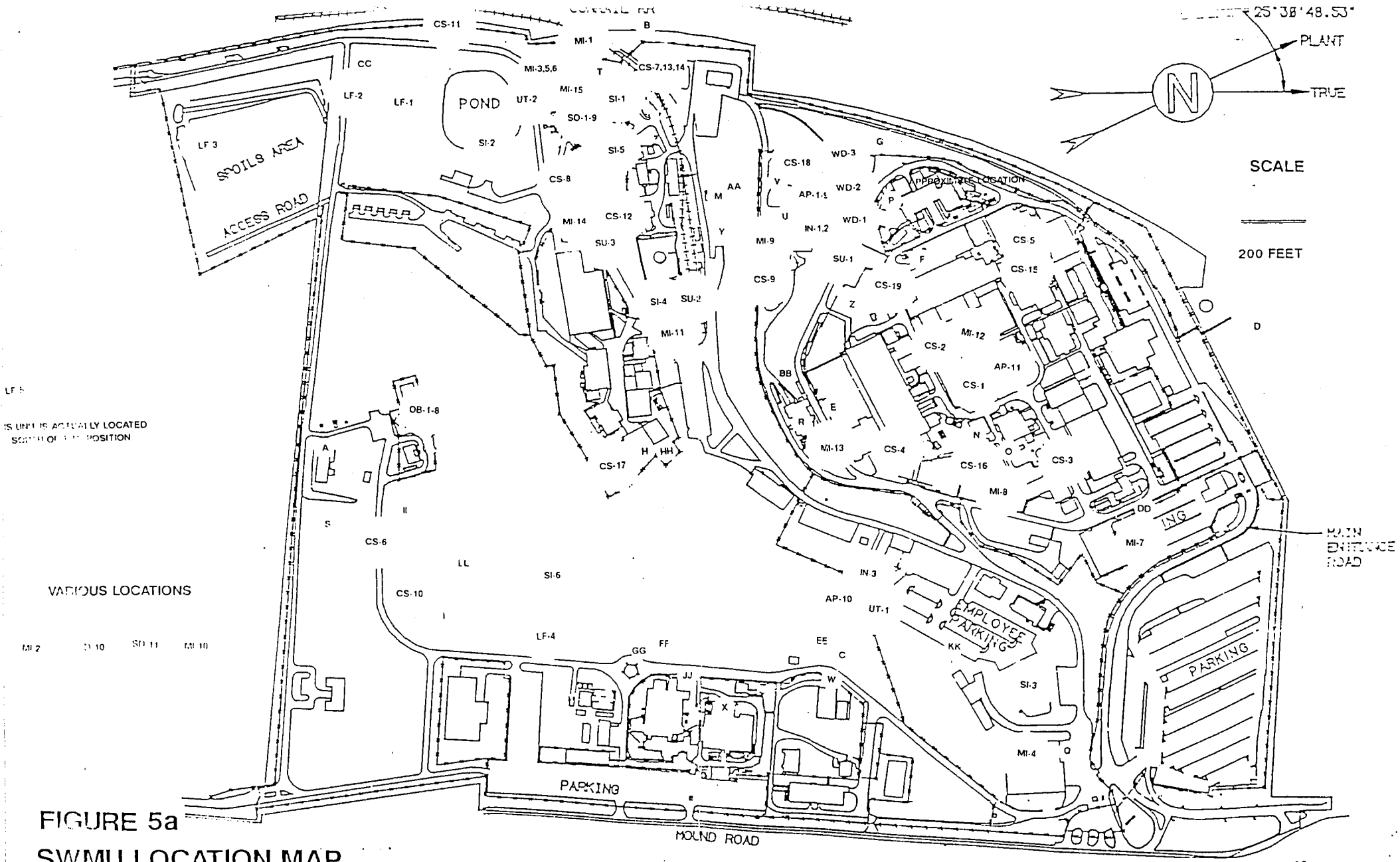


FIGURE 5a
SWMU LOCATION MAP

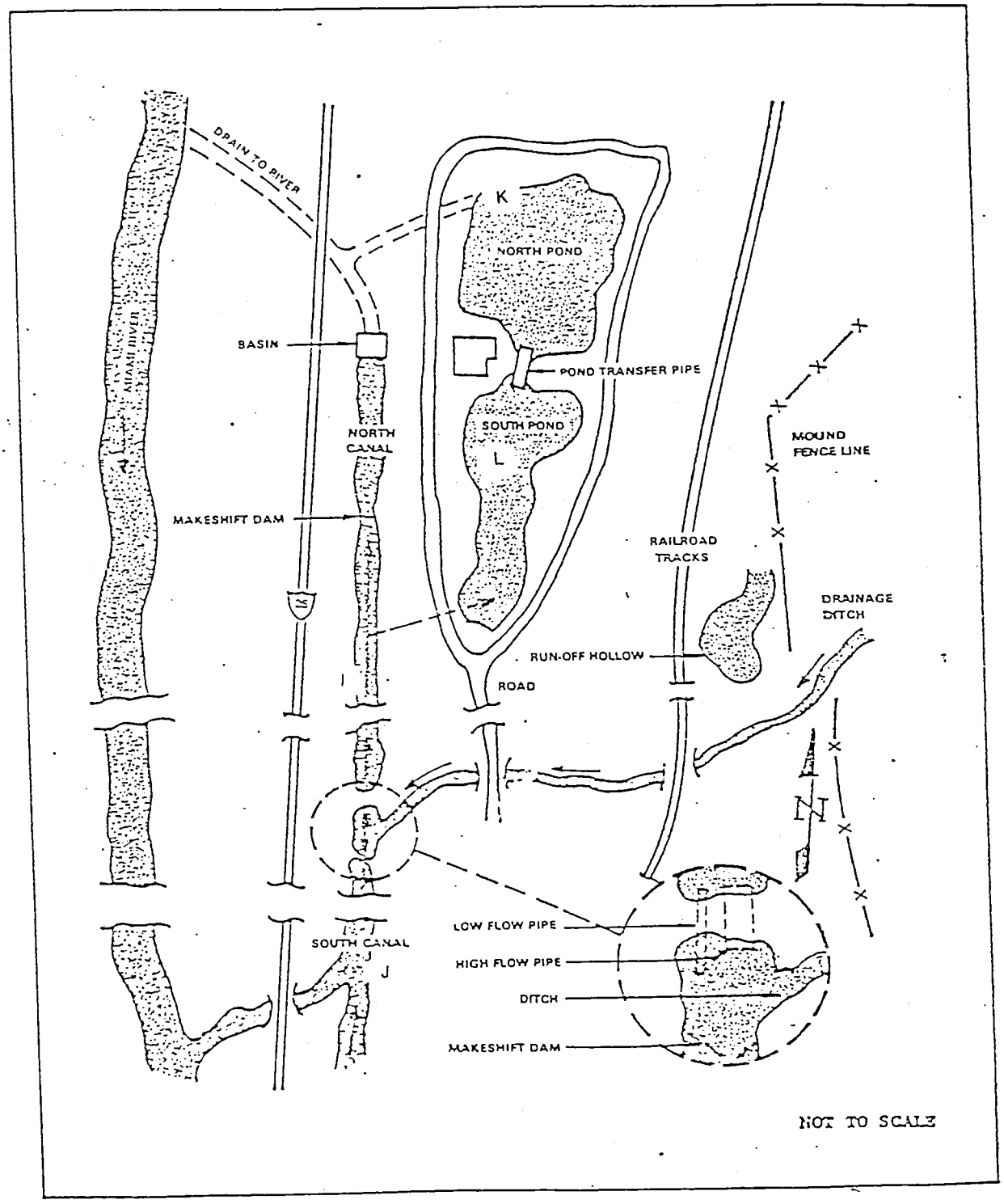


Figure 5b Off-site Other Areas of Concern

result of the subsequent VSI, additional units were identified and some units were deleted.

During the completion of the PR/VSI report, 86 SWMUs were identified. The following units were identified as SWMUs. The SWMUs and their regulatory and operational status is provided below.

RECEIVED
OCT 1 1 1992
OFFICE OF RCRA
Waste Management Division
U.S. EPA Region 7

	Regulatory Status	Active or Inactive
LANDFILLS		
LF-1 - Lined Landfill	RCRA/CERCLA	Inactive
LF-2 - Past Landfill	CERCLA	Inactive
LF-3 - Spoils Disposal Area	Not Regulated	Inactive
LF-4 - Dredged Material Disposal Area	Not Regulated	Inactive
LF-5 - South Property Dump	Not Regulated	Inactive
SURFACE IMPOUNDMENTS		
SI-1 - Retention Basins	NPDES*	Active
SI-2 - Overflow Pond	NPDES*	Active
SI-3 - Asphalt-Lined Pond	NPDES*	Inactive
SI-4 - Building 1 Leach Pit	NPDES*	Inactive
SI-5 - Building 27 Leach Pit	NPDES*	Inactive
SI-6 - Hillside Catch Basin	NPDES*	Active
CONTAINER STORAGE AREAS		
CS-1 - Scintillation Vial Storage Area	Not Regulated	Active
CS-2 - Building E Solvent Storage Shed	Not Regulated	Inactive†
CS-3 - Building 28 Solvent Storage Area	Not Regulated	Active
CS-4 - DS Building Solvent Storage Shed	Not Regulated	Active
CS-5 - Building B Solvent Storage Shed	Not Regulated	Active
CS-6 - Waste Oil Drumfield	Not Regulated	Inactive
CS-7 - Hazardous Waste Storage Area	RCRA	Active
CS-8 - Past Hazardous Waste Storage Area	RCRA	Inactive†
CS-9 - Rad./Mixed Waste Storage Area	RCRA	Active
CS-10 - Old Firing Range Drum Storage Area	Not Regulated	Inactive
CS-11 - Drilling Mud Drum Storage Area	Not Regulated	Active
CS-12 - Bldg. 27 Solvent Storage Area	Not Regulated	Active
CS-13 - Outdoor Hazardous Waste Storage Area	Not Regulated	Active
CS-14 - Empty Drum Storage Area	Not Regulated	Active
CS-15 - Bldg. B Temporary Drum Storage Area	Not Regulated	Active

CS-16 - Cooling Tower Drum Storage Area	Not Regulated	Active
CS-17 - Test Firing Residual Storage Area	Not Regulated	Active
CS-18 - WD Building Drum Staging Area	Not Regulated	Active
CS-19 - SW Building Staging Area	Not Regulated	Active
INCINERATORS		
IN-1 - Glass Melter Furnace	RCRA	Active
IN-2 - Cyclone Incinerator	RCRA	Inactive
IN-3 - Waste Solvent Incinerator	Not Regulated	Inactive†
AIR POLLUTION CONTROL UNITS		
AP-1 - Deluge Tank	Not Regulated	Active
AP-2 - Venturi Scrubber	Not Regulated	Active
AP-3 - Cyclone Demister	Not Regulated	Active
AP-4 - HEPA Filter	Not Regulated	Active
AP-5 - WD Filter Bank	RAPCA**	Active
AP-6 - Recycle Tank	Not Regulated	Active
AP-7 - Leaf Solution Filter	Not Regulated	Active
AP-8 - Strainer	Not Regulated	Active
AP-9 - Iodine Absorption Filter	Not Regulated	Inactive
AP-10 - Waste Solvent Incinerator Scrubber	Not Regulated	Inactive†
AP-11 - Ventillation Hoods	RAPCA**	Active
OPEN BURN AREA UNITS		
OB-1 - Trash Burner	RCRA	Inactive†
OB-2 - Thermal Treatment Unit	RCRA	Active
OB-3 - Retort (Rotary Kiln)	RCRA	Active
OB-4 - Building 90 Blockhouse	Not Regulated	Active
OB-5 - Pyrotechnic Waste Shed	RCRA	Active
OB-6 - Biodegradation Unit	Not Regulated	Active
OB-7 - Explosive Waste Storage Bunker (Magazine 53)	RCRA	Active
	Regulatory Status	Active or Inactive
OB-8 - Pyrotechnic Waste Disposal Area	Not Regulated	Inactive
UNDERGROUND STORAGE TANKS		
UT-1 - Waste Solvent Storage Tank	Not Regulated	Inactive
UT-2 - Aviation Fuel Tank	Not Regulated	Inactive

WD BUILDING WASTEWATER TREATMENT		
WD-1 - Alpha Wastewater Influent Tanks	NPDES*	Active
WD-2 - Alpha Wastewater Treatment System	NPDES*	Active
WD-3 - Beta Wastewater Treatment System	NPDES*	Active
SANITARY WASTEWATER TREATMENT SYSTEM		
SD-1 - Grit Chamber	NPDES*	Active
SD-2 - Grit Conveyor	NPDES*	Active
SD-3 - Comminutor	NPDES*	Active
SD-4 - Equalization Basins	NPDES*	Active
SD-5 - Aeration Basins	NPDES*	Active
SD-6 - Clarifiers	NPDES*	Active
SD-7 - Sand Filters	NPDES*	Active
SD-8 - Chlorine Contact Chambers	NPDES*	Active
SD-9 - Sludge Drying Beds	NPDES*	Active
SD-10 - Underground Sewer Lines	NPDES*	Active
SD-11 - Old Sanitary Wastewater Treatment Plant	Not Regulated	Inactive
SUMPS		
SU-1 - Glass Melter Room Sump	Not Regulated	Active
SU-2 - Building 1 Sump	Not Regulated	Inactive
SU-3 - Building 27 Sump	Not Regulated	Inactive
MISCELLANEOUS UNITS		
MI-1 - Plant Drainage Ditch	NPDES*	Active
MI-2 - Waste Disposal Pipeline	Not Regulated	Inactive
MI-3 - Oil Burn Structure	Not Regulated	Inactive
MI-4 - Waste Transport Vehicles	Not Regulated	Active
MI-5 - Fire Fighting Training Facility Burned fuel oil waste	XRCRA	Active
MI-6 - Lithium Carbonate Disposal Area	Not Regulated	Inactive
	Regulatory Status	Active or Inactive
MI-9 - Glass Melter Feed Drum	Not Regulated	Active
MI-10 - Trash Dumpsters	Not Regulated	Active
MI-11 - Acid Leach Field	Not Regulated	Inactive
MI-12 - Vapor Degreaser	Not Regulated	Active
MI-13 - Monitoring Well 34-1	Not Regulated	Active
MI-14 - Building 27 Concrete Flume	Not Regulated	Active

MI-15 - Dredge Spoil Drying Beds	Not Regulated	Active

* Wastewater is discharged to an NPDES outfall.
** Regional Air Pollution Control Authority.
† Unit has been dismantled.

The following Areas of Concern were identified during the VSI:

A - Thorium Drum Storage	Not Regulated	-
B - Runoff Hollow	Not Regulated	-
C - Septic Tank and Leach Field	Not Regulated	-
D - North Slope Springs	Not Regulated	-
E - Waste Pipeline	Not Regulated	-
F - SM/PP Hill-9	Not Regulated	-
G - Hillside Hole	Not Regulated	-
H - Epoxy Resin Disposal	Not Regulated	-
I - North Canal	Not Regulated	-
J - Miami-Erie Canal (South Canal)	Not Regulated	-
K - North Pond	Not Regulated	-
L - South Pond	Not Regulated	-
M - Contaminated Soil Box Storage Area	Not Regulated	-
N - Paint Shop Spills	Not Regulated	-
O - Powerhouse Spills	Not Regulated	-
P - Building 9 Spills	Not Regulated	-
Q - Building 61 Spills	Not Regulated	-
R - HH Building Contamination	Not Regulated	-
S - SM/PP Hill-1	Not Regulated	-
T - Valley-1	Not Regulated	-
U - Main Hill-1	Not Regulated	-
V - Main Hill-2	Not Regulated	-
W - SM/PP Hill-2	Not Regulated	-
X - SM/PP Hill-3	Not Regulated	-
Y - Valley-2	Not Regulated	-
Z - Main Hill-3	Not Regulated	-
AA - Main Hill-4	Not Regulated	-
BB - Main Hill-5	Not Regulated	-
CC - Valley-3	Not Regulated	-
DD - Mail Hill-6	Not Regulated	-
EE - SM/PP Hill-4	Not Regulated	-

FF - SM/PP Hill-5	Not Regulated	-
GG - SM/PP Hill-6	Not Regulated	-
HH - Valley-4	Not Regulated	-
II - SM/PP Hill-7	Not Regulated	-
JJ - SM/PP Hill-8	Not Regulated	-
KK - Valley-6	Not Regulated	-
LL - SM/PP Hill-10	Not Regulated	-

Based on a review of information available for this site, the following general conclusions can be made:

- Release of hazardous wastes or hazardous constituents have occurred from:

  - Building 1 Leach Pit (SWMU SI-4)
  - Building 27 Leach Pit (SWMU SI-5)
  - Building E Solvent Storage Shed (SWMU CS-2)
  - Waste Oil Drum Field (SWMU CS-6)
  - Pyrotechnic Waste Disposal Area (SWMU OB-8)
  - Waste Disposal Pipeline (SWMU MI-2)
  - Fire Fighting Training Facility (SWMU MI-5)
  - Lithium Carbonate Disposal Area (SWMU MI-6)
  - Chromium Trench (SWMU MI-7)
  - Acid Leach Field (SWMU MI-11)
  - Monitoring Well 34-1 (SWMU MI-13)

- Soil/groundwater, and surface water sampling should be conducted at several SWMUs, in conjunction with the continuing DOE Environmental Survey or as part of a RCRA Feasibility Investigation (RFI). These suggested further actions are described in Section VII.

II. INTRODUCTION

This report documents the results of a Preliminary Review/Visual Site Inspection (PR/VSI) of U.S. DOE Mound, Miamisburg, Ohio. The purpose of this review is to:

1. Identify all Solid Waste Management Units (SWMUs) and Other Areas of Concern (AOCs) which are located at the facility;

2. Use information obtained from the file review and VSI to assess the potential for release of hazardous wastes or hazardous constituents from each SWMU and AOC;

3. For each SWMU and AOC, determine what further measures, if any, should be taken to safeguard human health and the environment from a release (if those measures have not already been taken or are underway).

The information used in preparing this report has come from Parts A and B of the facility's permit application, information obtained from Ohio EPA and EPA Region V, information sent by the facility in response to the VSI Agenda and Information Needs letter, and information gathered during a Visual Site Inspection of the facility on May 3-5, 1988.

III. ENVIRONMENTAL SETTING

A. Meteorology

The average annual precipitation in the Miamisburg area is 36 inches (Ref. 100). The maximum 24-hour precipitation on record for Dayton is 4.56 inches. Average daily temperatures in Vondilin (24 miles north of Miamisburg) range from 31 degrees Fahrenheit in January to 75.5 degrees Fahrenheit in July (Table 2-8, Ref. 23). The relative humidity is moderately high, ranging from 50 to 80% (Ref. 23). The average annual wind speed was 8.7 mph in 1986, at Dayton, Ohio. Figure 6 shows the relative frequency of winds in the Dayton area for 1986. The predominant surface wind direction is from the southwest.

B. Floodplain and Surface Waters

The Mound facility is located approximately 2000 feet east of the Great Miami River. The mean flow in the Great Miami River is 1050 cubic feet per second (cps). Low flows of 180 cfs for seven consecutive days are projected to occur once every 20 years (Ref. 23).

The only natural water course on the Mound facility is a stream (Plant Drainage Ditch, SWMU MI-1) which flows along a buried glacial outwash channel separating the plant into the Main Hill (south) and the SM Hill (north) (Figure 7). Storm water runoff from both areas is routed into the Plant Drainage Ditch before it is routed to concrete retention basins (SWMU SI-1), prior to off-site discharge. The stream can be diverted to the Overflow Pond (SWMU SI-2) during periods of high water or if water quality problems arise. Runoff from the SM Hill is collected in the asphalt-lined pond (SWMU SI-3) before being discharged to the Drainage Ditch. Runoff from the central portion of the facility (just north of the buffer area) is routed to the Overflow Pond.

The drainage ditch enters the South Canal (Miami-Erie Canal) to the west of the facility and then discharges to the Great Miami River (Figure 8). Formerly, surface waters flowed both to the North and South Canals (and to the North and South Ponds via the North Canal). Because of the discovery of radioactive water in the North and South Pond, the southern terminus of the North Canal was blocked in July 1976.

Surface and groundwater appropriation within the Great Miami River basin are shown in Figure 9. No public water system uses surface water downstream from the Mound effluent within the basin. Surface and groundwaters are used for industrial processing

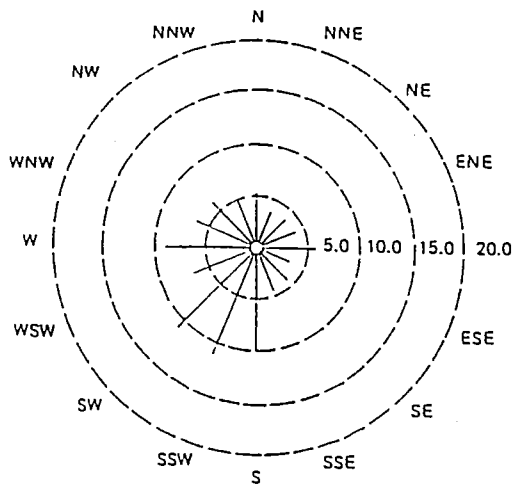


FIGURE 6 - The relative frequency of winds from different directions from the National Weather Service, Dayton, Ohio, for 1986.

(Ref. 92)

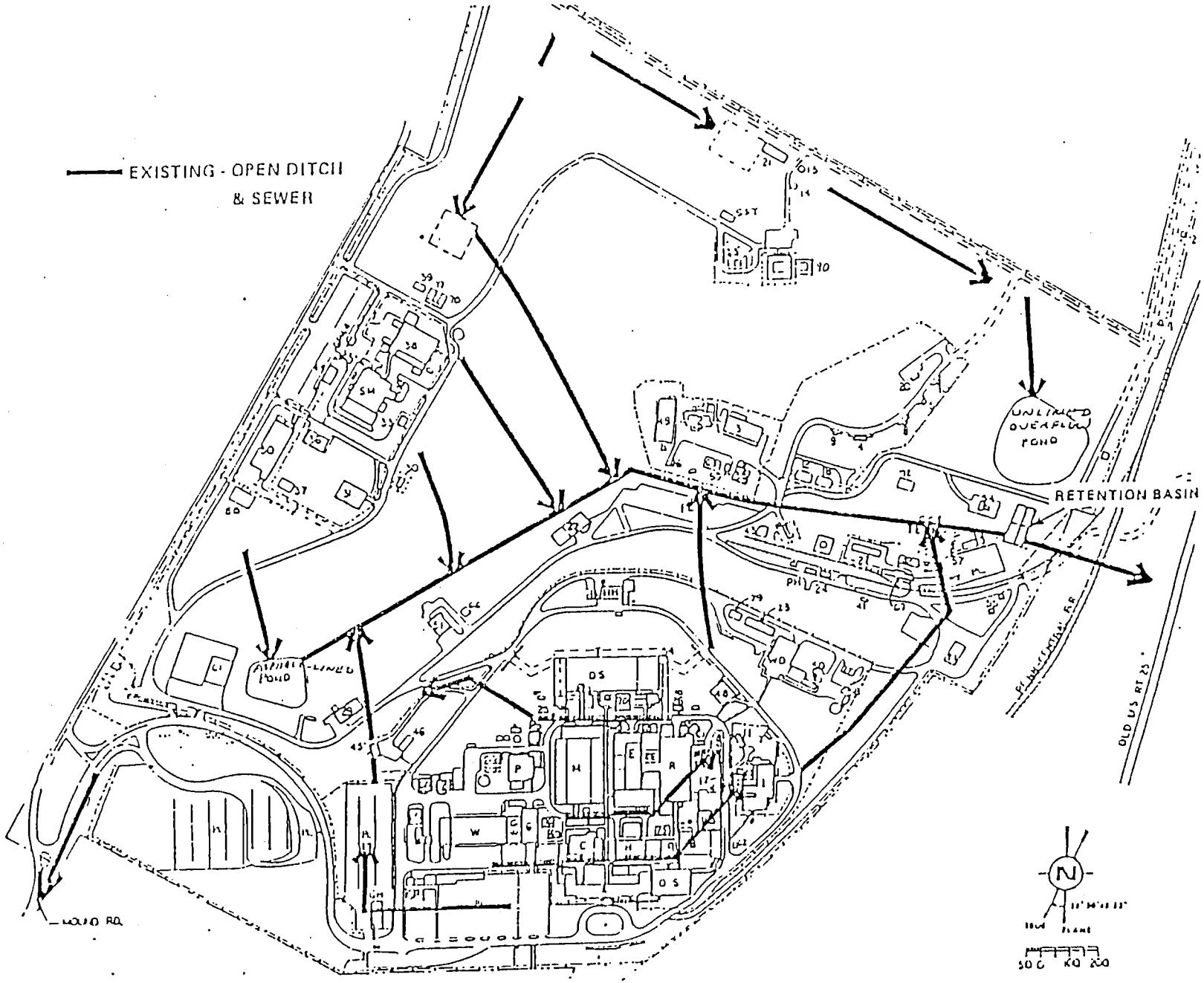


Figure 7 Storm water run-off
(Ref.66)

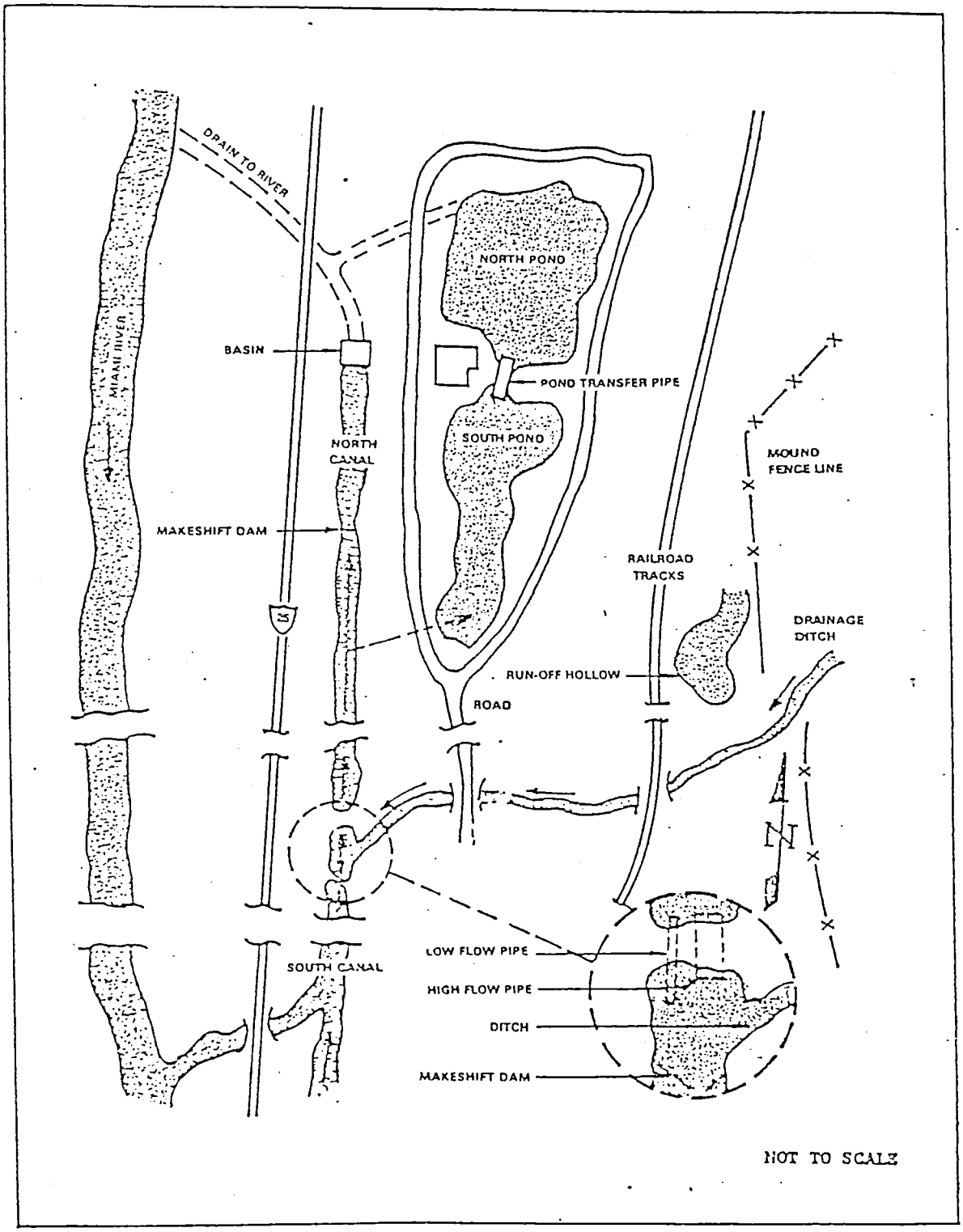


FIGURE 3 - Waterways adjacent to Mound Facility before July 1976. (Ref.23)

and heat exchange purposes within the basin. The O.H. Hutchings Power Station is the nearest surface water user (600 cfs).

A copy of the Flood Insurance Rate Map (Figure.10) of the Miamisburg area indicates that a small portion of the west-central portion of the facility lies within the 100-year floodplain. The100-year floodplain is at an elevation of 701 MSL. Portions of the Overflow Pond (SWMU SI-2) and the Past Landfill (SWMU LF-2) would be inundated in a 100-year event.

C. Soils and Geology

Soils on the Mound property are comprised of fine-grained glacial till materials and residuum from thin-bedded limestones and shales. Soil series on the facility include urban land loams, Miamian Urban land complex, Hennepin and Miamian silty loams, and clay loams, Fairmont silty loams and silty clay loam, Milton silty loam, Ritchey silt loam, Fairmont silty clay loam, and Ross silt loams. All soil types are moderately well drained to well drained. Near-surface permeabilities range from 0.2 to 0.63 in/hr for clay loams and from 0.63 to 2.0 in/hr for silt loams (Ref. 73).

The Mound facility lies within the Central Stable Province on the flank of the Cincinnati Arch. Basement rocks are comprised of Pre-Cambrian-age granites. Approximately 2600 feet of relatively flat-laying limestone, shales, dolomites, and sandstones. Limestone and shale bedrock of Ordovician Age underlie the two hills at the facility (Figures 11a and 11b). A thin veneer (less than 20 feet) of glacial till covers the surface and consists of gravels, sands, silts, and clay. The thin phase overlies a thicker glacial outwash deposit (the Buried Valley Aquifer, BVA) in the southwestern part of the site (Figure 12). The BVA is composed of stratified gravels, sands, silts, and clays and ranges up to 130 feet in thickness (Ref. 55).

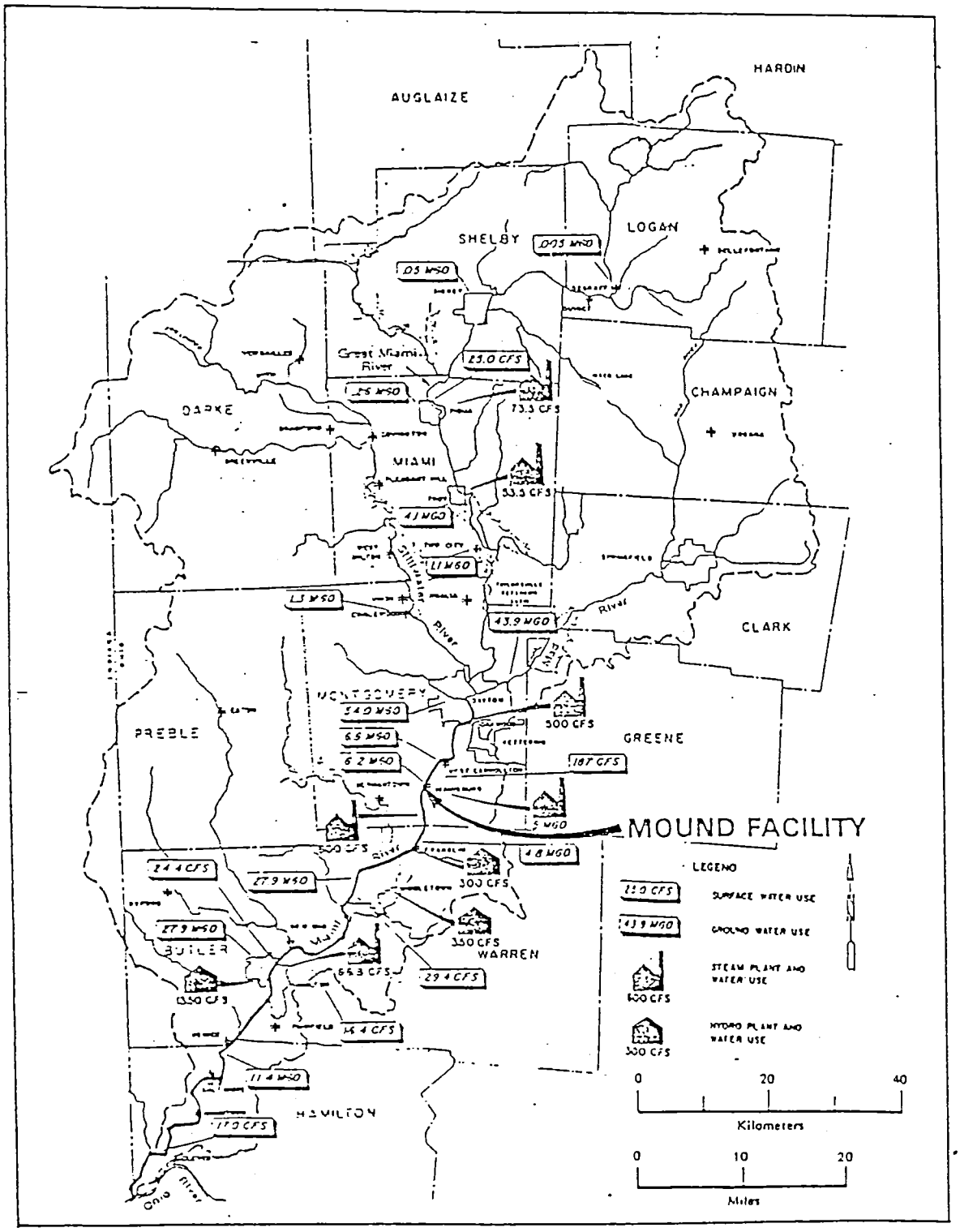


FIGURE 9 - Great Miami River Basin Water Use.
(Ref.23)

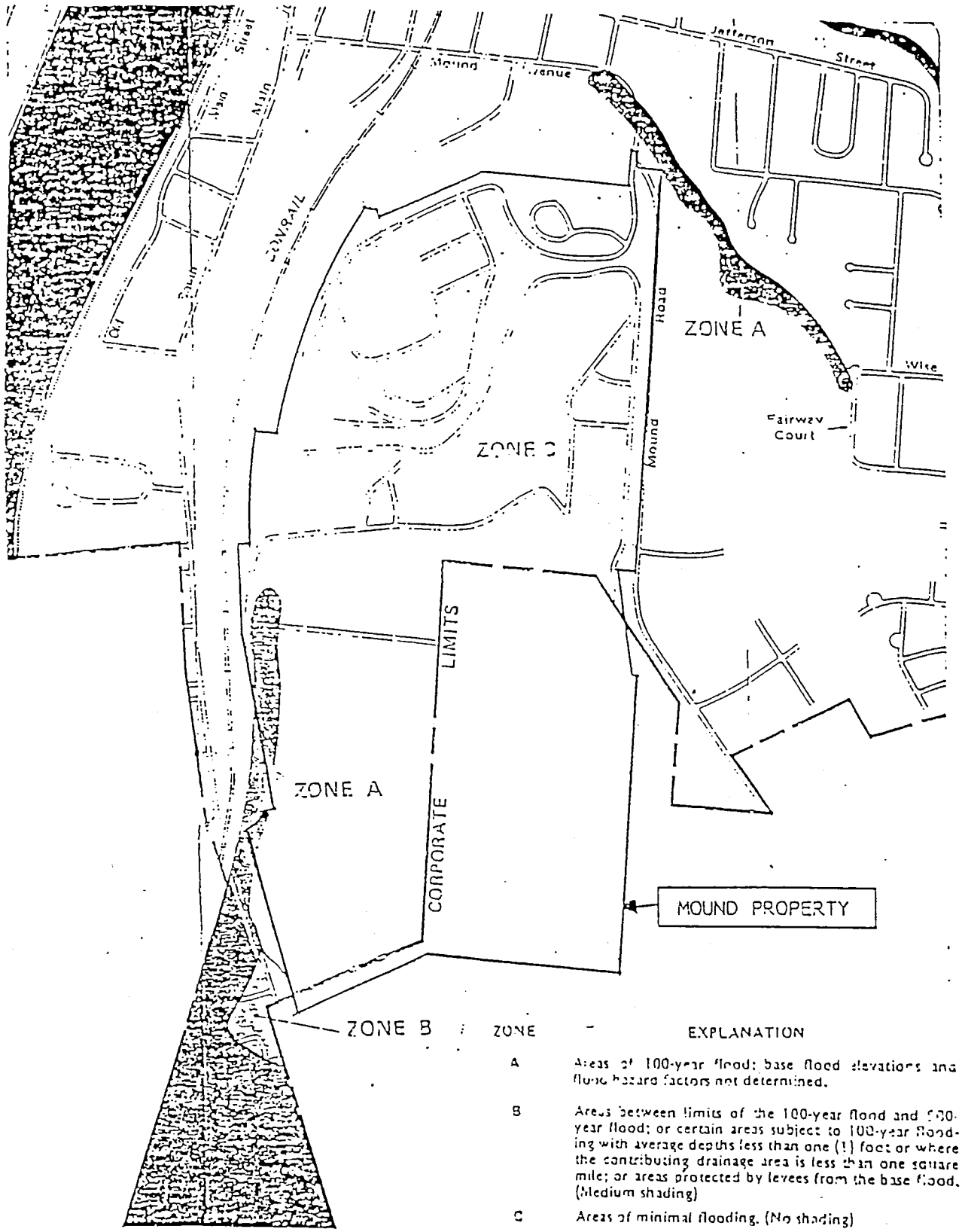


Figure 10 (Ref.66) Portion of Flood Insurance Rate Map showing Mound property

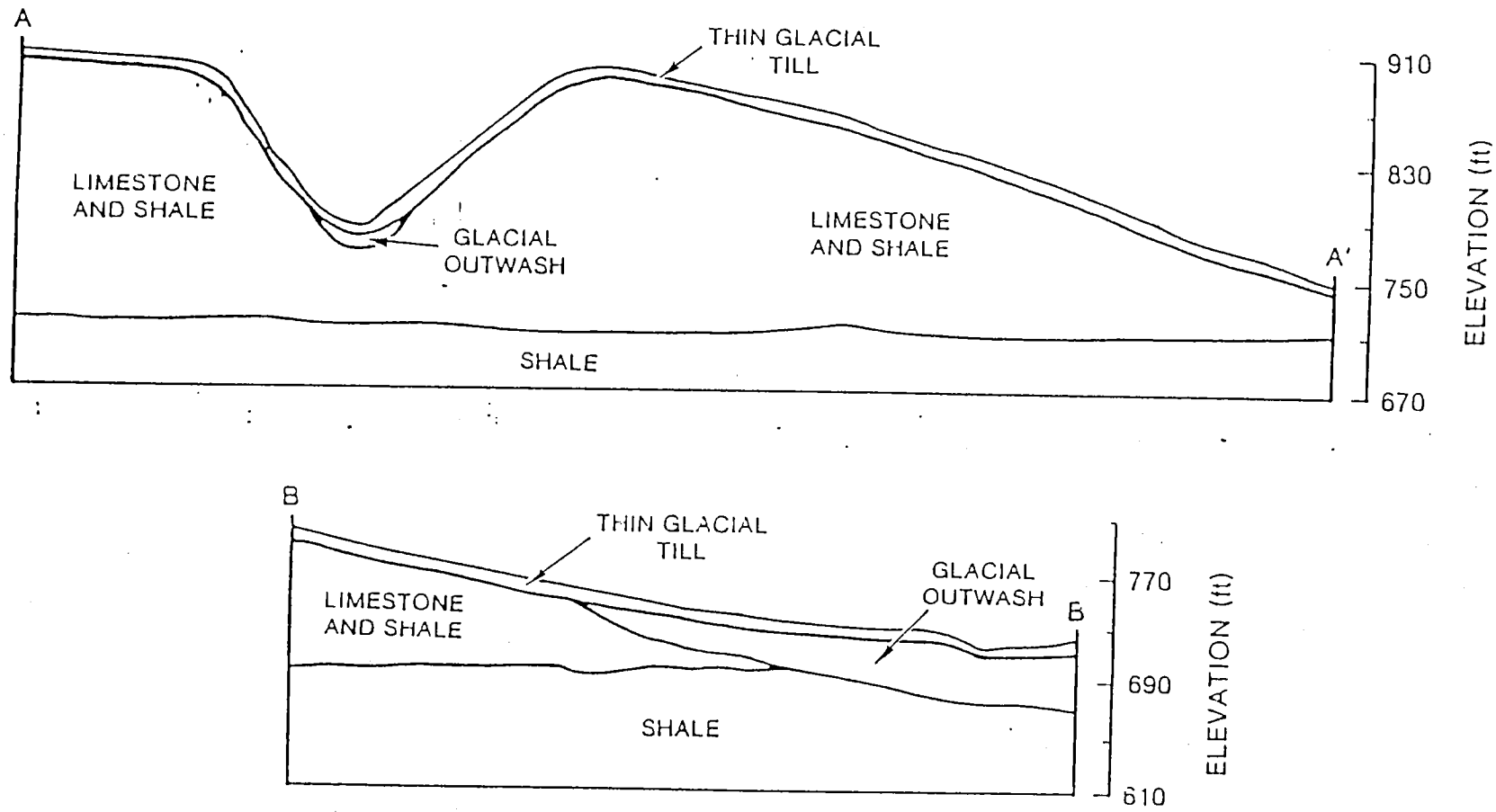


Figure 11a Generalized Geologic Sections through Mound (see Fig. 11b for location of geologic section lines).
(Ref.55)

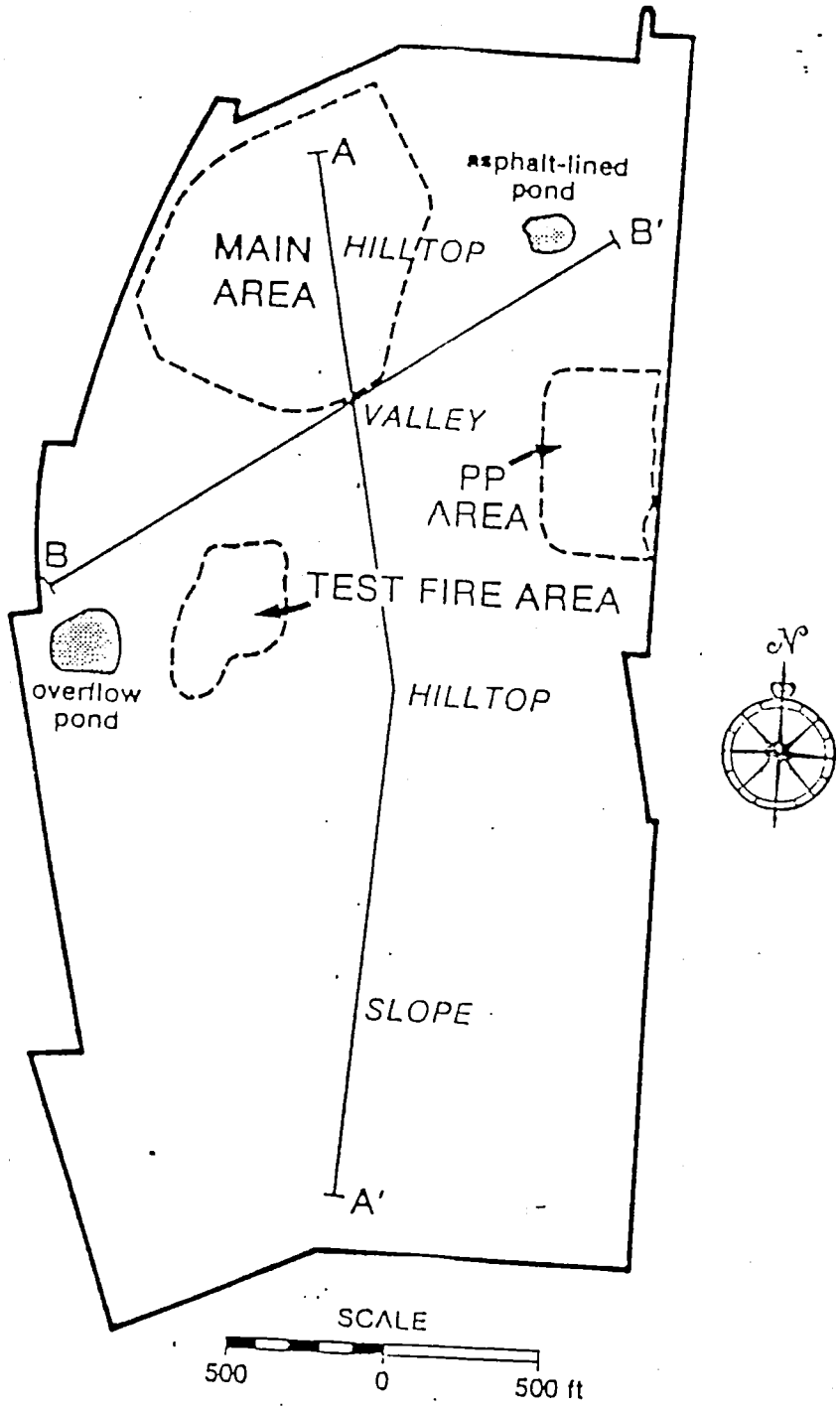


Figure 11b Mound Facility--Geologic Section Lines.
(Ref.55)

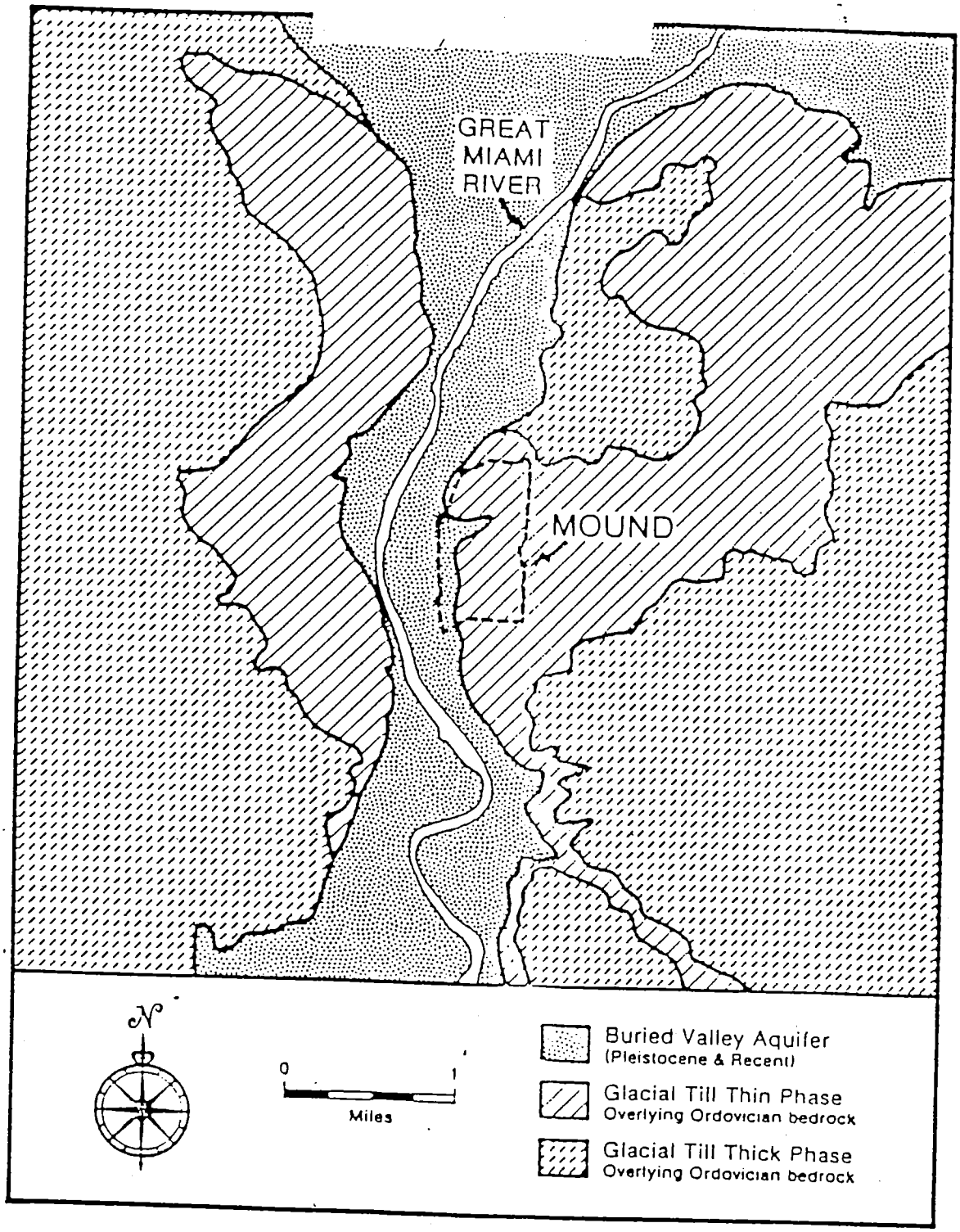


Figure 12 Mound Area Geology.
(Ref.55)

D. Groundwater

Groundwater occurs primarily in two strata in the DOE facility: in Paleozoic limestones and within the Buried Valley Aquifer (BVA). The thin veneer of glacial till at the surface acts as an aquiclude.

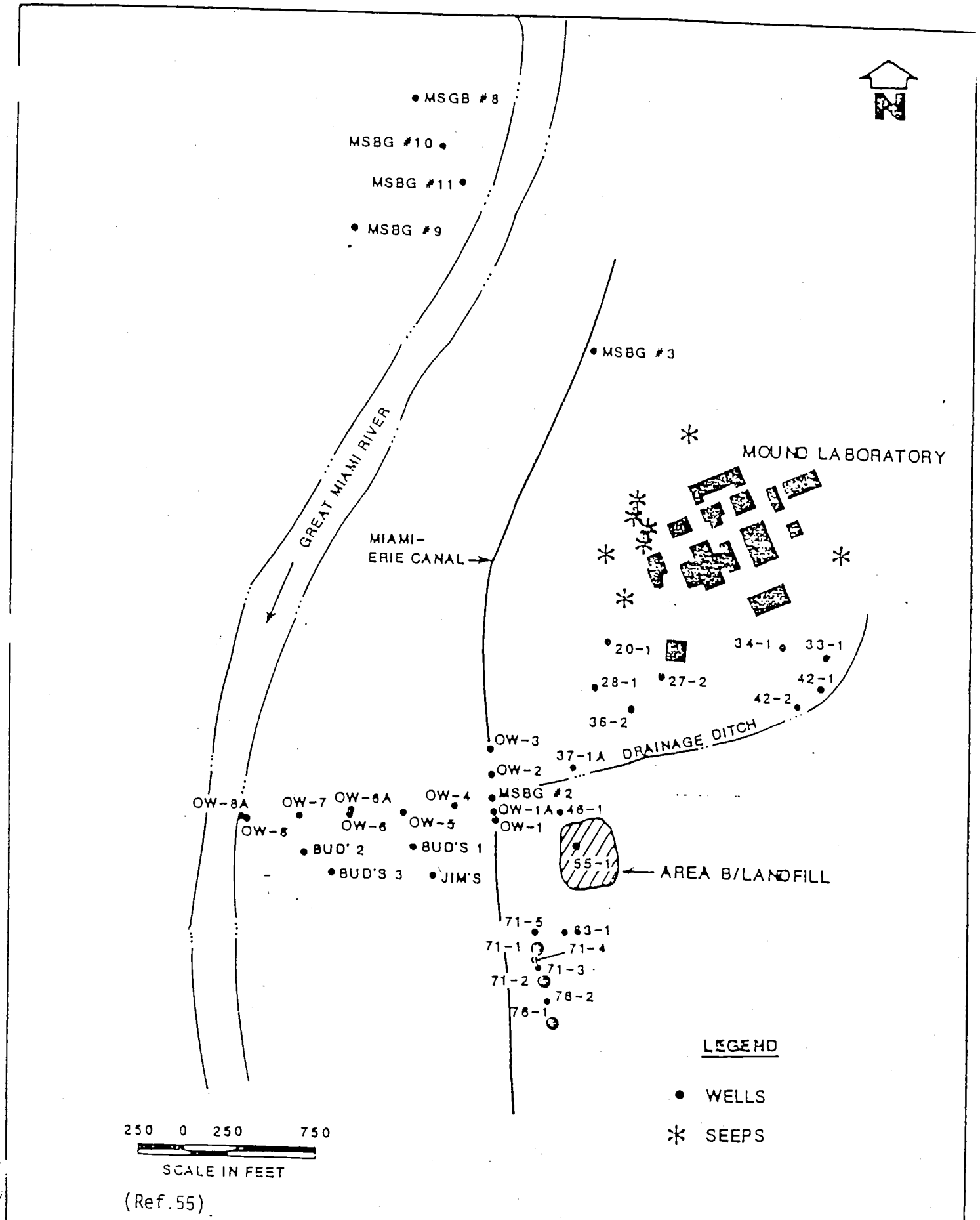
Permeabilities in the glacial deposits range from 0.0001 to 0.07 gpd/ft^2 (Ref. 23). Higher permeabilities are recorded in the upper weathered portions of limestone bedrock. Here permeabilities range from 1 to 10 gpd/ft^2. At depths greater than 20 feet, permeabilities range from 0.0 to 0.2 gpd/ft^2. Well yields in the limestone range from 5 to 10 gpd (if they are successful at all) (Ref. 55). The relatively tight surficial strata are responsible for the presence of numerous seeps located around and down slope from the Main Hill (Fig. 13).

The major wells in the vicinity of the facility (including three on-site supply wells, (71-1, 71-2, and 76-1 in Fig. 13) tap the BVA. Yields in those wells range from 450 to 550 gpm (Ref. 55). Permeabilities range from 1000 to 2000 gpd/ft^2 (Ref. 23). Levels in the BVA are controlled by the normal elevation of the Great Miami River (682 ft MSL) and by pumping of municipal and facility wells. Because of the variability of stratigraphic conditions throughout the site and the relatively low new surface permeabilities, water levels in monitoring wells do not represent static groundwater conditions (Ref. 23). Consequently, no detailed maps of groundwater elevations are available for the site. Assuming that the water level in the BVA corresponds to those in the Great Miami River, the depth to groundwater for the portions of the facility underlain by the BVA ranges up to 60 feet. The depths would probably be influenced by pumpage from nearby wells and local stratigraphic conditions (pinchout).

The facility maintains a network of on-site monitoring wells. Private and municipal wells are also monitored routinely to assess the potential for off-site migration of radioactive constituents (Fig. 13). New wells have also been recently installed by Weston as part of DOE's Comprehensive Environmental Assessment and Response Program (CEARP).

Water quality in the BVA generally meets national primary drinking water standards. Secondary standards are generally not met due to TDS in excess of 500 mg/l.

Tritium contamination does exist in the BVA, the result of systematic releases of sump waste liquids to the Great Miami River by way of the Drainage Ditch and the Miami-



(Ref.55)

FIGURE 13
HYDROGEOLOGIC MONITORING STATIONS

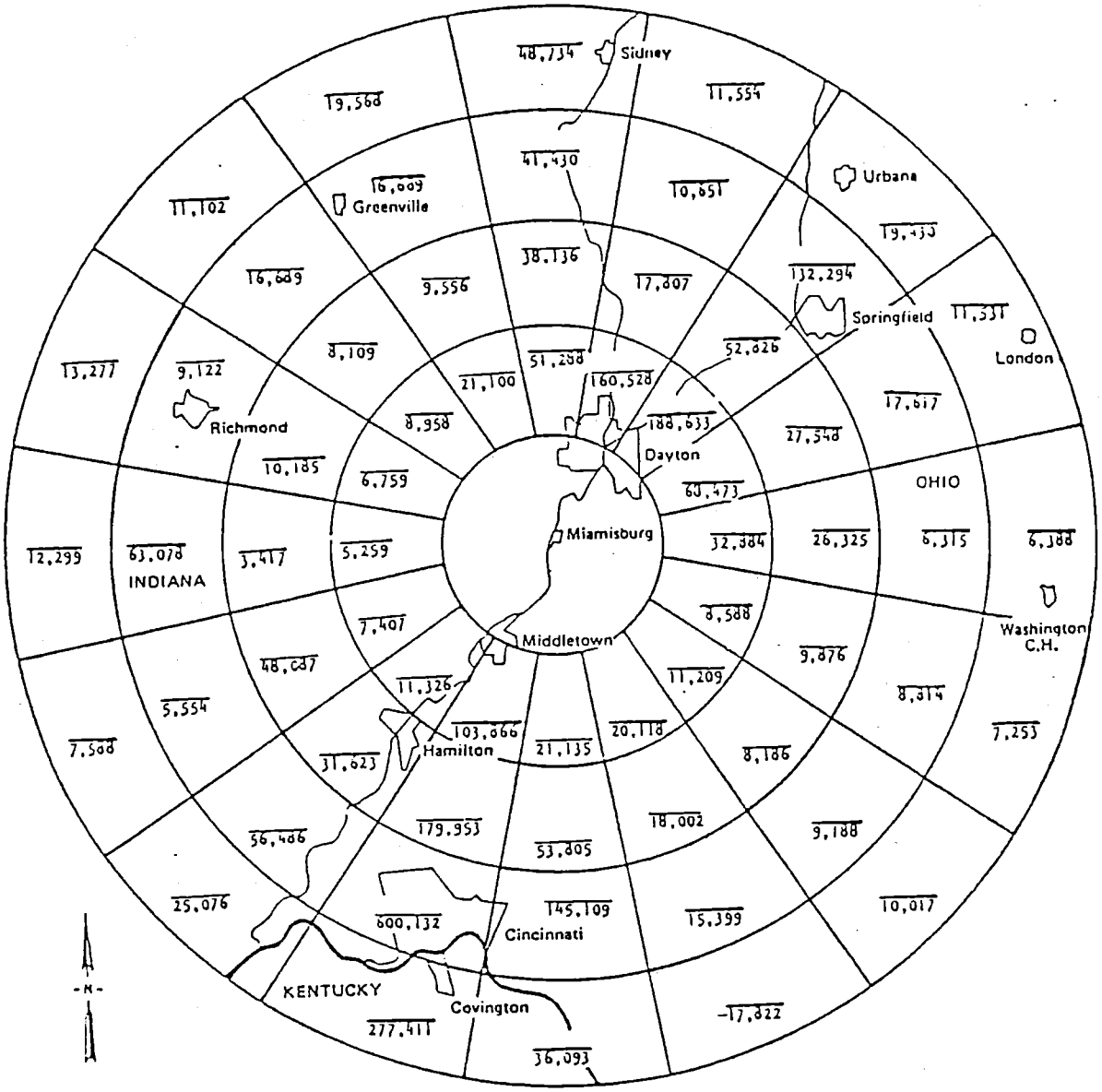
Erie Canal (Ref. 55). These activities occurred up until 1970. At that time, the facility initiated a remedial pumping program in order to limit trutium concentrations to 20 nCi/l. Tritium levels in surface seeps routinely exhibit tritium levels in the range of 100s of nCi/l.

E. Receptor Information

The DOE Mound facility is located primarily within the city limits of Miamisburg, Ohio, in Montgomery County. The 1980 census population for Miamisburg was 15,300 and for Montgomery County was 199,540 (Ref. 55, p. II-4). Projected populations for sectors within various distances to the site are listed in Fig. 14 (Ref. 92).

The site is surrounded by residential development and agricultural land in nearby uplands and commercial and industrial uses in lowland areas to the west. The Mound Golf Course and Miamisburg Mound State Memorial Park are located due east of the facility. A municipal swimming pool is located down the hill and approximately 500 feet from the northeast boundary of the facility.

The Great Miami River is located approximately 1500 feet to the west of the facility. It is used primarily for boating and sport fishing.



Cumulative Population Totals
1980 Population 0 - 50 Miles

0-10	398,259
0-20	1,125,790
0-30	1,669,231
0-40	2,823,798
0-50	3,358,941

FIGURE14 - Projected 1980 population within 50 miles of Mound.

(Ref.92)

IV. RELEASE PATHWAYS

A. Soil/Groundwater

Soils at the Mound facility are comprised of fine-grained glacial till materials and thin-bedded limestones and slates. Near-surface soil permeabilities range from 0.2 to 2.0 inches per hour. The uppermost groundwater occurs within the Buried Valley Aquifer which ranges up to 60 feet below the ground surface at the DOE facility. Because of the variability of stratigraphic conditions throughout the site and the relatively low near-surface permeabilities, a potential for release of hazardous constituents to soil and groundwater exists at the DOE facility. Releases were observed and a moderate to high potential for release to soil and groundwater was documented at the following SWMUs:

- Past Landfill (SWMU LF-2)
- Dredged Material Disposal Area (SWMU LF-4)
- South Property Dump (SWMU LF-5)
- Retention Basins (SWMU SI-1)
- Overflow Pond (SWMU SI-2)
- Asphalt-Lined Pond (SWMU SI-3)
- Building 1 Leach Pit (SWMU SI-4)
- Building 27 Leach Pit (SWMU SI-5)
- Hillside Catch Basin (SWMU SI-6)
- Building E Solvent Storage Area (SWMU CS-2)
- Waste Oil Drumfield (SWMU CS-6)
- Old Firing Range Drum Storage Area (SWMU CS-10)
- Cooling Tower Drum Storage Area (SWMU CS-16)
- WD Building Drum Staging Area (SWMU CS-18)
- Waste Solvent Incinerator (SWMU IN-3)
- Waste Solvent Incinerator Scrubber (SWMU AP-10)
- Trash Burner (SWMU OB-1)
- Thermal Treatment Unit (SWMU OB-2)
- Pyrotechnic Waste Disposal Area (SWMU OB-8)
- Alpha Wastewater Influent Tanks (SWMU WD-1)
- Sludge Drying Beds (SWMU SD-9)
- Underground Sewer Lines (SWMU SD-10)
- Plant Drainage Ditch (SWMU MI-1)
- Waste Disposal Pipeline (SWMU MI-2)
- Oil Burn Structure (SWMU MI-3)
- Fire Fighting Training Facility (SWMU MI-5)

- Lithium Carbonate Disposal Area (SWMU MI-5)
- Chromium Trench (SWMU MI-7)
- Acid Leach Field (SWMU MI-11)
- Monitoring Well 34-1 (SWMU MI-13)

Several Other Areas of Concern also exist at the facility which have been the site of past releases of radioactive contaminants to the soil and/or groundwater. It is not known whether hazardous constituents are present in the disposed materials in the subsurface media in these areas. A description of the Other Areas of Concern is provided in Section V.

B. Surface Water

The only natural water course on the Mound facility is an east to west-flowing stream or drainage ditch. This ditch, referred to as the Plant Drainage Ditch (SWMU MI-1) in this report, separates the facility into the Main Hill (north) and SM Hill (south) and directs stormwater runoff from both areas to off-site surface water. Runoff from the Main Hill discharges via the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2) to the Miami-Erie Canal and the Great Miami River. Runoff from the SM Hill is directed to the Asphalt-Lined Pond (SWMU SI-3) before discharging into the Plant Drainage Ditch.

The presence of documented spills, lack of secondary containment or runoff control structures, and proximity of spill areas to the Plant Drainage Ditch poses a potential for release of hazardous constituents to surface water from several SWMUs. Releases were observed and a moderate to high potential for release to surface water was documented at the following SWMUs:

- Dredged Material Disposal Area (SWMU LF-4)
- Retention Basins (SWMU SI-1)
- Overflow Pond (SWMU SI-2)
- Asphalt-Lined Pond (SWMU SI-3)
- Building 1 Leach Pit (SWMU SI-4)
- Building 27 Leach Pit (SWMU SI-5)
- Hillside Side Catch Basin (SWMU SI-6)
- Old Firing Range Drum Storage Area (SWMU CS-10)
- Empty Drum Storage Area (SWMU CS-14)
- Cooling Tower Drum Storage Area (SWMU CS-16)
- WD Building Drum Staging Area (SWMU CS-18)

- Waste Solvent Incinerator (SWMU IN-3)
- Waste Solvent Incinerator Scrubber (SWMU AP-10)
- Equalization Basins (SWMU SD-4)
- Aeration Basins (SWMU SD-5)
- Clarifiers (SWMU SD-6)

The potential for release to surface water due to inundation by flooding is low. Only a small portion of the Lined Landfill (SWMU LF-1) and the Overflow Pond (SWMU SI-2) is subject to 100-year flood inundation from the Great Miami River.

Discharges to the Great Miami River from the Sanitary Wastewater Treatment System (SWMUs SD-1 through SD-11) and the WD Building Wastewater Treatment System (SWMUs WD-1 through WD-3) are regulated by an NPDES permit.

C. Air

Releases to the air are likely to be small but may occur at the facility from the Retort (SWMU OB-3), Grit Chamber (SWMU SD-1), Equalization Basins (SWMU SD-4), and Aeration Basins (SWMU SD-5). The Retort discharges untreated emissions to the air which are generated during waste detonation. Volatile or evaporative emissions from the open-topped Equalization Basins and Aeration Basins are enhanced by the mixing activity in the impoundments. Air emissions from the WD Filter Bank (SWMU AP-5), Ventilation Hoods (SWMU AP-11) are regulated by the Regional Air Pollution Control Authority. The prevailing wind direction is out of the southwest. Therefore, likely receptors of air releases are the residents located northeast of the facility.

D. Subsurface Gas

A potential for generation of subsurface gas exists near several SWMUs which also exhibit a high potential for release to soil and groundwater. The following SWMUs have a potential for generation of subsurface gas:

- Past Landfill (SWMU LF-2)
- South Property Dump (SWMU LF-5)
- Building 1 Leach Pit (SWMU SI-4)
- Building 27 Leach Pit (SWMU SI-5)
- Hillside Catch Basin (SWMU SI-6)
- Building E Solvent Storage Shed (SWMU CS-2)
- Waste Oil Drumfield (SWMU CS-6)
- Old Firing Range Drum Storage Area (SWMU CS-10)

- WD Building Drum Staging Area (SWMU CS-18)
- Waste Solvent Incinerator (SWMU IN-3)
- Waste Solvent Incinerator Scrubber (SWMU AP-10)
- Trash Burner (SWMU OB-1)
- Pyrotechnic Waste Disposal Area (SWMU OB-8)
- Sludge Drying Beds (SWMU SD-9)
- Underground Sewer Lines (SWMU SD-10)
- Plant Drainage Ditch (SWMU MI-1)
- Oil Burn Structure (SWMU MI-3)
- Monitoring Well 34-1 (SWMU MI-13)

The potential for gas generation exists since wastes at these SWMUs are disposed directly on the ground surface where there are no natural or engineered liners.

V. SOLID WASTE MANAGEMENT UNITS

Unit No.: LF-1

Unit Name: Lined Landfill

Unit Description: The Lined Landfill is located in the southwest corner of the facility adjacent to the Overflow Pond (SWMU SI-2). It was constructed to provide containment of solid wastes formerly disposed in the Past Landfill (SWMU LF-2). The Lined Landfill is lined with five feet of clay and contains 100,000 cubic yards of waste materials excavated from the Past Landfill (Ref. 69, p. 2-2). The Lined Landfill is overlain with three feet of clay and two to five feet of seeded topsoil (Ref. 81, p. 4-28). The Part B permit application reports 10 feet of underlying clay (Ref. 66, p. 1-21). The Lined Landfill was constructed with a leachate collection system consisting of collection drains above the bottom of the landfill. These drains are located approximately eight feet above the bottom of the landfill to allow the landfill liquid to drain into the adjacent Overflow Pond. Facility representatives notified USEPA on June 9, 1981 regarding the presence of the unit as required by CERCLA (Ref. 69, p. 2-2). This landfill was reportedly included in the facility's Part A permit application (Ref. 50) but a copy of this revision was not available during the VSI.

Date of Start-up: 1978.

Date of Closure: The landfill was filled and closed in 1978.

Wastes Managed: The Lined Landfill consists of 100,000 cubic yards of trash, laboratory chemicals (Ref. 48), solvents, paint, photo-processing solutions, and plating bath solutions (Ref. 50). The volume of hazardous waste is approximately 1,000 ft^3 (Ref. 69, p. 2-2).

Release Controls: The Lined Landfill was constructed with a leachate collection and drainage system above the bottom of the landfill. The drain pipes are located approximately eight feet above the bottom of the landfill to allow landfill liquid to drain into the adjacent Overflow Pond.

The wastes from the Past Landfill were saturated when they were excavated and liquid drained from the Lined Landfill into the Overflow Pond for six months (Ref. 81, p. 4-31). The landfill is underlain with at least five feet of clay and covered with three feet of clay and two feet of vegetated topsoil. The entire unit is graded so that runoff is collected in the Overflow Pond. Clay berms prevent runon from contacting the top of the landfill and direct it to the Overflow Pond.

History of Releases: The excavated wastes were saturated during removal from the Past Landfill in 1978 and liquid drained into the Overflow Pond for six months (Ref. 81, p. 4-31). No leachate has been observed discharging from the Lined Landfill in the past 14 years (Ref. 66, p. 1-21). There were no releases observed from the landfill during the VSI.

Conclusions:

Soil/Groundwater: There is a moderate to high potential for release to soil and groundwater from the Lined Landfill due to the location of the leachate drainage system. The drainage pipes are located eight feet above the bottom of the landfill and it is possible that liquid has collected in the fill to the height of the drains. There is no collection system at the bottom of the landfill to prevent this liquid from seeping into the clay liner and underlying soil.

Surface Water: The potential for release to surface water is high since collected leachate is discharged without chemical treatment to the Miami-Erie Canal and the Great Miami River. The potential for leached liquids to reach surface water via groundwater interflow is low since the landfill is more than 1500 feet from the Great Miami River.

Air: The potential for release to the air from the landfill is low since the wastes are

completely covered with clay and vegetated topsoil. There are no vents in the fill to allow discharge of landfill gas to the atmosphere.

Subsurface Gas: There is a moderate potential for generation of subsurface gas since trash and volatile wastes were disposed in the unit. There are no vents in the fill to allow gas to migrate to the surface of the landfill.

Unit No.: LF-2

Unit Name: Past Landfill

Unit Description: The Past Landfill was located adjacent to the Overflow Pond (SWMU SI-2) and beneath the Lined Landfill (SWMU LF-1) in the southwestern corner of the facility property (Ref. 66, p. 1-21). Wastes were burned at the time of landfilling at this site (Ref. 69, p. 2-2). The landfill was taken out of service in 1972 and in 1978, approximately 100,000 cubic yards of the buried wastes were excavated and placed in a new Lined Landfill (Ref. 81). The Overflow Pond was built over the northern portion of the landfill in 1978 (Ref. 81, p. 4-28). Wastes from the portion of Past Landfill beneath the Overflow Pond and outside the boundary of the Lined Landfill at its southwest corner were not excavated (Ref. 81, p. 4-31). Mound officials believe it is not likely that large quantities of hazardous wastes exist in this location (Ref. 69, p. 2-2). The total waste volume remaining in this area is approximately 16,000 yd^3 (Ref. 81, p. 4-31). Mound notified the USEPA on June 9, 1981 regarding the presence of the unit as required by CERCLA (Ref. 69, p. 2-2).

Date of Start-up: 1948.

Date of Closure: Wastes were disposed in the Past Landfill until 1972 and were exhumed in 1978 (Refs. 50, 69, 81).

Wastes Managed: The exhumed portion of the Past Landfill reportedly contained trash and laboratory chemicals (Ref. 48), including solvents, paint, photo-processing solutions, and plating bath solutions (Ref. 50). The volume of hazardous waste was approximately 1,000 ft^3 (Ref. 69, p. 2-2). The landfill is also located within the 100-year floodplain of the Great Miami River (Ref. 93).

The portion of the Past Landfill located near the southwest corner of the Lined Landfill still contains wood and metal debris including 5,000 crushed drums formerly containing thorium wastes (Ref. 81,

p. 4-31).

Although the types of waste materials left beneath the Overflow Pond are not known, Mound officials believe it is not likely that large quantities of hazardous waste exist in this location (Ref. 69, p. 2-2).

Release Controls: The extent to which release controls were employed at the Past Landfill while it was in operation is not known. Most of the wastes were exhumed and are now encapsulated in the Lined Landfill. The Lined Landfill is completely surrounded with a clay liner, has a leachate collection system, and runon and runoff controls. The wastes left beneath the Overflow Pond and near the southwest corner of the Lined Landfill remain covered but have no other release controls.

History of Releases: A portion of the Past Landfill lies within the 100-year floodplain of the Great Miami River (Ref. 93). There were no releases of wastes from the Past Landfill noted in the file information or observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is moderate to high since there is documentation of hazardous wastes remaining in the unit without surface or subsurface release controls. Subsequently, infiltrating rainfall or wastewater in the Overflow Pond may seep through the wastes while carrying dissolved constituents into underlying soil and groundwater.

Surface Water: The potential for release to surface water is low since the wastes remaining in the landfill are buried. The potential for release to the surface water through groundwater interflow is low since the Great Miami River is greater than 1500 feet from the unit. The release potential

due to surface water inundation is moderate since a portion of the landfill is located within the 100-year floodplain of the Great Miami River.

Air: Since the wastes remaining in the Past Landfill were covered with soil, the potential for release to the air is low.

Subsurface Gas: There is a moderate potential for generation of subsurface gas if volatile wastes remain in the landfill.

Unit No.:	LF-3
Unit Name:	Spoils Disposal Area
Unit Description:	The Spoils Disposal Area is located just south of the Lined Landfill (SWMU LF-1) near the southwest corner of the facility. Its dimensions are approximately 300 feet by 300 feet and 10 feet deep (Ref. 84). The unit is composed of three cells with a total capacity of 350,000 cubic yards (Ref. 55, p. V-10). Wastes are dumped onto the landfill surface and graded.
Date of Start-up:	1985 (Ref. 55).
Date of Closure:	The Spoils Disposal Area is still active.
Wastes Managed:	The materials disposed in the unit is limited to uncontaminated soil and concrete from construction areas at the DOE-Mound facility. Facility representatives indicated there is no reason to suspect the presence of hazardous constituents in this unit (Ref. 84). There is no waste analysis available.
Release Controls:	A ditch has been constructed around the Spoils Disposal Area to prevent rainfall runon from contacting the disposed materials. The unit is graded slightly to the west with no cover or vegetation (Ref. 84). There are no other release controls associated with this unit.
History of Releases:	There were no releases reported in the file information or observed during the VSI. The disposal area is located within the 100-year floodplain of the Great Miami River (Ref. 93).
Conclusions:	The potential for release to soil, groundwater, surface water, air, and generation of subsurface gas is low since no known hazardous constituents are disposed in the landfill.

Unit No.: LF-4

Unit Name: Hillside Disposal Area

Unit Description: This unit is located near the center of the facility on a hillside slope west of Building 38 (Ref. 55). It has been used for disposal of construction and building debris, which have been "bulldozed over the hillside in a random, uncompacted fashion" (Ref. 55, p. V-27). The site encompasses four acres and a disposal volume exceeding 100,000 cubic yards. Continued disposal operations have resulted in spoil pile instability and excessive erosion (Ref. 55).

Date of Start-up: 1950s (Ref. 55, p. V-27).

Date of Closure: Early 1980s (Ref. 73, p. 3-49).

Wastes Managed: The disposal area contains construction debris, plumbing fixtures, roofing materials (Ref. 55), other chemical contaminants (Ref. 73, p. 3-49), and radioactive dredged material from the Drainage Ditch (Ref. 84). Asbestos materials may also be disposed in this unit (Ref. 73).

Release Controls: The Hillside Catch Basin (SWMU SI-6) at the toe of the slope is intended to collect runoff from the Hillside Disposal Area. The basin allows the silt to settle before the runoff enters the Plant Drainage Ditch (SWMU MI-1) further down the slope (Ref. 84). The surface of the disposal area was observed to be graded and vegetated during the VSI. No other release controls were observed.

History of Releases: Landfill instability and excessive erosion have been documented at the landfill in the past (Ref. 55). A liquid seep observed at the toe of the fill was ponding in the Hillside Catch Basin. There were no seeps noted outside the confines of the catch basin (Ref. 84). No other releases were observed during the VSI.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is moderate to high. This is because there is no engineered liner to prevent infiltration of landfill liquids into

the native subsurface materials.

Surface Water: The potential for release to surface water is moderate to high since runoff from the unit is discharged to the Miami-Erie Canal via the Plant Drainage Ditch. The release potential may be slightly reduced since suspended waste constituents are removed in the Hillside Catch Basin and Retention Ponds prior to discharge to the river.

Air: The potential for release to the air is low since the wastes are covered with vegetation and not subject to dispersion by the wind.

Subsurface Gas: The potential for generation of subsurface gas is moderate to high since waste material was disposed directly on the ground surface without construction of an engineered liner.

Unit No.:	LF-5
Unit Name:	South Property Dump
Unit Description:	The South Property Dump is located near the southwest corner of the undeveloped southern DOE property. The site is approximately 500 feet north of Benner Road, along the facility's southern property boundary. Before the southern property was purchased by DOE, this area was used for disposal of trash by local residents. The exact dimensions of the area are not known but from observations of the area made during the VSI, it appears to have covered less than an acre. Wastes were disposed without placement of cover material on the ground surface and were removed after the property was purchased by DOE. The total volume of wastes disposed is not known. An aerial photograph of the area reveals a private residence was formerly located between Benner Road and the South Property Dump (Ref. 84).
Date of Start-Up:	Unknown.
Date of Closure:	Most of the trash was removed when the Mound facility purchased the property in 1981. Some waste material still remains at the site (Ref. 84).
Wastes Managed:	The South Property Dump formerly contained trash, tires, other household debris (Ref. 84). It is not known whether hazardous constituents were disposed in this area. No analysis of the waste was available.
Release Controls:	No release controls were noted in the file material or observed during the VSI. Most of the wastes had been removed from the area by DOE when the property was purchased (Ref. 84).
History of Releases:	During the VSI, it was noted that most of the wastes in the South Property Dump had been removed from the site. The area was characterized by a lack of vegetation in some locations. Dark stains on the soil were observed near the assumed eastern edge of the disposal area (Ref. 84).

Conclusions:	Soil/Groundwater:	Soil stains were observed on the soil in this area; however, since the exact nature of the wastes disposed in the area are not known, the potential for release is indeterminate. If hazardous constituents are present in the soil residue, there would be a high potential for release to groundwater. This is because there is no landfill liner to prevent infiltration dissolved constituents to the water table.
	Surface Water:	The potential for release to surface water is low since the South Property Dump is more than 1500 feet away from the Great Miami River and above its 100-year floodplain.
	Air:	The potential for release to the air is low since the wastes have been removed from the site.
	Subsurface Gas:	There is a moderate potential for generation of subsurface gas if volatile hazardous constituents were present in the wastes that have seeped into the soil in this area.

Unit No.: SI-1

Unit Name: Retention Basins (3)

Unit Description: The Retention Basins are open-topped impoundments located just north of the Overflow Pond (SWMU SI-2) near the southwest corner of the DOE's northern property. On-site rainfall runoff and non-contact cooling water are diverted into the Retention Basins by way of the Plant Drainage Ditch (SWMU MI-1). The Retention Basins are separated by concrete walls and have earthen sides and bottoms (Ref. 84). The basins' function is to regulate the rate of discharge of facility stormwater to the Miami-Erie Canal and Great Miami River and to provide settling for suspended matter in the runoff (Ref. 55). Retention Basin effluent is discharged through a standpipe in the westernmost basin to the Great Miami River through NPDES Outfall 002 and the Miami-Erie Canal (Ref. 46). Excess runoff is diverted from the Retention Basins to the Overflow Pond (Ref. 84). Water from the Plant Drainage Ditch flows into the basin in the northernmost corner which discharges to the south pond and finally to the west basin where the effluent is discharged (Ref. 84). Dredged materials removed from the basins in the past were reportedly deposited in the Hillside Disposal Area (Ref. 55).

Date of Start-Up: Unknown.

Date of Closure: The Retention Basins are still active.

Wastes Managed: The basins receive approximately 410,000 gallons per day of single pass cooling water, cooling tower blowdown, and water softener backwash. Stormwater runoff is also directed into the Retention Basins via the Plant Drainage Ditch. The basins received wastewater containing radioactive particles as a result of the Waste Disposal Pipeline (SWMU MI-2) break in 1969. The wastewater or sludge in the basins has not been analyzed for hazardous constituents.

Release Controls: The liquid level in the basins is controlled by the standpipe in the west basin which discharges basin effluent to NPDES Outfall 002. The pipe maintains approximately two feet of freeboard on the

basins. Also, during times of excess rainfall or when the Plant Drainage Ditch effluent carries a high suspended solids load, the wastewater stream is diverted to the 5,000,000 gallon Overflow Pond for storage and clarification. In the event the Retention Basins fill to capacity, excess wastewater will discharge over a concrete spillway to NPDES Outfall 002.

History of Releases: There were no unintended releases reported from the basins in the file information or observed during the VSI. During the VSI, Drainage Ditch effluent was being diverted away from the Retention Basins to the Overflow Pond due to the heavy loading of suspended matter in the wastewater. The source of the suspended material was not determined but facility representatives indicated it may be the result of construction activity at various locations at the site.

Conclusions:

Soil/Groundwater: Since the Retention Basins are unlined there is a high potential for release of hazardous constituents, if they are present, to underlying soil and groundwater.

Surface Water: If hazardous constituents are present in the Retention Basin effluent, they would be discharged to the Great Miami River via NPDES Outfall 002 and the Miami-Erie Canal. The basins are not subject to inundation since they are located above the 100-year floodplain of the Great Miami River.

Air: There is a moderate to low potential for release to the air. The basins are open-topped but routinely receive relatively non-volatile liquid constituents. Air releases would occur in the event that a spill of volatile constituents were to be retained by the basins.

Subsurface Gas: The potential for generation of subsurface gas is low due to the relatively inert nature of the wastewater stored in the basins.

Unit No.: SI-2

Unit Name: Overflow Pond

Unit Description: The Overflow Pond is located near the southwestern corner of the Mound facility and contains excess stormwater run-off and cooling water blowdown from the Retention Basins (SWMU SI-1) to the north. The pond also receives rainfall runoff and leachate from the Lined Landfill (SWMU LF-1). Construction of the pond began when the wastes from the Past Landfill (SWMU LF-2) were excavated and placed into the Lined Landfill. A portion of those wastes were left in the Past Landfill and still remain below the Overflow Pond (Ref. 69, p. 2-2). The pond is built with earthen dikes and has a 5,000,000 gallon capacity. This volume will retain all facility effluents for five days in the event of a contaminant spill. Retention time in the pond allows settling of 95% of all silt (Ref. 23, p. 3-8). The Overflow Pond effluent is discharged through a standpipe located in the northwest corner of the pond from the facility to the Miami-Erie Canal and the Great Miami River through NPDES Outfall 002 at a rate of approximately 660,000 gallons per day (Ref. 32). The pond is lined with a minimum of three feet of compacted clay (Ref. 55, p. V-8). The dimensions of the Overflow Pond are approximately 300 feet on each side (Ref. 84).

Date of Start-Up: 1979.

Date of Closure: The Overflow Pond is still in operation.

Wastes Managed: The Overflow Pond receives stormwater runoff, cooling water blowdown, and water softener backwash through the Plant Drainage Ditch (SWMU MI-1) from various DOE-Mound process facilities. The pond also receives surface runoff and leachate from the Lined Landfill located south of the pond. Leachate drained into the pond for six months in 1978 when saturated wastes were first placed into the Lined Landfill but it has not been observed discharging into the Overflow Pond for the last 14 years (Ref. 66). Since the landfill contains hazardous waste, it is likely that hazardous constituents were present in the leachate. An analysis of pond wastewater or sludge for hazardous constituents has not been conducted.

Release Controls: Wastewater flows in and out of the Overflow Pond by gravity. The level of liquid is maintained at approximately 10 feet of freeboard by the level of the discharge pipe. The pond is underlain by three feet of compacted clay.

History of Releases: There were no unintended releases from the Overflow Pond reported in the file information or noted during the VSI. There was approximately 10 feet of freeboard on the pond during the VSI.

Conclusions:

Soil/Groundwater: There is a moderate to high potential for release of hazardous constituents in the pond liquid or sludge to underlying soil and groundwater. There is no leachate collection system to prevent liquids which have migrated through the clay liner from entering native soils.

Surface Water: There is a high potential for release of dissolved hazardous constituents to surface water since all wastewater is discharged to the Great Miami River. The Overflow Pond is not subject to surface water inundation since it is located above the river's 100-year floodplain.

Air: Although the pond is open-topped, the potential for release to air is low due to the relatively inert and dilute nature of the impounded wastewater.

Subsurface Gas: There is a moderate potential for volatile constituents in the sludge to generate subsurface gas beneath the Overflow Pond. Volatile constituents may be present in pond sludge as a result of the leachate discharge from the Lined Landfill.

Unit No.:	SI-3
Unit Name:	Asphalt-Lined Pond
Unit Description:	The Asphalt-Lined Pond is an open-topped impoundment located near Building 61 in the northeast corner of the Mound facility. Its dimensions are approximately 150 feet by 150 feet and 10 to 12 feet deep. Its capacity is 1.5 million gallons (Ref. 84). The pond receives non-contact cooling water and stormwater runoff from the hillside slope west of the SM Building (Ref. 55). The pond provides temporary storage, flow equalization, and retention time for removing suspended solids before discharging the effluent to the Retention Basins (SWMU SI-1) through the Plant Drainage Ditch (SWMU MI-1). Wastewater flows by gravity into and out of the pond. The pond bottom was dredged once in 1983 (Ref. 55).
Date of Start-up:	Late 1970s (Ref. 84).
Date of Closure:	The Asphalt-Lined Pond is still in service.
Wastes Managed:	The pond receives non-contact cooling water and runoff from the hillside slope west of the SM Building. The dredged material was found to contain low level radioactivity (Ref. 55). The wastewater or sludge has not been analyzed for hazardous constituents.
Release Controls:	The pond's sides and bottom are lined with a layer of asphalt. The thickness or permeability of this liner are not known. Cracks were noted in the exposed sides of the asphalt liner and vegetation was observed growing in the northern end of the pond during the VSI. Approximately five feet of freeboard is maintained by a gravity fed discharge outlet at the south end of the pond. A concrete spillway, also at the south end of the pond, allows emergency discharge of pond contents to the Plant Drainage Ditch (Ref. 84).
History of Releases:	There are no releases other than to the Plant Drainage Ditch reported in the file information or observed during the VSI. The integrity of the pond liner is not known; however, cracks in the sides and vegetation growing out of the bottom indicate the liner is not fully intact. In addition, desiccated silt residue was observed on the

concrete spillway. Facility representatives indicated the silt was deposited from runoff from the hillside and not as a result of a pond overflow (Ref. 84).

Conclusions:

Soil/Groundwater: If hazardous constituents are present in the runoff from the hillside slope, there is a high potential for release to the soil beneath the pond through cracks in the asphalt liner.

Surface Water: The Asphalt-Lined Pond is part of the Wastewater Treatment System permitted under NPDES, and discharges via the Plant Drainage Ditch and Retention Basins to the Great Miami River. The potential for a release to surface water is moderate since no treatment for removal of chemical constituents is provided at the pond or downstream units prior to discharge to the Miami-Erie Canal and Great Miami River. There is no potential for surface water inundation since the Asphalt-Lined Pond is located above the 100-year floodplain of the Great Miami River.

Air: Although the pond is open-topped, the potential for releases to the air is low due to the relatively inert and dilute nature of the impounded liquid.

Subsurface Gas: The potential for generation of subsurface gas is low due to the inert nature of the impounded liquid.

Unit No.:	SI-4
Unit Name:	Building 1 Leach Pit
Unit Description:	The Building 1 Leach Pit is an open-topped, inactive impoundment located west of Building 1 near the Plant Drainage Ditch (SWMU MI-1). The pit was formerly utilized for biodegradation of explosive constituents and evaporation of acetone in wastewater generated in Building 43. The Leach Pit is triangular with two sides approximately 75 feet long and one side approximately 50 feet long. Three pipes were observed in the pond during the VSI. One was formerly used to convey routine discharge from Building 43, another for overflow from the Building 43, and the third line from the Building 1 Sump and storm drains. The pit was formed by excavating approximately five feet into natural soil. The sides and bottom of the pit were not lined. Excess liquids are discharged to the Plant Drainage Ditch via a standpipe in the north end of the pit.
Date of Start-up:	Early 1960s (Ref. 81).
Date of Closure:	Wastewater discharge from Building 1 was discontinued in 1985 and soil in the Leach Pit was excavated (Ref. 84).
Wastes Managed:	The Leach Pit formerly received approximately 1000 gallons per year of wastewater containing dissolved explosives (ppm range) and approximately 4 m^3/yr of acetone (Ref. 23). The pit still receives stormwater runoff from Building 1. The soil removed from the Leach Pit was not analyzed for hazardous constituents.
Release Controls:	The Leach Pit is unlined and open-topped. The only release control feature is the gravity flow discharge line which prevents overtopping.
History of Releases:	The Leach Pit was designed to allow seepage of dissolved explosives into the underlying soil. Excess wastewater and runoff collected in the pit was discharged to NPDES Outfall 002 via the Plant Drainage Ditch and Retention Basins (SWMU SI-1). There were no reports of overtopping in the file information. The pit was empty and dry during the VSI.

Conclusions:	Soil/Groundwater:	Seepage of hazardous constituents into the soil and possibly groundwater has occurred in the past since dissolved explosives and acetone were discharged into this unlined impoundment. Ongoing releases of explosives and solvent to the soil cannot occur since the discharge line to the pit has been blocked. Ongoing releases could only occur if hazardous constituents are present in the stormwater runoff. The potential for past and ongoing releases to the groundwater is high since all contaminated soil beneath the pit to the water table was not removed.
	Surface Water:	The potential for ongoing releases to surface water is moderate to high if hazardous constituents remain in the soil in the pit. This is because excess runoff collected in the pit is discharged to the Great Miami River through the Plant Drainage Ditch and Retention Basins without treatment.
	Air:	The potential for release to the air is low since wastewater containing acetone is no longer discharged into the pit.
	Subsurface Gas:	There is a moderate potential for generation of subsurface gas since wastewater containing volatile constituents was discharged in the pit and allowed to seep into the soil.

Unit No.: SI-5

Unit Name: Building 27 Leach Pit

Unit Description: The Building 27 Leach Pit is an inactive, open-topped unit located just east of the Sanitary Wastewater Treatment System (SWMUs SD-1 through SD-10). The pit is approximately 30 feet on each side and three feet deep. Wastewater entered the pond through an underground pipe which extended from the Building 27 Sump (SWMU SU-3) to the center of the Leach Pit over a length of approximately 200 feet. The pit was and currently is unlined. It was intended for biodegradation of explosive constituents and for evaporation of acetone in wastewater from Building 27 (Ref. 84). During the VSI, vegetation was observed growing in the unlined pit.

Date of Start-up: The exact date of start-up is not known but facility representatives estimate it may have been during the early 1960s (Ref. 84).

Date of Closure: The pit was taken out of service in 1985.

Wastes Managed: The Leach Pit received wastewater containing acetone, ethanol, and explosive constituents. An analysis of the wastewater was not available.

Release Controls: The Leach Pit is open-topped and unlined to allow wastewater to infiltrate the soil. No release controls were reported in the file information or observed during the VSI.

History of Releases: The Leach Pit was intended to allow wastewater to infiltrate the soil beneath the unit. There were no overtopping releases noted in the file information. During the VSI, the pit was empty and dry and supported some vegetation.

Conclusions: Soil/Groundwater: Because the pit was unlined, past releases to the soil occurred whenever wastewater was discharged into the pit. There is no potential for ongoing releases since the pit is no longer in service. The soil in the pit has not been removed and, therefore there

is a high potential that acetone and ethanol in the wastewater have reached underlying groundwater.

Surface Water: The potential for release to surface water is moderate to high if hazardous constituents remain in the soil in the pit. Excess runoff collected in the pit is discharged to the Great Miami River via the Plant Drainage Ditch and Retention Basins without treatment.

Air: There is no potential for release to the air since the pit is no longer in service.

Subsurface Gas: There is a high potential for generation of subsurface gas since the pit was unlined and allowed volatile constituents to enter underlying soil.

Unit No.:	SI-6
Unit Name:	Hillside Catch Basin
Unit Description:	The Hillside Catch Basin is an open-topped, unlined impoundment located at the base of the Hillside Disposal Area (SWMU LF-4). The basin is approximately 40 feet by 20 feet and five feet deep. Its purpose is to collect potentially contaminated runoff from the disposal area and allow settlement of suspended particles. Runoff is then discharged from the basin through a standpipe to the Plant Drainage Ditch (SWMU MI-1) and Retention Basins (SWMU SI-1) to the Great Miami River via NPDES Outfall 002. The sides and bottom of the basin were observed to the partially vegetated during the VSI (Ref. 84).
Date of Start-up:	Unknown.
Date of Closure:	The basin is still active.
Wastes Managed:	The Hillside Catch Basin collects runoff from the Hillside Disposal Area which is potentially contaminated with radioactive materials. The runoff has not been analyzed for hazardous constituents.
Release Controls:	The runoff flows from the Catch Basin to the Plant Drainage Ditch by gravity through a standpipe in the basin. It is not known whether this standpipe is sized adequately to discharge all the water collected during a heavy rainstorm. The pond is unlined and open-topped and has no other release controls (Ref. 84).
History of Releases:	There were no releases from the Catch Basin noted in the file information. A small liquid seep was noted trickling into the basin during the VSI.
Conclusions:	<u>Soil/Groundwater</u>: The potential for release to soil and groundwater is high. The basin is unlined and collects runoff and seepage from the Hillside Disposal Area which may contain hazardous constituents.

Surface Water:	Water collected in the basin is discharged from the site through the Plant Drainage Ditch, Retention Basins and NPDES Outfall 002. There is a high potential that hazardous constituents present in the runoff will eventually reach the Great Miami River.
Air:	Due to the intermittent use of the basin and small wastewater volumes, the potential for release to the air is low.
Subsurface Gas:	There is a moderate potential for generation of subsurface gas because volatile constituents in the runoff would be allowed to infiltrate the subsurface soil.

Unit No.: CS-1

Unit Name: Scintillation Vial Storage Area

Unit Description: The Scintillation Vial Storage Area is located in Building E, Room 143 and consists of two metal drums filled with scintillation vials. The vials were closed plastic containers with approximately volumes of 40 to 250 ml. The metal containers are approximately 20 gallons each and have metal covers. The vials contain scintillation liquid composed of solvent and radioactive particles. When the metal containers are filled, they are transferred to the Radioactive/Mixed Waste Storage Area (SWMU CS-9) (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The unit is still in operation.

Wastes Managed: The scintillation liquid is composed of radioactive trimethylbenzene cocktail. The level of radioactivity is classified as low level (<50uCi/l) or high level (>50 uCi/l) (Ref. 84).

Release Controls: The vials are completely closed plastic containers which are placed in a covered metal drum. The drums are located inside Building E on a concrete floor slab. When the metal containers are filled with vials, they are brought to the Radioactive/ Mixed Waste Storage Area (Ref. 84). Air releases are discharged from the building through the Ventilation Hoods (SWMU AP-11).

History of Releases: There were no releases noted in the file information or observed during the VSI. The area was observed to be clean and there was no evidence of past spills. A slight solvent odor was detected (Ref. 84).

Conclusions: Soil/Groundwater: There is no potential for release to soil and groundwater since double containment is provided for the scintillation cocktail. The unit is located indoors and is underlain by a concrete floor further eliminating the potential for wastes to contact the soil. In

the event that a spill occurred, the volume of released material would be small and could be collected on the floor of the unit.

Surface Water: There is no potential for releases to surface water. The unit is located indoors over a concrete floor. In the event that material was released from the metal containers, the volume of such a spill would be small and could be recovered on the floor of the unit.

Air: There was a slight odor in the room during the VSI. The air releases are discharged to the atmosphere via the Ventilation Hoods in Room 143. The potential for large air releases is low due to the double containment offered by the unit and due to the small volumes of liquid stored in each container.

Subsurface Gas: There is no potential for generation of subsurface gas from this indoor, above-ground unit.

Unit No.:	CS-2
Unit Name:	Building E Solvent Storage Shed
Unit Description:	The Building E Solvent Storage Shed is a recently dismantled unit located on the south side of Building E. The shed was a metal-walled and roofed structure with a concrete floor approximately 12 feet on a side. It was used for temporary storage of waste solvents generated in Building E. Waste solvent was pumped from the building directly into 55-gallons drums inside the shed. Once a week, filled drums were picked up and transferred to the Hazardous Waste Storage Area (SWMU CS-7). Some of the solvent drums from this unit are being stored at the Building B Temporary Drum Storage Area (SWMU CS-15) (Ref. 84).
Date of Start-up:	Unknown.
Date of Closure:	The unit was taken out of service in April, 1988.
Wastes Managed:	The drums in the shed contained waste solvents used in Building E.
Release Controls:	The Solvent Storage Shed was a fully enclosed structure to prevent exposure of the drums to sunlight and precipitation. The concrete floor was sloped to a drain which routed spilled material to storm sewer and to the Plant Drainage Ditch (SWMU MI-1) (Ref. 84). During operation, the unit had no curbing or other structures to contain spills (Ref. 78, p. 3-58).
History of Releases:	During dismantling operations, contaminated soil around the floor drain was discovered. The soil was excavated to a depth of approximately 10 feet. The soil is to be analyzed for solvents before backfilling the hole. The facility representatives had no documentation of releases from the unit and did not know how long the drain leakage occurred (Ref. 84).
Conclusions:	<u>Soil/Groundwater</u>: A release of solvent to the soil underneath the shed was documented. The extent of the soil contamination has not been determined. There is a moderate potential

for past releases from the shed to reach groundwater since there are no release controls in the underlying soil. There is no potential for ongoing releases because the shed and wastes have been removed.

Surface Water: There is no potential for release to surface water because the shed has been dismantled and waste removed. The ongoing potential for release to surface water through groundwater interflow is low since the Great Miami River is located more than 1500 feet away. The site is also located above the river's 100-year floodplain. Past releases from the unit to the Plant Drainage Ditch occurred through the storm drain.

Air: There is no potential for releases to the air from this inactive unit.

Subsurface Gas: There is a moderate to high potential for generation of subsurface gas due to the loss of waste solvents to the storm drain and underlying soil.

Unit No.: CS-3

Unit Name: Building 28 Solvent Storage Area

Unit Description: This solvent storage area consists of two 55-gallon drums located on a concrete pad on the west side of Building 28. Waste solvent is pumped from inside the building to the drums automatically. Filled drums are transferred from this unit to the Hazardous Waste Storage Area (SWMU CS-7) (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The unit is still active.

Wastes Managed: The drums present in the storage area contained waste solvents and were marked "Flammable Liquid N.O.S" (Ref. 84).

Release Controls: The drums were covered with sealed lids and the lines discharging solvents into the drums were equipped with automatic shut-off devices. Two sides of the concrete pad were protected with a sheet metal barrier. There was no curbing or other controls to contain releases from the unit (Ref. 73, p. 3-58).

History of Releases: There were no releases noted in the file information or observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low due to the filling controls on the drums. In the event that a drum were tipped in this area, there would be a high potential for release since there are no secondary containment devices at this unit.

Surface Water: The potential for release to surface water is low due to the filling controls on the drums. In the event that a drum were tipped in this area, the potential for release

to surface water is moderate since there are no secondary containment structures at the unit.

Air: The drums in this unit are sealed shut and, therefore, the potential for releases to the air is low.

Subsurface Gas: There is no potential for generation of subsurface gas from this above-ground unit.

Unit No.: CS-4

Unit Name: DS Building Solvent Storage Shed

Unit Description: The DS Building Solvent Storage Shed is a fully enclosed structure used to house 55-gallon drums of waste solvent from the DS Building. The shed is located on the east side of the DS Building. The shed also contains product-grade solvent to be used in the building. The dimensions of the shed's concrete floor are approximately 10 feet by 10 feet with a 12-foot ceiling. Waste solvent is pumped from inside the building to the drums in the shed through an automatic discharge hose. Filled drums are transferred from the shed to the Hazardous Waste Storage Area (SWMU CS-7).

Date of Start-up: Unknown.

Date of Closure: The unit is still in operation.

Wastes Managed: The 55-gallon drums contain waste solvent (D001) used in the DS Building.

Release Controls: The shed is a fully enclosed structure which prevents exposure of the drums from sunlight and precipitation. The concrete floor of the shed is curbed and covered with a metal grate. The shed is equipped with a fan for ventilation. Automatic shut-off devices are part of the drum filling equipment. There is a sealed drain in the concrete floor which, according to facility representatives, has an unknown point of discharge (Ref. 84). Until the past year, the storage shed had no curbing or other diversionary structures to contain spills. It was also reported that a storm drain was located near the shed (Ref. 73, p. 3-58).

History of Releases: There were no releases reported in the file information or observed during the VSI. The reason for blocking the floor drain is not known.

Conclusions: Soil/Groundwater: The potential for releases to soil and groundwater is low due to the secondary containment offered by the concrete floor

and curbing in the shed. No past releases were reported; however, past releases may have occurred from the unit to adjacent soil when there were no secondary containment structures. No past releases were reported, however.

Surface Water: There is no present potential for release to surface water since floor drain has been sealed. Any released liquids would be collected in the curbed floor of the shed. No releases were reported; however, past releases to the Plant Drainage Ditch may have occurred through the now abandoned floor drain. No releases were reported, however.

Air: Since the drums in the solvent shed are sealed shut the potential for release to the air is low.

Subsurface Gas: The potential for generation of subsurface gas is low from this indoor, above-ground unit.

Unit No.: CS-5

Unit Name: Building B Solvent Storage Shed

Unit Description: The Building B Solvent Storage Shed is a fully enclosed structure located on the east side of Building B. It is used to store 55-gallon drums of waste solvent generated in Building B. The dimensions of the shed are approximately 200 feet by 10 feet with a 12-foot high ceiling. During the VSI, the shed was undergoing reconstruction and all drums were stored outside in the Building B Temporary Drum Storage Area (SWMU CS-15). Waste is normally pumped from inside the building to the drums in the shed through an automatic discharge hose. Filled drums are transferred to the Hazardous Waste Storage Area (SWMU CS-7).

Date of Start-up: Unknown.

Date of Closure: The shed is still in operation.

Wastes Managed: The shed houses drums designated for containing waste solvents (D001) (Ref. 84).

Release Controls: The shed is a fully enclosed structure which prevents exposure of the drums from sunlight and precipitation. The concrete floor is curbed and covered with a metal grate. Each of the discharge lines to the drums is equipped with an automatic shut-off device to prevent overfills. A drain present in the concrete floor formerly connected to the plant's storm sewer has been sealed. Until the past year, the storage shed had no curbing or other structures to contain spills (Ref. 73, p. 3-58).

History of Releases: There were no releases noted in the file information or observed during the VSI. Facility representatives were also not aware that any past releases had occurred from this unit (Ref. 84).

Conclusions: Soil/Groundwater: The potential for releases to soil and groundwater is low due to the secondary containment provided by the concrete floor and curbing in the shed. Past releases may

have occurred from the unit to adjacent soil when there were no secondary containment structures. No past releases were reported, however.

Surface Water: The potential for release to surface water is low since the floor drain has been sealed. There is a moderate to high potential for past releases, if they occurred, to be released to surface water since the floor drain was connected to the plant's storm sewer system.

Air: Since the drums in the solvent storage shed are sealed shut the potential for release to the air is low.

Subsurface Gas: The potential for generation of subsurface gas is low from this indoor, above-ground unit.

Unit No.: CS-6

Unit Name: Waste Oil Drumfield

Unit Description: The Waste Oil Drumfield is an inactive unit located approximately 250 yards southeast of the Open Burn Area (SWMU OB-1 through OB-8). The area was approximately 100 feet long, 50 feet wide and contained 193 drums. The 35-gallon drums were temporarily located outdoors on skids placed on bare soil. The drums contained waste oil, solvents and other chemicals from various on-site activities. They were stored at this location until the Hazardous Waste Storage Area (SWMU CS-7) was completed (Ref. 73, p. 3-73).

Date of Start-up: 1985 (Ref. 73).

Date of Closure: 1985(Ref. 84).

Wastes Managed: Drums at the south end of the area contained waste oil. The drums at the northern end contained plating shop waste, solvents, explosive/solvent waste, batteries, kitchen grease, herbicides, photographic solution, epoxy resins, lab chemicals, scintillation vials (<50 uCi/l) and other chemical wastes (Ref. 73, p. 3-73). One drum of ethylene glycol remained at the site during the VSI. A stain on the soil was reported in the southern end of the area (Ref. 73, p. 3-67). There was no evidence of releases observed during the VSI.

Release Controls: There were no release controls noted in the file information or observed during the VSI. Stormwater runoff from the unit probably flows westward toward the Overflow Pond (SWMU SI-2) (Ref. 96).

History of Releases: A soil stain was reported in the southern end of the area (Ref. 73, p. 3-67). There was no evidence of releases observed during the VSI.

Conclusions: <u>Soil/Groundwater</u>: There is a high potential that releases to the soil occurred from the Waste Drum Oil Field. Soil stains have been noted in the past in this area. There is no ongoing

potential for release from this unit since all wastes have been removed.

Surface Water: There is a low potential for release of contaminated runoff from this area to surface water. The potential for release to surface water is minimal since the Overflow Pond is more than 1500 feet from the unit and the affected spill area is relatively small.

Air: There is no potential for air releases since the unit is no longer active.

Subsurface Gas: There is a moderate potential for generation of subsurface gas since wastes stored in this area included volatile chemicals.

Unit No.: CS-8

Unit Name: Past Hazardous Waste Storage Area

Unit Description: The Past Hazardous Waste Storage Area is an inactive unit located east of the Fire Training Area. It was used for storage of combustible and flammable liquids and waste oils generated at the facility, prior to off-site shipment. Wastes were stored in 55-gallon drums (Ref. 41). The maximum storage capacity was 38,500 gallons if drums were stacked two-high (Ref. 37). The Past Hazardous Waste Storage Area was a 60 foot by 40 foot covered structure. Its concrete floor had four drum storage bays which were diked and sloped (Ref. 37). The diked areas were used for segregating incompatible wastes (Ref. 55, p. V-11). Three of the diked areas were approximately 40 feet by 13 feet with capacity for approximately seventy 55-gallon drums and adequate aisle space. The floor was sloped and the dike height ranged from 6 to 15 inches. The fourth diked area was approximately 24 feet by 9 feet and was used to hold defective containers and prepare waste containers for off-site shipment (Ref. 55, p. V-11). A closure plan was submitted on January 18, 1985 (Ref. 41). During closure, the roof was dismantled and the concrete broken up and disposed. The contaminated soil around the base of the facility was excavated, sampled, and analyzed for halogenated volatile organic compounds. Halogenated volatile organic compounds were not detected in the newly exposed soil. Ohio EPA approved the closure plan on August 8, 1985 (Ref. 65).

Date of Start-up: 1982.

Date of Closure: The Ohio EPA approved closure of the unit in August, 1985 (Ref. 65).

Wastes Managed: The Past Hazardous Waste Storage Area was used to store combustible and flammable liquids and waste oils (Ref. 37), solvent-containing wastes, ignitable wastes, plating wastes, photo processing wastes, polymeric wastes, and toxic wastes (Ref. 66, p. 4-3). EPA listed wastes included D001, D002, D004, D005, D006,

D007, D008, D009, D010, D011, F002, F003, F004, F005, F007, F008, F009, and U158 (Ref. 37).

Release Controls: The building had a concrete floor with four bays which were diked and sloped to collect spills of hazardous wastes. The separate diked areas were used to segregate incompatible wastes. Drums in the unit were covered with a roof to protect them from sunlight and precipitation (Ref. 55).

History of Releases: During closure, the concrete floor was broken up and disposed. Soil around the base of the facility was excavated, sampled, and analyzed for halogenated volatile organic compounds. The newly exposed soil contained no detectable levels of halogenated volatile organic constituents. During the VSI, the area was noted to be graded and vegetated. There was no evidence of past releases.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low since the unit and the underlying soil has been excavated. No remaining contaminants were detected following cleanup.

Surface Water: There is no potential for release to surface water since the unit has been dismantled and underlying soil removed.

Air: There is no potential for release to the air since the unit was dismantled and underlying soil excavated.

Subsurface Gas: There is no potential for generation of subsurface gas since the unit was dismantled and underlying soil excavated.

Unit No.: CS-10

Unit Name: Old Firing Range Drum Storage Area

Unit Description: The Old Firing Range Drum Storage Area is an inactive unit formerly located on the surface of the Hillside Disposal Area (SWMU LF-4). Drums containing hazardous wastes were stored outside on bare ground over approximately a 100 foot by 100 foot area. All drums stored in this area were transferred to the Hazardous Waste Storage Area (SWMU CS-7). No drums were seen in the area during the VSI.

Date of Start-up: Late 1960s.

Date of Closure: Early 1970s (Ref. 84).

Wastes Managed: The unit was used for temporary storage of chemical or radiological waste including spent solvents (Ref. 81, p. 4-32). Past photographs reveal 100 to 500 drums located in this area.

Release Controls: No release controls were noted in the file information or observed during the VSI. Wastes were stored in drums outdoors on bare soil without protection from sunlight or precipitation. Stormwater runoff is collected in the Hillside Catch Basin (SWMU SI-6).

History of Releases: There were no releases noted in the file information. During the VSI, the area was partially vegetated. No drums or evidence of past releases were observed. The storage area was located on the unlined Hillside Disposal Area and any releases would have seeped into the waste fill material.

Conclusions: Soil/Groundwater: It is not known whether releases occurred from this unit. If leaks or spills did occur, the potential for release to underlying soil and groundwater is moderate to high. This is because drums were placed over an unlined landfill which also has a moderate to high potential for release to the soil. The landfill has no engineered liner to

prevent infiltration of landfill liquids into the native subsurface materials. There is no potential for ongoing release from the storage area to the surface of the fill material since all drums have been removed.

Surface Water: The potential for release to surface water is moderate. If there were releases to the surface of the landfill, seepage of contaminants out of the fill to the Hillside Catch Basin may still be occurring. Contaminated surface runoff may also be collected in the basin and discharged to the Great Miami River via the Plant Drainage Ditch and Retention Basins. The release potential is minimized since the storage area is located more than 2000 feet from the Great Miami River and is above its 100-year floodplain.

Air: There is no potential for release to the air since all drums of waste have been transported to the Hazardous Waste Storage Area.

Subsurface Gas: If spills occurred from drums in this area, there is a moderate potential for generation of subsurface gas in the fill material and native soil. There is no engineered liner beneath the landfill.

Unit No.: CS-11

Unit Name: Drilling Mud Drum Storage Areas (3)

Unit Description: The Drilling Mud Drum Storage Areas are located near each of three groundwater monitoring wells in the southwest corner of northern property. These wells are just west of the Overflow Pond (SWMU SI-2) and Lined Landfill (SWMU F-1). There were approximately twelve 55-gallon drums filled with drilling muds at each of the storage areas. The drums were covered with sealed lids and stored on bare soil during the VSI. Following analysis, the muds will be disposed off-site (Ref. 84).

Date of Start-up: The drums have been stored in this area since the wells were drilled in the summer of 1987 (Ref. 84).

Date of Closure: The drums are still stored at this location. No additional drilling mud wastes generated at other facility locations are stored here.

Wastes Managed: The drums are filled with drilling muds containing barium. Barium is a drilling mud additive used in the construction of the monitoring wells. The concentration of barium is not known and the muds have not been analyzed for other hazardous constituents (Ref. 84).

Release Controls: The drums are located outdoors and rest on bare soil. The drums are closed with sealed lids. No secondary containment structures or other release controls were observed during the VSI.

History of Releases: There were no releases noted in the file information. The drums appeared to be in good condition and there were no releases observed during the VSI. Some of the drums were noted to be leaning on uneven ground.

Conclusions: Soil/Groundwater: There is a low to moderate potential for release to soil and groundwater. The drums appeared to be in good condition but the release potential is increased since they were placed outdoors on bare and uneven soil. Furthermore, there are no

secondary containment structures to contain spilled or leaked material from the drums.

Surface Water: The potential for releases to surface water is low to moderate since there are no secondary containment structures to prevent runoff of wastes in the event of a drum leak.

Air: The potential for release to the air is low. All drums are sealed shut and contain non-volatile drilling muds.

Subsurface Gas: There is a low potential for generation of subsurface gas due to the non-volatile nature of the drilling mud and because all drums are stored above-ground.

Unit No.: CS-12

Unit Name: Building 27 Solvent Storage Area

Unit Description: The Building 27 Solvent Storage Area is located outdoors on the south side of Building 27 near the Building 27 Sump (SWMU SU-3). It consists of three or four 55-gallon drums on a concrete pad. The drums receive wastewater generated in Building 27 formerly discharged into the sump and to the Building 27 Leach Pit (SWMU SI-5). Drummed wastewater is transported from this unit once a week to the Hazardous Waste Storage Area (SWMU CS-7) (Ref. 84).

Date of Start-up: The drum storage area was put into service in 1985 when the Building 27 Sump was taken out of service (Ref. 84).

Date of Closure: The unit is still in operation.

Wastes Managed: The wastewater stored in the drums contains acetone, ethanol and explosive constituents (Ref. 84). An analysis of the wastewater was not available.

Release Controls: The drums are close-topped and placed on a concrete pad. The area is uncovered and has no secondary containment controls. No other release controls were observed during the VSI.

History of Releases: No releases were noted in the file information. The drums appeared to be in good condition and no releases were observed during the VSI.

Conclusions:

Soil/Groundwater: There is a low to moderate potential for release to soil and groundwater. The drums appeared to be in good condition and were located over a concrete pad but the area has no secondary containment structure to confine spills to the pad.

Surface Water: There is a moderate potential for release to surface water since the unit is located

within 50 feet of the Plant Drainage Ditch. There are no secondary containment structures to confine spills to the concrete pad and a large release from the drums would probably discharge into the ditch.

Air: The potential for air releases is low since all drums are closed-topped.

Subsurface Gas: The potential for generation of subsurface gas is low. All wastewater is contained in drums stored above-ground on a concrete pad.

Unit No.: CS-13

Unit Name: Outdoor Hazardous Waste Storage Area

Unit Description: The Outdoor Hazardous Waste Storage Area is located outside the east and south walls of Building 72, the Hazardous Waste Storage Area (SWMU CS-7). It is also adjacent to the Empty Drum Storage Area (SWMU CS-14). The 55-gallon drums in this area contain waste oil and are stored on an asphalt pad surrounded by a concrete curb. The pad is sloped to two catch basins which collect storm runoff and discharge it to the Plant Drainage Ditch. The waste oil is stored at this location until it is transported offsite for disposal (Ref. 84). During the VSI, drums were stacked two drums high on wooden pallets.

Date of Start-up: Spring 1986 (Ref. 84).

Date of Closure: The unit is still in operation.

Wastes Managed: The drums contain waste oil generated at the Mound facility.

Release Controls: The drums in the unit are placed on an asphalt pad which is sloped to two catch basins at the east end of the storage area. The integrity of the pad appeared to be good during the VSI. The pad is surrounded by a six-inch high concrete curb. The unit is located outdoors where drums are exposed to sunlight and precipitation. All drums observed in the area are sealed shut.

History of Releases: During the VSI, evidence of past releases were observed at this unit, stains were present on the asphalt pad between the waste oil drums on the east side of Building 72 and the catch basin. These releases would be discharged through NPDES Outfall 002 to the Great Miami River. No releases were noted on the soil outside the secondary containment structure.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater from the unit is low due to the presence of the underlying asphalt pad. The pad appeared to be in good condition.

The potential for releases is further minimized by the presence of the curbing to prevent spills from flowing off the pad onto bare soil.

Surface Water: There is a moderate to high potential for release to surface water. During the VSI, stains were noted on the asphalt pad between the drums and the catch basin. Contaminated runoff is discharged to the Plant Drainage Ditch, Retention Basins and through NPDES Outfall 002 to the Great Miami River. The runoff is not analyzed or chemically treated before it is discharged.

Air: Since the waste oil drums are closed-topped the potential for release to the air is low.

Subsurface Gas: The potential for generation of subsurface gas is low because wastes are stored above-ground in drums over an asphalt pad.

Unit No.: CS-14

Unit Name: Empty Drum Storage Area

Unit Description: The Empty Storage Area is an outdoor unit located near the northeast corner of Building 72, the Hazardous Waste Storage Area (SWMU CS-7). It is also adjacent to the Waste Oil Drum Storage Area (SWMU CS-13). The 55-gallon drums stored in this area are empty and are covered with a canvas tarpaulin. The drums are stored on their side on an asphalt pad which is sloped to two catch basins. The catch basins collect storm runoff from the unit and the Waste Oil Drum Storage Area and discharge it to the Plant Drainage Ditch (SWMU MI-1) (Ref. 84).

Date of Start-up: Spring 1986.

Date of Closure: The unit is still in operation.

Wastes Managed: The empty drums formerly stored hazardous wastes generated by on-site activities.

Release Controls: The drums in the unit are placed on an asphalt pad sloped to two catch basins at the east end of Building 72. The integrity of the pad appeared to be good during the VSI. The asphalt pad is surrounded by a six-inch high concrete curb. The drums are covered with a canvas tarpaulin (Ref. 84).

History of Releases: During the VSI, evidence of releases were observed at this unit; stains were present on the asphalt pad between the drums and the catch basin nearest the drums. These releases would be discharged through NPDES Outfall 002 to the Great Miami River. No releases were noted on the soil outside the concrete curb.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater from the unit is low due to the presence of the underlying asphalt pad. The pad appeared to be in good condition. The potential for release is further

minimized by the presence of the curbing to prevent spills from flowing off the pad onto bare soil.

Surface Water: There is a moderate to high potential for release to surface water. During the VSI, stains were noted on the asphalt pad between the drums and the catch basin. Contaminated runoff is discharged to the Plant Drainage Ditch, Retention Basins and through NPDES Outfall 002 to the Great Miami River. The runoff is not analyzed or chemically treated before it is discharged.

Air: There is a moderate potential for releases to the air. All the drums are not completely empty or sealed shut as observed by the stains on the asphalt pad.

Subsurface Gas: The potential for generation of subsurface gas is low because the drums are stored above-ground on an asphalt pad of adequate integrity.

Unit No.: CS-15

Unit Name: Building B Temporary Drum Storage Area

Unit Description: The Building B Temporary Drum Storage Area is an outdoor unit located adjacent to the Building B Solvent Storage Shed (SWMU CS-5). The area is approximately 15 feet on a side and contains approximately 26, fifty-five gallon drums. The drums are temporarily stored in this area while the Solvent Storage Shed is undergoing reconstruction. Solvent drums from the Building E are also stored in this unit while the Building E Solvent Storage Shed (SWMU CS-2) is reconstructed (Ref. 84).

Date of Start-up: 1988.

Date of Closure: The unit will be in service only while the Building B and Building E Solvent Storage Sheds are under construction. Completion of construction will be completed later in the year.

Wastes Managed: The unit is used to store waste solvents, waste oil, and trash from Buildings E and B (Ref. 84).

Release Controls: The unit is underlain with a concrete pad. All drums in the area were closed-topped. No other release controls were observed during the VSI.

History of Releases: No releases were noted in the file information or observed during the VSI.

Conclusions: Soil/Groundwater: There is a low potential for release to soil and groundwater since all wastes are contained in closed drums over a concrete pad. A moderate potential for release to soil exists if a drum spill occurred since there is no secondary containment provided at the unit.

Surface Water: The potential for release to surface water is also low since full containment of the

wastes is provided by the drums. The potential for release is moderate if a drum spill occurred since there is no secondary containment provided at the unit.

Air: Since the wastes are confined to closed drums, there is no potential for air releases.

Subsurface Gas: There is no potential for generation of subsurface gas from this above-ground drum storage area.

Unit No.:	CS-16
Unit Name:	Cooling Tower Drum Storage Area
Unit Description:	The Cooling Tower Drum Storage Area is located near the cooling towers south of the Powerhouse (Building P). The storage area is composed of several 55-gallon drums containing waste oil and ethylene glycol. There were 15 drums present in the area during the VSI. All drums were closed-topped but there was evidence of leakage from one of the drums (Ref. 84).
Date of Start-up:	Unknown.
Date of Closure:	The unit is still in service.
Wastes Managed:	The drums contained waste oils and ethylene glycol (Ref. 84).
Release Controls:	Wastes in the storage area were contained in closed-topped drums on an asphalt pad. The pad was sloped to the south and no stormwater runoff controls were observed.
History of Releases:	Leakage from one of the drums was observed during the VSI. The leaking liquid was draining on the asphalt pad to the south. There were no release controls to contain leakage or stormwater runoff on the pad.
Conclusions:	<u>Soil/Groundwater</u>: There was an observed discharge of liquids from the drum storage area on to the asphalt pad. Because there were no surface release controls observed, there is a high potential for releases to the soil adjacent to the pad.
	<u>Surface Water</u>: The potential for surface water releases is also high since there are no runoff controls in this area. Contaminated storm runoff is allowed to discharge to the Plant Drainage Ditch.

Air:	There is no potential for air releases since the drums are closed-topped. There is a low potential for releases to the air from the spilled material observed during the VSI.
Subsurface Gas:	The potential for generation of subsurface gas is low since wastes are contained above-ground in drums on an asphalt pad.

Unit No.:	CS-17
Unit Name:	Test Firing Residual Storage Area
Unit Description:	The Test Firing Residual Storage Area is located inside Building 2 and used to store residuals generated during test firing of detonating devices. The waste is primarily aluminum residue stored in 30-gallon drums. The wastes were not viewed during the VSI since it is considered a classified material by DOE. Residue and undetonated wastes are treated at the Open Burn Area (SWMUs OB-1 through OB-8) (Ref. 84).
Date of Start-up:	1956 (Ref. 84).
Date of Closure:	The unit is still in service.
Wastes Managed:	The storage area is used to store unexploded detonation devices and explosion residuals generated during test firing. The waste is primarily aluminum residue.
Release Controls:	The wastes are contained in drums located indoors on a concrete floor. There is no contact of waste with sunlight or precipitation (Ref. 84).
History of Releases:	There were no releases noted in the file information. The area was not viewed during the VSI since the area was used by the Mound facility to manage classified materials.
Conclusions:	<u>Soil/Groundwater</u>: There is no potential for release to soil and groundwater. Wastes are stored in drums and the unit is located indoors over a concrete pad.
	<u>Surface Water</u>: There is no potential for release to surface water from this indoor unit.
	<u>Air</u>: There is no potential for release to air due to the relatively non-volatile nature of the drummed wastes.

Subsurface Gas: There is no potential for generation of subsurface gas. Wastes are managed in drums, indoors, and above-ground on a concrete floor.

Unit No.:	CS-18
Unit Name:	WD Building Drum Staging Area
Unit Description:	The WD Building Drum Storage Area is located outdoors on the south side of the WD Building Annex. Approximately ten 55-gallon drums were present in this area during the VSI. Contents of at least two of these drums were small pieces of glass used in the Glass Melter Furnace (SWMU IN-1). Several other drums had closed tops. The Drum Staging Area is underlain by a concrete pad which is sloped to the south (Ref. 84).
Date of Start-up:	1981.
Date of Closure:	The unit is still in service.
Wastes Managed:	At least two of the drums contained small pieces of glass used in the Glass Melter Furnace. The contents of the closed-topped drums were not determined (Ref. 84). An analysis of the contents of the drums for hazardous constituents was not available.
Release Controls:	The Drum Staging Area is underlain by a concrete pad which is sloped to drain runoff from the area. There is no curbing on the pad to prevent runoff from discharging off the pad to the south (Ref. 84).
History of Releases:	Stains were observed on the concrete pad in the Drum Staging Area. The stains extended off the pad to the south. Two drums containing glass were open-topped exposing the wastes to precipitation.
Conclusions:	<u>Soil/Groundwater</u>: The potential for release to soil and groundwater is unknown since the nature of the waste was not provided. If hazardous constituents are present, there is a high potential for release to adjacent soil. Some waste drums were uncovered and stains were noted extending off the pad to uncovered soil.

Surface Water:	If hazardous constituents are present, the potential for release to surface water is high. Runoff from the Drum Staging Area is allowed to run off-site without treatment.
Air:	The potential for release to air is low due to the relatively non-volatile nature of wastes in the open drums.
Subsurface Gas:	The potential for generation of subsurface gas is low. Wastes are contained in drums on an above-ground concrete pad.

Unit No.: CS-19

Unit Name: SW Building Drum Staging Area

Unit Description: The SW Building Drum Staging Area is located near the SW Building. The area was surrounded by metal grid sidewalls and underlain by a concrete pad. The concrete pad was sloped down the hill toward the SD Building. There was no curbing surrounding the unit. Two waste oil drums, a fiberpack drain, and one antifreeze drum were observed outside the walls of the staging area during the VSI (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The unit is still in service.

Wastes Managed: The staging area was intended for storage of asbestos materials but is currently used for drum storage of hazardous wastes. Drums of waste oil and antifreeze were observed outside the staging area walls (Ref. 84).

Release Controls: All wastes were contained inside closed 55-gallon drums on a concrete pad. There was no curbing on the pad to collect runoff and potential drum releases. The drums outside the unit were not protected from sunlight and precipitation.

History of Releases: There were no releases noted in the file information or observed during the VSI. The fiber packed drum was stained and appeared to be deteriorating.

Conclusions: Soil/Groundwater: The potential for soil and groundwater releases is low to moderate. The drums are underlain by a concrete pad but there is no curbing to prevent drum leaks from releasing liquids to the adjacent soil. Drums outside the fenced area are exposed to rainfall and subject to corrosion.

Surface Water: The potential for release to surface water is

also low to moderate. Releases from the drums and runoff from the concrete pad would be subject to release to the Plant Drainage Ditch.

Air: The potential for release to the air is low since all drums in the area are closed-topped.

Subsurface Gas: The potential for generation of subsurface gas is low. The drums are stored above-ground on a concrete pad. No releases to adjacent soil were observed. If releases from the drums occurred, there is a moderate potential for gas generation since there is no curbing to confine these releases to the surface of the pad.

Unit No.: IN-2

Unit Name: Cyclone Incinerator

Unit Description: The Cyclone Incinerator is located in the WD Building Annex near the Glass Melter Furnace (SWMU IN-1). It was included in DOE's Part A permit application submitted in November 1984. A request to withdraw the unit from the Part A was made in August 1986 since the unit had burned only radioactive waste, not hazardous waste as originally intended. Wastes were burned in a metal drum located inside a partially enclosed chamber. Vented gases were injected and swirled in a cyclonic manner to aid in the rapid incineration of the waste. Ash collects in the bottom of the drum and is removed with the aid of a glove box (Ref. 84). Emissions from the unit were discharged into the off-gas treatment system (SWMUs AP-1 through AP-9). The incinerator was not in operation during the VSI.

Date of Start-up: 1975.

Date of Closure: The unit is inactive. The date of its last operation is not known.

Wastes Managed: Facility representatives indicated that the incinerator burned only radioactive wastes and not hazardous wastes as originally intended (Ref. 84). No waste analyses was provided.

Release Controls: The Cyclone Incinerator is located indoors on the second floor of the WD Building over a concrete floor slab. Floor drains discharge floor wash water beneath the unit to the Glass Melter Sump (SWMU SU-1) located on the first floor of the WD Building. Air emissions from the incinerator are released to the off-gas treatment system (SWMUs AP-1 through AP-9).

History of Releases: There were no releases noted in the file information or observed during the VSI. The floor adjacent to the incinerator was clean and dry.

Conclusions: Soil/Groundwater: There is no potential for release to soil or

groundwater since the furnace is located indoors over a concrete floor slab on the second story of the WD Building. Any releases to the floor are washed to the Glass Melter Room Sump.

Surface Water: The potential for releases to surface water is low. There are no direct discharges from the incinerator to the river. Floor washdown water is treated by the WD Wastewater Treatment System before it is discharged to the river.

Air: The potential for release to the air is low. All incinerator emissions are treated prior to discharge to the atmosphere.

Subsurface Gas: There is no potential for generation of subsurface gas. The incinerator is located indoors, two floors above the ground surface.

Unit No.: IN-3

Unit Name: Waste Solvent Incinerator

Unit Description: The WasteSolvent Incinerator is a dismantled unit formerly located outdoors on the south side of Building 51. It consisted of a primary and secondary combustion chamber with a rated capacity of 5,000 lb/hr. The primary chamber was 222 inches long, 81 inches wide, and 176 inches high. The secondary chamber was 61 inches long, 81 inches wide, and 176 inches high. Both chambers were lined with refractory brick. Combustion air was supplied with a forced draft fan under grates at a flow rate of 5100 cfm. Waste solvents were injected into the burn chamber by steam atomization at an average of 2000 lb/hour. Combustion emissions were treated by a wet scrubber prior to discharge to the atmosphere (Ref. 4).

Date of Start-up: 1968 (Ref. 81, p. 4-81).

Date of Closure: 1972 (Ref. 81).

Wastes Managed: The incinerator was used to destroy various waste solvents generated by on-site activities. A list of solvents incinerated is not available.

Release Controls: Combustion emissions were treated by a wet scrubber to collect flyash prior to discharge to the atmosphere (Ref. 4). Scrubber effluent was discharged to a storm catch basin. The Solvent Incinerator was taken out of service, dismantled, and removed from the site.

History of Releases: There were no releases noted in the file information. During the VSI, there was no incineration equipment remaining at the site. No evidence of past releases were observed; however, the soil surrounding the former unit has not been sampled to determine if past releases of hazardous constituents occurred. A slight solvent odor was also detected in this area during the VSI.

Conclusions: Soil/Groundwater: The potential for past releases to soil and groundwater is unknown, since the soil

surrounding the unit has not been sampled. A solvent odor detected in the area may be an indication of residual solvents in the soil. There is no potential for ongoing releases because the incinerator has been taken out of service and removed from the site.

Surface Water: The potential for past releases to surface water is moderate since the unit was within 100 feet of the Plant Drainage Ditch. If contaminants are present in the surrounding soil, there is a moderate potential for ongoing releases to the Plant Drainage Ditch since there are no runoff controls.

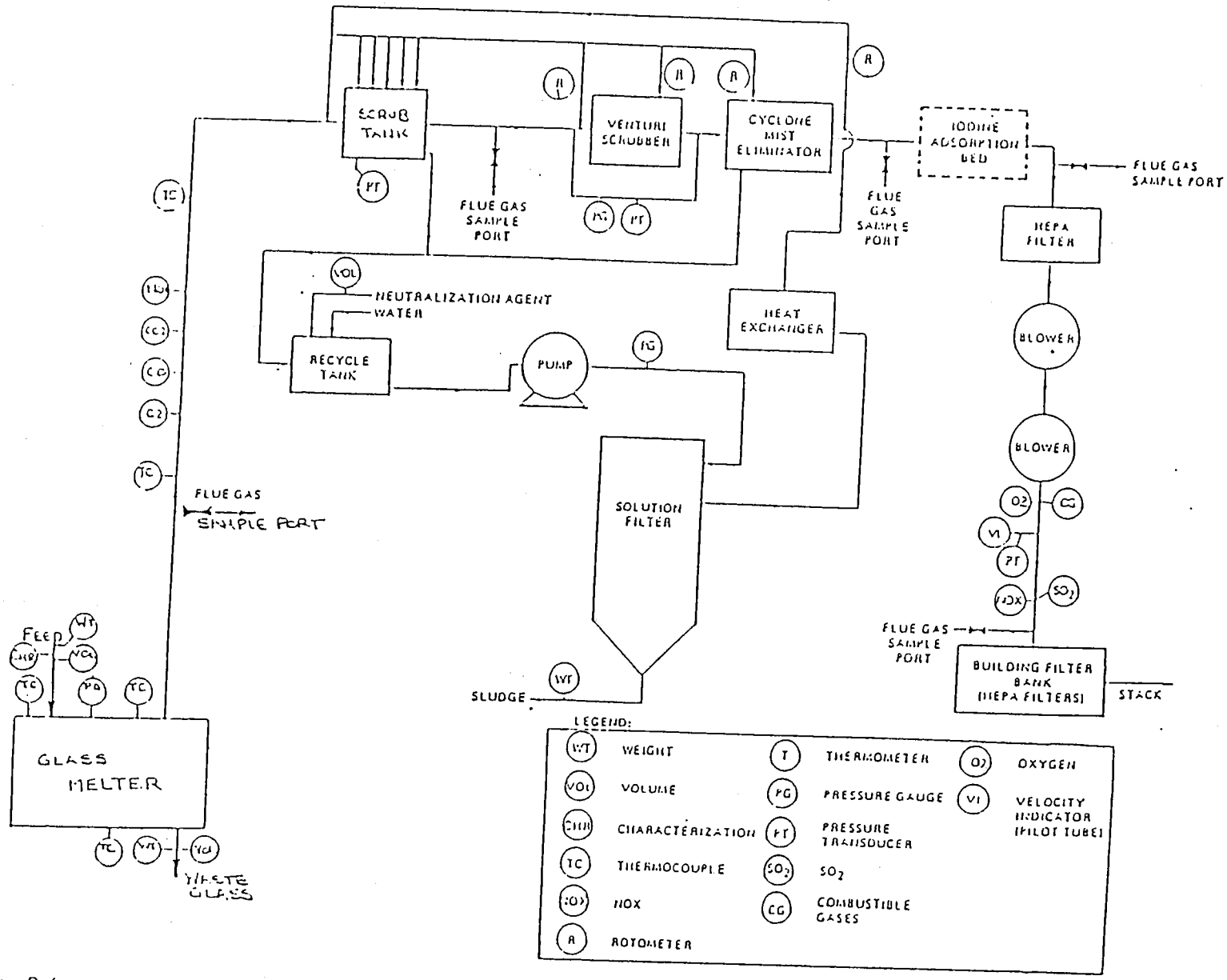
Air: The potential for past air releases is low due to the pollution control equipment present on the incinerator. There is no potential for ongoing releases since the unit has been taken out of service and dismantled.

Subsurface Gas: The potential for generation of subsurface gas is unknown since it has not been determined whether releases to the soil have occurred. If soil releases did occur in the past, the potential for subsurface gas generation is high.

Unit No.:	AP-1
Unit Name:	Deluge Tank
Unit Description:	Deluge Tank is the first component of the Off-Gas Treatment System (SWMUs AP-1 through AP-9) for the Glass Melter Furnace (SWMU IN-1). Figure 15 (Ref. 66) shows the position of this unit in the context of the entire incineration Off-Gas Treatment System. The unit is located on the second floor in the WD Building Annex. The dimensions of the annex are approximately 40 feet by 20 feet with an approximate 20-foot ceiling. The unit is a vertical stainless steel tank. Four spray units inject caustic solution counter-current to the ascending gases which remove the contaminants. Contaminated liquid drains directly to the Recycle Tank (SWMU AP-6) located beneath it (Ref. 66, p. 4-13). This system is inspected hourly when in use. The Deluge Tank is approximately three feet in diameter and eight feet high (Ref. 84).
Date of Start-up:	1981.
Date of Closure:	The unit is still in service.
Wastes Managed:	The Deluge Tank receives combustion emissions from the Glass Melter Furnace. Constituents in the emissions include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous constituents (POHCs).
Release Controls:	The Deluge Tank is a completely enclosed indoor unit located on the second floor of the annex. The tank discharges treated emissions to the Venturi Scrubber (SWMU AP-2) and wastewater to the Recycle Tank (Ref. 66, p. 4-13). The entire Off-Gas Treatment System is shut down automatically in the event of flow rate or temperature excursions (Ref. 84). Any releases due to a tank failure would be collected in the floor drains and routed to the Alpha Wastewater Treatment System (SWMU WD-2).
History of Releases:	There were no releases noted in the file information or observed during the VSI. The tank appeared to be in good condition.

FIGURE 15

PROCESS FLOW DIAGRAM



(Source: Reference 66)

Conclusions:	Soil/Groundwater:	There is no potential for release to soil or groundwater since the tank is completely enclosed and located above-ground. The tank is an indoor unit underlain by a concrete floor slab which further eliminates the potential for wastewater to come into contact with underlying soil.
	Surface Water:	There is no potential for release to surface water. The contaminated effluent is discharged to the Recycle Tank and eventually discharged to the Alpha Wastewater Treatment System. Any release due to a tank rupture would be collected in the floor drains and also routed to the Alpha Wastewater Treatment System.
	Air:	There are no direct releases to the air from this fully enclosed unit. Emissions are discharged to the Venturi Scrubber for further treatment.
	Subsurface Gas:	There is no potential for generation of subsurface gas from this fully enclosed, above-ground unit.

Unit No.: AP-2

Unit Name: Venturi Scrubber

Unit Description: The Venturi Scrubber is another component of the Off-Gas Treatment System for the Glass Melter Furnace (SWMU IN-1). It is located above the second floor of the WD Building Annex. The dimensions of the annex are approximately 40 feet by 20 feet with a 20-foot ceiling. The Venturi Scrubber is a fully enclosed metal unit. Gases enter the Venturi Scrubber from the Deluge Tank (SWMU AP-1) and are discharged to the Cyclone Demister (SWMU AP-2). Figure 15 (Ref. 66) shows the Venturi Scrubber in the context of the entire incineration off-gas treatment system. Spray nozzles deliver caustic solution in fine droplets to the throat of the Venturi Scrubber. The throat opens into a ribbed cylinder where waste gases are swirled tangentially. Here, the liquid and particulate matter is entrained into droplets that can be removed in the Cyclone Demister (Ref. 66).

A partial removal efficiency of 99% by weight for an inlet gas particle loading rate of 1.15 g/m^3 requires a water pressure differential in the Venturi Scrubber of 104 cm (Ref. 66). Inlet and outlet temperatures in the Venturi Scrubber are 324 degrees Fahrenheit and 168 degrees Fahrenheit, respectively. Inlet and outflow velocities are 34 feet per second (fps) and 75 fps, respectively. Inlet and outlet flow rates (in dry standard cubic feet per minute, DSCFM) are 208 and 292, respectively. Destruction removal efficiencies (DREs) for all principle organic hazardous constituents (POHCs) in the entire scrubber system in test burns ranged from 99.999% to 99.9999999. Modal DRE values for the test burns were equal to 99.999999%. Particulate control efficiencies ranged from 60 to 95% in test runs. This unit is inspected hourly when in use (Ref. 66).

Date of Start-up: 1981.

Date of Closure: This unit is still in service.

Wastes Managed: The Venturi Scrubber receives Glass Melter Furnace combustion

emissions from the Deluge Tank. Constituents in the combustion emissions include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous constituents.

Release Controls: The Venturi Scrubber is a completely enclosed indoor unit located on the second floor of the WD Annex Building. The tank discharges gases and entrained liquid droplets into the Cyclone Demister. There are no discharges directly to the atmosphere from this unit. The entire Off-Gas Treatment System is shut down automatically in the event of gas flow rate or temperature excursions (Ref. 84). Any releases of liquids due to a rupture in the unit would be collected in the floor drains and discharged to the Alpha Wastewater Treatment System.

History of Releases: There were no releases noted in the file information or observed during the VSI. The Venturi Scrubber appeared to be in good condition.

Conclusions:

Soil/Groundwater: There is no potential for release to soil or groundwater since the scrubber is completely enclosed and located above-ground. The tank is an indoor unit underlain by a concrete floor slab which further eliminates the potential for contact of wastewater with underlying soils.

Surface Water: There is no potential for release to surface water. Any release of liquid due to a rupture failure would be collected in the floor drains and routed to the Alpha Wastewater Treatment System.

Air: There are no releases to the air directly from this fully enclosed unit. Emissions are discharged to the Cyclone Demister for further treatment.

Subsurface Gas: There is no potential for generation of subsurface gas from this fully enclosed, above-ground unit.

Unit No.: AP-3

Unit Name: Cyclone Demister

Unit Description: The Cyclone Demister is located adjacent to the Venturi Scrubber (SWMU AP-2) in the WD Building Annex. It is another component of the Off-Gas Treatment System for the Glass Melter Furnace. Figure 15 (Ref. 66) shows the Cyclone Demister in the context of the entire Off-Gas Treatment System. Combustion gases, liquid droplets, and entrained particulate matter enter the base of the Cyclone Demister from the Venturi Scrubber. The flow rate of the droplets and gases is increased by the circulating motion of the gas created in the Cyclone Demister. The circulating motion also entrains the gas in the liquid. This solution is then thrown against the wall of the Cyclone Demister, falls to the conical base of the unit, and is discharged to the Recycle Tank (SWMU AP-6) (Ref. 66, p. 4-13). Treated gases are discharged from the Cyclone Demister to a high efficiency particulate air filter (HEPA Filter) (SWMU AP-4). The Demister is inspected hourly when in use.

Date of Start-up: 1981.

Date of Closure: The unit is still in service.

Wastes Managed: The Cyclone Demister receives treated combustion emissions from the Glass Melter Furnace via the Deluge Tank and Venturi Scrubber. Constituents in the emissions include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous constituents.

Release Controls: The Cyclone Demister is a completely enclosed indoor unit located on the second floor of the WD Annex Building. There are no discharges directly to the atmosphere from this unit. Treated gases are discharged to the HEPA Filter while the liquid and gas solution is collected in the Recycle Tank. The entire Off-Gas Treatment System is shut down automatically in the event of a flow rate or temperature excursion (Ref. 84). Any releases of liquids due to a rupture failure would be collected in the floor drains and discharged to the Alpha Wastewater Treatment System (SWMUs WD-1 and

WD-2).

History of Releases: There were no releases noted in the file information or observed during the VSI. The Cyclone Demister appeared to be in good condition.

Conclusions:

Soil/Groundwater: There is no potential for release to soil or groundwater since the unit is completely enclosed and located above-ground. The tank is an indoor unit underlain by a concrete floor slab which further eliminates the potential for contact of released wastewater with the soil.

Surface Water: There is no potential for release to surface water. The wastewater effluent is discharged to the Recycle Tank and eventually discharged to the Alpha Wastewater Treatment System. Any release due to a unit rupture would be collected in the floor drains and also routed to the Alpha Wastewater Treatment System.

Air: There are no releases to the air directly from this fully enclosed unit. Emissions are discharged to the HEPA Filter for further treatment.

Subsurface Gas: There is no potential for generation of subsurface gas from this fully enclosed, above-ground unit.

Unit No.: AP-4

Unit Name: HEPA Filter

Unit Description: The HEPA Filter (high efficiency particulate air filter) is a component of the Off-Gas Treatment System for the Glass Melter Furnace (SWMU IN-1) and is located in the WD Building Annex. Treated gases enter the HEPA Filter from the Cyclone Demister (SWMU AP-3). The HEPA Filter is a fabric filter which removes small particulate matter remaining in the dry off-gas emissions and discharges the gases by way of two exhausters to the WD Filter Bank (SWMU AP-5). This unit is inspected hourly when in service.

Date of Start-up: 1981.

Date of Closure: The unit is still in service.

Wastes Managed: The HEPA Filter receives treated combustion emissions from the Glass Melter Furnace via the Deluge Tank (SWMU AP-1), Venturi Scrubber (SWMU AP-2), and the Cyclone Demister. Constituents in the untreated emissions include metals, hydrochloric acid, polyaromatic hydrocarbons and principle organic hazardous constituents. An analysis of the particles collected in the HEPA Filter is not available.

Release Controls: The HEPA Filter is completely enclosed on the second floor of the WD Building Annex. There are no discharges directly to the atmosphere since filtered gases are sent to the WD Filter Bank. The entire Off-Gas Treatment System is shut down automatically in the event of a flow rate or temperature excursion (Ref. 84).

History of Releases: There were no releases noted in the file information or observed during the VSI.

Conclusions: <u>Soil/Groundwater</u>: There is no potential for release to soil or groundwater since the HEPA Filter is completely enclosed and located above-ground. The tank is an indoor unit

underlain by a concrete floor slab which further eliminates the potential for contact of releases to the soil.

Surface Water: There is no potential for release to surface water. Any releases of solids from the HEPA Filter due to a tank rupture would be washed into the floor drains and routed to the Alpha Wastewater Treatment System.

Air: There are no releases to the air directly from this fully enclosed unit. Emissions are discharged to the WD Filter Bank for further treatment.

Subsurface Gas: There is no potential for generation of subsurface gas from this fully enclosed, above-ground unit.

Unit No.:	AP-5
Unit Name:	WD Filter Bank
Unit Description:	The WD Filter Bank is the final component of the Off-Gas Treatment System for the Glass Melter Furnace (SWMU IN-1). It is located in a small enclosed shed on the roof of the WD Building Annex. The WD Filter Bank is composed of several HEPA (high efficiency particulate air) filters which receive filtered effluent from the HEPA Filter (SWMU AP-3) located inside the building. Figure 15 (Ref. 66) shows the WD Filter Bank in the context of the entire Off-Gas Treatment System. The Filter Bank removes small particulate matter remaining in the dry off-gas emissions and discharges them to the atmosphere. The unit is inspected hourly when in use.
Date of Start-up:	1981.
Date of Closure:	The unit is still in service.
Wastes Managed:	The WD Filter Bank receives treated combustion emissions from the Glass Melter Furnace via the Deluge Tank (SWMU AP-1), Venturi Scrubber (SWMU AP-2), Cyclone Demister (SWMU AP-3), and HEPA Filter (SWMU AP-4). Constituents in the untreated emissions include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous constituents. An analysis of the particles collected in the WD Filter Bank is not available.
Release Controls:	The WD Filter Bank is completely enclosed on the roof of the WD Building Annex. The filtered gases are discharged from the Filter Bank directly to the atmosphere. The entire Off-Gas Treatment System is shut down automatically in the event of a flow rate or temperature excursion (Ref. 84). Air releases are regulated by the Regional Air Pollution Control Authority (Ref. 55).
History of Releases:	There were no releases other than those intended from the WD Filter Bank noted in the file information. There was no sign of release of particulates outside the WD Filter Bank enclosure during the VSI.

Conclusions:	Soil/Groundwater:	There is no potential for release to soil or groundwater since the unit is completely enclosed and located above-ground on the roof of the building.
	Surface Water:	There is no potential for release to surface water. The unit is fully enclosed to prevent particulate matter from being wind blown to nearby surface water bodies.
	Air:	The WD Filter Bank discharges treated off-gases directly to the atmosphere as regulated by the Regional Air Pollution Control Authority.
	Subsurface Gas:	There is no potential for generation of subsurface gas from this fully enclosed, above-ground unit.

Unit No.: AP-6

Unit Name: Recycle Tank

Unit Description: The Recycle Tank is a fully enclosed, stainless steel tank which provides initial solution make-up to the Deluge Tank (SWMU AP-1), provides solution storage from the Deluge Tank, serves as a reservoir for temperature and pH moderation, and a head for the recycle of make-up water for the Off-Gas Treatment System's scrubber components (SWMU AP-2 and AP-3). The Recycle Tank is located on the second floor of the WD Building Annex. It receives drainage (by gravity) from the off-gas system components, including the Venturi Scrubber (SWMU AP-2), Cyclone Demister (SWMU AP-3), and Deluge Tank. A pH probe maintains a pH in the range of 8-10. The recycled make-up water is also routed through a vertical Leaf Solution Filter (SWMU AP-7), a heat exchanger, and a Strainer (SWMU AP-8) (Ref. 66, p. 4-14) prior to discharge to the Alpha Wastewater Treatment System (SWMU WD-2). This system is inspected hourly when in use.

Date of Start-up: 1981.

Date of Closure: The unit is still in service.

Wastes Managed: The Recycle Tank receives liquids from the Deluge Tank, Cyclone Demister, and Venturi Scrubber in the Off-Gas Treatment System. An analysis of the wastewater in the tank is not available; however constituents known to be in the untreated emissions include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous constituents.

Release Controls: The Recycle Tank is completely enclosed on the second floor of the WD Building Annex. Wastewater in the tank is either recycled back into the Off-Gas Treatment System or discharged to the Alpha Wastewater Treatment System. The entire Off-Gas Treatment System is shut down automatically in the event of a flow rate or temperature excursion (Ref. 84). Releases of liquid from the Recycle Tank due to a rupture failure would be collected in the floor drains and discharged to the Alpha Wastewater Treatment System

(SWMUs WD-1 and WD-2) (Ref. 84).

History of Releases: There were no releases noted in the file information or observed during the VSI. The containment integrity of the Recycle Tank appeared to be satisfactory.

Conclusions:

Soil/Groundwater: There is no potential for release to soil or groundwater since the Recycle Tank is completely enclosed and located above-ground. The tank is an indoor unit underlain by a concrete floor slab which further eliminates the potential for releases to soil beneath the building.

Surface Water: There is no potential for release to surface water. The effluent is recycled back into the Off-Gas System or discharged to the Alpha Wastewater Treatment System. Any release due to a tank rupture would be collected in the floor drains and routed to the Alpha Wastewater Treatment System.

Air: There are no releases to the air from this fully enclosed unit.

Subsurface Gas: There is no potential for generation of subsurface gas from this fully enclosed above-ground unit.

Unit No.:	AP-7
Unit Name:	Leaf Solution Filter
Unit Description:	The Leaf Solution Filter receives liquid from the Recycle Tank (SWMU AP-6) (Ref. 66, p. 4-14). It is a fully enclosed, cylindrical unit located on the second floor of the WD Building Annex. It is constructed of metal and is approximately ten feet high and twelve to fifteen inches in diameter (Ref. 84). Filter cake accumulates on the vertical filter leaves and is removed by periodic vibration of the filter housing. The dislodged cake falls by gravity to the bottom of the unit, where it is removed as a sludge (Ref. 66). The effluent flows to the Strainer before being recycled to the Deluge Tank (SWMU AP-1), Venturi Scrubber (SWMU AP-2), and Demister (SWMU AP-3). This unit is inspected hourly when in use.
Date of Start-up:	1981.
Date of Closure:	The unit is still in service.
Wastes Managed:	The Leaf Solution Filter retains the solids which accumulate in the wastewater in the Recycle Tank. An analysis of the sludge for hazardous constituents was not available; however, constituents known to be in untreated emissions from the Glass Melter Furnace (SWMU IN-1) include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous constituents.
Release Controls:	The Leaf Solution Filter is a fully enclosed indoor unit. Filtered effluent is discharged to the Deluge Tank and sludge is transported off-site for disposal. The entire Off-Gas Treatment System is shut down automatically in the event of a flow rate or temperature excursion. Releases of liquid from the Leaf Solution Filter due to a rupture failure would be collected in the floor drains and discharged to the Alpha Wastewater Treatment System (SWMUs WD-1 and WD-2) (Ref. 84).
History of Releases:	There were no releases noted in the file information or observed during the VSI. The containment integrity of the filter appeared to be adequate.

Conclusions:	Soil/Groundwater:	There is no potential for release to soil or groundwater since the unit is completely enclosed and located above-ground. The tank is an indoor unit underlain by a concrete floor slab which further eliminates the potential for releases to soil beneath the building.
	Surface Water:	There is no potential for release to surface water. The effluent is discharged to the Deluge Tank and sludges are disposed off-site. Any release due to a tank rupture would be collected in the floor drains and routed to the Alpha Wastewater Treatment System.
	Air:	There are no releases to the air from this fully enclosed unit.
	Subsurface Gas:	There is no potential for generation of subsurface gas from this fully enclosed, above-ground unit.

Unit No.: AP-8

Unit Name: Strainer

Unit Description: The Strainer is another component of the Off-Gas Wastewater Treatment System located on the second floor of the WD Building Annex. It receives effluent from the Leaf Solution Filter (SWMU AP-7) and filters out iron chips prior to discharge to the Deluge Tank (SWMU AP-1) (Ref. 84). The iron chips have accumulated in the wastewater from the corrosion of the black iron pipes used in the treatment system. The Strainer is a fully enclosed, metal column, approximately five feet high and six inches in diameter (Ref. 84).

Date of Start-up: 1981.

Date of Closure: The Strainer is still in service.

Wastes Managed: The Strainer removes iron chips which accumulate in the wastewater from the pipes in the Glass Melter's Off-Gas Treatment System. An analysis of the wastewater or accumulated solids for hazardous constituents is not available; however, constituents known to be in the untreated emissions from the Glass Melter Furnace (SWMU IN-1) include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous constituents.

Release Controls: The Strainer is a fully enclosed indoor unit. Filtered effluent from the Strainer is discharged to the Deluge Tank. In the event of a rupture in the unit, release liquid would be collected in the floor drains and discharged to the Alpha Wastewater Treatment System (SWMUs WD-1 and WD-2). The Off-Gas Treatment System including the Strainer is automatically shut down in the event of the flow rate or temperature exceeds operating specifications (Ref. 84).

History of Releases: There were no releases noted in the file information or observed during the VSI. The containment integrity of the unit appeared to be adequate.

Conclusions: Soil/Groundwater: There is no potential for release to soil or groundwater since the Strainer is

completely enclosed and located above-ground. The unit is an indoor unit underlain by a concrete floor slab which further eliminates the potential for releases to reach the soil at this location.

Surface Water: There is no potential for release to surface water. The effluent is discharged to the Deluge Tank and any release due to a tank rupture would be collected in the floor drains and routed to the Alpha Wastewater Treatment System.

Air: There are no releases to the air from this fully enclosed unit.

Subsurface Gas: There is no potential for generation of subsurface gas from this fully enclosed, above-ground unit.

Unit No.:	AP-9
Unit Name:	Iodine Absorption Filter
Unit Description:	The Iodine Absorption Filter is a component of the Off-Gas Treatment System for the Glass Melter Furnace (SWMU IN-1) which has never been used. It is located in the WD Building Annex and was intended to treat gases discharged from the Cyclone Demister (SWMU AP-3). Gases from the Cyclone Demister bypass the Iodine Absorption Filter and enter further treatment to remove particulate matter at the HEPA Filter (SWMU AP-4).
Date of Start-up:	The unit was never put into service.
Date of Closure:	The unit is inactive and was never used.
Wastes Managed:	The Iodine Absorption Filter was included in the Off-Gas Treatment System to be utilized for particulate removal. The unit was never used and gases from the Cyclone Demister are discharged to the HEPA Filter.
Release Controls:	The Iodine Absorption Filter is an above-ground, fully enclosed, metal unit. The unit is inactive and has never been used.
History of Releases:	There were no releases noted in the file information or observed during the VSI.
Conclusions:	There is no potential for release to the soil, groundwater, surface water, air, or for generation of subsurface gas since the unit is inactive and has never been used.

Unit No.:	AP-10
Unit Name:	Waste Solvent Incinerator Scrubber
Unit Description:	The Waste Solvent Incinerator Scrubber is an inactive and dismantled air pollution control device associated with the Waste Solvent Incinerator (SWMU IN-3). It consisted of a flooded tray wet collector and a settling chamber to remove fly ash from the Waste Solvent Incinerator emissions. Incinerator gases entered the scrubber at between 1300 degrees and 1500 degrees Fahrenheit. Its capacity was 25,000 cubic feet per minute (Ref. 4).
Date of Start-up:	1971.
Date of Closure:	The Waste Solvent Incinerator and Scrubber was dismantled in the late 1970s or early 1980s (Ref. 84). The exact date is not known.
Wastes Managed:	The incinerator was used to destroy various waste solvents generated by on-site activities. A list of solvents incinerated or types of emissions produced is not available.
Release Controls:	Scrubber emissions were discharged to the atmosphere and Scrubber effluent was discharged to a storm catch basin (Ref. 86). During the VSI, the Waste Solvent Incinerator and Scrubber were dismantled and there was no observed evidence of past releases.
History of Releases:	There were no releases noted in the file information. During the VSI, there was no incineration equipment remaining at the site. The soil surrounding the former unit has not been sampled to determine if releases of hazardous constituents has occurred. A solvent odor was detected near Building 51 during the VSI.
Conclusions:	<u>Soil/Groundwater</u>: The potential for past releases to soil and groundwater is unknown, since the soil surrounding the unit has not been sampled. There is no potential for ongoing releases because the incinerator has been taken out of service and removed from the site.

Surface Water: The potential for past releases to surface water is moderate since the Plant Drainage Ditch is located within 100 feet of the unit. There is a low potential for ongoing releases from the unit to the Drainage Ditch via stormwater runoff if contaminants are present in the surrounding soil.

Air: Scrubber off-gases were discharged directly to the atmosphere during operation. There is no potential for ongoing releases since the unit has been taken out of service.

Subsurface Gas: The potential for generation of subsurface gas is unknown since it has not been determined whether releases to the soil have occurred. If soil releases did occur in the past, the potential for subsurface gas generation is high.

Unit No.: AP-11

Unit Name: Ventilation Hoods

Unit Description: There are approximately 570 Ventilation Hoods at various indoor locations at the facility (Ref. 81, p. 3-11). Seven hoods were observed during the VSI in Building E, Room 143. The Ventilation Hoods' function in this area is to remove potentially contaminated indoor air from laboratory work spaces. The Ventilation Hoods are located over other laboratory and process areas at the facility and are equipped with fans to accelerate discharge. Metal ducts convey the exhaust from the hoods to the roof of the building (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: Ventilation Hoods are still in service.

Wastes Managed: The Ventilation Hoods are designed to collect and vent gases, fumes and other particulate matter to the atmosphere. Ventilated wastes include explosive gases, paint fumes, dust, acid gases, asbestos, and other chemicals. Hazardous constituents of these waste streams include acetone, trichloroethylene, benzene, chloroform, toluene, methylene chloride hydrofluoric acid, hydrochloric acid, sulfuric acid, nitric acid, methylethyl ketone (Ref. 81, p. D-1). The concentration or volumes of each constituent releases was not provided.

Release Controls: The Ventilation Hoods direct gas and particulate emissions directly or via air pollution control equipment to the atmosphere (Ref. 81, pp. 3-1, 12, 13). The Ventilation Hoods in Building E direct emissions to the atmosphere via a single roof vent without treatment by air pollution control equipment (Ref. 84). Air releases are regulated by the Regional Air Pollution Control Authority (Ref. 55).

History of Releases: Hazardous constituents are released directly to the atmosphere without treatment in some areas of the facility.

Conclusions: Soil/Groundwater: There is a moderate potential for release of particulate matter from the Ventilation

	Hoods to uncovered soil, especially in areas where dust is discharged to the air without prior treatment.
Surface Water:	There is a moderate potential for release to surface water. Particulate matter discharged to the air without prior treatment may fall out onto nearby surface water bodies.
Air:	Releases from the Ventilation Hoods to the atmosphere occur from some areas of the facility without treatment.
Subsurface Gas:	There is no potential for generation of subsurface gas since the units are above-ground and located indoors.

Unit No.: OB-4

Unit Name: Building 90 Blockhouse

Unit Description: The Building 90 Blockhouse is a fully enclosed ancillary waste storage unit associated with the Retort (SWMU OB-3). The Blockhouse is located just east of the Retort and is used to house the Retort's waste feed equipment. Small detonation devices are placed manually onto a conveyor accessible through a port in the Blockhouse. A screw-feeder transfers the wastes from the conveyor into the Retort (Ref. 66, p. 4-64). The dimensions of the Building 90 Blockhouse are approximately 10 feet by 10 feet with concrete walls and floor (Ref. 84). The conveyor was not in operation during the VSI.

Date of Start-up: 1984.

Date of Closure: The unit is still in service.

Wastes Managed: The Building 90 Blockhouse is used to convey encased explosive wastes (primarily detonators and pellets), mild detonating cord and mild detonating fuse (Ref. 66).

Release Controls: The unit is fully enclosed and underlain by concrete. Wastes are encased in the detonating devices as they are placed on the conveyor. There is no waste residue produced in the building (Ref. 84).

History of Releases: There were no releases noted in the file information. The floor of the building appeared clean and no releases were observed during the VSI.

Conclusions: Soil/Groundwater: There is no potential for release to soil and groundwater. The unit is underlain by a concrete floor slab and the explosive wastes are encased in the detonation device.

Surface Water: There is no potential for release to surface

water. The wastes are fully enclosed in the building where there is no contact with precipitation or surface runoff.

Air: There is no potential for air releases from this unit. Wastes are encased in the detonation devices and housed in the building. Waste explosive materials are not exposed to the air in this unit.

Subsurface Gas: There is no potential for generation of subsurface gas. The unit is located above-ground on a concrete floor slab.

Unit No.: OB-8

Unit Name: Pyrotechnic Waste Disposal Area

Unit Description: The Pyrotechnic Waste Disposal Area is an area along the southern fence line of the Open Burn Area that was formerly used for disposal of pyrotechnic materials in solution. The solution was poured directly onto the soil without prior treatment. The exact boundaries of the disposal area are not known (Ref. 84). The solutions were generated in the Open Burn Area at the Pyrotechnic Waste Shed (SWMU OB-5). Pyrotechnic solutions are now treated by solar evaporation in the Biodegradation Unit (SWMU OB-6). Pyrotechnic solutions were disposed onto the soil because it was thought that the inorganic salts in the solution would not be removed by the units in the Sanitary Wastewater Treatment Plant (Ref. 23). There was no evidence of past disposal observed in this area during the VSI.

Date of Start-up: 1975 (Ref. 84).

Date of Closure: Wastewater was last disposed in this area in 1985 (Ref. 84). No formal closure of the area has been undertaken.

Wastes Managed: The area was formerly used for disposal of pyrotechnic materials in solution (Ref. 23) including potassium perchlorate (Ref. 84). It is estimated that approximately 20 gallons per year were disposed in this manner. An analysis of the wastewater for hazardous constituents was not available.

Release Controls: There were no release controls noted in the file information or observed during the VSI.

History of Releases: Wastewater was poured directly onto the soil without prior treatment. There was no evidence of disposal observed during the VSI.

Conclusions: Soil/Groundwater: There are documented past releases of wastewater directly to the soil in this area. There is no ongoing potential for releases

to the soil since the unit is no longer active. The potential for release to groundwater is high because the soil has not been cleaned up and there are no surface release control structures to confine the wastewater to the surface soil.

Surface Water: The potential for past and ongoing releases to surface water is low due to the large distance to the Plant Drainage Ditch.

Air: The potential for past or ongoing air releases is low since the wastewater reportedly contained no non-volatile constituents.

Subsurface Gas: The potential for generation of subsurface gas from the disposed wastewater is low due to the suspected low volatility of the solution.

Unit No.: UT-1

Unit Name: Waste Solvent Storage Tank

Unit Description: The Waste Solvent Storage Tank is an inactive underground tank formerly located near the Waste Solvent Incinerator (SWMU IN-3). The tank was taken out of service when the incinerator was dismantled (Ref. 84). The 1000-gallon Waste Solvent Storage Tank was located approximately 20 feet east of the Waste Solvent Incinerator (Ref. 86). The tank's materials of construction are not known.

Date of Start-up: The tank was in service in 1970 (Ref. 86). The exact start-up date is not known.

Date of Closure: The Waste Solvent Storage Tank was removed from service when the incinerator was dismantled in the late 1970s or early 1980s (Ref. 84).

Wastes Managed: The tank was used to store waste solvents generated by on-site activities and destroyed in the incinerator. A list of solvents stored is not available.

Release Controls: No release controls were noted in the file information. During the VSI, only the standpipe from the tank was observed. The tank has been taken out of service but not removed from the ground (Ref. 84).

History of Releases: No releases were noted in the file information. There were no signs of surface soil releases; however, there was a solvent odor detected near Building 51 during the VSI.

Conclusions: Soil/Groundwater: The potential for past releases to soil and groundwater is unknown since there are no tank integrity testing data available. Solvent odors were detected in the area during the VSI.

Surface Water: The potential for release to surface water is

also unknown because the integrity of the tank was not determined. If past releases to the soil occurred, the potential for release to the Miami-Erie Canal through the Plant Drainage Ditch and Retention Basins would be moderate. This potential may be minimized since the solvents would have to reach the Plant Drainage Ditch via groundwater interflow and because the tank is more than 2500 feet from the Miami-Erie Canal.

Air: The potential for past release to the air is moderate from this underground unit. Some solvent vapors may have been released through the tank's standpipe. Solvent odors were detected near Building 51 during the VSI.

Subsurface Gas: The potential for generation of subsurface gas is unknown since the tank's integrity has not been determined. If leakage of solvents has occurred from the tank, subsurface gas generation has probably occurred.

Unit No.: UT-2

Unit Name: Aviation Fuel Tank

Unit Description: The Aviation Fuel Tank is a metal underground storage tank located just south of the Oil Burn Structure (SWMU MI-3). The tank was used to supply fuel through an underground pipeline to the Oil Burn Structure. The capacity of the tank is 350 or 400 gallons. Approximately 250 gallons of fuel remained in the tank during the VSI (Ref. 84).

Date of Start-up: Early 1970s.

Date of Closure: The tank was taken out of service with the Oil Burn Structure in 1979 (Ref. 84).

Wastes Managed: The tank was used to store aviation fuel that was used at the Oil Burn Structure. An analysis of the contents of the tank was not available.

Release Controls: The tank has been taken out of service but it has not been removed. No other release controls were noted in the file information or observed during the VSI. Tank integrity test data was not available.

History of Releases: No releases were noted in the file information or observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is unknown because the integrity of the tank was not determined. Since the tank is not empty, any small leak in the tank will result in ongoing releases to underlying soil and groundwater.

Surface Water: If the tank is leaking, there is a moderate potential for release to surface water via groundwater interflow. The tank is located within 200 feet of the Overflow Pond and Retention Basins and within 600

feet of the Miami-Erie Canal.

Air: The potential for release to the air is low. The tank still contains fuel but there are no open vents to result in emissions to the air.

Subsurface Gas: The potential for generation of subsurface gas is unknown since the integrity of the tank was not determined. If the tank is leaking, the potential for generation of subsurface gas is high due to the volatile nature of the contents.

Unit No.: WD-1

Unit Name: Alpha Wastewater Influent Tanks (4)

Unit Description: The Alpha Wastewater Influent Tanks are located below-ground in a concrete vault outside the north wall of the WD Building. Each tank is constructed of epoxy-coated steel (Ref. 55, p. V-28) and has a 30,000 gallon capacity (Ref. 84). Alpha-contaminated wastewater is piped into the tanks from the R, H, and WD Buildings and transported by tank truck from the SM and PP Buildings. In the Effluent Tanks, the pH of the wastewater is adjusted to 11-11.5 and a flocculant is added (Ref. 23, p. 2-20). Wastewater is discharged semi-continuously from the Influent Tanks to the Clariflocculators in the Alpha Wastewater Treatment System (SWMU WD-2) (Ref. 84). The Influent Tanks were located in a closed concrete vault and were not obwerved during the VSI.

Date of Start-up: 1948 (Ref. 84).

Date of Closure: The tanks are still in service.

Wastes Managed: The Influent Tanks receive low-level radioactive (alpha-contaminated) wastewater (Ref. 55). Since the tanks do not receive hazardous waste streams, an analysis of the wastewater for hazardous constituents is not available; however, the sludge generated from treatment of the wastewater does contain low concentrations of some hazardous constituents (Ref. 85).

Release Controls: The tanks are constructed of steel with an epoxy coating and are located inside a concrete vault. No other release controls were documented in the file information or observed during the VSI.

History of Releases: The tanks are subject to corrosion and have been "repaired" on several occasions. Despite these repairs, the facility reports no detectable leaks and state that "any slow undetectable leaks would have been repaired without significant losses" (Ref. 55). An overflow of the influent tanks was reported in 1965 which resulted in the release of polonium and cobolt in surrounding soil (Ref. 81). The integrity of the tanks and concrete vault were not determined

during the VSI.

Conclusions:	Soil/Groundwater:	The file information indicates that the tanks have leaked and overflowed in the past. The volume of released liquid was not provided. Since the integrity of the vault was not determined, the potential for ongoing release to soil and groundwater is unknown.
	Surface Water:	The potential for release to surface water is low since the tanks are more than 600 feet from the Plant Drainage Ditch.
	Air:	The potential for releases to the air is low since the tanks are completely enclosed in a concrete vault and due to the reported non-volatile nature of the wastewater.
	Subsurface Gas:	The potential for generation of subsurface gas is low. The tanks, although below-ground, are located inside a concrete vault. The potential is further minimized due to the low volatility of the wastewater.

Unit No.: WD-2

Unit Name: Alpha Wastewater Treatment System

Unit Description: The Alpha Wastewater Treatment System consists of eleven units which are located inside the WD Building which treat alpha-contaminated wastewater generated by on-site activities. Components of the treatment system include two Clariflocculators, a Mixing Box, two Sand Filters, two Bone Char Columns, an Effluent Storage Tank, two Sludge Pits, and a Sludge Solidification and Drumming Unit.

Wastewater which has been pH-adjusted and contains flocculant is discharged into Clariflocculator #1 from the Influent Tanks (SWMU WD-1). Clariflocculator #2 is used as a standby unit. Clarified wastewater is discharged to the Mixing Box and the sludge is pumped to the Sludge Storage Pits. Wastewater flows through a carbon adsorbtion bed at the Mixing Box, then through the Sand Filters, Bone Char Columns and a Final Filter. Effluent from the Final Filter is discharged to the Effluent Storage Tanks where it is sampled and analyzed for beta, ^{238}Pu, ^{233}U, and ^{234}U prior to discharge to the Great Miami River (Ref. 23, p. 2-20) in accordance with NPDES Permit No. IT000005 (Ref. 46).

Sludge from the Sludge Pits is sampled and analyzed for specific gravity, solids content, and ^{238}Pu. It is then discharged to the Sludge Solidification and Drumming Unit where it is mixed with concrete and sealed in 55-gallon drums. The drums are then stored in the Radioactive/Mixed Hazardous Waste Storage Area (SWMU CS-9) prior to off-site storage or disposal (Ref. 23).

The bottom of the Clariflocculators are located on the first floor of the WD Building and their sidewalls extend several feet above the second floor. The Sludge Pits are also located on the second floor. The remaining units in the treatment system are located on the first floor of the building. All units are underlain with a concrete floor slab and are covered by the roof of the building.

Date of Start-up: 1948 (Ref. 84).

Date of Closure: The treatment system is still in service.

Wastes Managed: The Alpha Wastewater Treatment System receives low level radioactive (alpha contaminated) wastewater from the R, H, WD, SM, and PP Buildings via the Influent Tanks (Ref. 23). During fiscal year 1984, the total quantity of alpha-contaminated waste disposed off-site was 92,800 cubic feet (Ref. 55).

Since the system does not treat hazardous waste streams, an analysis of the wastewater for hazardous constituents is not available. Analysis of the solidified treatment system sludge revealed leachable concentrations of arsenic, cadmium, chromium, lead, and silver. All concentrations were below the corresponding RCRA values for EP toxicity (Ref. 85).

Release Controls: All treatment units are located on the first or second floor of the WD Building where they are underlain by a concrete floor slab and covered by the roof of the building. There is no exposure of the waste in any portion of the treatment system to sunlight, wind, or precipitation. The only waste entering the treatment system is a regulated flow of wastewater from the Influent Tanks. In the event that extra treatment capacity is needed, Clariflocculator #2 can be taken out of service.

History of Releases: No releases were noted in the file information. During the VSI, the treatment units appeared to be in good condition as did the concrete floor of the WD Building. No evidence of past releases was observed.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low. The treatment units are located indoors and above-ground over a concrete floor slab. The containment integrity of each unit and the concrete floor appeared to be adequate.

Surface Water: The treated effluent is discharged from the treatment system to the Great Miami River.

Since the monitoring program only includes radioactive constituents, there is a moderate potential that hazardous constituents, known to be in the sludge, may also be discharged to the river. The potential for unintended releases to surface water such as those due to leakage or rupture failure are low since the treatment system is more than 600 feet from the Plant Drainage Ditch.

Air: There is a low potential for release to the air due to the low volatility of the wastewater.

Subsurface Gas: The potential for generation of subsurface gas is low since the units are located indoors and above-ground over a concrete floor slab. The potential is further minimized due to the non-volatile nature of the wastewater and integrity of the underlying concrete.

Unit No.:	WD-3
Unit Name:	Beta Wastewater Treatment System
Unit Description:	The Beta Wastewater Treatment System is located in the WD Building Annex. It consists of two Influent Tanks, a Metering Station, and a Wastewater Mixing/Solidification Unit. The treatment system treats beta-contaminated wastewater generated on-site by solidifying it prior to on-site storage. All beta-contaminated wastewater discharged to the treatment system is solidified; no wastewater effluent is produced by the system. Beta contaminated wastewater is piped to the Influent Tanks where it is discharged in 25-gallon batches to the Metering Station. From the Metering Station, the wastewater is discharged at a controlled rate into a 55-gallon drum in the Mixing/Solidification Unit where it is mixed with cement. The solidified drummed waste is then transported to the Radioactive/Mixed Hazardous Waste Storage Area (SWMU CS-9) in Building 33 prior to off-site disposal.
Date of Start-up:	1948 (Ref. 84).
Date of Closure:	The treatment system is still in service.
Wastes Managed:	The Beta Wastewater Treatment System receives beta-contaminated (tritium) wastewater generated on-site. The wastewater has not been analyzed for hazardous constituents. During fiscal year 1984, the total quantity of tritium-contaminated waste disposed off-site was 20,000 cubic feet (Ref. 55).
Release Controls:	The units are located inside the WD Building where treatment activities and the units are protected from sunlight, wind, and precipitation. The units are located on the second story of the building and are underlain by a concrete floor slab. The Influent Tanks and the Metering Station are enclosed to prevent releases to the floor.
History of Releases:	No releases from this treatment system were noted in the file information. During the VSI, the units and concrete floor appeared to be in good condition.

Conclusions:	Soil/Groundwater:	The potential for release to soil and groundwater is low. The treatment units are located indoors and above-ground over a concrete floor slab. The integrity of the concrete floor appeared to be adequate.
	Surface Water:	Wastewater is solidified in this treatment process and no effluent is produced. Therefore, there are no intended releases to surface water. The potential for releases to surface water from leaks and spills is low. The treatment units are located more than 600 feet from the Plant Drainage Ditch.
	Air:	There is a low potential for release to the air due to the low volatility of the wastewater.
	Subsurface Gas:	The potential for generation of subsurface gas is low since the units are located indoors and above-ground over a concrete floor slab. The potential is further minimized due to the non-volatile nature of the wastewater and integrity of underlying concrete.

Unit No.: SD-1

Unit Name: Grit Chamber

Unit Description: The Grit Chamber is the initial component of the Sanitary Wastewater Treatment Plant located outdoors east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Other components of the treatment system include the Comminutor (SWMU SD-3), four Equalization Basins (SWMU WD-4), two Aeration Basins (SWMU SD-5), two Clarifiers (SWMU SD-6), two Sand Filters (SWMU SD-7), four Chlorine Contact Chambers (SWMU SD-8), and four Sludge Drying Basins (SWMU SD-9). Treated effluent is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater per day is treated by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Grit Chamber is the first treatment unit in the system. It is an open-topped, in-ground tank approximately 10 feet on each side and 10 to 12 feet deep. The sides and bottom of the unit are constructed of 12-inch thick concrete. Wastewater enters the chamber by gravity flow through a below-ground pipe. In the Grit Chamber, heavy solids settle out of the wastewater and are raked into a Grit Conveyor (SWMU SD-2). The collected solids are then dried in the Sludge Drying Beds before they are transported to an off-site disposal area. Wastewater effluent is discharged from the Grit Chamber to the Comminutor (Ref. 84).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The unit is still in service.

Wastes Managed: The Grit Chamber receives sanitary and industrial process effluent (Ref. 53) including spent solvents from laboratory sinks and floor drains (Ref. 81). The sludge produced is known to contain radionuclides but it does not constitute a RCRA-listed hazardous

waste nor does it have hazardous waste characteristics. An analysis of the wastewater effluent for hazardous constituents is not available. The sludge is packaged for shipment as a low-level radioactive waste to the Nevada Test Site. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinse from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chloride (Ref. 81, p. 4-13).

Release Controls: The freeboard in the Grit Chamber was approximately six feet during the VSI. Overtopping of the unit is prevented by metering the influent wastewater flow. The soil in the vicinity of the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater would be discharged via this catch basin to the Retention Basins or Overflow Pond (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom of the unit was not observed since the unit was in operation and covered with wastewater; however, the concrete walls of the Grit Chamber appeared to be in good condition. No cracks or excessive wear of the concrete was observed.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low due to the observed integrity of the concrete sides and bottom of the unit.

Surface Water: The potential for direct releases to surface water is low due to the large freeboard maintained in the chamber. If overtopping occurred, the wastewater would be released to the Miami-Erie Canal and Great Miami River through the Retention Basins

and the Overflow Pond.

Air: The potential for release to the air is moderate since solvents are present in the wastewater and because the Grit Chamber is open-topped.

Subsurface Gas: The potential for generation of subsurface gas is low since the unit is lined with concrete.

Unit No.: SD-2

Unit Name: Grit Conveyor

Unit Description: The Grit Conveyor is a screw conveyor which lifts settled solids out of the Grit Chamber so the solids can be transported to the Sludge Drying Beds (SWMU SD-9). The unit extends to the bottom of the Grit Chamber and conveys the solids approximately three feet above-ground. The point of grit discharge is approximately six feet from the Grit Chamber (Ref. 84).

Date of Start-up: 1975 (Ref. 48).

Date of Closure: The unit is still in service.

Wastes Managed: The sludge produced in the Sanitary Wastewater Treatment System is known to contain radionuclides but it does not constitute a RCRA-listed hazardous waste nor does it have hazardous waste characteristics. The sludge is packaged for shipment as a low-level radioactive waste to the Nevada Test Site.

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chloride (Ref. 81, p. 4-13).

Release Controls: The solids from the Grit Conveyor are drummed and dumped into the Sludge Drying Beds. The conveyor is surrounded by a metal cover and the unloading area is underlain by a concrete pad. Excess liquids from the conveyor are drained back into the treatment system (Ref. 84).

History of Releases: There was no record of releases in the file information observed during the VSI. The Grit Conveyor was not operated during the VSI.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is low. The solids and

	liquids are fully contained in the conveyor above-ground over a concrete pad.
Surface Water:	Since the wastes are contained above-ground the potential for surface water releases is low.
Air:	The potential for air releases is moderate during unloading of waste from the conveyor to the drum.
Subsurface Gas:	There is no potential for generation of subsurface gas from this above-ground unit.

Unit No.: SD-3

Unit Name: Comminutor

Unit Description: The Comminutor is an outdoor component of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Comminutor is an open-topped, in-ground unit which receives wastewater effluent from the Grit Chamber (SWMU SD-1). The bottom and sides of the unit are lined with concrete. At the Comminutor, the floating or suspended solids are cut up to smaller more uniformly sized pieces to improve the efficiency of downstream treatment operations. The Comminutor is approximately five feet on a side and ten feet deep. Treated effluent is discharged from the Comminutor to the Equalization Basins (SWMU SD-4).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The unit is still in service.

Wastes Managed: The Comminutor receives sanitary and industrial process effluent from the Grit Chamber. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from the treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The Comminutor is concrete-lined and freeboard was approximately six feet during the VSI. The wastewater level in the unit is controlled by gravity feed from the Grit Chamber. The ground surface in the vicinity of the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater from the Comminutor would be discharged through this catch basin to the Retention Basin (SWMU SI-1) or Overflow Pond (SWMU SI-2) (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom of the unit was not seen since the unit was in operation and covered with wastewater; however the concrete walls of the Comminutor appeared to be in good condition. No cracks or excessive wear of the concrete was observed.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low due to the observed integrity of the concrete walls of the unit.

Surface Water: The potential for direct releases to surface water is low to moderate. If over-topping occurred the wastewater would be released to the Great Miami River through the Retention Basins and the Overflow Pond. The release potential is minimized due to the large freeboard maintained in the chamber.

Air: The potential for release to the air is low due to the relatively inert and dilute nature of the wastewater. The potential for release to the air would be high if larger

volumes of volatile constituents were present in the wastewater since the Comminutor is open-topped.

Subsurface Gas: The potential for generation of subsurface gas is low since the unit is lined with concrete and the wastewater is relatively dilute.

Unit No.: SD-4

Unit Name: Equalization Basins (4)

Unit Description: The Equalization Basins are four outdoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Equalization Basins are in-ground, open-topped units which receive wastewater from the Comminutor (SWMU SD-3). The bottom and sides of the basins are constructed of metal. The function of the Equalization Basins is to mix the wastewater to keep solids in suspension and to maintain aerobic conditions. Two of the basins were approximately 12 to 15 feet on each side. and approximately 10 feet deep. Effluent is discharged from the Equalization Basins to the Aeration Basins (SWMU SD-5).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The units are still in service.

Wastes Managed: The Equalization Basins receive sanitary and industrial process effluent from the Comminator. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The basins are constructed of metal and the freeboard on them was approximately two feet during the VSI. The ground surface in the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater from the Equalization Basins would be discharged through this catch basin to the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2) (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom and sides of the basins could not be inspected since the basins were filled with wastewater. No releases were observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is unknown since the sides and bottom of the unit could not be observed and its containment integrity could not be determined.

Surface Water: The potential for direct releases to surface water is moderate. The freeboard is approximately two feet and if over-topping occurred, the wastewater would be released to the Great Miami River through the Retention Basins and the Overflow Pond.

Air: There is a moderate potential for release to the air from this unit since it is open-topped and because the mixing action in the unit may enhance evaporation of even small concentrations of volatile constituents in the wastewater.

Subsurface Gas: The potential for generation of subsurface gas is low since the unit is constructed of metal and the wastewater is relatively dilute.

Unit No.: SD-5

Unit Name: Aeration Basins (2)

Unit Description: The Aeration Basins are two outdoor components of the Sanitary Wastewater Treatment System, located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Aeration Basins are in-ground, open-topped units which receive effluent from the Equalization Basins (SWMU SD-4). The bottom and sides of the basins are metal. Wastewater in the Aeration Basins is aerated to improve its treatability and to promote uniform distribution of suspended solids. The basins were approximately 40 feet long, 20 feet wide, and 10 feet deep. Aerated effluent from the basins is discharged to the Clarifiers (SWMU SD-6) (Ref. 84).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The units are still in service.

Wastes Managed: The Aeration Basins receive sanitary and industrial process effluent from the Equalization Basins. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents,

photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The basins are constructed of metal and the freeboard on them was approximately two feet during the VSI. The ground surface in the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater from the basins would be discharged via this catch basin to the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2) (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom and sides of the basins could not be inspected since the basins were filled with wastewater. No releases were observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is unknown since the sides and bottom of the unit could not be observed and its containment integrity could not be determined.

Surface Water: The potential for direct releases to surface water is moderate. The freeboard is approximately two feet and the wastewater would be released to the Great Miami River via the Retention Basins and the Overflow Pond.

Air: There is a moderate potential for release to the air from this unit since it is open-topped and because the mixing action in the unit may enhance evaporation of even small concentrations of volatile constituents in the wastewater.

Subsurface Gas: The potential for generation of subsurface

gas is low since the unit is constructed of metal and the wastewater is relatively dilute.

Unit No.: SD-6

Unit Name: Clarifiers (2)

Unit Description: The Clarifiers are two outdoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Clarifiers are in-ground, open-topped units which receive wastewater effluent from the Aeration Basins (SWMU SD-5). The Clarifiers are rectangular-shaped and have metal sides and bottoms. The objective of clarification is to remove readily settleable solids and floating material to reduce the suspended solids content. The Clarifiers are approximately 20 feet long, 10 feet wide, and 10 feet deep. Clarified effluent is discharged to the Sand Filters (SWMU SD-7) for further treatment. Sludge produced in the Clarifiers is removed and placed in the Sludge Drying Beds (SWMU SD-9) (Ref. 84).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The units are still in service.

Wastes Managed: The Clarifiers receive sanitary and industrial process effluent from the Aeration Basins. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal

finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The basins are constructed of metal and the freeboard was approximately two feet during the VSI. The ground surface in the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater from the Clarifiers would be discharged through this catch basin to the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2) (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom and sides of the Clarifiers could not be inspected since they were filled with wastewater. No releases were observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is unknown since the sides and bottom of the unit could not be observed and their containment integrity could not be determined.

Surface Water: The potential for direct releases to surface water is moderate. The observed freeboard was approximately two feet and if overtopping occurred the wastewater would be released to the Great Miami River via the Retention Basins and the Overflow Pond.

Air: The potential for release to the air is low due to the relatively inert nature of the wastewater. The potential for release to the air would be high if volatile

constituents were present in the wastewater since the Clarifiers are open-topped.

Subsurface Gas: The potential for generation of subsurface gas is low since the unit is constructed of metal and the wastewater is relatively dilute.

Unit No.: SD-7

Unit Name: Sand Filters (2)

Unit Description: The Sand Filters are two indoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The systems' design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Sand Filters are located in a small building west of the Clarifiers (SWMU SD-6). They are fully enclosed, cylindrical units approximately 12 feet high and four feet in diameter. Wastewater is pumped to the Sand Filters at an average rate of 70 gallons per minute through the bottom of the cylinder and discharges through the top. The filters are completely above-ground and are constructed of metal. They were installed to reduce the suspended solids concentration in the wastewater effluent (Ref. 51). Only one Sand Filter is operated at a time. Filtered effluent is discharged to the Chlorine Contact Chambers (SWMU SD-8) before being discharged offsite. Backwash water which periodically cleanses the filters is discharged back to the Comminutor (SWMU SD-3) (Ref. 53).

Date of Start-up: 1986.

Date of Closure: The units are still in service.

Wastes Managed: The Sand Filters receive sanitary and industrial process effluent from the Clarifiers. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms,

showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The flow of wastewater is controlled at approximately 70 gallons per minute to prevent overfilling the Sand Filters. The Sand Filters are fully enclosed such that wastewater and filter media are not exposed to the indoor air. The filters are completely above-ground to offer visual inspection of the entire unit. The filters are underlain by a concrete floor slab.

History of Releases: No releases were noted in the file information. During the VSI, the exterior surface of the Sand Filters appeared to be in good condition. No stains or releases were observed on the units and the concrete floor of the building was clean, dry and free of cracks.

Conclusions:

Soil/Groundwater: There is no potential for release to soil and groundwater because the unit is fully enclosed and above-ground. The containment integrity of the filters appeared to be good and there were no signs of deterioration of the underlying concrete pad.

Surface Water: The potential for direct releases from the Sand Filters to surface water is low. If a filter ruptured and leaked, wastewater would be collected outside the building in the catch basin. The wastewater would be released to the Great Miami River via the Retention Basins and the Overflow Pond. The release potential is minimized due to the apparent integrity of these metal units.

Air:	There is no potential for release to the air from these fully enclosed units.
Subsurface Gas:	There is no potential for generation of subsurface gas since the Sand Filters are located completely above-ground over a concrete floor slab.

Unit No.: SD-8

Unit Name: Chlorine Contact Chambers (4)

Unit Description: The Chlorine Contact Chambers are two outdoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The systems' design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Chlorine Contact Chambers are the final treatment units in the system. Each chamber is approximately three feet on a side and approximately 10 feet deep. The chambers are rectangular-shaped and open-topped. Chlorine is added to the wastewater as a disinfectant prior to discharge. Chlorinated effluent is discharged from the Chlorine Contact Chambers to the Great Miami River via NPDES Outfall 001 (Ref. 84).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The units are still in service.

Wastes Managed: The Chlorine Contact Chambers receive sanitary and industrial process effluent from the Sand Filters (SWMU SD-7). An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents,

photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The Chlorine Contact Chambers are constructed of concrete and two feet of freeboard was observed during the VSI. The ground surface around the chambers was uncovered. Treated wastewater enters the chambers at a constant rate from the Sand Filters and is discharged by gravity to NPDES Outfall 001, thereby maintaining a constant wastewater level in the units (Ref. 84).

History of Releases: No releases were noted in the file information. During the VSI, the upper portion of the concrete walls of the chamber appeared to be in good condition. The bottom of the unit could not be inspected since the unit was filled with wastewater.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is unknown since the concrete sides and bottom of the unit could not be inspected and their containment integrity could not be determined.

Surface Water: The potential for direct releases to surface water is moderate. If overtopping occurred the wastewater would probably follow the natural slope of the land to the Retention Basins or the Overflow Pond. This release potential is minimized due to the freeboard maintained in the chamber.

Air: The potential for release to the air is low due to the relatively dilute and inert nature of the wastewater. The potential for release to the air would be high if volatile constituents were present in the wastewater since the Chlorine Contact Chamber is open-topped.

Subsurface Gas: The potential for generation of subsurface gas is low since the unit is lined with concrete and the wastewater is relatively non-volatile.

Unit No.: SD-9

Unit Name: Sludge Drying Beds (4)

Unit Description: The Sludge Drying Beds represent four outdoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Sludge Drying Beds receive sludge from the Grit Chamber (SWMU SD-1) and Clarifiers (SWMU SD-6). Each unit is approximately 40 feet long, 20 feet wide and three or four feet deep. The sides are constructed of six-inch thick concrete and the bottom is composed of gravel fill. The bottom is underlain with underdrains which direct the liquid from the sludge back into the treatment system. The sludge is placed in the beds and allowed to dry in the sun. Dried sludge is removed and disposed off-site (Ref. 84).

During the VSI, three of the beds contained sludge and one was empty.

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The units are still in service.

Wastes Managed: The Sludge Drying Beds receive sanitary and industrial process wastewater sludge from the Grit Chamber and Clarifiers. The sludge is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. It has not been analyzed for hazardous constituents. The sludge is packaged for shipment as a low-level radioactive

waste to the Nevada Test Site. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: Concrete sidewalls confine the sludge to the beds. Underdrains collect excess liquids and return it back to the treatment system. Freeboard on the three Sludge Drying Beds in service during the VSI was approximately two feet. The ground surface around the Sludge Drying Beds is covered with asphalt which is sloped to the west toward a storm catch basin. From this collection point, runoff and releases from the beds would be discharged to the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2).

History of Releases: Sludge from the treatment system is placed in the drying beds on bare soil over an underdrain system. The extent of any contamination in the soil is not known. No releases over the sidewalls of the beds were observed during the VSI.

Conclusions:

Soil/Groundwater: Sludge is placed directly on the ground surface in the beds. There is a moderate to high potential for contaminants in the sludge to travel with infiltrating liquid to the groundwater. The potential may be minimized due to the presence of the underdrain system; however, the efficiency of liquid collection was not determined.

Surface Water: There is a low to moderate potential for release to surface water since the surrounding asphalt is sloped to a storm drain. The ability of the units' underdrain

system to handle large volumes of rainfall is not known.

Air: The potential for volatile releases to the air is low. Although the unit is open-topped and sludge is exposed to the atmosphere any volatile constituents present in the wastewater are likely to be released during treatment at the Equalization Basins and Aeration Basins. There is a moderate potential for release of airborne particulates since the dried wastes are subject to wind dispersion.

Surface Gas: There is a moderate to low potential for generation of subsurface gas since any volatile constituents present in the wastewater are likely to be released during treatment at the Equalization Basins or Aeration Basins.

Unit No.:	SD-10
Unit Name:	Underground Sewer Lines
Unit Description:	Underground Sewer Lines, located throughout the facility, are used to transport sanitary and industrial wastewater streams from the facility to the Sanitary Wastewater Treatment System (SWMUs SD-1 through SD-9). The Sewer Lines are constructed of vitrified clay, cast iron, or steel pipe with diameters ranging from four to ten inches (Ref. 95).
Date of Start-up:	Early 1950s (Ref. 55).
Date of Closure:	The Underground Sewer Lines are still in service.
Wastes Managed:	The Underground Sewer Lines convey sanitary and industrial wastewater to the Sanitary Wastewater Treatment System. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from wastewater treatment is known to contain radionuclides but it does not contain RCRA-hazardous waste nor does it exhibit hazardous waste characteristics. Sources of wastewater conveyed by the Underground Sewer Lines include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73). It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).
Release Controls:	No release controls were noted in the file information or observed during the VSI.
History of Releases:	There is documentation of past release from the Underground Sewer Line due to leakage from broken pipes. Previous investigations of the sewer system "indicated numerous pipe and joint breaks, cracks, misalignments, sags and obstructions." It is also thought that potentially contaminated groundwater from contaminated soil areas

on-site may be infiltrating the sewer lines (Ref. 73, p. 3-33). Some repairs were made to the sewer line in order to limit contaminant discharges to underlying soil and groundwater.

Conclusions:	Soil/Groundwater:	Releases from the Underground Sewer Lines to soil and groundwater have been documented. It is not known whether releases are presently occurring.
	Surface Water:	The potential for release to surface water is high due to the proximity of the site to the Miami-Erie Canal. Subsurface discharges from the sewer could reach this surface water body through groundwater interflow.
	Air:	The potential for release to the air is low since the pipelines are below ground.
	Subsurface Gas:	There is a high potential for generation of subsurface gas since the wastewater contains solvents and pipeline leakage is documented.

Unit No.: SD-11

Unit Name: Old Sanitary Wastewater Treatment Plant

Unit Description: The Old Sanitary Wastewater Treatment Plant is located just west of the WD Building. It was used prior to construction of the new Sanitary Wastewater Treatment Plant (SWMUs SD-1 through SD-9). The plant consisted of a pump room, primary settling tank, aeration tank, digester, chlorinator, and effluent baffle chamber (Ref. 99). All treatment units are open-topped, in-ground structures. The sidewalls and bottoms are in-ground structures. The sidewalls and bottoms are constructed of 12-inch thick reinforced concrete. The entire plant is located within a 44-foot by 47-foot area. The primary settling tank aerator and digester are 15 feet deep. The pump room is 12 feet deep and the effluent baffle chamber is seven feet deep. Treated effluent was discharged to the sanitary sewer to the Great Miami River (Ref. 99). The treatment plant was taken out of service when it became too small to effectively treat the wastewater produced by the facility (Ref. 84).

Date of Start-up: 1948.

Date of Closure: 1975 (Ref. 84).

Wastes Managed: The Old Sanitary Wastewater Treatment Plant treated the same type of wastes as the new Sanitary Wastewater Treatment System. This included sanitary wastewater and some process effluent from the facility. Sources of wastewater included restrooms, showers, laundry facilities, lab sinks, and rinse water from a metal finishing operation. An analysis of the wastewater effluent or sludge for hazardous constituents was not available.

Release Controls: The sidewalls and bottoms of the units in the plant were constructed of 12-inch thick reinforced concrete. Waste flow through the treatment units was controlled by a gravity feed system. No other release controls were observed on this inactive unit during the VSI.

History of Releases: No releases were noted in the file information. No evidence of past releases were observed during the VSI. The units were inactive and

contained only rainwater. The integrity of the concrete walls and bottoms of the units appeared to be good. There was no sign of stressed vegetation outside the walls of the treatment units.

Conclusions:	Soil/Groundwater:	The potential for release to soil and groundwater is low. The integrity of the concrete units appeared to be adequate and there were no other signs of past releases.
	Surface Water:	The treatment plant was designed to discharge to the Great Miami River. There is no ongoing potential for surface water release since the unit is no longer in operation.
	Air:	During operation, releases to air may have occurred from the open-topped units. There is no potential for ongoing air releases since the unit is no longer in service.
	Subsurface Gas:	Due to the apparent integrity of the concrete walls and bottom of the treatment units, the potential for generation of subsurface gas is low.

Unit No.:	SU-1
Unite Name:	Glass Melter Room Sump
Unit Description:	The Glass Melter Room Sump is a covered, concrete-lined unit located in the basement of the WD Building beneath the Glass Melter Furnace (SWMU IN-1). It is approximately three feet in diameter. The sump was covered and its depth could not be determined. The sump is used to collect wastewater from the Glass Melter's Off-Gas Treatment System and washwater from the floor of the Glass Melter Room. Wastewater in the sump is pumped into the Influent Tank in the Alpha Wastewater Treatment System (SWMU WD-2).
Date of Start-Up:	1981.
Date of Closure:	The sump is still in service.
Wastes Managed:	The sump receives wastewater from the Glass Melter's Off-Gas Treatment System and from the floor of the Glass Melter Room. An analysis of the wastewater contained in the sump for hazardous constituents was not available.
Release Controls:	The sump is concrete-lined, located indoors, and covered where it is protected from rainfall runoff. The sump pump is automatically activated to prevent overflows (Ref. 84).
History of Releases:	There were no releases noted in the file information. There were no releases observed during the VSI but the integrity of the sump could not be determined.
Conclusions:	<u>Soil/Groundwater</u>: The potential for release to soil and groundwater is unknown because the integrity of the sump liner could not be determined.
	<u>Surface Water</u>: The potential for release to surface water is low since the sump is located indoors and more than 600 feet from the Plant Drainage Ditch.

Air:	The potential for release to the air is low from this indoor, covered sump due to the inert nature of the wastewater.
Subsurface Gas:	The potential for generation of subsurface gas is low since the sump is lined and due to the inert nature of the wastewater.

Unit No.: SU-2

Unit Name: Building 1 Sump

Unit Description: The Building 1 Sump is a partially covered, inactive pit located on the west side of Building 1. Its dimensions are approximately four feet by four feet and three feet deep. It is concrete-lined and covered with a metal lid. The sump's function was to collect wastewater from Building 1, filter it to remove contaminants, and discharge the effluent to the Building 1 Leach Pit (SWMU SI-4) (Ref. 84). The sump was dredged every three or four years. The sludge and filters were destroyed on-site by thermal treatment (Ref. 55).

Date of Start-up: Early 1960s (Ref. 81).

Date of Closure: The sump's influent and effluent lines were blocked in 1985 (Ref. 84).

Wastes Managed: The wastewater discharged into the sump contained small amounts of dissolved explosives (ppm range, grams per year) and acetone (4 m^3/year) (Ref. 55).

Release Controls: The sump was closed-topped and discharged filtered wastewater by gravity to the Leach Pit. The liner also prevents infiltration of hazardous constituents into the subsurface soil.

History of Releases: There were no releases, other than those to the Leach Pit, noted in the file information. The sump was observed to contain only rainwater during the VSI. The concrete liner appeared to be in good condition.

Conclusions: Soil/Groundwater: The potential for past releases to soil and groundwater from the sump is low. The sump's concrete liner appeared to be in good condition. There is no ongoing potential for release sinee the unit is no longer used to contain process wastewater.

Surface Water: There is no potential for release to surface

water since the unit is inactive and waste sludge has been removed from the sump.

Air: There is no potential for release to the air since the unit is inactive and no wastes remain in the sump.

Subsurface Gas: Since the unit is concrete-lined, the potential for generation of subsurface gas from volatile constituents in the wastewater is low.

Unit No.: SU-3

Unit Name: Building 27 Sump

Unit Description: The Building 27 Sump is a partially covered, inactive pit located near the south side of Building 27. Its dimensions are approximately six feet by three feet and four feet deep. It is lined with concrete and covered with a metal lid. The sump was used to collect wastewater from Building 27, filter it to remove suspended contaminants, and discharge the effluent to the Building 27 wastewater through a covered concrete flume. Sump effluent was discharged by gravity to the Building 27 Leach Pit (SWMU SI-5) through an underground pipeline. The Leach Pit is located approximately 200 feet west of the sump. The sump was dredged every three or four years to remove accumulated sludge. This sludge and spent filters were destroyed on-site by thermal treatment (Ref. 84).

Wastewater generated at Building 27 is now discharged into the Concrete Flume (SWMU MI-14) where it accumulates without being discharged into the sump. The flume is approximately 20 feet long, 10 inches wide, and 12 inches deep. The wastewater is then pumped from the flume into 55-gallon drums at the adjacent Building 27 Solvent Storage Area (Ref. 84).

Date of Start-Up: The exact start-up date is unknown but was probably in the early 1960s (Ref. 84).

Date of Closure: The sump was taken out of service in 1985 (Ref. 84).

Wastes Managed: The wastewater discharged from Building 27 into the sump contained acetone, ethanol, and dissolved explosives (Ref. 84).

Release Controls: The sump was closed-topped and discharged by gravity to the Leach Pit to prevent overtopping. The sump was concrete-lined to prevent infiltration of hazardous constituents into the subsurface soil.

History of Releases: There were no releases other than those to the Leach Pit noted in the file information. The sump was observed to contain only rainwater

during the VSI. The concrete liner appeared to be in good condition. A facility schematic of the storm sewers indicates the sump may have discharged wastewater at one time to the Plant Drainage Ditch (Ref. 96).

Conclusions:

Soil/Groundwater: The potential for past releases to soil and groundwater directly from the sump is low. The sump is concrete-lined and the liner appeared to be in good condition. There is no ongoing potential for direct releases to the soil since the unit is no longer used to contain process wastewater. There is a moderate potential for release to soil and groundwater since it appeared that wastewater currently contained in the Concrete Flume, could flow over the barrier into the sump. If enough wastewater accumulated in the sump it could drain into the Leach Pit where contaminants could enter the soil. There is no equipment to automatically divert wastewater from the flume to the drums.

Surface Water: There is no potential for release to surface water since the unit is inactive and waste sludge has been removed from the sump. Past releases to the Plant Drainage Ditch may have occurred via the suspected drain line from the sump.

Air: There is no potential for release to the air since the unit is inactive and no wastes remain in the sump.

Subsurface Gas: Since the unit is concrete-lined, the potential for generation of subsurface gas from volatile constituents in the wastewater is low.

Unit No.: MI-1

Unit Name: Plant Drainage Ditch

Unit Description: The Plant Drainage Ditch is an unlined open channel which collects runoff from the facility and directs it to the Retention Basin (SWMU SI-1) or Overflow Pond (SWMU SI-2). The runoff is then discharged to the Miami-Erie Canal through NPDES Outfall 001. The ditch is a natural drainage path located in a topographic low in the center of the facility. The total length of the Drainage Ditch is approximately 2200 feet and it extends from Building 51 to the eastern edge of the Retention Basin (Ref. 96). During the VSI, the average width of the ditch appeared to be less than five feet and its depth was less than 12 inches. The drainage basin which contributes runoff to the ditch is approximately 200 acres (Ref. 58).

Date of Start-up: The Drainage Ditch has been used since the facility began operation in 1948.

Date of Closure: The ditch is still in service.

Wastes Managed: The ditch is used to collect storm runoff from non-process areas on the SM Hillside, non-contact cooling water, cooling tower blowdown, water softener and backwash (Ref. 32). Floor drains from some of the facility's solvent storage areas were also connected to storm drains which may have discharged into the Plant Drainage Ditch. The Building 27 Sump (SWMU SU-3) also appears to have, at one time, discharged solvent and explosive contaminated wastewater directly to the ditch (Ref. 96). Finally, the SM hillside area, which was contaminated with radioactive materials from the Waste Disposal Pipeline (SWMU MI-2) rupture has resulted in radioactive runoff in the Plant Drainage Ditch (Ref. 73, p. 3-92).

Release Controls: The Plant Drainage Ditch is an open and unlined channel which directs runoff and non-process wastewater off-site. Releases of suspended solid contaminants to the Miami-Erie Canal and the Great Miami River is controlled at the Retention Basins and Overflow Pond. There are no controls to prevent contaminated runoff from entering the ditch. The water in the ditch receives no chemical

treatment for dissolved contaminants that may enter the runoff prior to discharge to the canal (Ref. 84).

History of Releases: During the VSI, facility representatives indicated that floor drains from some of the solvent storage areas were connected with the storm sewer. It is not known whether any of these were sewer lines discharged to the Plant Drainage Ditch. The Building 27 Sump (SWMU SU-3) also may have discharged solvent and explosive contaminated wastewater to the ditch (Ref. 96). Finally, the Plant Drainage Ditch received radioactive contaminated wastewater from the Waste Disposal Pipeline rupture and subsequently contaminated runoff from wastes discharged to the soil. During the VSI, water in the ditch was observed to contain silt which, according to facility representatives, was present due to excavation and construction operations being conducted at the Mound site.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is high. The Plant Drainage Ditch is unlined and has been the receptor of spilled waste materials and contaminated wastewater in the past. The ongoing potential for release is also high since it is likely that dissolved chemical contaminants are present in the stormwater runoff from this 200-acre site.

Surface Water: The Plant Drainage Ditch receives facility runoff and has been the receptor of spilled waste materials in the plant. Therefore, there is a high potential for release of contaminants in the Drainage Ditch to surface water. The wastewater in the ditch is discharged to the Miami-Erie Canal without undergoing chemical treatment.

Air: Since the Plant Drainage Ditch is uncovered there is a moderate potential for release of any volatile constituents present in the ditch to the air. The release potential

is minimized since the runoff and cooling water, which makes up most of the dry weather flow in the ditch, is relatively non-volatile.

Subsurface Gas: The potential for generation of subsurface gas is moderate to low. The Plant Drainage Ditch is unlined but receives relatively non-volatile wastestreams.

Unit No.: MI-2

Unit Name: Waste Disposal Pipeline

Unit Description: The Waste Disposal Pipeline is an abandoned underground pipeline which carried wastewater from the Special Metallurgical/Plutonium Processing (SM/PP) Facility to the Alpha Wastewater Treatment System (SWMU WD-2) in the WD Building (Refs. 12, 84). The liquid wastes were generated in the SM/PP area and carried by gravity via two, two-inch underground pipelines to Building 41. From Building 41, the wastewater was pumped to the WD Building (Ref. 84). The pipeline was buried 6 to 23 feet below grade and crossed the Plant Drainage Ditch (SWMU MI-1) above ground near Building 22. The length of the pipeline was 2,650 feet (Ref. 81, p. 4-33).

Date of Start-up: 1967 (Ref. 81, p. 4-33).

Date of Closure: The pipeline was taken out of service in 1976 and dismantled and removed in 1986 (Ref. 81).

Wastes Managed: The Waste Disposal Pipeline carried waste plutonium in acid solution from the SM/PP Facility to the WD Building (Ref. 81). An analysis of the wastewater for hazardous constituents was not available; however, detectable concentrations of toxic metals are present in the sludge from the Alpha Wastewater Treatment System. This system is utilized for treatment of the same wastewater formerly carried in the pipeline (Ref. 85).

Release Controls: The portion of the pipeline from Building 41 to the WD Building was pressurized; a pressure drop would indicate loss of liquid in the pipeline. The entire pipeline, with the exception of the section crossing the Plant Drainage Ditch, was underground so releases from the pipeline could not be visually detected.

History of Releases: The Waste Disposal Pipeline developed several leaks which lead to its abandonment and eventual removal. The surrounding soil became contaminated with pipeline wastes which were spread to the Plant Drainage Ditch and subsequently released off-site via rainfall

runoff. The pipeline ruptured in 1969 and both pipes were removed in 1986. A total of 964 ft^3 of contaminated soil has been removed and shipped off-site (Ref. 81, pp. 3-46, 4-33). Contaminated soil is still being removed from the hillside south of the WD Building (Ref. 87).

Conclusions:

Soil/Groundwater: Releases to soil have occurred as a result of a pipeline rupture in 1969. Since the wastewater likely contains hazardous constituents and because the pipeline was not located in a lined bed, there is a high potential that contaminants have reached underlying groundwater. Much of the contaminated soil has been excavated. There is no potential for ongoing releases from the pipeline since it was removed in 1986.

Surface Water: Releases to surface water occurred when contaminated soil from the pipeline rupture was conveyed off-site with rainfall runoff to the Miami-Erie Canal and the Great Miami River. There is a moderate to low potential for ongoing releases to surface water from contaminated soil areas. This potential is minimized since soil contamination is currently being excavated. Soil erosion is prevented by covering the areas with tarps when excavation is not being performed.

Air: The potential for ongoing releases to the air in the form of wind-blown particulate matter from the pipeline excavation is moderate in the areas where excavation is performed. The facility has attempted to minimize particulate releases by covering the excavated areas with plastic tarps.

Subsurface Gas: The potential for generation of subsurface gas is low since volatile wastes were not conveyed by the pipeline.

Unit No.: MI-3

Unit Name: Oil Burn Structure

Unit Description: The Oil Burn Structure is located adjacent to the spillway between the Retention Basins (SWMU SI-1) and Overflow Pond (SWMU SU-2). It is an open-topped, in-ground pit formerly used to test shipping containers by subjecting them to a gas fire for 15 minutes (Ref. 29). The pit has brick lined walls, approximately 10 feet on each side, and eight feet deep. The bottom of the pit is lined with concrete. The unit is now inactive (Ref. 84). Fuel for the Oil Burn Structure was stored in the Aviation Fuel Tank located within 50 feet. During the VSI, there was liquid observed in the bottom of the unit and vegetation growing through the seams in the concrete (Ref. 84).

Date of Start-up: Early 1970s.

Date of Closure: The unit was taken out of service in 1979 (Ref. 84).

Wastes Managed: The Oil Burn Structure was formerly used to confine the test burning operation. An analysis of the combustion residue in the unit for hazardous constituents was not available.

Release Controls: The unit's walls are lined with brick and the bottom is concrete. There were no features to control emissions from this unit. The unit was registered with the Regional Air Pollution Control Authority (Ref. 84).

History of Releases: During its operation, emissions from the Oil Burn Structure were discharged directly to the atmosphere. Vegetation was observed growing in the seams of the concrete on the bottom of the unit.

Conclusions: <u>Soil/Groundwater</u>: There is a high potential for past and ongoing releases to soil and groundwater from this unit. The integrity of the unit is suspect due to the presence of vegetation growing through the cracks in the concrete bottom. Residue from past burns and

rainwater was observed in the bottom of the structure.

Surface Water: The potential for past and ongoing surface water releases is low. The unit is an in-ground structure and combustion residues are confined to the pit.

Air: During its operation, the Oil Burn Structure released combustion emissions directly to the atmosphere. The unit was registered with the Regional Air Pollution Control Authority. There is no potential for ongoing releases since the unit is no longer in service.

Subsurface Gas: There is a moderate potential for generation of subsurface gas since it is possible that fuel may have escaped containment through the concrete bottom of the structure.

Unit No.: MI-4

Unit Name: Waste Transport Vehicles

Unit Description: The Waste Transport Vehicles used at the site include hand carts, fork lifts, a modified step van, box truck, cargo bed truck, stake bed truck and a tank truck. The hand carts are used indoors to transport drummed wastes. The step van and box van transport explosive wastes in containers from various on-site locations to the Open Burn Area. Drummed hazardous wastes are transported by a stake bed truck and a cargo bed truck to the Hazardous Waste Storage Area (SWMU CS-7). Wastewater from the SM/PP Facility, formerly conveyed to the WD Building by the Waste Disposal Pipeline (SWMU MI-2), is transported by tanker truck (Ref. 66, p. 1-22).

Date of Start-up: Waste collection vehicles have been used since the 1950s.

Date of Closure: The vehicles are still in operation.

Wastes Managed: The hand carts and fork lifts are used for indoor transport drums of hazardous wastes generated at the site. Wastes transported in the step and box vans include primarily containerized pyrotechnic and explosive wastes (D003). Cargo and stake bed trucks move drummed hazardous wastes from points of generation to the Hazardous Waste Storage Area. Tank trucks transport a plutonium and acid wastewater slurry from the SM/PP Facility to the WD Building. An analysis of the slurry for hazardous constituents is not available, however detectable concentrations of toxic metals are known to be in the sludge produced from the treatment of the slurry (Ref. 85).

Release Controls: Hand carts and fork lifts are used indoors for manually transporting single drums over short distances. Drums are typically loaded onto the Waste Transport Vehicles with the hand carts. No special release controls were observed. The step and box vans are completely enclosed to prevent exposure of pyrotechnic and explosive waste containers to sunlight and precipitation. Both vehicles have explosive placards on the exterior with no other special markings or beacons. Drums are restrained on the bed of the

stake bed truck by removable sidewalls. No such controls are available on the cargo truck (Ref. 84). These trucks have no special markings or beacons.

Waste transport routes are designated for each Waste Transport Vehicle. Intersections along these routes are marked with warning signs with flashing beacons, and traffic signal lights (Ref. 66). There were no release controls to prevent spilled liquid wastes from running off the roadways via storm drains to the Plant Drainage Ditch (Ref. 96). Many of the roads used for transport of these wastes are constructed of gravel and deteriorating asphalt or concrete (Ref. 66).

History of Releases: There were no releases noted from the Waste Transport Vehicles in the file information or observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater during routine transport is low; however, in the event of a roadway accident and a release from a truck, particularly liquid wastes, the potential for release to soil and groundwater adjacent to or beneath the roadways is high. This is because there are no roadway release controls and many of the roads are composed of gravel or deteriorating concrete or asphalt.

Surface Water: The potential for release to surface water during routine waste transport activities is low since all wastes are containerized; however, in the event of a roadway accident, there is a high potential for releases to surface water since runoff from the vehicle roadways is directed to the Plant Drainage Ditch.

Air: The potential for releases to the air is low since all wastes are containerized while

being transported in the Waste Transport Vehicles.

Subsurface Gas: The potential for generation of subsurface gas is moderate in the event of a release of volatile wastes. There are no release controls on the roadways and many roads are constructed of gravel or deteriorating asphalt or concrete.

Unit No.: MI-5

Unit Name: Fire Fighting Training Facility

Unit Description: The Fire Fighting Training Facility is located just east of the Oil Burn Structure (SWMU MI-3). It consists of two concrete pads, one approximately ten feet on a side and the other, approximately 10 feet wide and 20 feet long. Both pads have 12-inch high concrete curbs. During the VSI, the smaller pad contained a black residue and rainwater. Black stains were also observed on the soil outside the pad. There was no liquid in the larger pad but a black residue was observed. Gasoline fires were created in these pads for demonstration purposes. Three to five gallons of diesel fuel was used to create the fires and water from a nearby hydrant was used to extinguish the fires (Ref. 84). The unit is permitted by the Regional Air Pollution Control Authority (Ref. 44).

Date of Start-up: Unknown.

Date of Closure: The facility has not been used since 1987 (Ref. 84).

Wastes Managed: Diesel fuel was ignited in this area to create demonstration fires. Approximately 300 gallons of fuel was used in 1987 (Ref. 84). An analysis of the black residue in the pads and on the soil for hazardous constituents was not available.

Release Controls: The fires were created on two concrete pads. There was no control of emissions or water used to extinguish the fires at the unit. No other release controls were observed during the VSI. The unit is permitted by the Regional Air Pollution Control Authority (Ref. 44).

History of Releases: There was a black liquid observed inside the pad and a black residue on the soil in this area during the VSI. An analysis of the soil, black residue or liquid inside the pad for hazardous constituents was not available.

Conclusions: <u>Soil/Groundwater</u>: Releases were observed on the soil around the unit during the VSI. There is a high potential for contaminants in the soil to

reach underlying groundwater.

Surface Water: Due to the proximity of the unit to the Plant Drainage Ditch, Retention Ponds and Overflow Ponds, the potential for release of soil contaminants to surface water via rainfall runoff is high.

Air: Past releases to the air were regulated by the Regional Air Pollution Control Authority. The ongoing release potential is low since volatile constituents would have been discharged during combustion.

Subsurface Gas: There is a moderate to high potential for generation of subsurface gas since diesel fuel was used at the site. Stains were noted near the pad indicating that infiltration of wastes into the soil has already occurred.

Unit No.: MI-6

Unit Name: Lithium Carbonate Disposal Area

Unit Description: The Lithium Carbonate Disposal Area is a 150 foot diameter area that was used for disposal of lithium carbonate, organic solvents and other hazardous materials (Ref. 81, p. 4-32). Facility representatives indicated that the disposal area is now the site of Building 34 located within 50 feet of the spillway between the Retention Basins (SWMU SI-1) and Overflow Pond (SWMU SI-2). It is not known how wastes were disposed in this area. Soil samples have been taken in the area but no contaminants were detected (Ref. 81). The sampling depth and analytical results were not provided.

Date of Start-up: Disposal occurred in the 1950s. The exact date is not known.

Date of Closure: 1950s (Ref. 55).

Wastes Managed: Lithium carbonate, organic solvents, and other hazardous wastes were disposed in this area (Ref. 81, p. 4-32).

Release Controls: No release controls were noted in the file information or observed during the VSI. Building 34 now covers the disposal area.

History of Releases: Waste materials were disposed directly on the ground surface in this area with no apparent release controls.

Conclusions:

Soil/Groundwater: Lithium carbonate, organic solvents, and other hazardous wastes were disposed directly on the soil in this area. There is a high potential for these contaminants to reach underlying groundwater since no subsurface release controls were present and the contamination was not removed.

Surface Water: There is a moderate to high potential for release to surface water. Rainfall runoff may carry these contaminants into surface

water via the Plant Drainage Ditch, Retention Basins, and Overflow Pond since residual soil contaminants were not removed. Due to the proximity of the disposal area to the surface impoundments, contaminants may also reach surface water via groundwater interflow.

Air: The present potential for release to the air is low. Volatile constituents in the solvents would have been released during or soon after disposal.

Subsurface Gas: There is a high potential for generation of subsurface gas. Organic solvents were disposed and allowed to infiltrate directly into the soil. The contaminants were not removed and Building 34 was built on the site, further restricting the dissipation of subsurface gas.

Unit No.:	MI-7
Unit Name:	Chromium Trench
Unit Description:	The Chromium Trench is located beneath an asphalt parking lot just south of the GH Building. Approximately 110 gallons of chromium plating bath solution treated with sodium bisulfite and disposed in a trench in this area. The residual chromium was not removed and was determined not to pose a health hazard (Ref. 55, p. V-25).
Date of Start-up:	1963 (Ref. 55).
Date of Closure:	The site was only used during 1963. No formal closure was undertaken.
Wastes Managed:	The trench was used as a disposal area for chromium plating bath solution treated with sodium bisulfite (Ref. 84).
Release Controls:	The Chromium Trench is now covered by an asphalt parking lot. No other release controls were noted in the file information or observed during the VSI.
History of Releases:	Wastes were disposed onto the ground surface in the trench with no apparent release controls.
Conclusions:	<u>Soil/Groundwater</u>: Chromium plating bath solution was disposed directly onto the soil surface in this area. There is a moderate to high potential for contaminants to reach underlying groundwater since no release controls were present in the trench.
	<u>Surface Water</u>: The potential for release to surface water is low since the trench is covered with asphalt to prevent contaminants from leaving the site with storm runoff. The release potential is further minimized since the Plant Drainage Ditch is over 500 feet to the south.

Air:	There is no potential for release to the air due to the relatively non-volatile nature of the waste and since the disposal trench has been covered with asphalt.
Subsurface Gas:	The potential for generation of subsurface gas is low due to the relatively non-volatile nature of the disposed liquid.

Unit No.: MI-8

Unit Name: Cooling Tower Basins (4)

Unit Description: The Cooling Tower Basins are small, above-ground impoundments located beneath the four cooling towers at the facility. The basins collect cooling tower blowdown and discharge it to the Plant Drainage Ditch (SWMU MI-1) or recycle it back into the non-contact cooling system. The basins are constructed of concrete or metal with typical dimensions of approximately 30 feet by 15 feet, and one to three feet deep. The facility representative did not know if solids ever accumulate in the cooling tower basins or if the basins are ever cleaned out (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The units are still in operation.

Wastes Managed: The cooling water contains additives including algacides, rust inhibitors such as zinc chromate, organics, and sodium hydroxide (Ref. 57). The following chemical additives are listed in the file information.

- ANCO Algaecide No. 1, Andersen Chemical Company (EPA Registration No. 3931-3);
- 2-benzyl-4-chlorophenol;
- aqueous solution of 21-benzyl-4-chlorophenol and sodium hydroxide;
- Siltex, Andersen Chemical Company;
- ANCO Microbicide 77, Andersen Chemical Company (EPA Registration);
- 5-chloro-2 methyl-4-isothiazolin-3-one;
- 2-methyl-4-isothiazolin-3-one;

- cooling water treatment - CSA - Andersen Chemical Company; and

- organo-phosphonate, triazol, polyacrylate.

Release Controls: Several inches of freeboard were observed in the basins during the VSI. Water collected in the basins is immediately pumped to the Plant Drainage Ditch or recycled back into the facility's cooling system. The ground surface adjacent to and beneath the basins was covered with asphalt.

History of Releases: There were no releases noted in the file information or observed during the VSI. No stains were observed on the side of the basins or on the surrounding ground surface.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low. There is adequate freeboard maintained in the basins and the soil adjacent to the basins is covered.

Surface Water: Cooling tower blowdown is discharged from the basins to the Miami-Erie Canal via the Plant Drainage Ditch, Retention Basin and Overflow Pond.

Air: The potential for release to air is low due to the relatively dilute and non-volatile nature of the liquid.

Subsurface Gas: There is no potential for generation of subsurface gas since all wastes are contained above-ground in the basins.

Unit No.: MI-9

Unit Name: Glass Melter Feed Drum

Unit Description: The Glass Melter Feed Drum is located approximately ten feet from the Glass Melter Furnace (SWMU IN-1) on the second story of the WD Building Annex. The drum is used to contain inorganic wastes which are fed to the furnace via an overhead pipe. The drum is a metal 55-gallon drum positioned on a two-foot high metal stand over the concrete floor (Ref. 84).

Date of Start-up: 1981.

Date of Closure: The unit is still in operation.

Wastes Managed: The drum contains shredded dry inorganic hazardous wastes and radioactive mixed wastes generated by on-site activities.

Release Controls: The drum is covered loosely with a metal lid. There is also a drain in the concrete floor approximately three feet from the drum. Washwater from the floor and spills from the Feed Drum are collected by the drain and discharged to the Alpha Wastewater Treatment System (SWMU WD-2) via the Glass Melter Room Sump (SWMU SU-1).

History of Releases: No releases were noted in the file information. During the VSI, the sides of the drum and floor surrounding the drum was stained, apparently from past releases. No releases were occurring during the VSI.

Conclusions: Soil/Groundwater: There is no potential for release to soil and groundwater since the drum is located indoors over a concrete floor slab. Any releases from the drum to the floor of the building are washed to the Alpha Wastewater Treatment System via the Glass Melter Room Sump.

Surface Water: The potential for release to surface water is

low. There are no direct discharges to the Miami-Erie Canal or Great Miami River. Floor washdown water is treated by the Alpha Wastewater Treatment system prior to discharge to the river.

Air: The potential for release to the air is low. The drum is covered and contains no volatile wastes.

Subsurface Gas: There is no potential for generation of subsurface gas. The drum is located indoors on a concrete slab, two stories above natural soil.

Unit No.: MI-10

Unit Name: Trash Dumpsters

Unit Description: Trash Dumpsters are rectangular metal containers located throughout the facility in many locations for collection of general trash. Many of the dumpsters are approximately seven feet long, four feet wide, and four feet high with an approximate capacity of two to five cubic yards. Trash is transported off-site for disposal (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The dumpsters are still in service.

Wastes Managed: The dumpsters are used for collection of general trash generated from on-site activities. The file information indicates this waste collection system is well organized but small quantities of laboratory chemicals find their way into the trash (Ref. 81, p. 4-14).

Release Controls: The Trash Dumpsters are metal and wastes are covered with plastic or a metal lid. Many of the dumpsters are located on asphalt or concrete pads. Runoff from these areas is discharged to the storm drains.

History of Releases: There were no releases from the Trash Dumpsters noted in the file information. During the VSI, stains were observed on the asphalt pad beneath the dumpster near Building A.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low since wastes are contained in the metal dumpster. The soil is further protected from releases by the asphalt or concrete pad.

Surface Water: There is a moderate potential for release to surface water. Runoff from the stained areas adjacent to the dumpster is discharged into the storm sewer to the Plant Drainage Ditch.

Air:	The potential for release to the air is low due to the relatively non-volatile nature of the wastes.
Subsurface Gas:	There is no potential for generation of subsurface gas from these units. Wastes are contained completely above-ground in the metal dumpsters.

Unit No.: MI-11

Unit Name: Acid Leach Field

Unit Description: The Acid Leach Field is located west of Building 38 and is surrounded and covered by the Hillside Disposal Area. The Acid Leach Field was used for disposal of acid and caustic solutions contaminated with plutonium. The source of the wastes was the PP Building. The exact location or size of the leach field is not known. Wastes were disposed directly on the ground surface (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: Unknown.

Wastes Managed: The leach field was used for disposal of acid and caustic wastewater solutions contaminated with plutonium.

Release Controls: There were no release controls noted in the file information or observed during the VSI. The exact location of the leach field on the hillside could not be determined.

History of Releases: Wastewater was disposed on the ground surface in this area with no associated release controls.

Conclusions:

Soil/Groundwater: The wastewater from the PP Building was disposed directly on the ground surface in this area. There is a high potential for releases to groundwater since there were no subsurface release controls at the unit. There is no ongoing potential for release to the soil since the leach field is no longer used.

Surface Water: The potential for past release to surface water was high due to the proximity of the Plant Drainage Ditch. All runoff from this area flows into the ditch. The ongoing potential for release is moderate. The

wastes have not been removed but have been covered by dredge material. This may limit exposure to rainfall and production of contaminated runoff from the leach field.

Air: There is no potential for releases to air due to the relatively non-volatile nature of the wastewater.

Subsurface Gas: There is no potential for generation of subsurface gas due to the non-volatile nature of the wastewater.

Unit No.: MI-12

Unit Name: Vapor Degreaser

Unit Description: The Vapor Degreaser is located in the plating shop in the M Building. Small machined metal parts are cleaned by solvent vapors produced in the chamber of the degreaser. Approximate dimensions of the metal chamber are three feet long, two feet wide and four feet deep. Spent solvents and vapors are retained in the degreaser. The unit has a 15-gallon solvent capacity (Ref. 84).

Date of Start-up: Late 1970s.

Date of Closure: The unit is still in service.

Wastes Managed: The wastes produced by this unit are spent solvents. A facility representative indicated the solvent used in the Vapor Degreaser is Perclene D (Ref. 84).

Release Controls: The unit is fully enclosed with a metal lid when in operation. The spent solvents and vapors are contained in the cleaning chamber. Spent solvent is transferred to a drum and transported to the Hazardous Waste Storage Area (SWMU CS-7). There are no wastewater streams discharged to the storm or sanitary sewer. The floor of the building is constructed of concrete with curbing to contain spills from the entire plating shop.

History of Releases: No releases were noted in the file information or observed during the VSI. The Vapor Degreaser was not in operation at the time of the inspection.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low. Spent solvents are retained in the unit and any releases would be collected on the curbed concrete floor of the building.

Surface Water: There is no potential for release to surface water due to the release controls associated

with the unit. Spent solvents are retained in the chamber of the unit and any releases would be collected on the curbed concrete floor of the building.

Air: The potential for release to the air is low. The unit's lid is closed during operation and it designed to keep the vapors and spent solvents in the cleaning chamber.

Subsurface Gas: There is no potential for generation of subsurface gas from this indoor, above-ground unit.

Unit No.: MI-13

Unit Name: Monitoring Well 34-1

Unit Description: Monitoring Well 34-1 is located at the base of the slope south of the DS Building. The well is constructed with a four-inch diameter PVC casing. Facility representatives suspect that the well was used as a one-time discharge point for an unknown volume of waste oil. During the VSI, the well cap was removed and a teflon bailer was lifted out of the casing. The bailer exhibited a dark stain and an oily sheen was observed on the water. Groundwater was 15 to 20 feet below the ground surface at this location. The soil around the well casing also exhibited a dark colored stain (Ref. 84).

Date of Start-up: The date of well construction or waste oil contamination is not known.

Date of Closure: The monitoring well is still in service.

Wastes Managed: The well was not constructed to manage wastes. It was intended to provide data regarding groundwater conditions below the facility. Facility representatives suspect that an unauthorized discharge of waste oil occurred into the well (Ref. 84).

Release Controls: The well head is covered with a cap which is not locked on the well. Access to the well is not restricted.

History of Releases: Facility representatives indicated that an unauthorized discharge of waste oil into the monitoring well occurred. The groundwater exhibited a sheen and the soil around the well casing was stained during the VSI.

Conclusions:

Soil/Groundwater: Evidence of past releases directly to the groundwater and soil surrounding the well casing was observed during the VSI.

Surface Water: There is a moderate potential for release to surface water through groundwater interflow with the Plant Drainage Ditch for

Miami-Erie Canal. Groundwater in the well is already known to be contaminated.

Air: The potential for air releases is low since the area of contaminants on the groundwater exposed to the air is small (four-inch diameter casing) and because the casing is capped.

Subsurface Gas: There is a high potential for generation of subsurface gas from the waste oil present on the groundwater surface.

Unit No.:	MI-14
Unit Name:	Building 27 Concrete Flume
Unit Description:	The Building 27 Concrete Flume is located on the south side of Building 27. It was formerly used to convey wastewater from the building to the Building 27 Sump (SWMU SU-3). Since the sump was abandoned, the wastewater in the Concrete Flume has been pumped into drums at the Building 27 Solvent Storage Area (SWMU CS-12). The Concrete Flume is approximately 20 feet long, 10 inches wide, and 12 inches deep. The capacity of the flume is approximately 100 gallons. Its bottom and sidewalls are constructed of concrete and it is covered with a metal lid (Ref. 84).
Date of Start-up:	Early 1960s (Ref. 84).
Date of Closure:	The flume is still in service.
Wastes Managed:	The wastewater discharged into the Concrete Flume from Building 27 contains acetone, ethanol, and dissolved explosives (Ref. 84).
Release Controls:	The sidewalls and bottom of the flume are constructed of concrete. If overfills occur, the wastewater will drain into the Building 27 Sump located just downstream of the flume. Wastewater is pumped from the flume into drums twice a day. There is no curbing or diversionary structures to prevent building runoff from entering the flume during heavy rainfall.
History of Releases:	There were no releases from the flume noted in the file information or observed during the VSI. The flume was observed to be nearly full of wastewater and the integrity of the concrete could not be determined.
Conclusions:	<u>Soil/Groundwater</u>: There is a low potential for release to soil and groundwater. The integrity of the concrete could not be determined but the wastewater in the flume could flow and be released through the seams between the concrete and asphalt.

Surface Water:	The potential for release to surface water is low. Rainfall runoff and flume overfills would drain to the adjacent sump. Drain lines from the sump to the Plant Drainage Ditch and the Building 27 Leach Pit have been abandoned and sealed shut.
Air:	There is a moderate potential for release to the air since the top of the flume is not completely closed. Volatile emissions from the solvents may be released.
Subsurface Gas:	The potential for generation of subsurface gas is unknown since the integrity of the concrete could not be determined.

Unit No.: MI-15

Unit Name: Dredge Spoil Drying Beds

Unit Description: The Dredge Spoil Drying Beds are located near the west end of the Sanitary Wastewater Treatment System. Dredge spoil from the Asphalt-Lined Pond (SWMU SI-3) is dried in the beds before it is packaged for off-site disposal. The Dredge Spoil Drying Beds are open-topped wooden structures approximately six to eight feet on a side and three feet deep. The wooden beds are lined with plastic and are positioned on bare soil. At least five of these units were present during the VSI (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The units are still in service.

Wastes Managed: The Dredge Spoil Drying Beds contain plutonium-contaminated dredged material from the Asphalt-Lined Pond (Ref. 84). The dredged spoil has not been analyzed for hazardous constituents.

Release Controls: The beds have wooden bottom supports and are lined with plastic to contain the waste material. The integrity of the sides and bottoms of the units was not determined. The drying beds are uncovered, positioned over bare soil, and there are no release controls to contain potentially contaminated runoff or releases from the units (Ref. 84).

History of Releases: There were no releases noted in the file information or observed during the VSI. The waste material in the drying beds appeared to be dry and adequately contained; however, the containment integrity of the liner could not be determined.

Conclusions: Soil/Groundwater: There is a moderate to high potential for releases from the drying beds to underlying soil. The containment integrity of the bottom of the units was not determined but since the liners consist of only one sheet of plastic, there is likely to be leakage. Also, since the beds are open-

topped, they collect rainfall and produce leachate that may be released through the liner. Finally, the soil beneath the drying beds is not covered or lined to prevent infiltration of leachate.

Surface Water: There is a moderate to high potential for surface water releases. The containment integrity of the bottom of the units was not determined but since the liner consists of only one sheet of plastic, there is likely to be leakage. Also, since the beds are open-topped, they collect rainfall and produce leachate that may be released through the liner. Finally, there are no secondary containment structures to confine leachate or contaminated runoff to the area beneath the drying beds.

Air: The potential for release of volatile constituents to the air is low due to the inert nature of the waste. There is a moderate potential for release of airborne particulates since the unit is open-topped and dried wastes are subject to wind dispersion.

Subsurface Gas: The potential for generation of subsurface gas is low due to the low volatility of the wastes.

OTHER AREAS OF CONCERN

No.	Name	Waste Managed/ Contaminant	Location	Volume/Area	Concern	Reference
A	Thorium Drum Storage Building	Drummed thorium sludge	Building 21	110 by 40 ft	Possible residual thorium contamination on concrete floor	84
B	Runoff Hollow	Runoff collection area	Base of hillside west of Building 72	Unknown	Plutonium contaminated runoff and sediments	84
C	Septic Tank and Leach Field	Sanitary wastewater	Building 33	Unknown	Wastewater contaminated with plutonium released to soil	84
D	North Slope Springs (S006 S007)	Contaminated groundwater seeps	West of Building A outside property fence	1 gal/min	Groundwater seepage contaminated with radioactive constituents	84
E	Waste Pipeline	Process wastewater	Building T	Unknown	Pipeline released wastewater contaminated with gamma radiation	84

OTHER AREAS OF CONCERN

No.	Name	Waste Managed/ Contaminant	Location	Volume/Area	Concern	Reference
F	SM/PP Hill-9	Radioactive waste	SW Building, Room 219	1000 ft^2	Radioactive cell not removed or decontaminated	81
G	Hillside Hole	Contaminated groundwater seep	West of Building I	2 gal/min	Groundwater seepage contaminated with tritium	84
H	Epoxy Resin Disposal	General trash	Building 49	2-5 yd^3 dumpster	Epoxy resin co-disposed in trash	84
I	North Canal	Surface runoff	West of facility off-site	Approximately 2000 feet long	Plutonium in sediments	10, 12, 72 73, 84
J	Miami-Erie Canal (South Canal)	Plant runoff	Southwest of facility, off-site	Approximately 3000 feet long	Plutonium in sediments, receives potential contaminated plant runoff	10, 12, 72, 73, 84
K	North Pond	Well water used for solar energy pond	Northwest of facility, off-site	Approximately 200 feet on each side; unknown volume	Plutonium in impounded water	7, 10, 72, 84

OTHER AREAS OF CONCERN

No.	Name	Waste Managed/ Contaminant	Location	Volume/Area	Concern	Reference
L	South Pond	Surface runoff from North Canal	Northwest of facility, off-site south of North Pond	Approximately 100 by 50 feet, unknown volume	Plutonium in impounded water	7, 10, 72, 84
M	Contaminated Soil Box Storage Area	Excavated soil	South of WD Building at base of hill	Unknown	Plutonium contaminated soil from pipeline leak	84
N	Paint Shop Spills	Paint wastes	PS Building	Unknown	Suspected leaks and spills to soil	55
O	Powerhouse Spills	Fuel Oil	P Building	Unknown	Possible underground tank leakage	55
P	Building 9 Spills	Waste oil in soil	Building 9	Unknown	Dumping	55
Q	Building 61 Spills	Waste/Oil	Building 61	Unknown	Suspected dumping onto soil	55

OTHER AREAS OF CONCERN

No.	Name	Waste Managed/ Contaminant	Location	Volume/Area	Concern	Reference
R	HH Building Contamination	Tritium	HH Building	Unknown	Leaks to soil	13
S	SM/PP Hill-1	Thorium drums	Building 21	136,000 ft^2	Spill of thorium onto soil during transport of drums	81
T	Valley-1	Plutonium drums	Building 72, 55, 94 and 57	15,000 ft^2	Site of drum storage and plutonium in soil from pipeline rupture	81
U	Main Hill-1	Radiation laden wastewater	WD Building	Unknown	Influent tank overflow to soil	81
V	Main Hill-2	Treatment plant sludge	SD Building	Unknown	Soil at sludge drying beds contaminated with polonium	81
W	SM/PP Hill-2	Waste storage and redrumming area	Building 31	40,000 ft^2	Thorium contaminated soil	81

OTHER AREAS OF CONCERN

No.	Name	Waste Managed/ Contaminant	Location	Volume/Area	Concern	Reference
X	SM/PP Hill-3	Plutonium process activities	SM Building	40,000 ft^2	Plutonium contaminated soil beneath and adjacent to building	81
Y	Valley-2	Wastewater spill into ditch	South of WD Building	Unknown	Soil contaminated with plutonium	81
Z	Main Hill-3	Radioactive wastewater pipeline	North of Building 48	6800 ft^2	Soil contaminated with cobalt and polonium and pipeline rupture	81
AA	Main Hill-4	Radioactive wastewater pipeline	Southwest of WD Building	2600 ft^3	Plutonium-contaminated soil from pipeline rupture	81
BB	Main Hill-5	Radioactive wastewater pipeline	West of HH Building	Unknown	Cobalt and cesium in soil from pipeline rupture	81
CC	Valley-3	Soil disposal area	Between Overflow Pond and Well No. 1	15,000 ft^2	Polonium and cobalt in underlying soil	81

OTHER AREAS OF CONCERN

No.	Name	Waste Managed/ Contaminant	Location	Volume/Area	Concern	Reference
DD	Main Hill-6	Soil disposal area	North of Building 76	2100 ft^2	Underlying soil contaminated with polonium	81
EE	SM/PP Hill-4	Soil disposal area	West of Building 30	25,000 ft^2	Underlying soil contaminated with thorium	81
FF	SM/PP Hill-5	Soil disposal area	West of Building 30	13,000 ft^2	Underlying soil contaminated with polonium	81
GG	SM/PP Hill-6	Soil disposal area	West of SM Building	19,000 ft^2	Underlying soil contaminated with thorium	81
HH	Valley-4	Soil disposal area	Northeast of Building 49	9,000 ft^2	Underlying soil contaminated with polonium	81
II	SM/PP Hill-7 (Orphan Soil Areas)	Soil disposal area	East of Open Burn Area	Unknown	Underlying soil contaminated with cobalt	81

OTHER AREAS OF CONCERN

No.	Name	Waste Managed/ Contaminant	Location	Volume/Area	Concern	Reference
JJ	SM/PP Hill-8	Leach bed/settling basin for process wastewater	West of SM Building	2,600 ft^2	Underlying soil contaminated with plutonium	81
KK	Valley-6	Drum disposal area	Southeast of Buildings 51 and 29	22,000 ft^2	Underlying soil contaminated with radium, thorium, and actinium	81
LL	SM/PP Hill-10	Explosive and radioactive waste disposal area	Northeast of Building 53, west of Building 95	Unknown	Underlying soil contaminated with explosive and radioactive wastes	81

VI. OTHER RELEASE INFORMATION

No additional information regarding spills and/or other releases at the facility was available.

VII. SUMMARY OF SUGGESTED FURTHER ACTIONS

Unit No.	Unit Name	Suggested Further Actions
	SOLID WASTE MANAGEMENT UNITS	
LANDFILLS		
LF-1	Lined Landfill	Continue groundwater monitoring at the landfill in accordance with applicable RCRA regulations.
LF-2	Past Landfill	Conduct sampling of liquid leachate from the discharge pipe to the Overflow Pond or of sediment in the Overflow Pond to determine whether hazardous constituents have been released from the Past Landfill.
LF-3	Spoils Disposal Area	No further action is suggested at this time.
LF-4	Dredged Material Disposal Area	Conduct sampling to determine whether the liquid present in the Catch Basin is leachate or groundwater and whether hazardous constituents are being released from the unit.
LF-5	South Property Dump	Conduct soil sampling in the stained areas to determine whether hazardous constituents were released from the dump. The samples should also be analyzed to determine the presence of subsurface gas.
SURFACE IMPOUNDMENTS		
SI-1	Retention Basins	Collect samples of sediment from the bottom of the basins to determine whether hazardous constituents have been released to the underlying soil.

Unit No.	Unit Name	Suggested Further Actions
SI-2	Overflow Pond	Collect samples of sediment from the bottom of the basins to determine whether hazardous constituents have been released to the underlying soil. The samples should also be analyzed to determine the presence of subsurface gas.
SI-3	Asphalt-Lined Pond	Conduct sediment sampling from the bottom of the pond to determine whether hazardous constituents have been released to underlying soil.
SI-4	Building 1 Leach Pit	Conduct subsurface soil sampling in the leach pit to determine the magnitude and extent of contamination. Samples should also be analyzed to determine the presence of subsurface gas.
SI-5	Building 27 Leach Pit	Conduct subsurface soil sampling in the leach pit to determine the magnitude and extent of contamination. Samples should also be analyzed to determine the presence of subsurface gas.
SI-6	Hillside Catch Basin	Conduct sediment sampling from the bottom of the basin to determine whether hazardous constituents have been released. The samples should also be analyzed to determine the presence of subsurface gas.
CONTAINER STORAGE AREAS		
CS-1	Scintillation Vial Storage Area	No further action is suggested at this time.

Unit No.	Unit Name	Suggested Further Actions
CS-2	Building E Solvent Storage Shed	If solvent is detected in the soil samples already taken by the facility, additional samples should be taken to determine the magnitude and extent of contamination and to determine the presence of subsurface gas.
CS-3	Building 28 Solvent Storage Area	Consideration should be given to providing secondary containment for the drums in this area.
CS-4	DS Building Solvent Storage Shed	No further action is suggested at this time.
CS-5	Building B Solvent Storage Shed	No further action is suggested at this time.
CS-6	Waste Oil Drumfield	Conduct soil sampling in the area of suspected leakage and staining to determine whether hazardous constituents were released. The samples should also be analyzed to determine the presence of subsurface gas.
CS-7	Hazardous Waste Storage Area	Continue compliance with applicable RCRA regulations.
CS-8	Past Hazardous Waste Storage Area	Continue compliance with Ohio EPA post-closure requirements.
CS-9	Radioactive/Mixed Waste Storage Area	No further action is suggested at this time.

Unit No.	Unit Name	Suggested Further Actions
CS-10	Old Firing Range Drum Storage Area	Conduct soil sampling in this area to determine whether releases of hazardous constituents have occurred. The samples should also be analyzed to determine the presence of subsurface gas.
CS-11	Drilling Mud Drum Storage Area	Consideration should be given to transporting the drums to the Hazardous Drum Storage Area where adequate secondary containment is provided.
CS-12	Building 27 Solvent Storage Area	Consideration should be given to providing secondary containment for this drum storage area.
CS-13	Outdoor Hazardous Waste Storage Area	Collect samples of the stain residue on the concrete pad or sediment in the catch basin to determine whether releases to surface water have occurred.
CS-14	Empty Drum Storage Area	Collect samples of the stain residue on the concrete pad or sediment in the catch basin to determine whether releases to surface water have occurred.
CS-15	Building B Temporary Drum Storage Area	Consideration should be given to providing secondary containment for drums stored in this area.
CS-16	Cooling Tower Drum Storage Area	Collect samples of residuals on the asphalt pad or of the soil adjacent to the pad to determine whether hazardous constituents have been released.
CS-17	Test Firing Residual Storage Area	No further action is suggested at this time.

Unit No.	Unit Name	Suggested Further Actions
CS-18	WD Building Drum Staging Area	Conduct soil sampling near the edge of the concrete pad to determine whether releases of hazardous constituents have occurred. The samples should also be analyzed to determine the presence of subsurface gas.
CS-19	SW Building Staging Area	Consideration should be given to providing secondary containment for waste drums stored in this area.
INCINERATORS		
IN-1	Glass Melter Furnace	No further action is suggested at this time.
IN-2	Cyclone Incinerator	No further action is suggested at this time.
IN-3	Waste Solvent Incinerator	Conduct sampling to determine the presence of hazardous constituents in the soil and to determine the presence of subsurface gas.
AIR POLLUTION CONTROL UNITS		
AP-1	Deluge Tank	No further action is suggested at this time.
AP-2	Venturi Scrubber	No further action is suggested at this time.
AP-3	Cyclone Demister	No further action is suggested at this time.
AP-4	HEPA Filter	No further action is suggested at this time.
AP-5	WD Filter Bank	Continue compliance with regulations issued by the Regional Air Pollution Control Authority.
AP-6	Recycle Tank	No further action is suggested at this time.

Unit No.	Unit Name	Suggested Further Actions
AP-7	Leaf Solution Filter	No further action is suggested at this time.
AP-8	Strainer	No further action is suggested at this time.
AP-9	Iodine Absorption Filter	No further action is suggested at this time.
AP-10	Waste Solvent Incinerator Scrubber	Conduct soil sampling to determine the presence of hazardous constituents in the soil and to determine the presence of subsurface gas.
AP-11	Ventilation Hoods	Continue compliance with air emissions regulations issued by the Regional Air Pollution Control Authority.
OPEN BURN AREA UNITS		
OP-1	Trash Burner	Conduct soil sampling adjacent to the Trash Burner to determine whether releases of hazardous constituents have occurred. The samples should also be analyzed to determine the presence of subsurface gas.
OP-2	Thermal Treatment Unit	Conduct soil sampling adjacent to the unit to determine whether releases of hazardous constituents have occurred.
OP-3	Retort (Rotary Kiln)	Conduct air monitoring during operation of the Retort to determine the presence of hazardous constituents in the emissions.
OP-4	Building 90 Blockhouse	No further action is suggested at this time.
OP-5	Pyrotechnic Waste Shed	Consideration should be given to providing secondary containment for this unit.

Unit No.	Unit Name	Suggested Further Actions
OP-6	Biodegradation Unit	No further action is suggested at this time.
OP-7	Explosive Waste Storage Bunker (Magazine 53)	No further action is suggested at this time.
OP-8	Pyrotechnic Waste Disposal Area	Conduct subsurface soil sampling to determine the magnitude and extent of contamination. Samples should also be analyzed to determine the presence of subsurface gas.
UNDERGROUND STORAGE TANKS		
UT-1	Waste Solvent Storage Tank	Determine the integrity of the underground tank. If a leak in the tank is detected, subsurface soil sampling should be conducted to determine the magnitude and extent of the contamination.
UT-2	Aviation Fuel Tank	Determine the integrity of the underground tank. If a leak in the tank is detected, subsurface soil sampling should be conducted to determine the magnitude and extent of the contamination.
WD BUILDING WASTEWATER TREATMENT UNITS		
WD-1	Alpha Wastewater Influent Tanks	Conduct soil sampling in the area of past spills to determine whether releases of hazardous constituents has occurred.
WD-2	Alpha Wastewater Treatment System	Continue compliance with NPDES permit discharge limits.
WD-3	Beta Wastewater Treatment System	No further action is suggested at this time.

Unit No.	Unit Name	Suggested Further Actions
SANITARY WASTEWATER TREATMENT SYSTEM		
SD-1	Grit Chamber	Conduct air sampling near the unit to determine whether hazardous constituents are being released. Consideration should also be given to provide secondary containment for releases due to overtopping.
SD-2	Grit Conveyor	Conduct air sampling near the unit to determine whether hazardous constituents are being released during the grit unloading process.
SD-3	Comminutor	Conduct air sampling near the unit to determine whether hazardous constituents are being released. Consideration should also be given to provide secondary containment for releases due to overtopping.
SD-4	Equalization Basins	Determine the integrity of the sidewalls and bottom of the basins. If leaks are detected, subsurface soil sampling should be conducted to determine the magnitude and extent of the contamination. Consideration should also be given to providing secondary containment for releases due to overtopping.
SD-5	Aeration Basins	Determine the integrity of the sidewalls and bottom of the basins. If leaks are detected, subsurface soil sampling should be conducted to determine the magnitude and extent of the contamination. Consideration should also be given to providing secondary containment for releases due to overtopping.

Unit No.	Unit Name	Suggested Further Actions
SD-6	Clarifiers	Determine the integrity of the sidewalls and bottom of the basins. If leaks are detected, subsurface sampling should be conducted to determine the magnitude and extent of the contamination. Consideration should also be given to providing secondary containment for releases due to overtopping.
SD-7	Sand Filters	No further action is suggested at this time.
SD-8	Chlorine Contact Chambers	Determine the integrity of the sidewalls and bottom of the basins. If leaks are detected, subsurface sampling should be conducted to determine the magnitude and extent of the contamination. Consideration should also be given to providing secondary containment for releases due to overtopping.
SD-9	Sludge Drying Beds	Conduct soil sampling near the Sludge Drying Beds to determine whether hazardous constituents have been released. Samples should also be analyzed to determine the presence of subsurface gas. Consideration should be given to providing secondary containment for releases due to overtopping.
SD-10	Underground Sewer Lines	Conduct soil sampling near sewer lines to determine whether hazardous constituents have been released. Samples should also be analyzed to determine the presence of subsurface gas.
SD-11	Old Sanitary Wastewater Treatment Plant	No further action is suggested at this time.

Unit No.	Unit Name	Suggested Further Actions
SUMPS		
SU-1	Glass Melter Room Sump	Determine the integrity of the sidewalls and bottom of the sump. If leaks are detected, the wastewater should be sampled to determine whether hazardous constituents are present.
SU-2	Building 1 Sump	No further action is suggested at this time.
SU-3	Building 27 Sump	No further action is suggested at this time.
MISCELLANEOUS UNITS		
MI-1	Plant Drainage Ditch	Conduct surface water and sediment sampling in the ditch to determine the presence of hazardous constituents. The samples should also be analyzed to determine the presence of subsurface gas.
MI-2	Waste Disposal Pipeline	Subsurface soil sampling should be conducted to determine the magnitude and extent of contamination.
MI-3	Oil Burn Structure	Collect soil samples or samples of residue from the bottom of the unit to determine whether releases of hazardous constituents have occurred. The samples should also be analyzed to determine the presence of subsurface gas.
MI-4	Waste Transport Vehicles	Consideration should be given to providing secondary containment for Waste Transport Vehicle roadways.
MI-5	Fire Fighting Training Facility	Conduct subsurface soil sampling to determine the magnitude and extent of contamination.

Unit No.	Unit Name	Suggested Further Actions
MI-6	Lithium Carbonate Disposal Area	Conduct subsurface soil sampling to determine the magnitude and extent of contamination.
MI-7	Chromium Trench	Conduct subsurface soil sampling to determine the magnitude and extent of contamination.
MI-8	Cooling Tower Basins	No further action is suggested at this time.
MI-9	Glass Melter Feed Drum	No further action is suggested at this time.
MI-10	Trash Dumpsters	Consideration should be given to routing runoff from areas near trash dumpsters to the Sanitary Wastewater Treatment System.
MI-11	Acid Leach Field	Conduct subsurface soil sampling to determine the magnitude and extent of contamination.
MI-12	Vapor Degreaser	No further action is suggested at this time.
MI-13	Monitoring Well 34-1	Conduct groundwater soil sampling to determine the magnitude and extent of contamination.
MI-14	Building 27 Concrete Flume	Determine the integrity of the concrete bottom and sidewalls of the flume. If cracks exist in the concrete, the underlying soil should be sampled to determine whether releases of hazardous constituents have occurred.

Unit No.	Unit Name	Suggested Further Actions
MI-15	Dredge Spoil Drying Beds	Collect soil samples beneath the drying beds to determine whether releases of hazardous constituents has occurred. Consideration should be given to providing secondary containment for potential releases from this unit.

OTHER AREAS OF CONCERN

A	Thorium Drum Storage	No further action is suggested at this time.
B	Runoff Hollow	Collect samples of the ponded runoff in the hollow to determine whether hazardous constituents are present.
C	Septic Tank and Leach Field	Conduct soil sampling in the former leach field to determine whether hazardous constituents were released.
D	North Slope Springs	Collect samples of the groundwater seeping from the spring to determine whether hazardous constituents are present.
E	Waste Pipeline	Conduct wastewater or soil sampling to determine whether releases of hazardous constituents have occurred.
F	SM/PP Hill-9	Conduct soil sampling to determine whether releases of hazardous wastes have occurred.
G	Hillside Hole	Collect samples of the groundwater seeping from the seep to determine whether hazardous constituents are present.

Unit No.	Unit Name	Suggested Further Actions
H	Epoxy Resin Disposal	Attempts should be made to segregate the waste epoxy resin from general trash at Building 49.
I	North Canal	Collect sediment samples to determine whether hazardous constituents have been discharged off-site in plant stormwater runoff.
J	Miami-Erie Canal (South Canal)	Collect sediment samples to determine whether hazardous constituents have been discharged off-site in plant stormwater runoff.
K	North Pond	Collect surface water samples from the pond to determine whether hazardous constituents have been discharged off-site in plant runoff.
L	South Pond	Collect surface water samples from the pond to determine whether hazardous constituents have been discharged off-site in plant runoff.
M	Contaminated Soil Box Storage Area	No further action is suggested at this time.
N	Paint Shop Spills	Identify the spill location and conduct soil sampling from the affected areas to determine whether releases of hazardous constituents have occurred.
O	Powerhouse Spills	Identify the locations of leakage and conduct soil sampling from the affected areas to determine whether releases of hazardous constituents have occurred.

Unit No.	Unit Name	Suggested Further Actions
P	Building 9 Spills	Identify the discharge locations and conduct soil sampling from the affected areas to determine whether releases of hazardous constituents have occurred.
Q	Building 61 Spills	Identify the discharge locations and conduct soil sampling from the affected areas to determine whether releases of hazardous constituents have occurred.
R	HH Building Contamination	Identify the spill locations and conduct soil sampling from the affected areas to determine whether releases of hazardous constituents have occurred.
S	SM/PP Hill-1	Identify the spill locations and conduct soil sampling from the affected areas to determine whether releases of hazardous constituents have occurred.
T	Valley-1	Identify the spill locations and conduct soil sampling from the affected areas to determine whether releases of hazardous constituents have occurred.
U	Main Hill-1	Identify the tank overflow location and conduct soil sampling from the affected areas to determine whether releases of hazardous constituents have occurred.
V	Main Hill-2	Conduct soil sampling beneath the old sludge drying beds to determine whether releases of hazardous constituents have occurred.

Unit No.	Unit Name	Suggested Further Actions
W	SM/PP Hill-2	Identify the spill locations and conduct soil sampling in the affected areas to determine whether releases of hazardous constituents have occurred.
X	SM/PP Hill-3	Identify the release locations and conduct soil sampling in the affected areas to determine whether releases of hazardous constituents have occurred.
Y	Valley-2	Identify the release locations and collect sediment samples from the affected areas of the ditch to determine whether releases of hazardous constituents have occurred.
Z	Main Hill-3	Collect soil samples to determine whether releases of hazardous constituents have occurred.
AA	Main Hill-4	Identify the leak locations and collect soil samples from the affected areas to determine whether hazardous constituents have occurred.
BB	Main Hill-5	Identify the pipe rupture location and collect soil samples to determine whether releases of hazardous constituents have occurred.
CC	Valley-3	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.
DD	Main Hill-6	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.

Unit No.	Unit Name	Suggested Further Actions
EE	SM/PP Hill-4	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.
FF	SM/PP Hill-5	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.
GG	SM/PP Hill-6	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.
HH	Valley-4	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.
II	SM/PP Hill-7	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.
JJ	SM/PP Hill-8	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.
KK	Valley-6	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.

Unit No.	Unit Name	Suggested Further Actions
LL	SM/PP Hill-10	Identify the disposal location and collect soil samples from the area to determine whether releases of hazardous constituents have occurred.

VIII. REFERENCES

1. Accident Investigation in R-120 to Dr. J. F. Eichelberger, July 12, 1960.

2. E. A. Walker, Office Memorandum to G. H. Dugger, Health and Safety Division, Alburquerque Operations, Report on July 6, 1960 Radiation Incident at Mound Laboratory, February 6, 1961.

3. United States Atomic Energy Commission Mound Laboratory, Permit Application to Ohio Air Pollution Control Board, January 3, 1973.

4. R. L. Wainwright U. S. Atomic Energy Commission, Area Manager, Transmittal of refuse incinerator forms to William A. Auberle, Regional Air Pollution Control Agency, November 7, 1973.

5. Bernd Kahn, Director, Radiochemistry & Nuclear Engineering Facility, EPA, Letter to Gary Bramble, Ohio EPA, July 16, 1974.

6. Ken M. Harsh, G. Bramble, Ohio EPA, Inter-office Communication Memo to Thomas J. Birch, Chief, E. E. Group Mound Laboratory, August 6, 1974.

7. Notes and tables, Meeting on plutonium, September 11, 1974.

8. Ken M. Harsh, G. Bramble, Ohio EPA, Inter-office Communication Memo to Dr. Thomas Birch, Ohio, Ambient Water Group Chief, Ohio EPA, September 13, 1974.

9. Bernd Kahn, Radiochemistry & Nuclear Engineering Facility, EPA, Letter to Mr. Gary Bramble, Ohio EPA, October 1, 1974.

10. Mound Plutonium Study, Copies of slides and press release, October 2, 1974.

11. Ken Harsh, Art Talsma, Ohio EPA, Inter-office Communications Memo to Ernie Neal, Chief, Division of Surveillance, October 11, 1974.

12. Report of the Ad Hoc Committee to Evaluate the Health and Safety Aspeets of Pu 238 in the Environment Adjacent to Mound Laboratory, February 1976.

13. Phase I Potable Water Standards Project, Mound Laboratory for Monsanto Research Corporation, Dames and Moore, April 1976.

14. Ohio EPA, Permit to Operate an Air Contaminant Source to Mound Laboratory, Mary 6, 1977.

15. Ohio Air Pollution Control Agency, Notice of Registration to Mound Laboratory for fabrication and repair equipment, May 20, 1977.

16. Ohio Air Pollution Control Agency, Notice of Registration to Mound Laboratory for Machining Equipment, May 21, 1976.

17. Ohio Air Pollution Control Agency, Notice of Registration to Mound Laboratory for grinding shop, May 21, 1976.

18. Summary of Mound Laboratory Documents, July 6, 1960 through December 1, 1977.

19. Potable Water Standards Project, Mound Laboratory for Monsanto Research Corporation, Continuation of Data Analyses (Effects of Pumping), Dames and Moore, January 12, 1978.

20. Tritium Rainout Project, Prepared for Mound Facility, Monsanto Research Corporation, Dames and Moore, March 6, 1978.

21. Carl J. Kershuer and T. Ben Rhinehammer, Mound Laboratory Tritium Environmental Study: 1976-1977, Issued: April 10, 1978.

22. Mound Laboratory Documents, Government Accountability Project, summaries of reports for the period from 1960 to 1978.

23. Final Environmental Impact Statement, DOE-Mound Facility, Miamisburg, Ohio, U. S. Department of Energy, June 1979.

24. Clarence E. Styron and Herbert E. Meyer, Potable Water Standards Project: Final Report, April 7, 1981.

25. Harry N. Hill Department of Energy, Mound Facility, Transmittal of renewal applications for permit to operate an air contaminant source to William T. Burkhart, Supervisor, Regional Air Pollution Control Agency, February 1, 1980.

26. Authorization to Discharge Under the National Pollutant Discharge Elimination System, Permit No. OH 0009857, United States Department of Energy (Mound Facility), December 16, 1980.

27. Notification of Hazardous Waste site, U. S. Department of Energy, Mound Facility, June 11, 1981.

28. Harry N. Hill, U. S. Department of Energy, Mound Facility, Transmittal of Discharge Monitoring Report: April-June 1982 to Arnold E. Leder, U. S. EPA, June 26, 1982.

29. Contact Report, meeting attended by Dan Carfagno and Donna Lee, September 4, 1983.

30. Paint Spray Booth operation specifications, Department of Energy, Mound Facility, September 4, 1983.

31. R. M. Munson, Acting Area Manager, U. S. Department of Energy, Mound Facility, Transmittal of Air Pollution Permit Applications to Donna Lee, Regional Air Pollution Control Agency, February 3, 1984.

32. Harry N. Hill, Area Manager, U. S. Department of Energy, Mound Facility, Transmittal of completed NPDES permit application forms to Ohio EPA, April 2, 1984.

33. Agency telephone log regarding disposal of asbestos generated at the Mound Facility, June 7-8, 1984.

34. Enforcement Referral from Kendra H. Dearth, SWDO to Wastewater, Litigation Screening Committee Division of Industrial wastewater regarding U. S. DOE-Mound Facility, November 19, 1984.

35. Ohio EPA, Director's Final Findings and Orders in the Matter of U.S. DOE-Mound Facility, November 21, 1984.

36. Kendra H. Dearth, James C. Simpson, DWPC-SWDO, Inter-office Communication memo to Robert H. Maynard, Director, November 21, 1984.

37. Harry N. Hill, Area Manager, U. S. DOE-Mound Facility, Letter transmitting revised Part A permit application to Tom Crepean, Ohio EPA, November 28, 1984.

38. Robert H. Maynard, Director, Ohio EPA, Letter to Harry N. Hill, DOE-Mound Facility, December 11, 1984.

39. Jennifer Tiell, Staff Attorney, Inter-office Communications memo to Robert H. Maynard, Director Ohio EPA, December 13, 1984.

40. Barbara A. Fillmore, Natural Resources Defense Council, Notice of Intent to File Suit for Hazardous Waste Violations to Donald P. Hodel U.S. DOE, January 3, 1985.

41. Harry N. Hill, Area Manager, DOE-Mound Facility, Letter to Tom Crepean, Ohio EPA, January 18, 1985.

42. Hydee Hetick, Ohio EPA, Inter-office Communication Memo to Dan Redman, February 4, 1985.

43. Sandra J. Kemper, Manager, Permit and Compliance Program Section, Transmittal of Directors Final Findings and Orders, February 27, 1985.

44. Harry N. Hill, Area Manager, DOE-Mound Facility, Letter to Donna Gorby Lee, Regional Air Pollution Control Agency, May 1, 1985.

45. James A. Morley, Area Manager, DOE-Mound Facility, Letter to Sandra Turner, Ohio EPA, July 15, 1985.

46. Sandra J. Kemper, Manager, Permits and Compliance Section, Ohio EPA, Transmittal of NPDES Permit to DOE-Mound Facility, September 30, 1985.

47. George Glaser, Alloyd Asbestos Abatement Company, Letter to Jack Kemp, Regional Air Pollution Control Agency, November 4, 1985.

48. Scott Shane, Ohio EPA, Potential Hazardous Waste Site Preliminary Assessment, December 9, 1985.

49. Glenn Statement Releasing the GAO Report on the Three Ohio Defense Facilities, December 17, 1985.

50. Mary L. Walker, Assistant Secretary, Environment, Safety, and Health, Department of Energy, Washington, D.C., Letter to Director, Ohio EPA, January 31, 1986.

51. James C. Simpson, Unit Supervisor, Water Pollution Control, Ohio EPA, Transmittal of NPDES Compliance Inspection Report to James Morley, DOE-Mound Facility, February 25, 1986.

52. Thomas G. Rigo, Manager, Field Operations Section, Division of Air Pollution Control, Ohio EPA, Transmittal of Permit to Install to Dave Ingle, DOE-Mound Facility, March 19, 1986.

53. Kendra H. Dearth, Industrial Wastewater Group, Ohio EPA, Report on Plans for Sand Filters at Sanitary Wastewater Treatment Plant to Serve U.S. DOE-Mound Facility, March 20, 1986.

54. Sandra J. Kemper, Permits and Compliance Programs, Ohio EPA, Transmittal of Permit to Install to DOE-Mound Facility, March 27, 1986.

55. Albuquerque Operations Office Environment, Safety, and Health Division, Environmental Programs Branch, Comprehensive Environmental Assessment and Response Program, Phase I, Installation Assessment Mound, Draft, April 1986.

56. James A. Morley, Area Manager, DOE-Mound Facility, Transmittal of Air Pollution Control Information to Larry F. Kertcher, U. S. EPA, Region V, April 24, 1986.

57. James A. Morley, Area Manager, DOE-Mound Facility, Transmittal of Reporting and Testing Requirements to Robert Phelps, Ohio EPA, May 15, 1986.

58. Description and Safety Assessment of Site for Mound Laboratory, Dames and Moore, May 27, 1986.

59. Thurman D. Smith, Regional Air Pollution Control Agency, letter to Richard M. Munson, DOE-Mound Facility, June 11, 1986.

60. Contact Report, Meeting regarding Mounds' Labs, July 3, 1986.

61. Asbestos Demolition/Renovation Notification completed by George Glaser, Alloyed Asbestos Abatement Company, July 15, 1986.

62. W. B. Hogeman, President, Monsanto Research Corporation - Mound, Letter to Paula MacIllwaine, Montgomery County Commissioner, July 18, 1986.

63. Contact Report, Meeting regarding Environmental Survey, DOE-Mound, August 19, 1986.

64. James A. Morley, DOE-Mound Facility, Letter to Robert Swale, U.S. EPA, Region V, August 22, 1986.

65. James A. Morley, DOE-Mound Facility, Letter to Don Marshall, Ohio EPA, August 22, 1986.

66. James A. Morley, U.S. DOE-Mound Facility, RCRA Part B Permit Application to Robert Swale, U. S. EPA, Region V, November 7, 1986.

67. James A. Morley, DOE-Mound Facility, Letter to Vendra Dearth, Ohio EPA, December 10, 1986.

68. Asbestos Demolition/Renovation Notification completed by Dennis Lower, Alloyd Asbestos Abatement Company, January 12, 1987.

69. Department of Energy, Albuquerque Operations Office, Environment, Safety and Health Division, Environmental Programs Branch Comprehensive Environmental Assessment and Response Program, Phase 2: Mound, Installation Generic Monitoring Plan/Site-Specific Monitoring Plan, Health and Safety Plan, Working Draft, January 1987.

70. Department of Energy, Albuquerque Operations Office, Environment, Safety and Health Division, Environmental Programs Branch, Comprehensive Environmental Assessment and Response Program, Phase 2: Mound, Installation Generic Monitoring Plan/Site-Specific Monitoring Plan Synopsis, January 1987.

71. Richard K. Blauvelt, Sr. Waste Management Specialist, Monsanto Research Corporation - Mound, Mound Response to EPA Review of Part B permit Application to James A. Morley, U.S. DOE-Mound Facility, June 1, 1987.

72. Scott Shayne, Ohio EPA, Inter-office Communications Memo to Dave Strayer, June 4, 1987.

73. Environmental Survey Sampling and Analysis Plan, Mound Site, Miamisburg, Ohio, U.S. Department of Energy, Environment, Safety and Health, Office of Environmental Audit, July 1987.

74. Sharon L. Roney, Division of Water Quality Monitoring and Assessment, Ohio EPA, Compliance Sampling Inspection, Mound Laboratory, September 8, 1987.

75. James A. Morley, DOE-Mound Facility, Letter transmitting NPDES Information to Kendra Dearth, Ohio EPA, September 9, 1987.

76. James C. Simpson, Unit Supervisor, Water Pollution Control, Ohio EPA, Transmittal of NPDES Compliance Inspection Report to James Morley, DOE-Mound Facility, September 10, 1987.

77. Scott R. Shane, Solid and Hazardous Waste Management Unit, Letter to Richard Janowiecki, DOE-Mound Facility, September 22, 1987.

78. Draft Phase 2 Installation Generic Monitoring Plan/Remedial Investigation Plan - Stage 2 Supplement, Mound, Comprehensive Environmental Assessment and Response Program, September 1987.

79. John B. Hussman, Sr. Industrial Hygienist, Monsanto Research Corporation - Mound, Transmittal of Asbestos Demolition/Renovation Notification to Jack Kemp, Regional Air Pollution Control Agency, October 20, 1987.

80. Safety and Hygiene Manual, DOE-Mound, October 1, 1987.

81. G. W. Johnson, Acting Area Manager, DOE-Mound Facility, Transmittal of Environmental Survey (dated March 1987) to Scott Shane, Ohio EPA, October 30, 1987.

82. Contact Report, DOE-Mound, Meeting regarding GDF Inspection, December 21, 1987.

83. Monica B. Roll, Technical Director, A. T. Kearney, Transmittal of Completeness/Technical Review of Part B Application, U. S. DOE, Mound, Miamisburg, Ohio to Pat Vogtman, Regional Project Officer, U.S. EPA Region V, February 11, 1987.

84. Information retained from Visual Site Inspection at DOE-Mound, field log books, photograph logs, William Murphy Rohrer and Steven C. Heikkila, DPRA, Inc., May 3-5, 1988.

85. Lab Analysis Report from NUS Corporation, WD Sludge Analysis, September 27, 1985.

86. Site Plan, Incinerator Facility, Sketch No. 2, W. Russell, June 30, 1970.

87. Richard J. Janowiecki, Monsanto Research Corporation, Letter to Bill Rohrer, DPRA, Inc. (formerly Pope-Reid Associates), May 10, 1988.

88. Environmental Monitoring at Mound: 1982 Report, Daniel G. Carfagno and Billy M. Farmer, April 25, 1983.

89. Environmental Monitoring at Mound: 1983 Report, Daniel G. Carfagno and Billy M. Farmer, April 25, 1984.

90. Environmental Monitoring at Mound: 1984 Report, Daniel G. Carfagno and Billy M. Farmer, April 25, 1985.

91. Environmental Monitoring at Mound: 1985 Report, Daniel G. Carfagno and Billy M. Farmer, May 5, 1986.

92. Environmental Monitoring at Mound: 1986 Report, Daniel G. Carfagno and Billy M. Farmer, May 11, 1987.

93. Site Plan with Wind Rose and 100-Year Flood, K. Weaver, Drawing No. FSE861264, December 4, 1986.

94. Site Plan for Hazardous Waste Management, K. Weaver, Drawing No. FSD861469, October 4, 1986.

95. Site Sanitary Sewer, G.A.B., Drawing No. FSE16465, May 10, 1976.

96. Site Storm Sewer, G.A.B., Drawing No. FSE16464, May 10, 1976.

97. Existing Ground and Domestic Water Wells, K. Weaver, Drawing No. FSE860304, March 12, 1986.

98. Site Overflow Pond Test Borings, Willi, Drawing No. FSD16994, February 24, 1977.

99. S.D. Building Plans, Elevations, and Sections, G. R. Long, Job No. 46-142SD, September 16, 1947.

100. U.S. Department of Commerce NOAA, Comparative Climatic Data for the United States through 1985.

ATTACHMENT 1

VISUAL SITE INSPECTION FIELD NOTEBOOKS

ATTACHMENT 2

VISUAL SITE INSPECTION SUMMARY

VISUAL SITE INSPECTION (VSI) REPORT

U.S. DOE MOUND

MIAMISBURG, OHIO

Date:	May 3-5, 1988
Facility Representatives:	Richard Janowiecki, MRC Dan Carfagno, MRC
Inspectors:	Kae Lee, EPA Region V William L. M. Rohrer, DPRA Steven Heikkila, DPRA
Weather Conditions:	Sunny, clear, temperature in upper 60s.

U.S. DOE Mound is a research development and production facility in support of weapon and non-weapon activities. Major areas of research include nuclear technology and chemical analysis. Non-nuclear detonations and explosive pellets are manufactured at this plant for use in nuclear weapons. Nuclear weapons are assembled in another DOE facility.

The facility was constructed in 1949, to research Polonium-210 for early nuclear weapons applications. The facility is currently operated by Monsanto Research Corporation (MRC) for DOE. Sometime this fall a new contractor (EG&G) will take responsibility for management of the facility.

The first morning of the VSI was spent meeting numerous representatives of MRC , DOE, and staff from Ohio EPA who wanted to inspect the Glass Melter Incinerator and Thermal Treatment Areas of the facility. Radiologic and hazardous waste safety personnel also provided brief descriptions of their respective programs. Everyone of the inspection team was issued a personal dosimeter (TLD) badge to monitor for exposure to Pu 238, tritium, and other radioactive sources at the site, the results of nearly 40 years of activity with radioactive materials. Because of the highly classified nature of activities at DOE, the VSI participants were informed that they would be accompanied at all times. This even included escort to lavatories, preventive metal detector checks and screening upon entry to certain areas by armed sentries.

Mr. Janowiecki also informed us that we would not be able to retain photographic film to develop

prints outside the facility. The facility agreed to process the film in their own photographic laboratory, screen all pictures, and then send them to us. On the last day of the VSI, the facility had only developed one roll of film.

After inspecting the Glass Melter Incinerator, inspections were screened by an alpha screener, the VSI contingent then proceeded to the Thermal Treatment Area. Following inspection of this area, the representatives for EPA Region V and Ohio EPA departed and the inspectors from DPRA were given baseline physicals and fit tested for half-face respirators.

After the fit test and lunch, the inspectors converged in a conference room to discuss the agenda for the remainder of the VSI and to discuss information needs, as outlined in the agenda letter sent to the facility prior to the VSI.

After reviewing the agenda, the participants toured the construction activities at the site of the WD pipeline break (which occurred in 1969) and sanitary sewer system.

After leaving the facility, DPRA staff drove to a park adjacent to the northeast boundary of the facility. The Indian Mound for which the facility was named) and an unsecured drinking fountain (which reportedly is contaminated with tribum) were inspected. On the following day, numerous solid waste management units were inspected, including:

- Magazine 53 in Thermal Treatment Area.
- Building 72 Hazardous Waste Storage Area.
- Fire Training Area.
- WD Wastewater Treatment System.
- Building 23 Staging Area for Radioactive and Mixed Radioactive Wastes.
- Spoils Areas and Radioactive Waste Areas on SW/PP Hill.
- Asphalt-lined Pond.
- Cooling Towers at Power House.
- Fuel Oil Storage Area Adjacent to Power House.

On the third day, the following units were inspected:

- Vapor Degreaser in Metal Plating Shop (M-108).
- Hazardous Waste Transport Vehicles at Building 61.
- DS Solvent and B Storage Sheds.
- Radioactive Soil Contamination Areas.
- Various Radioactive Seeps, Including the "Hillside Hole".

A short close-out meeting with MRC and DOE staff was convened following lunch. Final information needs were identified at this point. Mr. Carfagno then accompanied DPRA staff to two offsite locations: The North/South Ponds below the bluff to the west side of the facility and an abandoned sanitary landfill (dump) on the newly acquired buffer area to the south of the plant proper. DPRA staff then drove Mr. Carfagno back to the facility and relinquished the remaining rolls of exposed film.

The facility staff were quite helpful and tried to obtain answers to questions as quickly as possible. They appeared to be very aware of the past and ongoing environmental problems (mainly stemming from radioactive waste). Approximately $11-12 M have been and will be spent annually on D&D (decontamination and decommissioning) activities from the mid-1970s to the mid-1990s.

ATTACHMENT 3

VISUAL SITE INSPECTION (VSI) PHOTOGRAPH LOG

The following list is a cross-reference of SWMU and AOC labels, and photograph numbers. For a few units, no photograph was taken. A reason is provided for the absence of a photograph in these cases.

UNIT	PHOTOGRAPH NUMBER OR REASON FOR NO PHOTOGRAPH TAKEN
LANDFILLS	
LF-1 - Lined Landfill	4-6 to 4-7
LF-2 - Past Landfill	4-6 to 4-7, 4-21 to 4-22
LF-3 - Spoils Disposal Area	4-23 to 4-26
LF-4 - Dredged Material Disposal Area	4-31 to 4-32
LF-5 - South Property Dump	6-36, 7-1 to 7-3
SURFACE IMPOUNDMENTS	
SI-1 - Retention Basins	2-23 to 2-25
SI-2 - Overflow Pond	4-6 to 4-7
SI-3 - Asphalt-Lined Pond	5-10 to 5-12
SI-4 - Building 1 Leach Pit	3-19 to 3-21
SI-5 - Building 27 Leach Pit	3-25 to 3-26
SI-6 - Hillside Catch Basin	5-1
CONTAINER STORAGE AREAS	
CS-1 - Scintillation Vial Storage Area	3-9
CS-2 - Building E Solvent Storage Shed	3-10
CS-3 - Building 28 Solvent Storage Area	5-14
CS-4 - DS Building Solvent Storage Shed	6-8 to 6-9
CS-5 - Building B Solvent Storage Shed	6-10 to 6-11
CS-6 - Waste Oil Drumfield	4-27

UNIT	PHOTOGRAPH NUMBER OR REASON FOR NO PHOTOGRAPH TAKEN
CS-7 - Hazardous Waste Storage Area	3-29, 3-34 to 3-37, 4-1, 4-2
CS-8 - Past Hazardous Waste Storage Area	4-8
CS-9 - Radioactive/Mixed Waste Storage Area	4-16 to 4-18
CS-10 - Old Firing Range Drum Storage Area	4-29 to 4-30
CS-11 - Drilling Mud Drum Storage Area	6-26 to 6-27
CS-12 - Building 27 Solvent Storage Area	3-24
CS-13 - Outdoor Hazardous Waste Storage Area	3-31
CS-14 - Empty Drum Storage Area	3-30
CS-15 - Building B Temporary Drum Storage Area	6-12
CS-16 - Cooling Tower Drum Storage Area	5-15 to 5-17
CS-17 - Test Firing Residual Storage Area	Classified Area
CS-18 - WD Building Drum Staging Area	1-21 to 1-24
CS-19 - SW Building Staging Area	6-19
INCINERATORS	
IN-1 - Glass Melter Furnace	1-3 to 1-10
IN-2 - Cyclone Incinerator	1-17 to 1-18, 1-20
IN-3 - Waste Solvent Incinerator	1-35 to 1-36
AIR POLLUTION CONTROL UNITS	
AP-1 - Deluge Tank	1-15

UNIT	PHOTOGRAPH NUMBER OR REASON FOR NO PHOTOGRAPH TAKEN
AP-2 - Venturi Scrubber	1-14
AP-3 - Cyclone Demister	1-14
AP-4 - HEPA Filter	1-13
AP-5 - WD Filter Bank	4-14
AP-6 - Recycle Tank	Photograph did not turn out
AP-7 - Leaf Solution Filter	1-11 to 1-12
AP-8 - Strainer	4-15
AP-9 - Iodine Absorption Filter	1-19
AP-10 - Waste Solvent Incinerator Scrubber	Unit dismantled
AP-11 - Ventillation Hoods	3-4, 3-8
OPEN BURN AREA UNITS	
OB-1 - Trash Burner	1-34
OB-2 - Thermal Treatment Unit	1-25 to 1-26
OB-3 - Retort (Rotary Kiln)	1-27 to 1-30
OB-4 - Building 90 Blockhouse	3-11
OB-5 - Pyrotechnic Waste Shed	1-33, 3-11
OB-6 - Biodegradation Unit	1-31 to 1-32
OB-7 - Explosive Waste Storage Bunker (Magazine 53)	3-12, 3-16 to 3-17
OB-8 - Pyrotechnic Waste Disposal Area	3-15
UNDERGROUND STORAGE TANKS	
UT-1 - Waste Solvent Storage Tank	1-35 to 1-36
UT-2 - Aviation Fuel Tank	4-20
WD BUILDING WASTEWATER TREATMENT	
WD-1 - Alpha Wastewater Influent Tanks	4-10
WD-2 - Alpha Wastewater Treatment System	4-11 to 4-13

UNIT	PHOTOGRAPH NUMBER OR REASON FOR NO PHOTOGRAPH TAKEN
WD-3 - Beta Wastewater Treatment System	Unit identified after VSI

SANITARY WASTEWATER TREATMENT SYSTEM

SD-1 - Grit Chamber	2-10
SD-2 - Grit Conveyor	2-11 to 2-12
SD-3 - Comminutor	2-13
SD-4 - Equalization Basins	2-14
SD-5 - Aeration Basins	2-15
SD-6 - Clarifiers	2-16
SD-7 - Sand Filters	2-19
SD-8 - Chlorine Contact Chambers	2-20
SD-9 - Sludge Drying Beds	2-17 to 2-18
SD-10 - Underground Sewer Lines	Unit is underground and not visible
SD-11 - Old Sanitary Wastewater Treatment Plant	6-20 to 6-22

SUMPS

SU-1 - Glass Melter Room Sump	4-13
SU-2 - Building 1 Sump	3-18
SU-3 - Building 27 Sump	3-23

MISCELLANEOUS UNITS

MI-1 - Plant Drainage Ditch	2-1 to 2-3
MI-2 - Waste Disposal Pipeline	2-4 to 2-6, 6-23
MI-3 - Oil Burn Structure	2-25, 4-5
MI-4 - Waste Transport Vehicle	6-2 to 6-6
MI-5 - Fire Fighting Training Facility	4-3 to 4-4, 4-20

UNIT	PHOTOGRAPH NUMBER OR REASON FOR NO PHOTOGRAPH TAKEN
MI-6 - Lithium Carbonate Disposal Area	4-19
MI-7 - Chromium Trench	6-13
MI-8 - Cooling Tower Basins	5-15
MI-9 - Glass Melter Feed Tank	1-8
MI-10 - Trash Dumpsters	2-28
MI-11 - Acid Leach Field	5-3
MI-12 - Vapor Degreaser	6-1
MI-13 - Monitoring Well 34-1	6-7
MI-14 - Building 27 Concrete Flume	3-22
MI-15 - Dredge Spoil Drying Beds	2-22
A - Thorium Drum Storage	3-13 to 3-14
B - Runoff Hollow	3-28
C - Septic Tank and Leach Field	5-6
D - North Slope Springs	6-14 to 6-16
E - Waste Pipeline	Underground unit
F - SW Building C	6-18
G - Hillside Hole	6-24 to 6-25
H - Epoxy Resin Disposal	Classified Area
I - North Canal	6-33
J - Miami-Erie Canal (South Canal)	Unit not photographed because of time constraints
K - North Pond	6-35
L - South Pond	6-29 to 6-32
M - Contaminated Soil Box Storage Area	2-7 to 2-9
N - Paint Shop Spills	Spills no longer visible
O - Powerhouse Spills	5-18
P - Building 9 Spills	Spills no longer visible
Q - Building 61 Spills	Spills no longer visible
R - HH Building Contamination	Unit is in same area as Photograph MI-13

UNIT	PHOTOGRAPH NUMBER OR REASON FOR NO PHOTOGRAPH TAKEN
S - SM/PP Hill-1	Unit is in same area as Photographs 3-13 to 3-14
T - Valley-1	Unit is in same area as Photographs 2-10 to 2-20
U - Main Hill-1	6-23
V - Main Hill-2	6-23
W - SM/PP Hill-2	5-9
X - SM/PP Hill-3	5-5
Y - Valley-2	Unit is in same area as Photographs 2-7 to 2-9
Z - Main Hill-3	6-17
AA - Main Hill-4	6-23
BB - Main Hill-5	Unit not identified until after VSI
CC - Valley-3	Unit is in same area as Photographs 4-21 to 4-22
DD - Main Hill-6	Unit is in same areas as Photograph 6-13
EE - SM/PP Hill-4	5-8
FF - SM/PP Hill-5	4-33 to 4-36
GG - SM/PP Hill-6	5-4
HH - Valley-4	Classified Area
II - SM/PP Hill-7 (Orphen Soil Areas)	4-28
JJ - SM/PP Hill-8	Unit is in same area as Photograph 5-5
KK - Valley-6	5-13
LL - SM/PP-10	Unit is in same area as Photograph 5-1

ATTACHMENT 4

WASTE ANALYSES

TABLE 1

WASTE ANALYSIS DATA FOR RADIOACTIVE MIXED WASTE

Waste Name WasteWaste No.	Scintillation Vials-Type 1 M-136	Scintillation Vials-Type 2 M-137	Scintillation Vials-Type 3 M-138	Acid Waste M-150	Base Waste M-151
Physical Form	Clear liquid	Clear blue-violet liquid	Clear liquid	Liquid	Liquid
Constituents, %	Pseudocumene solvents, ≥50 Synthetic organic surfactants, ≤50 Chlorinated solvents, 0-5 Benzene, 0-5	Xylene, 50-70 Alkylpolyethoxyethanol and Arylhydrocarbons, balance	1,4-dioxane, 85-95 Naphthalene, 5-15 2,5-diphenyloxazole, 0.5-1 1,4-bis-2-(5-phenyloxazolyl)-benzene, 50-150 ppm	Various acid solutions (to be determined)	Various base solutions (to be determined)
Flash Point, °F	~ 113 8-9	~ 79 7-10	~ 54 7-10	N/A ≤2	N/A ≥12.5
Source	Bioassay	Bioassay	Bioassay	Various operations	Various operations
EPA Waste Code	D001	D001;F003	D001	D002	D002
Radioisotopes	Tritium, carbon-14, plutonium-238 or plutonium-239	Tritium, carbon-14, plutonium-238 or plutonium-239	Tritium, carbon-14, plutonium-238 or plutonium-239	To be determined (Suspect Pu-238 and Pu-239)	To be determined (Suspect Pu-238 and Pu-239)

(Source: Reference 66, Appendix C)

TABLE 2

WASTE ANALYSIS DATA FOR SOLVENT-CONTAINING WASTES

Waste Name	Waste Solvent 28	Waste Solvent B	Waste Solvent DS	Waste Solvent E
Waste No.	MTO-27	MTO-29	MTO-28	MTO-110
Components, %	Isopropanol, 20-40 Methylene chloride, 20-40 Acetone, 10-20 Ethanol, 0-5 Methanol, 0-5 Diacetone alcohol, 0-5	Ethanol, 10-40 Isopropanol, 10-40 Trichloroethylene, 10-40 Water, 5-20 Acetone, 0-20 Methylene chloride, 0-15	Isopropanol, 0-50 1,1,1-Trichloroethane, 0-25 Trichlorotrifluoroethane, 0-20 Trichloroethylene, 0-20 Acetone, 0-20 Toluene, 0-20	Trichlorotrifluoroethane, 25-45 Isopropanol, 25-45 Methylene chloride, 10-30 Water, 30-50 Chlorine, 0-1
Physical State	Clear liquid	Clear liquid	Liquid	Clear liquid
Specific Weight (lb/gal)	6-11	6-13		8-11
Flash Point, °F	40-150 (est.)	<60	<60	101-140 (est.)
Other				Btu/lb: >3,500
Source/Comments	Cleaning operations in Bldg. 28	Cleaning operations in B Bldg.	Cleaning operations in DS Bldg.	Metal cleaning operations in E Bldg.
EPA Waste Code	D001;F002;F003	D001;F002;F003	D001;F003;F005	D001;F001;F002

(Source: Reference 66, Appendix C)

TABLE 2

WASTE ANALYSIS DATA FOR SOLVENT-CONTAINING WASTES (continued)

Waste Name	Waste Solvent I	Waste Acetone	Waste acetone/DAP/asbestos	Waste alcohol mixture
Waste No.	MTO-107	MTO-19	MTO-103	MTO-30
Components, %	Isopropanol, 10-40 1,1,1-Trichloroethane, 10-40 Methylene chloride, 10-40 Trichlorotrifluoroethane, 10-40	Acetone, 90-100 Water, 0-10	Acetone, 80-95 Water, 5-20 Diallyl phthalate with asbestos, 5-15	Methanol, 5-50 Ethanol, 5-50 Isopropanol, 5-50 Water, 0-10
Physical State	Clear liquid	Clear liquid	Liquid	Clear liquid
Specific Weight (lb/gal)	~10	6.7	7-8	5-10
Flash Point, °F	101-140	~4	<60	<60
Other		Btu/lb: >8,000		
Source/Comments	Metal cleaning operations in I Bldg.	Part cleaning operations	Plastics operations	Various operations
EPA Waste Code	D001;F001;F002	F003	F003	D001;F003

TABLE 2

WASTE ANALYSIS DATA FOR SOLVENT-CONTAINING WASTES (continued)

Waste Name	Blankrola solvent waste	Carbon disulfide	Waste freon 11	Waste freon and water
Waste No.	M-48	MTO-18	MTO-62	MTO-21
Components, %	Petroleum naphtha, 75-80 Perchloroethylene, 20-25 Chlorine, 13.9	Carbon disulfide, 100	Trichloromonofluromethane, 100	Trichlorotrifluoroethane, 30-90 Water, 10-70
Physical State	Reddish-brown liquid	Faint yellow liquid	Colorless liquid	Liquid
Specific Weight (lb/gal)	7-9	10.8	12-14	8-14
Flash Point, °F	108	-22	>200	None
Other	Btu/lb: 16,820		Toxic	
Source/Comments	Print shop ink waste	Laboratory operations	Various operations	Various operations
EPA Waste Code	D001;F001	F005	F002	F002

TABLE 2

WASTE ANALYSIS DATA FOR SOLVENT-CONTAINING WASTES (continued)

Waste Name	Ketone waste	LIX Solvent Waste	Waste methyl ethyl ketone	Waste methylene chloride
Waste No.	MTO-25	MTO-35	MTO-20	MTO-17
Components, %	Methyl isobutyl ketone, 10-15 Methyl ethyl ketone, 10-25 Other solvents, 30-70	Mineral spirits, 70-80 Perchloroethylene, 10-20 1,1,1-Trichloroethane, 10-20	Methyl ethyl ketone, 80-100 Water, 0-20 Other organic material, 0-2 Chlorine, 0-1	Methylene chloride, 90-100 Water, 0-10
Physical State	Liquid	Liquid	Colorless liquid	Colorless liquid
Specific Weight (lb/gal)	8-12	8.8	6-10	10-12
Flash Point, °F	<60	<140	61-100	None
Other			Btu/lb: >8,000 Pb: 119 ppm	
Source/Comments	Various operations	Parts cleaning		
EPA Waste Code	F003;F005	D001;F002	F005	F002

TABLE 2

WASTE ANALYSIS DATA FOR SOLVENT-CONTAINING WASTES (continued)

Waste Name	Waste organic solvent solution	Waste organic solvent solution	Tetrachloroethane waste	Trichloroethane waste
Waste No.	MTO-109	MTO-86	MTO-61	MTO-26
Components, %	Isopropanol, 40 1,1,1-Trichloroethane, 3.5 1,1,2-Trichloroethane, 4.2 Water, ~50 Chlorine, 7.6	Methylene chloride, 12 Mineral spirits/oil, 17 1,1,1-Trichloroethane, 6 Tetrachloroethylene, 5 Water, ~60 Chlorine, 22	Tetrachloroethane, 90-100 Water, 0-10	1,1,1-Trichloroethane, 90-100 Water, 0-10
Physical State	Liquid (2 phase)	Liquid	Colorless liquid	Liquid
Specific Weight (lb/gal)	7.9	8.6	10-15	10-12
Flash point, °F	<70	>180	Not combustible	None
Other	Btu/lb: 6,690	Btu/lb: 3,680		
Source/Comments	Metal cleaning operations	Cleaning operations	Various operations	Various operations
EPA Waste Code	D001;F002	D001;F002	U208	F002

TABLE 2

WASTE ANALYSIS DATA FOR SOLVENT-CONTAINING WASTES (continued)

Waste Name	Trichloroethylene Waste	Trichlorotrifluoroethane waste	Paint Waste	Contaminated Soil
Waste No.	HTO-33	HTO-60	H-93	HTO-105; H-29
Components, %	Trichloroethylene, 90-100 Water, 0-10	Trichlorotrifluoroethane, 60-100 Water, 0-40	Acetone, 0-20 Toluene, 0-20 Ethanol, 0-15 1,1,1-Trichloroethane, 0-10 Tetrachloroethylene, 0-10 Chlorobenzene, 0-10 Mineral spirits, 0-20 Water, 0-40	1,1,1-Trichloroethane, 0.4-18 ppm Trichloroethylene, 0.8-7.6 ppm
Physical State	Liquid	Colorless liquid	Multilayer liquid	Sandy solid
Specific Weight (lb/gal)	12.5	10-15	5-10	10
Flash point, °F	None	Not combustible	10-140	None
Other			Btu/lb: >8,000	
Source/Comments	Various operations	Various operations	Paint shop operations	Soil near former Bldg. 72
EPA Waste Code	F002	F002	D001;F003;F005	F002

TABLE 2

WASTE ANALYSIS DATA FOR SOLVENT-CONTAINING WASTES (continued)

Waste Name	Liquid waste from explosives production		
Waste No.	N-134		
Components, %		Range	Recent Composition
	Acetone	0-100	1-25
	Ethanol	0-100	1-25
	Acetonitrile	0-100	
	Tetrahydrofuran	0-100	
	Methylene chloride	0-50	
	Dimethyl sulfoxide	0-25	
	Toluene	0-15	
	Ammonium hydroxide	0-10	
	Sodium hydroxide	0-10	
	Diacetone alcohol	0-5	
	Butyrolactone	0-5	
	Water	0-100	75-99
	HMX, PETN, TATB, CP, sodium perchlorate	0-1	0-1 (HMX)
Physical State		Liquid	
Specific Weight (lb/gal)		6-11	~8
Flash Point, °F		0 to >160, or none	>160
Source/Comments		Bldg. 27 operations	
EPA Waste Code		F003;F002; F005;D001	F003;D001

NOTE: HMX = cyclotetramethylene tetranitrate
PETN = pentaerythritol tetranitrate
TATB = Triamino trinitrobenzene
CP = 2-[5-cyanotetrazolato]pentaamine cobalt III perchlorate

TABLE 2

WASTE ANALYSIS DATA FOR MISCELLANEOUS IGNITABLE WASTES

Waste Name	Acetonitrile waste	Ammonium nitrate waste	CoRezyn 1664 Waste	Organic Acid
Waste No.	M-132	MTO-12	M-57	M-92
Components, %	Acetonitrile, 100	Ammonium nitrate, 80-100 Water, 0-20	Unsaturated polyester, 61 Styrene monomer, 33 Triphenyl phosphate, 5 Dimethylamine, 0-0.1 Diethylamine, 0-0.1	Organic acid, 90-95 Water, 5-10 Free cyanide, <.05 ppm Free sulfide, <0.1 ppm PCB, 0 Total organic hydrogen, 1.24
Physical State	Clear liquid	Wet solid mass	Brown appearance	Yellow liquid
Specific Weight (lb/gal)	6.7	~14	~10	~10
Flash point, °F	42	N/A	87	<70
Other				Btu/lb: 3,862 pH: <2
Source/Comments	Research processes	Excess material	Resin process	Special operation
EPA Waste Code	D001	D001	D001	D001;D002

ATTACHMENT 5

PRELIMINARY REVIEW (PR)

PRELIMINARY REVIEW REPORT (PR)
RCRA FACILITY ASSESSMENT (RFA)

1. Facility Name: U.S. DOE Mound
EPA I.D. No. : OH6899008984
Preparers : William L. Murphy Rohrer and Steven Heikkila
Date : April 14, 1988

A. General Description of Facility and Processes:

The Mound facility is located within the corporate limits of Miamisburg, in southwestern Ohio (Figure 1). The 306-acre site is located approximately 10-miles south-southwest of Dayton. The principal function of the Mound facility is to manufacture non-nuclear and tritium-bearing components for nuclear weapons. Weapons assembly is conducted at another DOE facility. The Mound facility has been active since 1948 and is now operated by the Monsanto Research Corporation (MRC).

As described in the Environmental Survey Sampling and Analysis Plan (U.S. DOE, 1987), five major programs are conducted at the Mound facility:

- Weapons Program - Activities associated with the weapons program include research, development, and production of: detonators; timers, transducers and switches; firesets; actuators; and nuclear components. Surveillance is also performed on various components of weapons taken from stockpile. In addition, 36 products on 9 different types of ordinance are procured for other sites involved in the program.

- Stable Isotope Program - Development of isotope separation methods for biomedical applications, molecular science research, isotope separation research and development, stable isotopes inventory program and worldwide sales, and isotope separation by chemical exchange are the major efforts conducted within the stable isotope program.

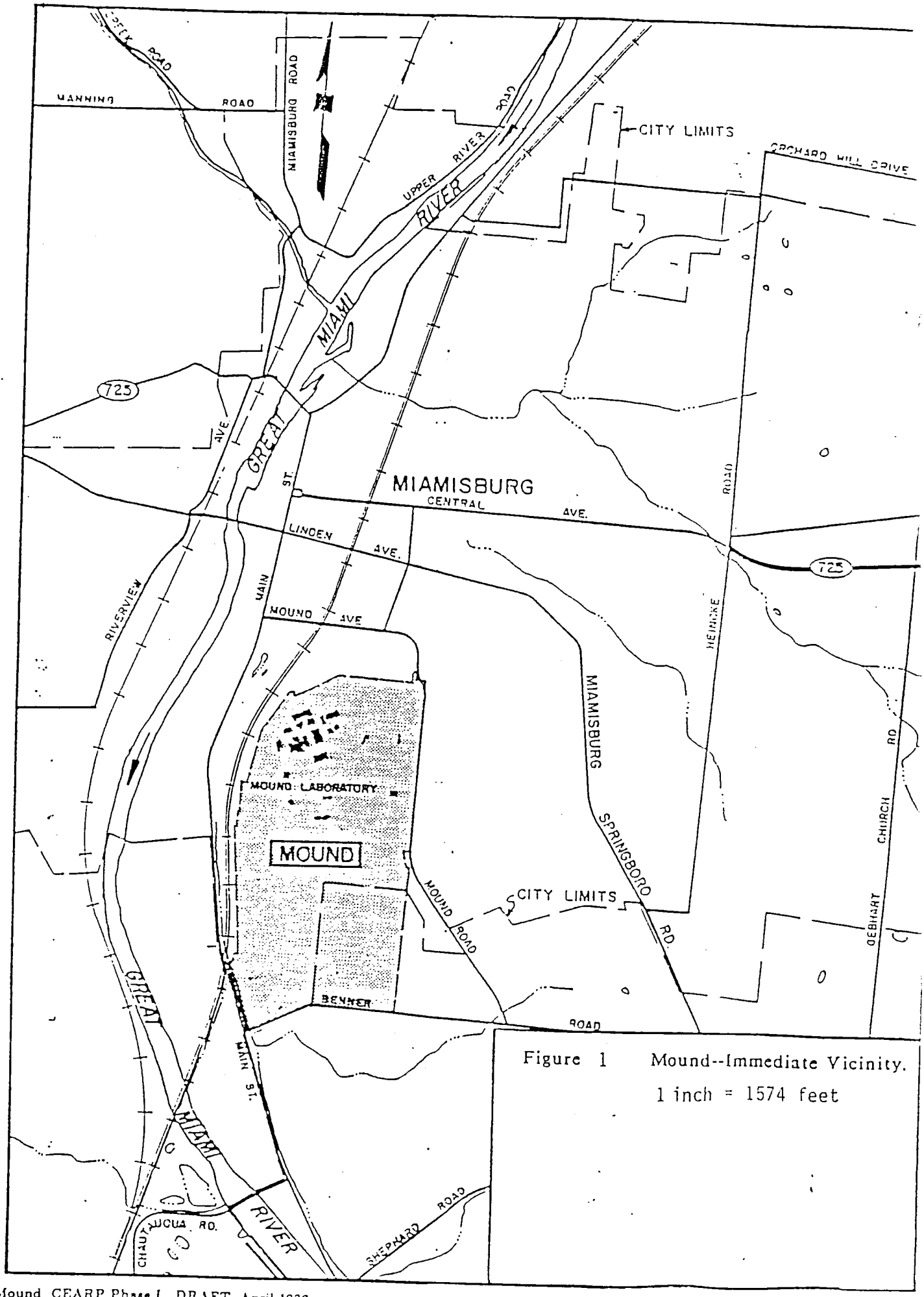


Figure 1 Mound--Immediate Vicinity.
1 inch = 1574 feet

- Safeguards Program - Mound's safeguards programs include research and development for nuclear measurement instruments and methodology, and provide site assistance for nuclear material accountability, and calorimeter reimbursable materials.

- Heat Source Program - Mound's activities in the heat source program include hardware fabrication, radioactive module assembly, radioisotopic thermoelectric generator (RTG) assembly, and testing of heat sources of the production of electricity in space, in the ocean, and on land. Also associated with this program are the receipt and monitoring of spare flight RTG's after launches are completed at Kennedy Space Center.

- Tritium Recovery Program - Mound receives scrap materials from other DOE sites and recovers and purifies the tritium for future use.

The USDOE Mound facility is a generator and TSDF for hazardous wastes and radioactive mixed waste. The Part B Permit Application pertains to the following storage and treatment activities:

1. Storage of containerized waste in Building 72;

2. Incineration of ignitable hazardous wastes and radioactive mixed waste in the Glass Melter, WD Building Annex;

3. Storage of containerized radioactive mixed waste in Building 23.

Table 1 from the Phase 1: Installation Assessment draft report, 1986 (Ref. 55) lists the RCRA-regulated wastes managed at the facility.

U.S. DOE Mound submitted a RCRA Part A Application to USEPA Region V on August 15, 1980. A copy was sent to Ohio EPA on April 9, 1981. Revised versions of the Part A Application were submitted to Ohio EPA in November 1984, and January, March and May, 1985. A Part B Application was submitted by the facility on November 7, 1986.

As a result of a large spill of plutonium 238 waste in 1969, the State of Ohio submitted a demand letter (under CERCLA authority) for $63,000,000 to

USDOE, MRC, and the Monsanto Company. Remedial activities were initiated soon after the spill and according to the Draft Phase I Installation Assessment Report (1986, Ref. 55), "subsequent studies and monitoring conducted by MRC [and] the State of Ohio . . . indicated that this is not a current or future threat to health or the environment and no further remedial action for this site is warranted." Negotiations between USDOE and the State of Ohio are continuing in an effort to resolve the issue.

The U.S. DOE Mound Site received a NPDES discharge permit from Region V USEPA in June 1975. NPDES-regulated effluent discharges are monitored at four stations at the facility.

Table 1

Management of RCRA-Regulated Wastes

EPA Hazard Waste No.	Estimated Annual Quantity of Waste (lb/yr)	Process Treatment Code
D001	66,000	S01
F001	(included with D001)	S01
F003	(included with D001)	S01
F005	(included with D001)	S01
D002	18,000	S01
F007	(included with D002)	S01
F009	(included with D002)	S01
D003	4000	T04,T03
D004	300	S01
D005	300	S01
D006	1500	S01
D006	25	T03
D007	500	S01
D008	2000	S01
D009	12,000	S01
D010	100	S01
D011	20,000	S01
F002	15,000	S01
F003	20,000	S01
F004	300	S01
F005	5000	S01
F007	1000	S01
F008	1000	S01
F009	1000	S01
U003	2400	T03
U009	400	T03
U037	400	T03
U158	1500	S01
U211	400	T03
Misc.	50,000	S01

D001--A solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste in Subpart D.

F001--The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.

Table 1 (cont)

F003--The following spent nonhalogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobuyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.

F005--The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine: and the still bottoms from the recovery of these solvents.

D002--A solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in Subpart D.

F007--Spent cyanide plating bath solutions from electroplating operations.

F009--Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.

D003--A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in Subpart D.

D004--Arsenic.

D005--Barium.

D006--Cadmium.

D007--Chromium.

D008--Lead.

D009--Mercury.

D010--Selenium.

D011--Silver.

F002--The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents.

F004--The following spent nonhalogenated solvents: cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.

F008--Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process.

U003--Acetonitrile

U009--Acrylonitrile

Table 1 (cont)

U037--Benzene, chloro-

U158--4,4'-Methylenebis (2-chloroaniline)

U211--Carbon tetrachloride

S01--Storage container

T03--Treatment incinerator. (Explosives are treated in an incinerator on an occasional as-needed basis; estimated annual quantity: 300 lbs; process capacity: 12 lbs per burn.)

A "cyclone incinerator" and a "glass melter" are developmental units used for hazardous waste treatment. The incinerator includes a single-stage cyclonic combustion chamber, a wet off-gas treatment system, and a high-efficiency filter. The glass melter includes a refractory chamber with molten glass over which waste is burned, a wet off-gas treatment system, and a high efficiency filter. Each unit has a design capacity of 50 lbs/h of organic waste.

T04--Treatment/Other. (Open burning of explosive-contaminated waste is conducted on an occasional as-needed basis; estimated annual quantity: 1,000 lbs; process capacity: 40 lbs per day. Detonators and pellets are treated in a retort (propane fired kiln) on an occasional as-needed basis; estimated annual quantity: 2,000 lbs; process capacity 0.33 lb per 30 seconds.)

Misc.--Periodic lab wastes, primarily having D001, D002, D003, and EP toxicity characteristics, but also including listed wastes in small quantities. The mix and quantity is dependent upon program requirements.

B. Information on Solid Waste Management Units:

Unit	Release (yes/no/unknown/suspected)
1. Open Burning Area	suspected
2. Past Landfill 1	suspected
3. Waste Solvent Incinerator	no
4. Waste Solvent Incinerator Scrubber	no
5. Lined Landfill	no
6. Past Disposal Area 2	suspected
7. Past Disposal Area 3	suspected
8. Plant Drainage System	yes
9. Drainage Flume	unknown
10. Waste Disposal Pipeline	yes
11. Waste Disposal Facility	unknown
12. Retaining/Settling Basins	unknown
13. Solution Discard Areas	suspected
14. Wastewater Treatment Plant	unknown
15. Overflow Pond	unknown
16. Test Firing Tanks	suspected
17. Oil Burn Structure	unknown
18. Past Hazardous Waste Storage Area	no
19. Current Hazardous Waste Storage Area	no
20. Explosive Storage Area	unknown
21. Glass Melt Furnace	unknown
22. Fire Fighting Training Facility	suspected
23. Wastewater Treatment Plant Sand Filters (2)	unknown
24. Asphalt-Lined Pond	unknown
25. Concrete-Lined Ponds	unknown
26. Dredged Material Disposal Site	suspected
27. Spoils Area	unknown
28. Solvent Storage Shed	unknown
29. Process Area Solvent Storage Areas	unknown
30. Photoprocessing Waste Storage	unknown
31. Radioactive Mixed Waste Consolidation Areas	unknown
32/33. Building 23 Waste Staging Area	unknown
34. Stagnant Water Area	suspected
35. Leach Bed	suspected
36. Chromium Trench	suspected

37. Pyro Waste Disposal Area	suspected
38. Building 38 Hillside Disposal Area	suspected
39. WD Building USTs	suspected
40. Cooling Towers	unknown
41. Recreation Ponds (2)	unknown
42. Pyrotechnic Waste Shed	unknown
43. Glass Melter Off-Gas Deluge Tank	no
44. Off-Gas Venturi Scrubber	no
45. Off-Gas Cyclone Demister	no
46. Off-Gas Recycle Tank	no
47. Iodine Adsorption Bed	no
48. Off-Gas HEPA Filter	no
49. Off-Gas Leaf Solution Filter	no
50. Strainer	unknown
51. WD Filter Bank	unknown
52. Retort	suspected
53. Building 90 Blockhouse	unknown
54. Thermal Treatment Unit	suspected
55. Biodegradation Unit	suspected
56. Drum Carts/Collection Vehicles	unknown
57. Solvent Leach Beds	suspected
58. Building 1 Leach Pit	suspected
59. Building 27 Leach Pit	suspected
60. Former Solvent Drum Storage Area	suspected
61. Building 28 Solvent Storage Area	suspected
62. DS Solvent Storage Shed	suspected
63. B Building Solvent Storage Shed	suspected
64. E Building Solvent Storage Shed	suspected
65. Sludge Drying Beds	suspected
66. Waste Oil Drumfield	suspected
67. Waste Solvent Storage Tank	suspected
68. Ventilation Hoods	suspected
69-71. Refuse Piles	unknown
72. Air Pollution Control Device	unknown
73. Solid Waste Salvage and Reclamation Building	unknown

C. Monitoring Description (groundwater, surface water, etc.): A comprehensive monitoring program has been in place at the USDOE Mound facility since 1949. The monitoring activities of the MRC Environmental Control Program include sampling of air, water, food materials, soil, and sediment samples extending to a distance of 28 miles from the site. Analytes include hazardous constituents, radionuclides, and drinking water parameters. Table 2 (Ref. 55) summarizes the sampling frequency and analytical parameters included in the various monitoring programs. Locations of the sampling activities are shown in Figures 2 to 4.

D. Environmental Setting: The U.S. DOE Mound facility (Figure 5) is almost entirely located within the City of Miamisburg. The 1980 Census reported a population of 15,300 (Ref. 73). The principal land use within 5 miles of the facility is residential. Approximately 1,500 to 2,000 feet from the western plant boundary is the Great Miami River. The sanitary wastewater, stormwater, and radioactive wastewater systems ultimately drain to this river.

The facility is underlain by limestone and shale of Ordovician age. The Great Miami River Valley is filled with up to 150 feet of glacial outwash sands and gravel. A thin layer of fluvial clays, silts, and fine gravel caps the valley fill deposits. A 5-foot thick layer of glacial till (comprised of clays, silts, and fine gravel) overlies the bedrock in the upland areas.

The depth to groundwater is relatively shallow at the facility, however the permeability of near-surface soils is relatively low (generally .63 to 2 in/hr). The major aquifer in the vicinity of the plant is the Buried Valley Aquifer, comprised of the valley fill outwash deposits. Municipal and industrial pumpage from this aquifer has resulted in such extensive drawdowns that the Great Miami River is now a recharge source. Miamisburg City Well 2 is located near the western property boundary of the Mound facility.

Facility operations have resulted in a long history of environmental degradation to surface waters and groundwater. The reported con-

Table 2

MRC Environmental Monitoring Program

	Sampling Frequency	Parameter Measured
Air Surveillance		
Offsite		
15 locations	Weekly	HTO, Pu, particulate
Onsite		
5 locations	Weekly	HTO, Pu, particulate
Stack Emission		
15 locations	Daily	HT, HTO, Pu, U
Water Surveillance--Offsite		
River		
5 locations	Daily	HTO, Pu, U
Pond		
7 locations	Monthly	HTO, Pu, U
Municipal Drinking Water		
12 locations	Quarterly	HTO, Pu
Well Water		
5 locations	Monthly	HTO, Pu
Water Surveillance--Onsite		
Effluent Water		
3 locations	Daily	Flow, suspended solids, BOD_5, fecal coliform, pH, oil and grease, COD, residual chlorine, dissolved solids, cyanide, chromium, cadmium, nickel copper, HTO, Pu, U
Sediment Surveillance--Offsite		
River		
5 locations	Quarterly	Pu
Pond		
7 locations	Quarterly	Pu
Vegetation and Foodstuff Surveillance		
Vegetation		
3 locations	Semiannually	HTO, Pu
Foodstuffs		
3 locations	Annually	HTO, Pu
Environmental Level Surveillance		
Four Mediums		
6 locations	Quarterly	HTO, Pu

Ref: Mound CEARP Phase I DRAFT April 1986

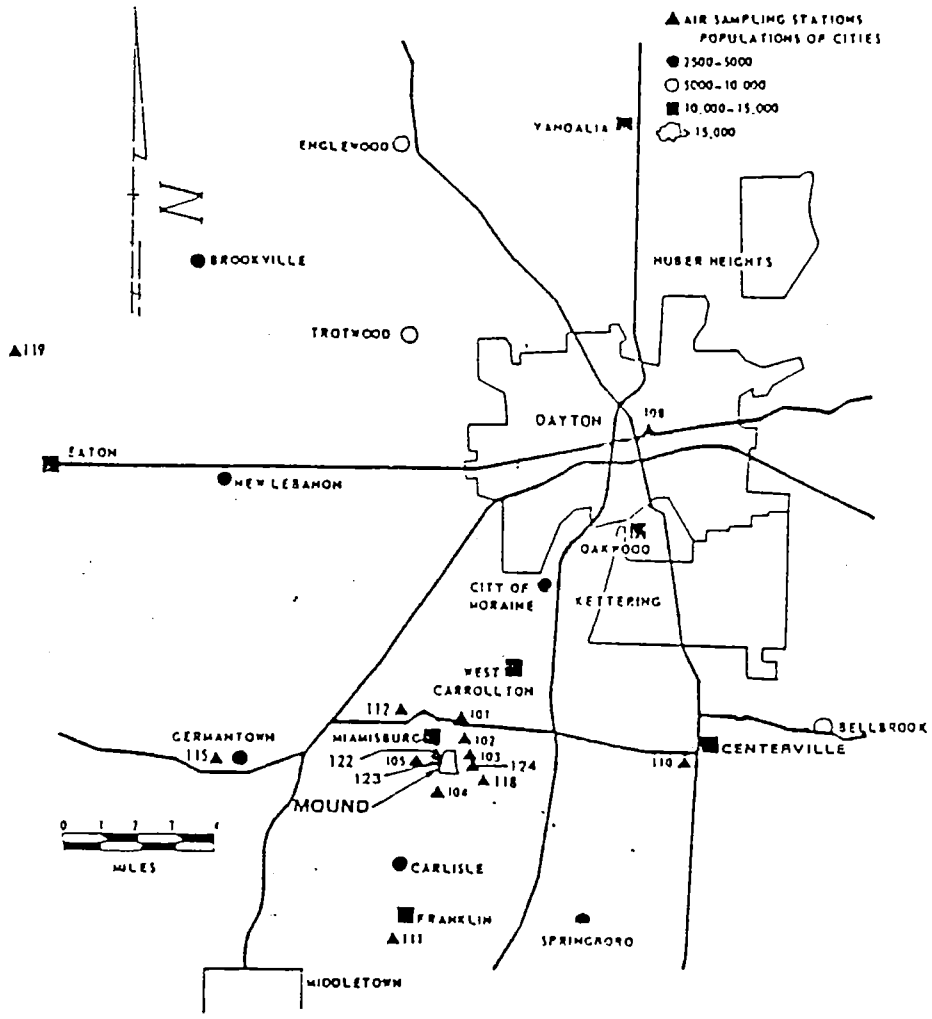


Figure 2 Offsite Air Sampling Locations.

Ref: Mound CEARP Phase I DRAFT April 1986

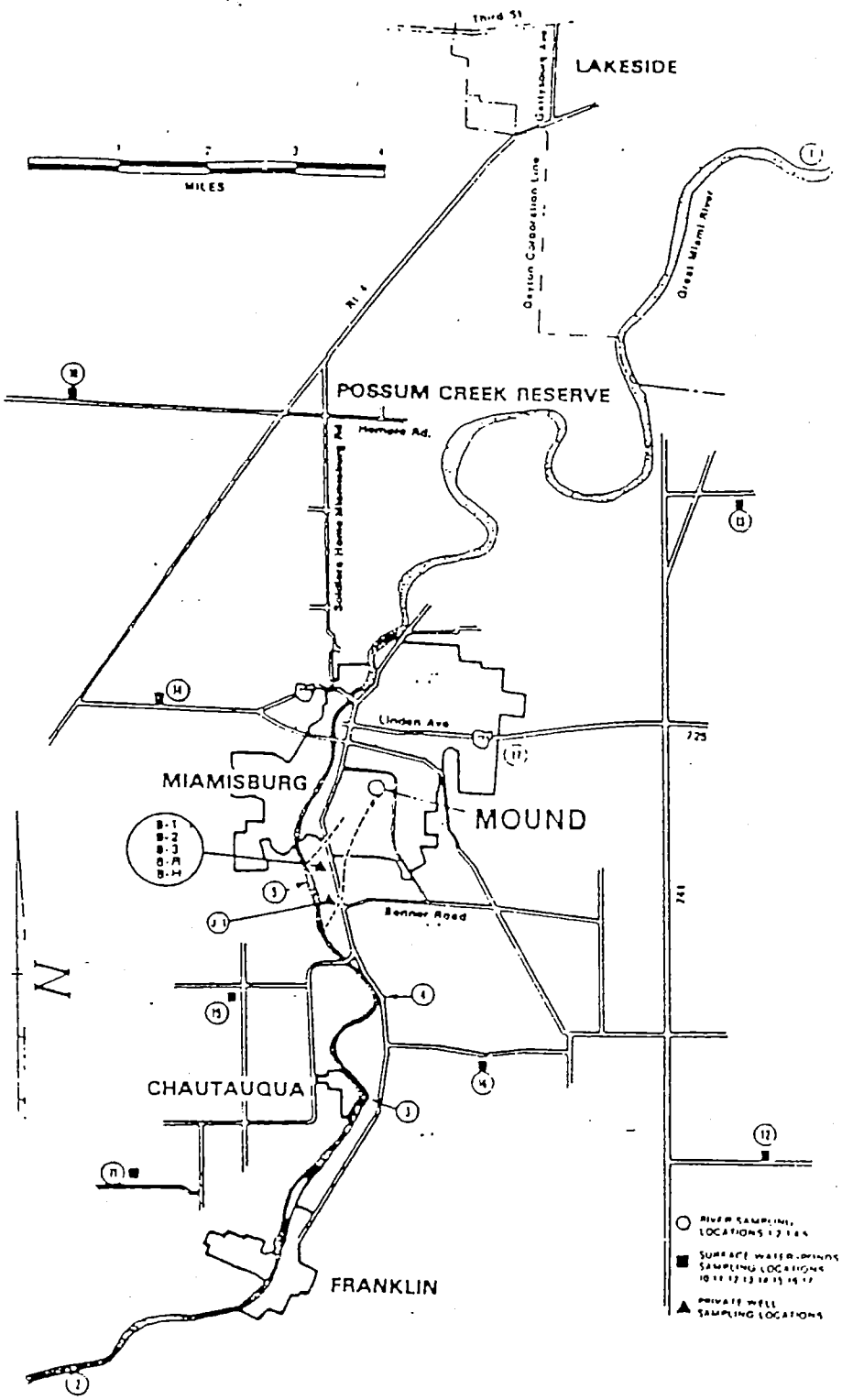


Figure 3 Offsite Water Sampling Locations.

Ref: Mound CEARP Phase I DRAFT April 1986

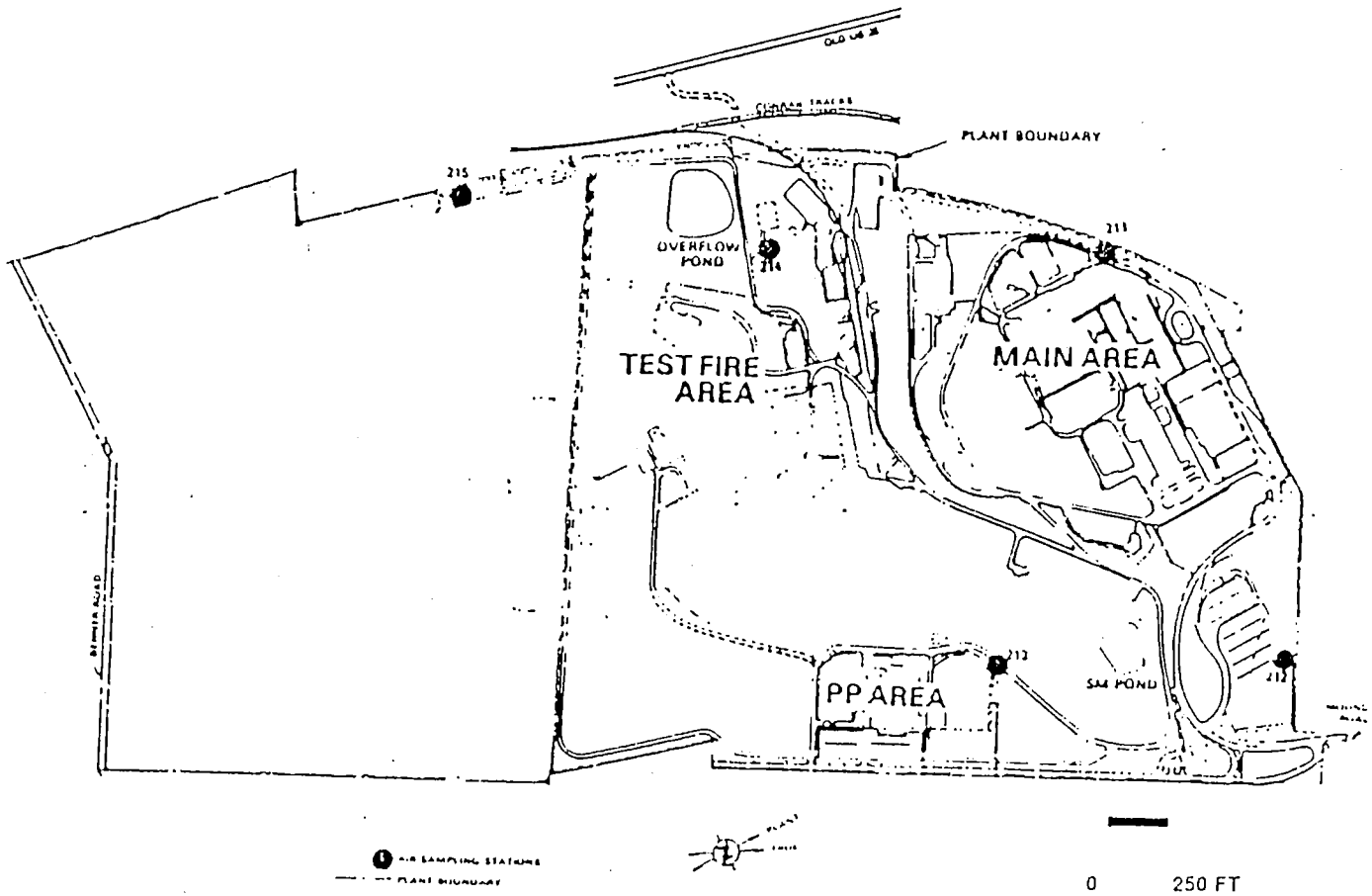


Figure 4 Onsite Air Sampling Locations.

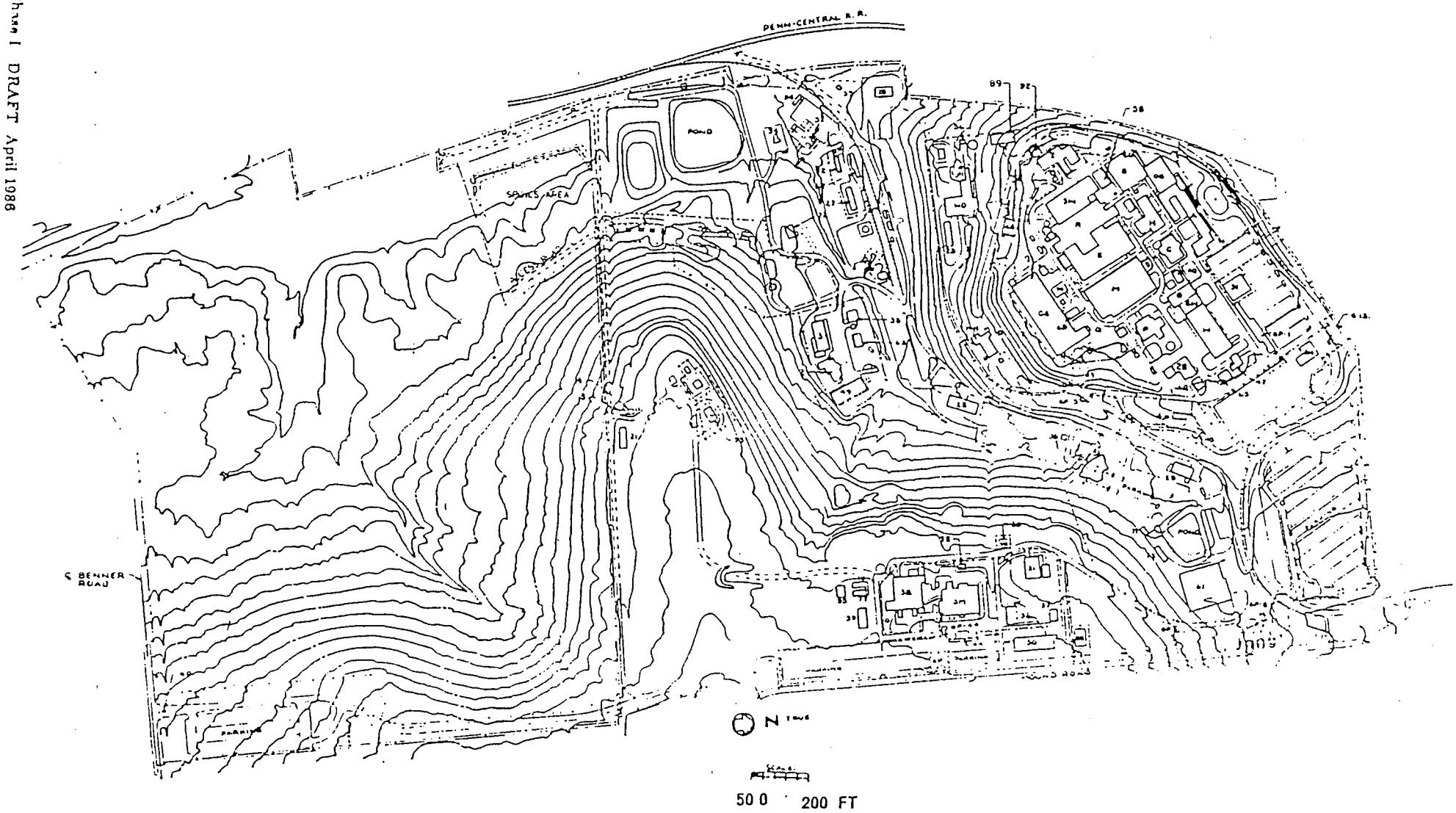


Figure 5 Mound--Site Topography.

tamination has resulted from accidental spills, leakage from abandoned and active waste disposal areas and exfiltration from abandoned and active underground sewer pipelines. Contamination by radioactive and hazardous materials has been documented at the site. Numerous radioactive releases have been documented in the period 1960-1977. Workers and visitors have been subjected to inhalation and skin exposure from a variety of radioactive sources. In some cases, excessive body burden levels have been detected. According to a Survey of Mound Laboratory Documents (1977, Ref. 18), an explosion of ion-exchange resins containing plutonium on 8-27-65, represented a "near-miss" accident . . . Its seriousness should not be underestimated." In another incident in October of 1971, a spontaneous fire of solvents and plutonium (resulting from improper storage of materials) released 49.9 uCi of plutonium through a stack to the environment (62.4% of RCG limit). In another case (3-13-73) 163 Curies of tritium were released from stack filters into the environment (2.8 times RCG limit at property line).

High levels of tritium and plutonium reportedly still remain in soils and groundwater, despite extensive remedial activities at the site. According to the Environmental Survey Sampling and Analysis, Plan USDOE, 1987 (Ref. 73), "past on-site releases have resulted in a reservoir of contamination that is continuing to enter groundwater . . . [as evidenced by] analyses of core samples from inside site buildings, samples of liquids in utility trenches on-site, and samples of seeps and springs both on and off-site". As an example, results of sampling conducted for the Potable Water Standards Project, Dames & Moore, 1976 (Ref. 13) suggested that up to 1,300 curies of tritium were found beneath the SW Buildings.

Additional Information Needs:

1. Tabulation of drinking water wells within three miles of facility
2. Location of contaminated groundwater seeps
3. Results of any in-situ permeability measurements taken at the site

E. Evidence of Suspected Past or Current Releases: See individual Solid Waste Management Unit descriptions for information on suspected or current releases. Other Areas of Concern are listed in the following table.

Table 3 Other Areas of Concern

Name	Contaminant	Location	Volume/Area	Cause	Reference
Plutonium Spill Area	Plutonium	See Figure V.1., Page V-19, Ref. 66	Unknown	Spilled Solutions	55
Paint Shop Spills	Paint, paint wastes	Soil adjacent to Paint Shop	Unknown	Leaks, spills, or dumping	55
Powerhouse Spills	Oil	Soil adjacent to Powerhouse	Unknown	Spills	55
WD Building Underground Tanks (4)	Radioactive Wastes	WD Building	Unknown	Corrosion leaks (suspected)	55
Building 61 Spills	Waste Oil	Soil adjacent to Building 61	Unknown	Dumping (suspected)	55
Building 9 Spills	Waste Oil	Soil adjacent to Building 9	Unknown	Dumping	55
Valley-3 area	Sand Containing Cobalt-60	Between the Overflow Pond and Well No. 1	15,000 ft^2	Contaminated soil dumping area	81
Main Hill-6	Sand Containing polonium-210 and cobalt-60	North of Building 76 east of Building 65	2,100 ft^2	Soil dumping area	81
SM/PP Hill-4	Thorium-238 contaminated dirt	West of Building 30	25,000 ft^2	Dumping area for contaminated dirt	81
SM/PP Hill-5	Polonium contaminated concrete	West of Building 30	13,000 ft^2	Dumping area	81

Other Areas of Concern (continued)

Name	Contaminant	Location	Volume/Area	Cause	Reference
SM/PP Hill-6	Dirt containing thorium and plutonium	West of SM Building	19,000 ft^2	Dumping area	81
Valley-4 Area	Polonium-contaminated concrete	Northeast of Building 49	9,000 ft^2	Dumping area	81
SM/PP Hill-7	Soil contaminated with cobalt-60	Unknown	9,000 ft^2	Dumping area	81
SW Building	Tritium	Releases from beneath the building	Unknown	Leaks	13
HH Building	Tritium	Releases from beneath the building	Unknown	Leaks	13
North Pond	Plutonium-contaminated runoff	East of north end of North Canal	Unknown	Spill	7
South Pond	Plutonium-contaminated runoff	East of north end of North Canal	Unknown	Spill	7

Additional Information Needed: See individual Solid Waste Management Unit descriptions for additional information needs on suspected or current releases.

1. Pond 13 and Pond 17 are cited in Reference 13 but there is no indication of whether they are waste management units. Provide information regarding the use (or purpose), location, dimensions, capacity, materials of construction wastes handled, hazardous constituents and release controls for these units.

2. Reference 57 indicates that boiler blowdown is blended with additives such as sodium sulfite, sodium carbonate, sodium lignosulfate, cobalt sulfate, morpholine, cyclohexylamine, acrylamide/sodium acrylate resin, butyl ethers of plyethylene-propylene glycol, sodium hydroxide and sodium polyacrylate. Provide the locations, dimensions, capacity, materials of construction and release controls of any sumps, tanks or other units used to store or treat boiler blowdown prior to discharge from the facility.

1. Unit Information:

A. Unit Name: Open Burning Area

Period of Operation: Unknown

Waste Type: Wastes consist of mild detonating fuse, pyrotechnic materials, components containing small amounts of explosives, tissue and cardboard contaminated with explosives (Ref. 23, p. 3-14), 2-[5-cyanotetrazolato] pentaamine cobalt (III) perchlorate and thermite powder (Ref. 66, App. C). Wastes may also contain organic solvents such as acetone and freon (Ref. 73, p. 3-75).

Hazardous Constituents: Nitrous oxide and nitrogen dioxide are released during detonation (Ref. 66, App. C).

Regulatory Status: RCRA permit sought (Ref. 66).

B. Unit Description: The Open Burning Area is located on the southern edge of the plant site (Ref. 23, p. 1-2). Wastes are destroyed in accordance with U.S. Army Material Command Regulation 385-100 (Army Ordinance Manual) with the concurrence of the Ohio EPA and Montgomery County Combined General Health District (Ref. 23, p. 3-14). The distance to the nearest residence from the area is 1,400 feet (Ref. 44). Open burning is conducted inside a 64 ft^3 cage (4 ft x 4 ft x 4 ft) located inside a 1,200 ft^3 (10 ft x 10 ft x 12 ft) chain link fence enclosure (Ref. 66, p. 4-64). The floor of the unit is concrete. The unit can be used to burn up to 40 pounds of trash per event, but typically only 5-6 pounds of waste are burned at one time (Ref. 73). Approximately 1,120 pounds of explosive wastes were burned in 1977 (Ref. 23, p. 3-15).

Additional Information Needed:

1. Period of operation
2. Particulate release control mechanisms
3. History of releases

2. Unit Information:

A. Unit Name: Past Landfill 1

Period of Operation: 1948-1972 (Refs. 50, 69, and 81).

Waste Type: The landfill reportedly contains trash and laboratory chemicals (Ref. 48), including solvents, paint, photoprocessing solutions, and plating bath solutions (Ref. 50). The volume of hazardous waste was approximately 1,000 ft3 (Ref. 69, p. 2-2).

Hazardous Constituents: Unknown

Regulatory Status: RCRA (included in Part A) (Ref. 50). Mound notified the USEPA on June 9, 1981 regarding the presence of the site as required by CERCLA (Ref. 69, p. 2-2).

B. Unit Description: Past Landfill 1 was located on a hillside (Ref. 66, p. 1-21) adjacent to the existing large Overflow Pond (SWMU 15) southern portion of the facility. Wastes were burned at the time of landfilling at this site (Ref. 69, p.2-2). The landfill was taken out of service in 1972 and in 1978, most of the buried wastes were excavated and placed in a new Lined Landfill (SWMU 5) (Ref. 81). The Overflow Pond was built over the northern portion of the landfill in 1978 (Ref. 81, p. 4-28). Wastes from the portion of Past Landfill 1 beneath the Overflow Pond were not excavated (Ref. 81, p. 4-31). Mound officials believe it is not likely that large quantities of hazardous wastes exist in this location (Ref. 69, p. 2-2). The total waste volume in this area is approximately 16,000 yd3 (Ref. 81, p. 4-31).

Additional Information Needed:

1. Location
2. Status of closure
3. Dimensions
4. Depth
5. Closure design specifications
6. Sampling results
7. Method of initial disposal
8. Documentation of small quantity of hazardous waste

3. Unit Information:

A. Unit Name: Waste Solvent Incinerator
Period of Operation: 1971 to present (Ref. 4)
Waste Type: Solvent (types unknown)
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The Waste Solvent Incinerator is a double chambered unit located in Building 51. The primary chamber is 222 inches long, 81 inches wide, and 176 inches high and the secondary chamber is 81 inches long, 61 inches wide, and 176 inches high. The chambers are lined with a fire-brick refractory. The incinerator's capacity is 5000 lb/hr and it is normally operated once a week for eight hours. A wet scrubber (SWMU 4) cleans gaseous emissions from the incinerator prior to discharging them to the atmosphere. Heat content of the waste is 5,000 Btu/hr (Ref. 4).

Additional Information Needed:

1. Regulatory status
2. Waste type
3. Hazardous constituents
4. Waste injection procedures
5. Ash disposal practices
6. Release control mechanisms
7. Source(s) of waste
8. Ancillary waste storage units

4. Unit Information:

A. Unit Name: Waste Solvent Incinerator Scrubber
Period of Operation: 1971 to present
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The Scrubber consists of a flooded tray wet collector and a settling chamber to remove fly-ash from incinerator emissions. Incinerator gases enter the scrubber at between 1,300-1,500°F. Its capacity is 25,000 cubic feet per minute at 165°F (Ref. 4).

Additional Information Needed:

1. Regulatory status
2. Waste type
3. Hazardous constituents
4. Treatment description
5. Ash management procedures
6. Wastewater management procedures

5. Unit Information:

A. Unit: Lined Landfill

Period of Operation: 1978-?

Waste Type: Trash, laboratory chemicals (Ref. 48), solvents, paint, photoprocessing solutions, and plating bath solutions (Ref. 50). The volume of hazardous waste is approximately 1,000 ft^3 (Ref. 69, p. 2-2).

Hazardous Constituents: Unknown

Regulatory Status: Mound notified USEPA on June 9, 1981 regarding the presence of the site as required by CERCLA (Ref. 69, p. 2-2). The site was included in Mound's RCRA Part A permit application (Ref. 50).

B. Unit Description: The Lined Landfill is lined with five feet of clay and contains 100,000 yds of waste materials (Ref. 69, p. 2-2) excavated from the Past Landfill 1 (SWMU 2). The Lined Landfill is overlain with three feet of clay and two to five feet of seeded topsoil (Ref. 81, p. 4-28). The Part B permit application reports 10 feet of underlying clay (Ref. 66, p. 1-21). The Lined Landfill was constructed with a leachate collection system consisting of collection drains located approximately eight feet above the bottom of the landfill. These drains allow the collected leachate to drain into the nearby Overflow Pond (SWMU 15). These drains are located approximately eight feet above thebottom of the landfill to allow the landfill liquid to drain into the adjacent Overflow Pond. The excavated wastes were saturated during their removal from Past Landfill 1 in 1978 and liquid drained into the pond for six months (Ref. 81, p. 4-31). No leachate has been observed draining from the landfill in the past 14 years (Ref. 66, p. 1-21).

Additional Information Needed:

1. Location
2. Method of approval
3. Period of operation
4. Dimensions

5. Release controls
6. Hazardous constituents
7. Closure status
8. Leachate analysis
9. Liner permeability
10. Volume of leachate to Overflow Pond

6. Unit Information:

A. Unit Name: Past Disposal Area 2
Period of Operation: 1948-1972
Waste Type: Wood and metal debris including 5,000 crushed drums formerly containing thorium wastes (Ref. 81, p. 4-31).
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: Past Disposal Area 2 is located outside the boundary of Lined Landfill (SWMU 5) at its southwest corner, immediately east of the roadway surrounding the landfill.

Additional Information Needed:

1. Method of disposal
2. Dimensions
3. Release controls
4. Hazardous constituents
5. Closure status
6. Confirmation that only empty drums were disposed

7. Unit Information:

A. Unit Name: Past Disposal Area 3

Period of Operation: 1948-1972

Waste Type: Mound officials do not know what types of waste were disposed in this area (Ref. 81, p. 4-31).

Volume: 16,000 yd^3 (Ref. 81, p. 4-31)

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B Unit Description: Past Disposal Area 3 contains approximately 16,000 yds^3 of waste (Ref. B1, p. 4-31) and is located beneath the Overflow Pond (SWMU 15) near the Lined Landfill (SWMU 5). Although the types of waste materials left in this area are not known, Mound officials believe it is not likely that large quantities of hazardous waste exist in this location (Ref. 69, p. 2-2).

Additional Information Needed:

1. Regulatory Status
2. Method of disposal
3. Dimensions
4. Release controls
5. Waste types
6. Hazardous constituents
7. Closure status

8. Unit Information:

A. Unit Name: Plant Drainage System
Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: There are three drainage ditches and two canals that direct surface runoff from the property. The East Drainage Ditch directs water south to north and is located just east of Mound Road near the northeast corner of the facility. The West Drainage Ditch flows from the west central portion of the facility westward to the North and South Canal. The South Drainage Ditch is located on the southern end of the facility and directs water from the southwest to the South Canal (Ref. 9, Fig. 1). The North Canal is an open, brick-lined ditch that flows parallel to the site boundary for approximately 600 feet and terminates in two Recreation Ponds (SWMU 40). The South Canal flows to the south paralleling the Penn Central Railroad tracks to their intersection over the Great Miami River. The liquid effluent is discharged in accordance with an NPDES permit into the river at this point (Ref. 58, p. 3-3). As a result of a Waste Disposal Pipeline (SWMU 10) rupture in January 1969, plutonium-contaminated soil was washed by precipitation into the drainage system (Ref. 73, p. 3-92). Sediment samples taken from the ditches and canals have revealed the presence of plutonium-238. A Department of Energy Committee was assembled in January, 1975 to study the plutonium problem (Ref. 12, p. 4). The committee recommended improvement of on-site drainage and elimination of flow of drainage ditch water into the North Canal. They also recommended sediment sampling and construction of a retention basin to prevent further off-site plutonium releases (Ref. 12, p. 7).

Additional Information Needed:

1. Regulatory status
2. Period of operation

3. Waste types
4. Hazardous constituents
5. Release controls
6. Ditch and canal lengths
7. History of releases
8. Sediment sampling analyses
9. Materials of construction

9. Unit Information:

A. Unit Name: Drainage Flume
Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The Drainage Flume was noted as a proposed structure on the southeast side of the facility (Ref. 10). No other information was provided.

Additional Information Needed:

1. Regulatory status
2. Dimensions
3. Flow rate
4. Period of operation
5. Waste types
6. Hazardous constituents
7. Release controls

10. Unit Information:

A. Unit Name: Waste Disposal (WD) Pipeline
Period of Operation: 1967-1976
Waste Type: Plutonium-laden wastewater slurry (Ref. 22, p. 3)
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The Waste Disposal Pipeline is an abandoned underground pipeline which carried waste from the Plutonium Processing Facility down a hillside to the Waste Disposal Facility (SWMU 11) (Ref. 12). The pipeline ruptured in 1969 and three days of rainfall delayed the clean-up and spread the plutonium contamination to the drainage ditches and canals. The problem with migration of plutonium was not detected until 1974 (Ref. 22, p. 3). The liquid wastes were generated in the SM/PP area and carried by gravity via two underground pipelines (2,650 feet each) to the Building 41 pump station. The gravity pipeline was buried from 6 to 23 feet below grade and crossed the storm drainage creek above ground. Since abandonment of the pipeline, liquid waste from the SM/PP area has been sent to WD Building via tank trucks (Ref. 81, p. 4-33).

Additional Information Needed:

1. Regulatory status
2. Period of operation
3. Materials of construction
4. Capacity
5. Waste types
6. Hazardous constituents
7. Method of abandonment
8. Inspection findings following abandonment
9. Extent of contamination
10. Remedial activity status

11. Unit Information:

A. Unit Name: Waste Disposal (WD) Facility

Period of Operation: Unknown
Waste Type: Low-level liquid radioactive waste (Ref. 32).
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The Waste Disposal Facility received wastewater from the Plutonium Processing Facility via pipeline (SWMU 10) prior to its rupture in 1969 (Ref. 12). Treated effluent is discharged from the facility via NPDES outfall 001B (Ref. 32). This unit is also referred to as the Radioactive Waste Disposal (WD) Area (Ref. 63, p.1).

Additional Information Needed:

1. Regulatory status
2. Period of operation
3. Waste type
4. Hazardous constituents
5. Treatment processes
6. Dimensions
7. Capacity
8. Release controls
9. Closure status

12. Unit Information:

A. Unit Name: Retaining/Settling Basins
Period of Operation: Unknown

Waste Type: Wastewater (1,000 gallons/year) containing small amounts (ppm range, grams per year) of dissolved explosives and acetone (4 m^3/yr)(Ref. 23).
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The basins are utilized for biodegradation of the explosive constituents and evaporation of the acetone (Ref. 23). According to Ref. 55, "the wastes were piped to concrete-lined filtering basins" then to an "open retaining/settling basin or a leach bed for biodegradation treatment." Two areas (labelled I in Ref. 55 and 69) represent the locations of these units on the western portion of the facility. The concrete-lined basins were dredged every 3 or 4 years. The sludge materials and filters were destroyed by thermal treatment.

Additional Information Needed:

1. Number of basins
2. Regulatory status
3. Closure status
4. Dimensions
5. Capacity
6. Period of operation
7. Release controls
8. Disposition of dredged sludges and filters

13. Unit Information:

A. Unit Name: Solution Discard Areas
Period of Operation: Unknown
Waste Type: Pyrotechnic materials in solution (Ref. 23).
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: Pyrotechnic materials in solution were discarded on the soil in a remote restricted area of the facility. The materials were disposed in this manner since it was thought that the inorganic salts in solution would not be removed by the Wastewater Treatment Plant (SWMU 14) (Ref. 23).

Additional Information Needed:

1. Number of disposal areas
2. Location(s)
3. Regulatory status
4. Volume of waste disposal
5. Period of operation
6. Hazardous constituents
7. Closure status
8. Waste analyses

14. Unit Information:

A. Unit Name: Wastewater Treatment Plant

Capacity: 130,000 gallons/day (Ref. 23, p. 3-8).
Period of Operation: Unknown
Waste Type: Sanitary and industrial wastes (Ref. 53). The sludge contains radionuclides, but does not have RCRA-listed hazardous waste or hazardous waste characteristics (Ref. 55, p. V-5).
Hazardous Constituents: Unknown

Regulatory Status: NPDES permitted

B. Unit Description: The Wastewater Treatment Plant process consists of a grit chamber, comminutor, four equalization basins, two aeration tanks, two clarifiers and chlorination facilities (Ref. 53). After processing, the sludge is dried and packaged for off-site disposal and the effluent is discharged through an enclosed pipeline to the Great Miami River. Effluent quality is monitored continually to document compliance with their NPDES permit (Ref. 23, p. 3-13). Sources of wastewater treated at the facility include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal-finishing operation. An average of 100,000 gallons per day of treated effluent is discharged to the Great Miami River via Outfall 601 under NPDES permit No. IT000005 (Ref. 73). The capacity of the plant is 130,000 gallons/day (Ref. 23, p. 3-8). Ref. 55 (p. V-8) states that sludge contains radionuclides but does not have RCRA-listed hazardous wastes or hazardous characteristics. This unit is also referred to as Sanitary Disposal (SD) (Ref. 83, p.1).

Additional Information Needed:

1. Period of operation
2. Unit dimensions
3. Unit capacities
4. Release controls
5. Hazardous constituents
6. Waste flow description
7. Waste analysis which supports contention that there are no hazardous constituents in the waste

15. Unit Information:

A. Unit Name: Overflow Pond
Capacity: 5 million gallons (Ref. 23, p. 3-8)
Period of Operation: 1979 - present (Ref. 23, p. 3-8)
Waste Type: Rain run-off (Ref. 23, p. 3-8), non contact cooling water blowdown, and softener backwash (Ref. 32). Previously received leachate from Lined Landfill (SWMU 5).
Hazardous Constituents: Unknown
Regulatory Status: NPDES permitted

B. Unit Description: The pond is located near the western boundary of the facility and contains excess rain run-off and other effluents from the low flow retention basins. The pond was formed with an earthen dam and has a 5,000,000 gallon capacity to retain all facility effluents for five days in the event of a contaminant spill. Retention time in the pond allows settling of 95% of all silt (Ref. 23, p. 3-8). The Overflow Pond effluent is discharged from the facility to the Great Miami River via NPDES Outfall 002 at approximately 660,000 gallons per day (Ref. 32). The pond is lined with a minimum of three feet of compacted clay (Ref. 55, p. V-8). Waste residuals in Past Landfill 1 (SWMU 2) remain in the soil beneath the Overflow Pond (Ref. 69, p. 2-2).

Additional Information Needed:

1. Dimensions
2. Hazardous constituents
3. Release controls
4. Clay liner permeability
5. Volume of leachate received
6. Frequency of dredging
7. Dredge spoil management procedures

16. Unit Information:

A. Unit Name: Test Firing Tanks
Period of Operation: Unknown
Waste Type: Solid and gaseous explosive residuals, carbon dioxide, water and nitrogen oxides (Ref. 23, p. 3-16)
Hazardous Constituents: Nitrogen oxides (Ref. 23, p. 3-16)
Regulatory Status: Unknown

B. Unit Description: Test Firing Tanks are used to determine the performance of explosives and explosive devices. The tanks are constructed of steel with a sealable door, instrumentation ports, and an exhaust opening with baffles and filters for release of gaseous explosion products. Particulate matter is retained in the tank. Testing firing operations released 0.45 kg of nitrogen oxides to the atmosphere in 1977 (Ref. 23, p. 3-16). Ref. 55 (Figure C.3) shows a Test Fire Area east of Overflow Pond (SWMU 15).

Additional Information Needed:

1. Regulatory status
2. Period of operation
3. Disposal of solid residuals
4. Retention time of wastes
5. Capacity/dimensions
6. Hazardous constituents

17. Unit Information:

A. Unit Name: Oil Burn Structure
Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The unit is used to test shipping containers by subjecting them to a gas fire for 15 minutes. This test is required for nuclear waste containers to prevent spillage in case of an accident during transport (Ref. 29).

Additional Information Needed:

1. Regulatory status
2. Period of operation
3. Location
4. Dimensions
5. Materials of construction
6. Release controls
7. Hazardous constituents

18. Unit Information:

A. Unit Name: Past Hazardous Waste Storage Area
Period of Operation: 1982-1985 (Ref. 41)
Waste Type: Combustible and flammable liquids and waste oils (Ref. 37), solvent-containing wastes, ignitable wastes, plating wastes, photoprocessing wastes, polymeric wastes, and toxic wastes (Ref. 66, p. 4-3).
Hazardous Constituents: EPA listed wastes: D001, D002, D004, D005, D006, D007, D008, D009, D010, D011, F002, F003, F004, F005, F007, F008, F009, U158 (Ref. 37).
Regulatory Status: Closed with Ohio EPA approval.

B. Unit Description: The Past Hazardous Waste Storage Area was located at Building 72 and was used for storage of combustible and flammable liquids and waste oils generated at the facility, prior to off-site shipment. Wastes were stored in 55-gallon drums (Ref. 41). The maximum storage capacity was 38,500 gallons if drums were stacked two-high (Ref. 37). Building 72 was a 60 foot by 40 foot covered structure. Its concrete floor had four drum storage bays which were diked and sloped (Ref. 37). The diked areas were used for segregating incompatible wastes (Ref. 55, p. V-11). Three of the diked areas were approximately 40 feet by 13 feet with capacity for approximately seventy 55 gallon drums and adequate aisle space. The floor was sloped and the dike height ranged from 6 to inches. The fourth diked area was approximately 24 feet by 9 feet and was used to hold defective containers and prepare waste containers for off-site shipment (Ref. 55, p. V-11). A closure plan was submitted on January 18, 1985 (Ref. 41). During closure, the roof was dismantled and the concrete broken up and disposed. The contaminated soil around the base of the facility was excavated, sampled, and analyzed for halogenated volatile organic compounds. The newly exposed soil contained no detectable levels of halogenated volatile organic compounds. Ohio EPA approved the closure plan on August 8, 1985 (Ref. 65).

Additional Information Needs:

1. Waste analysis including non-halogenated VOAs (F003, F004, F005)
2. Status of final closure certification from Ohio EPA

19. Unit Information:

A. Unit Name: Current Hazardous Waste Storage Area

Period of Operation: 1985 to present (Ref. 4)

Waste Type: Combustible and flammable liquids and waste oils (Ref. 37), solvent-containing wastes, ignitable wastes, plating wastes, photoprocessing wastes, polymeric wastes, and toxic wastes (Ref. 66, p. 4-3).

Hazardous Constituents: EPA listed wastes: D001, D002, D004, D005, D006, D007, D008, D009, D010, D011, F002, F003, F004, F005, F007, F008, F009, U158 (Ref. 37).

Regulatory Status: RCRA

B. Unit Description: The Current Hazardous Waste Storage Area is located approximately 400 feet north of the Past Storage Area (SWMU 18) (Ref. 37). Its dimensions are 60 feet by 40 feet. The base is a concrete slab covered with the same roof used at the dismantled facility. No other information is available.

Additional Information Needed:

1. Capacity
2. Release controls

20. Unit Information:

A. Unit Name: Explosive Storage Area

Period of Operation: Unknown

Waste Type: Detonators, high explosive powder, detonating cord, pyrotechnic powders, hexanitrostilbene and primary explosives (Ref. 66, App. C, Table C-8) and EPA-listed waste 0003

Hazardous Constituents: Unknown

Regulatory Status: RCRA Regulated

B. Unit Description: The Explosive Waste Storage Area, also known as Magazine 53, is located inside the fenced Open Burning Area (SWMU 1) (Ref. 66) on the south end of the facility (Ref. 37). It is used for temporary storage of containerized explosive waste prior to on-site thermal destruction. The bunker measures approximately 15.5 feet by 10 feet and is approximately 10 feet high. The walls and ceiling of the bunker are constructed of corrugated 10 gauge Armco multiplate. The end-walls are made of reinforced concrete approximately 12 inches thick. Compacted earth fill surrounds the walls with only the front wall uncovered for access. The fill provides more than two feet of cover on the top of the bunker (Ref. 66, p. 4-8).

Additional Information Needed:

1. Period of operation
2. Hazardous constituents

21. Unit Information:

A. Unit Name: Glass Melt Furnace
Period of Operation: Unknown
Waste Type: Selected hazardous wastes and radioactive mixed wastes (Ref. 66, p. 4-9).
Hazardous Constituents: (See Ref. 66, Tables C-1, C-2, App. C)
Regulatory Status: RCRA regulated

B. Unit Description: The Glass Melt Furnace is located in an addition to the west side of the liquid Waste Disposal (WD) Facility (SWMU 11). The addition is 57 feet by 24 feet constructed of reinforced concrete to ground level. The side walls are constructed of concrete block and reinforced concrete beams are provided at the top of the walls. The roof is concrete slab which spans the concrete walls (Ref. 66, p. 4-9). The incinerator is an electrically heated glass melter (Pyro-Converter™) purchased from Penberthy Electromelt International, Inc. The unit is equipped with a gas tight outer skin for radioactivity control and a hopper with a screw feed which supplies 23 kg/hr of shredded dry waste to the furnace. The screw feeder shaft is water cooled to minimize the possibility of ignition. Another feed system is used to convey ion exchange resins to the furnace. It consists of a vibrating hopper and a small screw feeder. The furnace is an elongated chamber designed to provide residence time in a high-temperature zone to combustion gases and particles passing through it. The upper chamber walls are constructed of fire brick and the ceiling is formed of cast refractory block. The entire furnace is lined with firebrick. A molten glass pool on the bottom of the chamber entraps most organics and immobilizes toxic substances and radionuclides. Ash from incompletely burned wastes falls to the bottom of the chamber and becomes incorporated into the molten glass. A water seal forms a pressure relief valve for the furnace. The seal is vented to the atmosphere through a HEPA filter (Ref. 66, p. 4-10).

Gases exit the chamber at the end opposite the feeder and enter the wet off-gas system consisting of primary and secondary wet scrubbing equipment and a high efficiency filter (SWMUs 43-51). Scrub liquid is recycled and provides a caustic solution for the system.

Glass melting is initiated by a 4000,000 Btu/hr propane-fire burner. Air for combustion is supplied through ports in the chamber side walls.

Additional Information Needed:

1. Period of operation
2. Glass disposal practices
3. Air release permit numbers

22. Unit Information:

A. Unit Name: Fire Fighting Training Facility

Period of Operation: Unknown

Waste Type: Deisel or unusable fuel, lumber, cardboard, and paper.

Hazardous Constituents: Unknown

Regulatory Status: Permitted by the Ohio Regional Air Pollution Control Agency (Ref. 44).

B. Unit Description: The lot used for the Fire Training Facility is located on the south end of the facility boundary. The nearest residence is approximately 800 feet away. Burning is conducted twice per week (Ref. 44).

Additional Information Needed:

1. Period of operation
2. Hazardous constituents
3. Dimensions
4. Release controls

23. Unit Information:

A. Unit Name: Wastewater Treatment Plant Sand Filters (2)

Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: NPDES permitted (Ref. 51, 53, 54)

B. Unit Description: The Sand Filters are a component of the Wastewater Treatment Plant (SWMU 14) used on an "as needed" basis to control solids in the wastewater. The filters are epoxy-painted carbon steel tanks insulated with two-inch fiberglass board. The tanks are covered and heated to prevent freezing. These filters are up-flow filters with a 19 ft^2 surface area and are composed of quartz sand.

Additional Information Needed:

1. Period of operation
2. Dimensions
3. Capacity
4. Release controls
5. Hazardous constituents
6. Waste flow diagram
7. Backwash and filter disposal procedures

24. Unit Information:

A. Unit Name: Asphalt-Lined Pond

Period of Operation: Unknown, but dredged in 1983.

Waste Type: Stormwater run-off and non-contact single-pass cooling water.

Hazardous Constituents: Dredged materials reportedly contained low-level radioactive runoff.

Regulatory Status: Unknown

B. Unit Description: The pond is an asphalt-lined impoundment, located between Main Hill and SM Hill. The pond collects run-off from SM Hill and non-contact single-pass cooling water (Ref. 55).

Additional Information Needed:

1. Dates of operation
2. Analysis of pond liquids and sludges
3. Results of liner integrity inspections and tests (if any)
4. Dimensions
5. Hazardous constituents in SM Hill runoff
6. Source of radioactive runoff

25. Unit Information:

A. Unit Name: Concrete-Lined Ponds
Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit consists of interconnected concrete retention basins that regulate on-site streamflow, prior to discharge. The basins are located on the western portion of the facility. Excess flow is diverted to the Overflow Pond (SWMU 15). Dredged materials from the retention basins reportedly were deposited near the SM Water Tower (SWMU 26)(Ref. 55). The Concrete-Lined Ponds may be equivalent to SWMU 12.

Additional Information Needed:

1. Dates of operation
2. Dimensions and capacity
3. Waste types and hazardous constituents
4. Date of dredging
5. Is this unit part of NPDES system?

26. Unit Information:

A. Unit Name: Dredged Material Disposal Site near SM Water Tower
Period of Operation: Unknown
Waste Type: Dredged material from one-time cleaning of Concrete-Lined Ponds (SWMU 25).
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This area was used as a one time repository for dredged material from the Concrete-Lined Ponds (SWMU 25). The unit is located near the SM Water Tower (Ref. 55, p. V-9).

Additional Information Needed:

1. Unit dimension
2. Dates of operation
3. Release controls
4. Waste analysis
5. Volume of waste disposed

27. Unit Information:

A. Unit Name: Spoils Area

Period of Operation: Date of start-up - first quarter of 1985 (Ref. 55).

Waste Type: Unknown

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: This unit is located on the west central portion of the facility. The first of three cells was constructed in 1985. Total disposal capacity of the unit is 350,000 yd^3 (Ref. 55, V-10).

Additional Information Needed:

1. Dimensions
2. Status of Cells 2 and 3
3. Analysis of wastes
4. Release controls

28. Unit Information:

A. Unit Name: Solvent Storage Shed

Period of Operation: Unknown
Waste Type: Solvents
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit is a temporary storage unit for waste solvents generated in "operating areas." Wastes accumulate in this unit(s?) until transported and stored in the Hazardous Waste Storage Area (SWMU 19) (Ref. 55, Fig. V.4).

Additional Information Needed:

1. Regulatory status
2. Number of units and locations
3. Dimensions
4. Waste types and quantities
5. Dates of operation
6. Release controls
7. Waste analysis

29. Unit Information:

A. Unit Name: Process Area Solvent Storage Areas
Period of Operation: Unknown
Waste Type: Solvents
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit is a temporary storage unit for waste solvents generated in "operating areas." Wastes accumulate in safety cans until transported and stored in the Hazardous Waste Storage Area (SWMU 19) (Ref. 55, Fig. V.4).

Additional Information Needed:

1. Regulatory status
2. Number of units and locations
3. Dimensions
4. Waste types and quantities
5. Dates of operation
6. Release controls
7. Waste analysis

30. Unit Information:

A. Unit Name: Photoprocessing Waste Storage
Period of Operation: Unknown
Waste Type: Photoprocessing wastes
Hazardous Constituents: Silver, corrosivity
Regulatory Status: Unknown

B. Unit Description: This unit is an accumulation area for photoprocessing wastes. Wastes are stored in this unit before being transferred to the Hazardous Waste Storage Area (SWMU 19) (Ref. 55, Fig. V.4).

Additional Information Needed:

1. Regulatory status
2. Dimensions
3. Waste quantities
4. Waste analysis
5. Release controls
6. Dates of operation
7. Numbers and locations of units

31. Unit Information:

A. Unit Name: Radioactive Mixed Waste Consolidation Areas

Period of Operation: Unknown

Waste Type: Radioactive mixed wastes, primarily in the form of scintillation vials, organic solvents, heavy metals, corrosivity.

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: These units are accumulation areas for radioactive mixed wastes. Wastes are consolidated in 55-gallon drums in "operating areas" until transferred to Building 23 for storage (Ref. 55, Fig. V.4).

Additional Information Needed:

1. Wastes analyses
2. Numbers of units and locations
3. Dates of operation
4. Release controls
5. Dimensions
6. Regulatory status
7. Location of leak
8. Extent of remedial activities
9. Waste quantities

32/33. Unit Information:

A. Unit Name: Building 23 Waste Material Staging
Period of Operation: Unknown
Waste Type: Scintillation vials and mixed radioactive corrosive wastes.
Hazardous Constituents: Refer to Table 4 for a list of hazardous constituents contained in these wastes.

Regulatory Status: RCRA interim status

B. Unit Description: This unit is used primarily for temporary staging of packaged radioactive waste from Waste Consolidation Areas (SWMU 31) prior to off-site shipment. This unit is also used for storage of radioactive mixed waste, including scintillation vials - types 1, 2, 3 and acid and base wastes. Table 4 (Ref. 66) describes EPA waste codes and radioisotopes contained in the wastes. This unit consists of a 30 x 40 foot storage area for holding 55 gallon drums of mixed waste. The entire building is a 30 x 117 foot one-story structure constructed of concrete-block walls. An automatic sprinkler system is installed in the interior of the building. A 6-foot deep, 36-inch diameter concrete pipe comprises a manually controlled collection sump. Two loading docks on the front side of the building are used for transferring wastes for off-site shipment. This latter area constitutes SWMU 33. Approximately 85 gallons of scintillation vial wastes (and associated packaging materials) are generated annually (Ref. 66, p. 4-7).

A DOE Environmental Survey Sampling and Analysis Plan (Ref. 73) documents a leak of a tar-like substance near the radioactive waste drums in the northeast corner of Building 23. The drums were stacked too close together for the inspection team to identify the source of the leak. It is unclear if hazardous substances or PCBs are contained in the leaked materials. This unit is also referred to as the Waste Materials Staging Area (Ref. 83, p.1).

Additional Information Needed:

1. Dates of operation
2. Quantities of wastes

TABLE 4. WASTE ANALYSIS DATA FOR RADIOACTIVE MIXED WASTE

Waste Name WasteWaste No.	Scintillation Vials-Type 1 M-136	Scintillation Vials-Type 2 M-137	Scintillation Vials-Type 3 M-138	Acid Waste M-150	Base Waste M-151
Physical Form	Clear liquid	Clear blue-violet liquid	Clear liquid	Liquid	Liquid
Constituents, %	Pseudocumene solvents, ≥50 Synthetic organic surfactants, ≤50 Chlorinated solvents, 0-5 Benzene, 0-5	Xylene, 50-70 Alkylpolyethoxyethanol and Arylhydrocarbons, balance	1,4-dioxane, 85-95 Naphthalene, 5-15 2,5-diphenyloxazole, 0.5-1 1,4-bis-2-(5-phenyloxazolyl)-benzene, 50-150 ppm	Various acid solutions (to be determined)	Various base solutions (to be determined)
Flash Point, °F	~ 113 8-9	~ 79 7-10	~ 54 7-10	N/A ≤2	N/A ≥12.5
Source	Bioassay	Bioassay	Bioassay	Various operations	Various operations
EPA Waste Code	D001	D001;F003	D001	D002	D002
Radioisotopes	Tritium, carbon-14, plutonium-238 or plutonium-239	Tritium, carbon-14, plutonium-238 or plutonium-239	Tritium, carbon-14, plutonium-238 or plutonium-239	To be determined (Suspect Pu-238 and Pu-239)	To be determined (Suspect Pu-238 and Pu-239)

34. Unit Information:

A. Unit Name: Stagnant Water Area

Period of Operation: from the 1950's

Waste Type: Lithium carbonate and other smaller quantities of organic solvents.

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: This unit is described in two different references as being in slightly different locations. Reference 55 states that a 150 foot diameter area of stagnant wastes was used for disposal of barrels of lithium carbonate and other hazardous materials. The area was apparently filled in. The location, as indicated in Figure V, is east of Building 34. Ref. 66, on the other hand, states that "the actual area of disposal was under and around Building 39, not the area to the east of Building 34 that was reported in previous documentation."

Additional Information Needed:

1. Exact location of unit
2. Dates of operation
3. Results of sampling
4. Extent of remedial activities
5. Quantity of material disposed
6. Waste types
7. Hazardous constituents

35. Unit Information:

A. Unit Name: Leach Bed
Period of Operation: Unknown
Waste Type: Caustic and acid solutions with plutonium contamination.
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit is a leach bed for plutonium operations in the PP Building. The area is located west of Building 38 and is surrounded by the Building 38 Hillside Disposal Area (SWMU 38) (Ref. 55, p. V-25).

Additional Information Needed:

1. Waste analysis
2. Dates of operation
3. Status of remediation
4. Dimensions of unit

36. Unit Information:

A. Unit Name: Chromium Trench

Period of Operation: 1963

Waste Type: Chromium plating solution treated with sodium bisulfide.

Hazardous Constituents: Chromium

Regulatory Status: Unknown

B. Unit Description: In 1963, 110 gallons of chromium bath plating solution were treated with sodium bisulfide and disposed in a trench in the northern portion of facility. This area was subsequently paved over. Less than 1,000 pounds of chromium were disposed at this location (Ref. 55, p. V-25).

Additional Information Needed:

1. Regulatory status
2. Extent of remedial activities
3. Results of soil/groundwater sampling
4. Dimensions of unit
5. Release controls

37. Unit Information:

A. Unit Name: Pyro Waste Disposal Area

Period of Operation: Known disposal in 1984

Waste Type: Trace amounts of reacted pyrotechnic waste (D003) and small amounts of solvents (primarily acetone) in detergent.

Hazardous Constituents: Acetone and other solvents, trace quantities of reacted pyrotechnic wastes (D003).

Regulatory Status: Unknown

B. Unit Description: This unit corresponds to Area H (Ref. 55, p. V-25). Reacted pyrotechnic wastes were dissolved in water and filtered. The filtrate was disposed on the ground in the thermal treatment area (near Building 53) and treated by natural weathering processes (hydrolysis). The waste stream quantity averaged 10 gallons per year. In 1984, five gallons of liquid were disposed in this area.

Additional Information Needed:

1. Dimensions
2. Dates of Operation
3. Waste analysis
4. Release controls
5. Extent of remedial activities
6. Waste quantities
7. Regulatory status

38. Unit Information:

A. Unit Name: Building 38 Hillside Disposal Area

Period of Operation: From the 1950's to the present (Ref. 55, p. V-27)

Waste Type: Construction debris, plumbing fixtures, roofing materials (Ref. 55), and other chemical contaminants (Ref. 73, p.3-49), perhaps radioactive materials. Asbestos materials may also be disposed in this unit (Ref. 73).

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: This area is located on a hillside slope west of Building 38 (Ref. 55). It has been used since the early 1950's for disposal of construction and building debris. The materials have been "bulldozed over the hillside in a random, uncompacted fashion" (Ref. 55, p. V-27). The site encompasses four acres and a disposal volume exceeding 100,000 cubic yards. Continued disposal operations have resulted in spoil pile instability and excessive erosion (Ref. 55). This unit is described as Area J in Ref. 55.

Additional Information Needed:

1. Dates of closure
2. Waste analysis
3. Release controls
4. Extent of remedial activities
5. Depth of unit
6. Soil and groundwater sampling results
7. Results of engineering analysis of slope stability

39. Unit Information:

A. Unit Name: WD Building USTs
Period of Operation: Unknown
Waste Type: Radioactive wastes.
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit consists of four underground steel tanks located near the WD Building (SWMU 11) in the northwest portion of the facility. The tanks were repaired and re-coated with epoxy on several occasions because of tank corrosion (Ref. 55, p. V-28). Leakage may have occurred from these units.

Additional Information Needed:

1. Regulatory status
2. Waste analysis
3. Hazardous constituents
4. Extent of remedial activities
5. Soil and groundwater sampling results
6. Dates of operation
7. Capacity and materials of construction
8. Timing of tank repairs

40. Unit Information:

A. Unit Name: Cooling Tower Basins

Period of Operation: Unknown

Waste Type: Cooling tower additives, including algaecides, organics, and sodium hydroxides.

Hazardous Constituents: Unknown

Regulatory Status: Unknown (but may be regulated under an NPDES permit).

B. Unit Description: The existence of this unit is inferred from correspondence between DOE and Ohio EPA (Ref. 57) concerning the characteristics of additives used in cooling tower and boiler systems. The following chemicals are listed in the correspondence:

- ANCO Algaecide No. 1, Andersen Chemical Company (EPA Registration No. 3931-3);
- 2-benzyl-4-chlorophenol;
- aqueous solution of 2-benzyl-4-chlorophenol and sodium hydroxide;
- Siltex, Andersen Chemical Company;
- ANCO Microbicide 77, Andersen Chemical Company (EPA Registration
- 5-chloro-2 methyl-4-isothiazolin-3-one;
- 2-methyl-4-isothiazolin-3-one;
- cooling water treatment - CSA - Andersen Chemical Company; and
- organo-phosphonate, triazol, polyacrylate;

No other information concerning this unit was available.

Additional Information Needed:

1. Numbers of units and locations
2. Capacity of cooling tower basins
3. Waste volumes
4. Waste analysis
5. Disposition of wastes
6. Dates of operation

41. Unit Information:

A. Unit Name: Recreation Ponds (2)
Period of Operation: Unknown
Waste Type: Stormwater from southwest part of facility and cooling units located in the Powerhouse (Building P).
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: Liquids from the north trending fork of the Plant Drainage System (SWMU 8) flow to Recreation Ponds behind the abandoned Miamisburg Power & Light Company plant (Ref. 58). No other information regarding this unit was available in the file materials.

Additional Information Needed:

1. Dimensions and capacity
2. Regulatory status
3. Dates of operation
4. Release controls
5. Waste analysis
6. Soil, surface water, and groundwater sampling results
7. Type of recreation activities

42. Unit Information:

A. Unit Name: Pyrotechnic Waste Shed

Period of Operation: Unknown

Waste Type: Pyrotechnic powders and pyrotechnic-contaminated wastes (D003).

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: The Pyrotechnic Waste Shed temporarily stores pyrotechnic waste prior to thermal destruction. The shed is located inside the fenced Drum Area. The unit is constructed on a concrete pad - 9 by 15 feet in area and 7 feet high with chain-link fence side walls. The roof is constructed of 18-gauge galvanized corrugated steel (Ref. 66). Contaminated trash and pyrotechnic "providers" are saturated with mineral oil, contained within two conductive bags, and further sealed within a metal can. The facility indicates that "pyrotechnical components are stored in non-propagating trays inside of a metal suitcase" (Ref. 66, p. 10-6).

Additional Information Needed:

1. Regulatory status
2. Dates of operation
3. Waste analysis
4. Waste management description
5. Definition of "provider" and "non-propagating tray"

43. Unit Information:

A. Unit Name: Glass Melter Off-Gas Deluge Tank
Period of Operation: Unknown
Waste Type: Off gases from Glass Melt Furnace (SWMU 21)
Hazardous Constituents: POHCs, metals, HCl, PAH
Regulatory Status: Unknown

B. Unit Description: This unit is the first component of the off-gas scrubber system for the Glass Melt Furnace. Figures 5 and 6 (Ref. 66) show the position of this unit in the incineration treatment system. It is unclear if this unit is equivalent to the Scrub Tank identified in Figure 4-5 (Ref. 66). The unit is located in the WD Building Annex. The unit is a vertical stainless steel tank. Four spray units inject caustic solution counter-current to the ascending gases. The tank drains directly to the Recycle Tank (SWMU 46) on which it rests (Ref. 66, p. 4-13). This system is inspected hourly when in use.

Additional Information Needed:

1. Capacity and dimensions
2. Results of destruction removal efficiency
3. Dates of operation
4. Regulatory status

44. Unit Information:

A. Unit Name: Off-Gas Venturi Scrubber
Period of Operation: Unknown
Waste Type: Off-gases from Glass Melt Furnace (SWMU 21)
Hazardous Constituents: POHCs, metals, HCl, PAH
Regulatory Status: Unknown

B. Unit Description: Gases form the Deluge Tank (SWMU 43) are scrubbed in a high-energy venturi scrubber. Figures 6 and 7 show the unit in the context of the incineration treatment system. A particle removal efficiency of 99% by weight for an inlet gas particle loading rate of 1.15g/m3 requires a water pressure differential of 104 cm (Ref. 66). Gases and entrained droplets exit the bottom of the unit and enter the Cyclone Demister (SWMU 45) at its base. Scrubber inlet and outlet temperatures are 324°F and 168°F, respectively. Inlet and outflow velocities are 34 feet per second (FPS) and 75 FPS, respectively. Inlet and outlet flow rates (in DSCFM) are 208 and 292, respectively. Destruction removal efficiencies (DREs) for all principle organic hazardous constituents (POHCs) in the entire scrubber system in test burns ranged from 99.999% to 99.9999999. Modal DRE values for the test burns were equal to 99.999999%. Particulate control efficiencies ranged from 60 to 95% in test runs (Ref. 66). This unit is inspected hourly when in use.

Additional Information Needed:

1. Regulatory status
2. Dimensions and materials of construction
3. Dates of operation

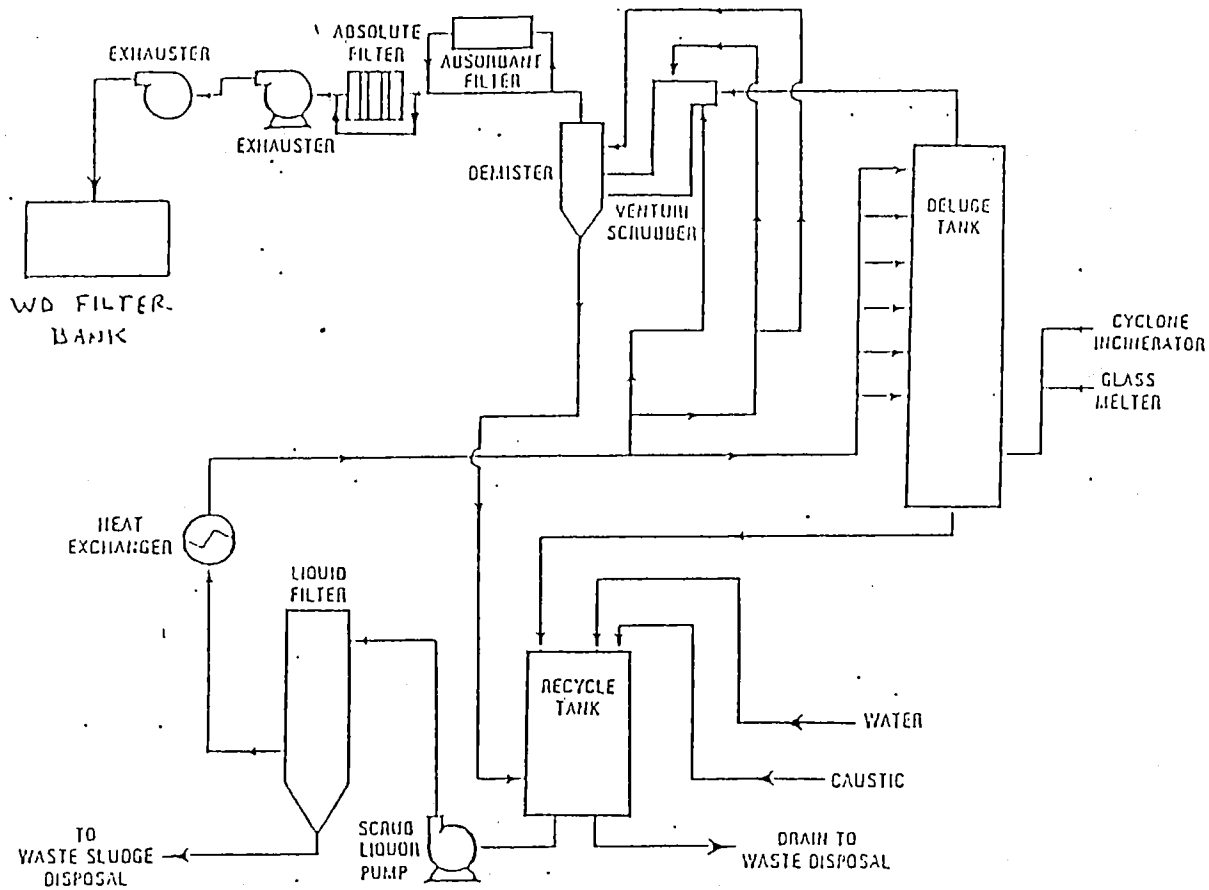


Figure 6 Wet offgas system.

PROCESS FLOW DIAGRAM

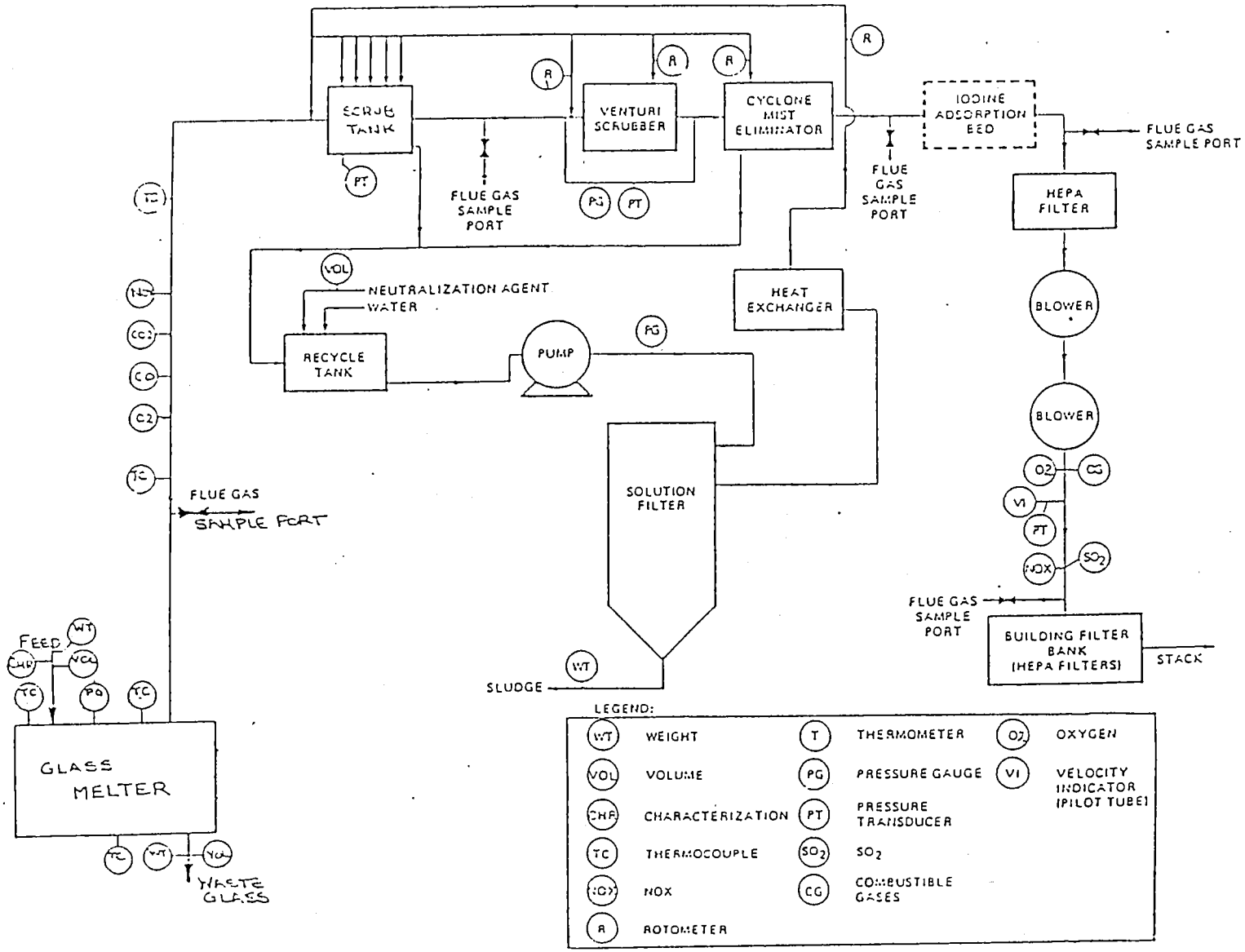


Figure 7 Glass Melter

45. Unit Information:

A. Unit Name: Off-Gas Cyclone Demister

Period of Operation: Unknown

Waste Type: Off-gases and entrained droplets from Off-Gas Venturi Scrubber (SWMU 44)

Hazardous Constituents: POHCs, metals, HCl, PAH

Regulatory Status: Unknown

B. Unit Description: Off-gases and entrained droplets from the Off-Gas Venturi Scrubber enter the base of this unit. Water sprays from the liquid mixture to the conical base of the unit into the Off-Gas Recycle Tank (SWMU 46) (Ref. 66, p. 4-13). Exit gases are routed to a nuclear grade high efficiency (HEPA) filter (SWMU 47). Figures 6 and 7 show the unit in the context of the other components of the incineration treatment system. This unit is inspected hourly when in use.

Additional Information Needed:

1. Regulatory status
2. Dimensions and construction
3. Dates of operation
4. Release controls

46. Unit Information:

A. Unit Name: Off-Gas Recycle Tank
Period of Operation: Unknown
Waste Type: Liquids from the Off-Gas Venturi Scrubber (SWMU 44), Off-Gas Cyclone Demister (SWMU 45), and Deluge Tank (SWMU 43).
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This system, consisting of a stainless steel tank, provides for initial solution make-up, solution storage, a reservoir for temperature and pH moderation in the scrub liquor system, and a head for the recycle of make-up water for the three off-gas scrubber components. The unit receives drainage (by gravity) for the off-gas system components, including the Venturi Scrubber (SWMU 44), Cyclone Demister (SWMU 45), and Deluge Tank (SWMU 43). A pH probe maintains a pH in the range of 8-10. The recycled make-up water is also routed through a vertical Leaf Solution Filter (SWMU 49), a heat exchanger, and a strainer (SWMU 50) (Ref. 66, p. 4-14). Figure 6 shows an outlet from this unit to the waste disposal system (SWMU 14) as well. This system is inspected hourly when in use.

Additional Information Needed:

1. Dimensions and construction
2. Waste analysis
3. Regulatory status
4. Dates of operation
5. Release controls

47. Unit Information:

A. Unit Name: Iodine Adsorption Bed (Absorbent Filter)
Period of Operation: Unknown
Waste Type: Gases from Off-Gas Cyclone Demister (SWMU 45)
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit is part of the Off-Gas Scrubber System (Figs. 6 and 7). Filtered gases apparently are further treated by an Off-Gas nuclear grade high efficiency (HEPA) Filter (SWMU 48). This unit is inspected hourly when in use. No other information was available regarding this unit.

Additional Information Needed:

1. Dimensions and construction
2. Waste analysis
3. Dates of operation
4. Regulatory status
5. Disposition of spent filters
6. Flow rates
7. Monitoring results

48. Unit Information:

A. Unit Name: Off-Gas HEPA Filter (Absolute Filter)
Period of Operation: Unknown
Waste Type: Gases from Iodine Adsorption Bed (SWMU 47) or Cyclone Demister (SWMU 45)
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit is part of the Off-Gas Scrubber System (Figs. 6 and 7). Filtered gases are sent by way of two exhausters (in series) to the WD Filter Bank (SWMU 51), before being exhausted to the outdoors. This unit is inspected hourly when in use.

Additional Information Needed:

1. Dimensions and construction
2. Monitoring results
3. Dates of Operation
4. Regulatory status
5. Disposition of spent filters
6. Flow rates
7. release controls

49. Unit Information:

A. Unit Name: Off-Gas Leaf Solution Filter (Liquid Filter)
Period of Operation: Unknown
Waste Type: Make-up solution from Off-Gas Scrubber System
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit accepts liquid from the Recycle Tank (SWMU 46) (Ref. 66, p. 4-14). Filter cake accumulates on the vertical filter leaves and is removed by periodic vibration of the filter housing. The dislodged cake falls by gravity to the bottom of the unit, where it is removed as a sludge. The effluent flows through a heat exchanger and strainer (SWMU 50) before being recycled to the Deluge Tank (SWMU 43), Venturi Scrubber (SWMU 44), and Demister (SWMU 45). This unit is inspected hourly when in use.

Additional Information Needed:

1. Dimensions and construction
2. Regulatory status
3. Dates of operation
4. Monitoring results
5. Wastes analysis
6. Hazardous constituents
7. Flow rates
8. Disposition of leaf cake build-up and bottom sludge

50. Unit Information:

A. Unit Name: Strainer
Period of Operation: Unknown
Waste Type: Make-up solution from off-gas scrubber solution
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit receives effluent from the Off-Gas Leaf Solution Filter (SWMU 49) in the Off-Gas Scrubber Solution Make-Up System (Ref. 66, p. 4-14). Figure 4-5a in Ref. 66 indicates that liquid from this unit (and a filter in parallel) is routed to the Deluge Tank (SWMU 43) or Venturi Scrubber (SWMU 44). No other information about this unit was available for review. This unit is inspected hourly when in use.

Additional Information Needed:

1. Design and construction
2. Regulatory status
3. Waste analysis
4. Dates of operation
5. Disposition of wastes

51. Unit Information:

A. Unit Name: WD Filter Bank
Period of Operation: Unknown
Waste Type: Filtered off-gases from the Glass Melter Incinerator Scrubber System
Hazardous Constituents: Unknown
Regulatory Status: Unknown.

B. Unit Description: This unit represents a final filter for scrubber off-gases, prior to discharge to the atmosphere (Figs. 6 and 7). The filter bank apparently contains HEPA filters (nuclear-grade high efficiency filters). This unit is inspected hourly when in use.

Additional Information Needed:

1. Dimensions and construction
2. Regulatory status
3. Dates of operation
4. Disposition of filtrate and spent filters
5. Waste analysis
6. Monitoring results

52. Unit Information:

A. Unit Name: Retort (Rotary kiln)
Period of Operation: Unit installed in 1983
Waste Type: D003 explosive wastes (primarily detonators and pellets), mild detonating cord (MDC) and mild detonating fuse (MDF).
Hazardous Constituents: Unknown
Regulatory Status: RCRA permit sought

B. Unit Description: This unit is a propane-fired rotary kiln used to destroy explosive wastes. The unit is three feet in diameter, has a 10-foot long kiln, and a vent stack (Ref. 66, p. 4-64). It is located in a four-inch thick concrete foundation and within a one-foot thick concrete enclosure. The kiln is heated to 800°F. The process is monitored every few minutes during operation. The temperature is controlled automatically.

Additional Information Needed:

1. Date of closure
2. Waste analysis
3. Air monitoring analytes and results
4. Frequency of inspections
5. Disposition of waste residue

53. Unit Information:

A. Unit Name: Building 90 Blockhouse
Period of Operation: Unknown
Waste Type: D003 explosive wastes
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This is an ancillary waste storage unit associated with the Retort (SWMU 52). Small-quantity wastes are placed on a feed conveyor accessible through a port in the Blockhouse which is adjacent to the Retort. A screw feeder transfers the waste from the conveyor to the inside of the Retort (Ref. 66, p. 4-64).

Additional Information Needed:

1. Dates of operation
2. Dimensions and construction
3. Release controls
4. Waste quantities
5. Waste analysis

54. Unit Information:

A. Unit Name: Thermal Treatment Unit

Period of Operation: Unknown

Waste Type: D003 explosive wastes including contaminated trash, components and assemblies, bulk high explosive powder (PETN, PBX, RDX, HMX, and Tetryl), mild detonating cord and mild detonating fuses, pyrotechnic powders and trash, hexanitrostilbene (HNS) wastes, 2-[5-cyanotetrazolato] pentaamine cobolt (III) perchlorate (CP) wastes, Thermite powder wastes, and solid primary explosives (Ref. 66).

Hazardous Constituents: Unknown

Regulatory Status: RCRA permit sought

B. Unit Description: This unit is located in the Burn Area and it consists of a 55-gallon drum inside a base containing water and antifreeze. Wastes are placed in the drum and detonated remotely from Building 13. Control instruments in the building regulate a blower which provides air to the unit. The unit is operated periodically on a batch basis. The unit is located in a 10 by 10 by 10 foot cubicle with 4-inch thick steel-plate sand-filled walls and an open expanded metal screen roof. Temperature and opacity are monitored every few minutes while the unit is in operation (Ref. 66, pp. 10-7, 10-10).

Additional Information Needed:

1. Waste analysis
2. Disposition of ash residue
3. Waste and ash quantities
4. Dates of operation
5. Waste management description

55. Unit Information:

A. Unit Name: Biodegradation Unit

Period of Operation: Unknown

Waste Type: Soapy rinsate from decontamination of equipment used in pyrotechnic operations.

Hazardous Constituents: Unknown

Regulatory Status: RCRA permit sought

B. Unit Description: This unit consists of a portable steel cylinder (1 foot diameter, 2 feet high) mounted on legs and placed within a 30-inch by 30-inch by 6-inch high tray. Screens are placed at the top and bottom of the cylinder. A filter (through which the waste is poured) is placed on top of the upper screen. The waste apparently is treated by evaporation and biodegradation.

Additional Information Needed:

1. Waste analysis
2. Waste quantities
3. Dates of operation
4. Disposition of waste residues and filters
5. Location of unit
6. Release controls

56. Unit Information:

A. Unit Type: Drum Carts/Collection Vehicles
Period of Operation: Unknown
Waste Type: Containerized hazardous wastes and radioactive mixed wastes.
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: Drum carts are used to manually transfer containerized wastes to collection vehicles at generating points throughout the facility (Ref. 66, p. 5-10). The collection vehicles are small trucks with hydraulically activated tailgates.

Additional Information Needed:

1. Number of units
2. Decontamination procedures
3. Dates of operation

57. Unit Information:

A. Unit Name: Solvent Leach Beds
Period of Operation: 1960-1985 (Ref. 73, p. 3-45)
Waste Type: Water (80%), ethanol (10%), acetone (10%), and trace amounts of high explosives (Ref. 73).
Hazardous Constituents: Ethanol, acetone (Ref. 73)
Regulatory Status: Unknown

B. Unit Description: The solvent leach bed, located near Building 42, was 25 feet square and 5 feet deep. It is estimated that a few thousand gallons of wastewater were disposed in this unit (Ref. 73, p. 3-45).

Additional Information Needed:

1. Materials of construction
2. Source of wastewater
3. Status of closure
4. Release controls

58. Unit Information:

A. Unit Name: Building 1 Leach Pit

Period of Operation: Late 1960s-1985 (Ref. 73, p. 3-45)

Waste Type: Water, ethanol, acetone, and trace amounts of high explosives (Ref. 73).

Hazardous Constituents: Ethanol, acetone (Ref. 73)

Regulatory Status: Unknown

B. Unit Description: The Leach Pit was operated near Building 1. Its dimensions were similar to SWMU 57, the Solvent Leach Bed (25 feet square and 5 feet deep)(Ref. 73, p. 3-45).

Additional Information Needed:

1. Materials of construction
2. Source of wastewater
3. Volume of wastewater disposed
4. Status of closure
5. Release controls

59. Unit Information:

A. Unit Name: Building 27 Leach Pit
Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: A description of this unit was not provided in the information available for this report. Reference 73 provided only the name of the unit and implied that it was used for disposal of wastes similar to those in the Solvent Leach Bed (SWMU 57) and the Building 1 Leach pit (SWMU 58) (Ref. 73, p. 3-45).

Additional Information Needed:

1. Location
2. Dimensions
3. Materials of construction
4. Regulatory status
5. Period of operation
6. Waste type
7. Hazardous constituents
8. Release controls

60. Unit Information:

A. Unit Name: Former Solvent Drum Storage Area
Period of Operation: Unknown
Waste Type: Solvents
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The unit was located on the west side of the road between the SM/PP Hill and Building 21 in the southern portion of the site. Reference 73 indicates that between 100 and 500 drums were observed in aerial photographs of the site. The areal dimensions of the site were approximately 180 feet by 80 feet. Reference 73 also indicates there are no records regarding length of storage and that the structures associated with the unit have been removed (Ref. 73, p. 3-40).

Additional Information Needed:

1. Status of closure
2. Period of operation
3. Hazardous constituents
4. Materials of construction
5. Release controls
6. Source of wastes
7. Method of waste disposal

61. Unit Information:

A. Unit Name: Building 28 Solvent Storage Area
Period of Operation: Unknown
Waste Type: Solvents
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This waste storage area is located in close proximity to storm or floor drains which could provide a release pathway to underlying soil. There is no curbing or other diversionary structures to prevent spilled material from leaving the area (Ref. 73, p. 3-58).

Additional Information Needed:

1. Location
2. Materials of construction
3. Regulatory status
4. Period of operation
5. Waste types
6. Hazardous constituents
7. History of releases
8. Source of wastes
9. Method of waste disposal

62. Unit Information:

A. Unit Name: DS Solvent Storage Shed
Period of Operation: Unknown
Waste Type: Solvents
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This storage area is located in close proximity to storm or floor drains which could provide a release pathway to underlying soil. There is no curbing or other diversionary structures to prevent spilled material from leaving the area (Ref. 73, p. 3-58).

Additional Information Needed:

1. Location
2. Material of construction
3. Regulatory status
4. Period of operation
5. Waste types
6. Hazardous constituents
7. History of releases
8. Source of wastes
9. Method of waste disposal

63. Unit Information:

A. Unit Name: B Building Solvent Storage Shed
Period of Operation: Unknown
Waste Type: Solvents
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This waste storage is located in close proximity to storm or floor drains which could provide a release pathway to underlying soil. There is no curbing or other diversionary structures to prevent spilled material from leaving the area (Ref. 73, p. 3-50).

Additional Information Needed:

1. Location
2. Material of construction
3. Regulatory status
4. Period of operation
5. Waste types
6. Hazardous constituents
7. History of releases
8. Source of wastes
9. Method of waste disposal

rmation:

a E Building Solvent Storage Shed
of Operation: Unknown
Type: Solvents
ous Constituents: Unknown
tory Status: Unknown

escription: This waste storage area is located in close proximity
rm or floor drains which could provide a release pathway to
ing soil. There is no curbing or other diversionary structures to
spilled material from leaving the area (Ref. 73, p. 3-58).

nal Information Needed:

ation
erials of construction
ulatory status
iod of operation
te types
s constituents
tory of releases
ce of wastes
iod of waste disposal

adioactive

nium, orga-
methylene

eposited in
al as a low
are sampled
ve approval
hese sludge
cated adja-

66. Unit Information:

A. Unit Name: Waste Oil Drumfield

Period of Operation: 1985 to present

Waste Type: Waste oil, solvents, plating shop waste, batteries, herbicides, photographic solution, scintillation vials and other chemical wastes (Ref. 73, p. 3-73).

Hazardous Constituents: Toluene

Regulatory Status: Unknown

B. Unit Description: The field containing the waste drums in located on the SM/PP Hill approximately 250 yards southeast of the Open Burning Area (SWMU 1). The area is approximately 100 feet long and 50 feet wide and contains 193 drums. Drums at the south end contain waste oil while the drums at the northern end contain plating shop waste, solvents, explosive/solvent waste, batteries, kitchen grease, herbicides, photographic solution, epoxy preforms, lab chemicals, scintillation vials (<50 uCi/liter) and other chemical wastes. The drums are located outdoors on bare soil Reference 73 indicates the soil was stained on the southern end of the unit (Ref. 73, p. 3-67).

Additional Information Needed:

1. Regulatory status
2. Method of waste disposal
3. Hazardous constituents
4. Release history

67. Unit Information:

A. Unit Name: Waste Solvent Storage Tank
Period of Operation: 1968-1972 (Ref. 73, p. 3-139)
Waste Type: Solvents
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The 1,000-gallon storage tank is located underground behind Building 51 and was used to store waste solvents prior to contamination in the incinerator. The tank has been abandoned but it is not known whether it still contains waste solvent (Ref. 73). The tank is now 16 years old and is constructed of steel. It is unlined and has no cathodic or external protection (Ref. 81, p. 4-20).

Additional Information Needed:

1. Location
2. Material of construction
3. Regulatory status
4. Period of operation
5. Waste types
6. Hazardous constituents
7. History of releases
8. Source of wastes
9. Method of waste disposal
10. Abandonment procedures

68. Unit Information:

A. Unit Name: Ventilation Hoods

Period of Operation: Unknown

Waste Type: Explosive gases, paint fumes, epoxy funes, solder fumes, metal vapors, solvent fumes, dust, acid gases, asbestos and other chemicals.

Hazardous Constituents: Acetone, trichloroethylene, benzene, chloroform, toluene, methylene chloride, hydrofuoric acid, hydrochloric acid, sulfuric acid, nitric acid, methylethyl ketone (Ref. 81, p. D-1).

Regulatory Status: Unknown

B. Unit Description: There are 570 ventilation hoods used in 34 buildings at the Mound Facility. The hoods direct gas and particulate emissions directly or via air pollution control equipment to the atmosphere (Ref. 81, p. 3-11, 12, 13).

Additional Information Needed:

1. Regulatory status
2. Period of operation

69-71. Unit Information:

A. Unit Name: Refuse Piles (3)
Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: Three refuse piles are located near the Thermal Treatment Area (Ref. 66, Fig. 10-1). No other information was available.

Additional Information Needed:

1. Regulatory stutus
2. Dimensions
3. Waste types
4. Period of operation
5. Hazardous constituents
6. Release controls

72. Unit Information:

A. Unit Name: Air Pollution Control Devices

Period of Operation: Unknown

Waste Type: Dust from maintenance and machine shops, incinerator fly ash, and radioactive particulates.

Hazardous Constituents: Hydrofluoric acid, diallyl phthalate, acetone, cyclohexane, methylene chloride, xylene, benzene, chloroform, hexane, nitric acids, sulfuric acid.

Regulatory Status: Permitted by the Ohio Regional Air Pollution Control Board

B. Unit Description: Sixteen Air Pollution Control devices not previously described in this report are operated on the facility (Ref. 3). These include four dust collectors on exhaust air ports from Building M and Building 33 and twelve filter bank facilities to handle radioactive particulates from various on-site buildings (Ref. 3).

Additional Information Needed:

1. Period of operation
2. Number of addition air pollution control units associated with ventillation hoods
3. Method of particulate or wastewater disposal

73. Unit Information:

A. Unit Type: Solid Waste Salvage and Reclamation Building

Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This unit is located north of the Wastewater Treatment Plant in Building 19 (Ref. 55, Fig. V.5).

Additional Information Needed:

1. Regulatory status
2. Period of operation
3. Waste types
4. Dimensions
5. Capacity
6. Release controls
7. Hazardous constituents

References

1. Accident Investigation in R-120 to Dr. J.F. Eichelberger, July 12, 1960.

2. E.A. Walker, Office Memorandum to G.H. Dugger, Health and Safety Division, Albuquerque Operations, Report on July 6, 1960 Radiation Incident at Mound Laboratory, February 6, 1961.

3. United States Atomic Energy Commission Mound Laboratory, Permit Application to Ohio Air Pollution Control Board, January 3, 1973.

4. R.L. Wainwright U.S. Atomic Energy Commission, Area Manager, Transmittal of refuse incinerator forms to William M. Auberle, Regional Air Pollution Control Agency, November 7, 1973.

5. Bernd Kahn, Director, Radiochemistry & Nuclear Engineering Facility, EPA, Letter to Gary Bramble, Ohio EPA, July 16, 1974.

6. Ken M. Harsh, G. Bramble, Ohio EPA, Inter-office Communication Memo to Thomas J. Birch, Chief, E.E. Group Mound Laboratory, August 6, 1974.

7. Notes and tables, Meeting on plutonium, September 11, 1974.

8. Ken M. Harsh, G. Bramble, Ohio EPA, Inter-office Communications Memo to Dr. Thomas Birch, Ohio, Ambient Water Group Chief, Ohio EPA, September 13, 1974.

9. Bernd Kahn, Radiochemistry & Nuclear Engineering Facility, EPA, Letter to Mr. Gary Bramble, Ohio EPA, October 1, 1974.

10. Mound Plutonium Study, Copies of slides from press release, October 2, 1974.

11. Ken Harsh, Art Talsma, Ohio EPA, Inter-office Communications Memo to Ernie Neal, Chief, Division of Surveillance, October 11, 1974.

12. Report of the Ad Hoc Committee to Evaluate the Health and Safety Aspects of ^{238}Pu in the Environment Adjacent to Mound Laboratory, February 1976.

13. Phase I Potable Water Standards Project, Mound Laboratory for Monsanto Research Corporation, Dames and Moore, April 1976.

14. Ohio EPA, Permit to Operate an Air Contaminant Source to Mound Laboratory, May 6, 1977.

15. Ohio Air Pollution Control Agency, Notice of Registration to Mound Laboratory for fabrication and repair equipment, May 20, 1977.

16. Ohio Air Pollution Control Agency, Notice of Registration to Mound Laboratory for Machining Equipment, May 21, 1976.

17. Ohio Air Pollution Control Agency, Notice of Registration to Mound Laboratory for grinding shop, May 21, 1976.

18. Summary of Mound Laboratory Documents, July 6, 1960 through December 1, 1977.

19. Potable Water Standards Project, Mound Laboratory for Monsanto Research Corporation, Continuation of Data Analyses (Effects of Pumping), Dames and Moore, January 12, 1978.

20. Tritium Rainout Project, Prepared for Mound Facility, Monsanto Research Corporation, Dames and Moore, March 6, 1978.

21. Carl J. Kershuer and T. Ben Rhinehammer, Mound Laboratory Tritium Environmental Study: 1976-1977, Issued: April 10, 1978.

22. Mound Laboratory Documents, Government Accountability Project, summaries of reports for the period from 1960 to 1978.

23. Final Environmental Impact Statement, DOE-Mound Facility, Miamisburg, Ohio, U.S. Department of Energy, June 1979.

24. Clarence E. Styron and Herbert E. Meyer, Potable Water Standards Project: Final Report, April 7, 1981.

25. Harry N. Hill Department of Energy, Mound Facility, Transmittal of renewal applications for permit to operate an air contaminant source to William T. Burkhart, Supervisor, Regional Air Pollution Control Agency, February 1, 1980.

26. Authorization to Discharge Under the National Pollutant Discharge Elimination System, Permit No. OH 0009857, United States Department of Energy (Mound Facility), December 16, 1980.

27. Notification of Hazardous Waste site, U.S. Department of Energy, Mound Facility, June 11, 1981.

28. Harry N. Hill, U.S. Department of Energy, Mound Facility, Transmittal of Discharge Monitoring Report: April-June 1982 to Arnold E. Leder, U.S. EPA, June 26, 1982.

29. Contact Report, meeting attended by Dan Carfagno and Donna Lee, September 4, 1983.

30. Paint Spray Booth operation specifications, Department of Energy, Mound Facility, September 4, 1983.

31. R.M. Munson, Acting Area Manager, U.S. Department of Energy, Mound Facility, Transmittal of Air Pollution Permit Applications to Donna Lee, Regional Air Pollution Control Agency, February 3, 1984.

32. Harry N. Hill, Area Manager, U.S. Department of Energy, Mound Facility, Transmittal of completed NPDES permit application forms to Ohio EPA, April 2, 1984.

33. Agency telephone log regarding disposal of asbestos generated at the Mound Facility, June 7-8, 1984.

34. Enforcement Referral from Kendra H. Dearth, SWDO to Wastewater, Litigation Screening Committee Division of Industrial Wastewater regarding U.S. DOE-Mound Facility, November 19, 1984.

35. Ohio EPA, Director's Final Findings and Orders in the Matter of U.S. DOE-Mound Facility, November 21, 1984.

36. Kendra H. Dearth, James C. Simpson, DWPC-SWDO, Inter-office Communication memo to Robert H. Maynard, Director, November 21, 1984.

37. Harry N. Hill, Area Manager, U.S. DOE, Mound Facility, Letter transmitting revised Part A permit application to Tom Crepean, Ohio EPA, November 28, 1984.

38. Robert H. Maynard, Director, Ohio EPA, Letter to Harry N. Hill, DOE-Mound Facility, December 11, 1984.

39. Jennifer Tiell, Staff Attorney, Inter-office Communications Memo to Robert H. Maynard, Director Ohio EPA, December 13, 1984.

40. Barbara A. Fillmore, Natural Resources Defense Council, Notice of Intent to File Suit for Hazardous Waste Violations to Donald P. Hodel U.S. DOE, January 3, 1985.

41. Harry N. Hill, Area Manager, DOE - Mound Facility, Letter to Tom Crepean, Ohio EPA, January 18, 1985.

42. Hydee Hetick, Ohio EPA, Inter-office Communication Memo to Dan Redman, February 4, 1985.

43. Sandra J. Kemper, Manager, Permit and Compliance Program Section, Transmittal of Directors Final Findings and Orders, February 27, 1985.

44. Harry N. Hill, Area Manager, DOE-Mound Facility, Letter to Donna Gorby Lee, Regional Air Pollution Control Agency, May 1, 1985.

45. James A. Morley, Area Manager, DOE - Mound Facility, Letter to Sandra Turner, Ohio EPA, July 15, 1985.

46. Sandra J. Kemper, Manager, Permits and Compliance Section, Ohio EPA, Transmittal of NPDES Permit to DOE-Mound Facility, September 30, 1985.

47. George Glaser, Alloyd Asbestos Abatement Company, Letter to Jack Kemp, Regional Air Pollution Control Agency, November 4, 1985.

48. Scott Shane, Ohio EPA, Potential Hazardous Waste Site Preliminary Assessment, December 9, 1985.

49. Glenn Statement Releasing the GAO Report on the Three Ohio Defense Facilities, December 17, 1985.

50. Mary L. Walker, Assistant Secretary, Environment, Safety, and Health, Department of Energy, Washington, D.C., Letter to Director, Ohio EPA, January 31, 1986.

51. James C. Simpson, Unit Supervisor, Water Pollution Control, Ohio EPA, Transmittal of NPDES Compliance Insepction Report to James Morley, DOE-Mound Facility, February 25, 1986.

52. Thomas G. Rigo, Manager, Field Operations Section, Division of Air Pollution Control, Ohio EPA, Transmittal of Permit to Install to Dave Ingle, DOE-Mound Facility, March 19, 1986.

53. Kendra H. Dearth, Industrial Wastewater Group, Ohio EPA, Report on Plans for Sand Filters at Sanitary Wastewater Treatment Plant to Serve U.S. DOE-Mound Facility, March 20, 1986.

54. Sandra J. Kemper, Permits and Compliance Programs, Ohio EPA, Transmittal of Permit to Install to DOE-Mound Facility, March 27, 1986.

55. Albuquerque Operations Office Environment, Safety, and Health Division, Environmental Programs Branch, Comprehensive Environmental Assessment and Response Program, Phase I, Installation Assessment Mound, Draft, April 1986.

56. James A. Morley, Area Manager, DOE-Mound Facility, Transmittal of Air Pollution Control Information to Larry F. Kertcher, U.S. EPA, Region V, April 24, 1986.

57. James A. Morley, Area Manager, DOE-Mound Facility, Transmittal of Reporting and Testing Requirements to Robert Phelps, Ohio EPA, May 15, 1986.

58. Description and Safety Assessment of Site for Mound Laboratory, Dames and Moore, May 27, 1986.

59. Thurman D. Smith, Regional Air Pollution Control Agency, letter to Richard M. Munson, DOE-Mound Facility, June 11, 1986.

60. Contact Report, Meeting regarding Mounds Labs, July 3, 1986.

61. Asbestos Demolition/Renovation Notification completed by George Glaser, Alloyed Asbestos Abatement Company, July 15, 1986.

62. W.B. Hogeman, President, Monsanto Research Corporation - Mound, Letter to Paula MacIllwaine, Montgomery County Commissioner, July 18, 1986.

63. Contact Report, Meeting regarding Environmental Survey, DOE-Mound, August 19, 1986.

64. James A. Morley, DOE-Mound Facility, Letter to Robert Swale, U.S. EPA, Region V, August 22, 1986.

65. James A. Morley, DOE-Mound Facility, Letter to Don Marshall, Ohio EPA, August 22, 1986.

66. James A. Morley, U.S. DOE-Mound Facility, RCRA Part B Permit Application to Robert Swale, U.S. EPA, Region V, November 7, 1986.

67. James A. Morley, DOE-Mound Facility, Letter to Vendra Dearth, Ohio EPA, December 10, 1986.

68. Asbestos Demolition/Renovation Notification completed by Dennis Lower, Alloyd Asbestos Abatement Company, January 12, 1987.

69. Department of Energy, Albuquerque Operations Office, Environment, Safety and Health Division, Environmental Programs Branch Comprehensive Environmental Assessment and Response Program, Phase 2: Mound, Installation Generic Monitoring Plan/Site-Specific Monitoring Plan, Health and Safety Plan, Working Draft, January 1987.

70. Department of Energy, Albuquerque Operations Office, Dnvironment, Safety and Health Division, Environmental Programs Branch, Comprehensive Environmental Assessment and Response Program, Phase 2: Mound, Installation Generic Monitoring Plan/Site-Specific Monitoring Plan Synopsis, January 1987.

71. Richard K. Blauvelt, Sr. Waste Management Specialist, Monsanto Research Corporation - Mound, Mound Response to EPA Review of Part B permit Application to James A. Morley, U.S. DOE-Mound Facility, June 1, 1987.

72. Scott Shayne, Ohio EPA, Inter-office Communications Memo to Dave Strayer, June 4, 1987.

73. Environmental Survey Sampling and Analysis Plan, Mound Site, Miamisburg, Ohio, U.S. Department of Energy, Environment, Safety and Health, Office of Environmental Audit, July 1987.

74. Sharon L. Roney, Division of Water Quality Monitoring and Assessment, Ohio EPA, Compliance Sampling Inspection, Mound Laboratory, September 8, 1987.

75. James A. Morley, DOE-Mound Facility, Letter transmitting NPDES Information to Kendra Dearth, Ohio EPA, September 9, 1987.

76. James C. Simpson, Unit Supervisor, Water Pollution Control, Ohio EPA, Transmittal of NPDES Compliance Inspection Report to James Morley, DOE-Mound Facility, September 10, 1987.

77. Scott R. Shane, Solid and Hazardous Waste Management Unit, Letter to Richard Janowiecki, DOE-Mound Facility, September 22, 1987.

78. Draft Phase 2 Installation Generic Monitoring Plan/Remedial Investigation Plan - Stage 2 Supplement, Mound, Comprehensive Environmental Assessment and Response Program, September 1987.

79. John B. Hussman, Sr. Industrial Hygienist, Monsanto Research Corporation - Mound, Transmittal of Asbestos Demolition/Renovation Notification to Jack Kemp, Regional Air Pollution Control Agency, October 20, 1987.

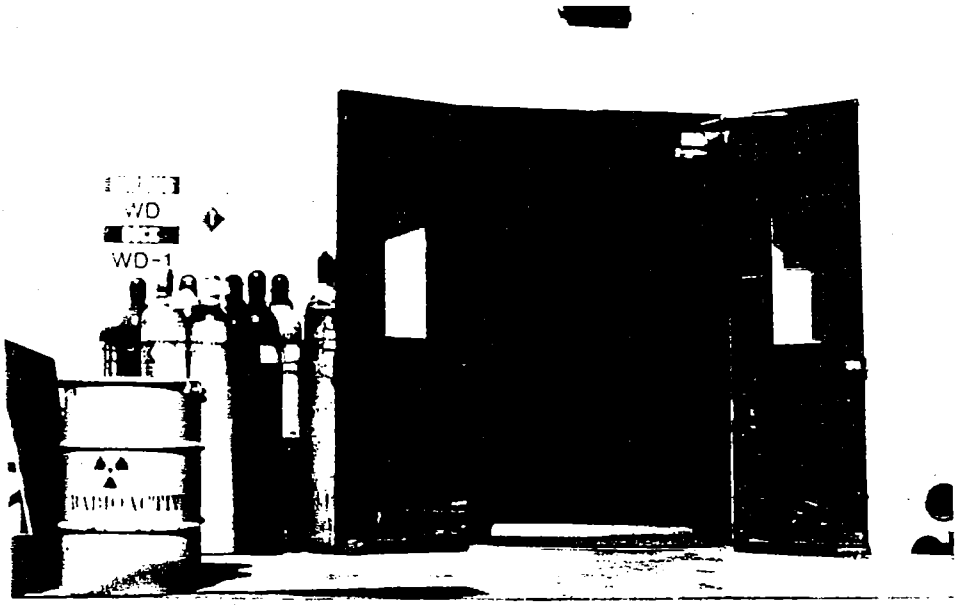
80. Safety and Hygiene Manual, DOE-Mound, October 1, 1987.

81. G.W. Johnson, Acting Area Manager, DOE-Mound Facility, Transmittal of Environmental Survey (dated March 1987) to Scott Shane, Ohio EPA, October 30, 1987.

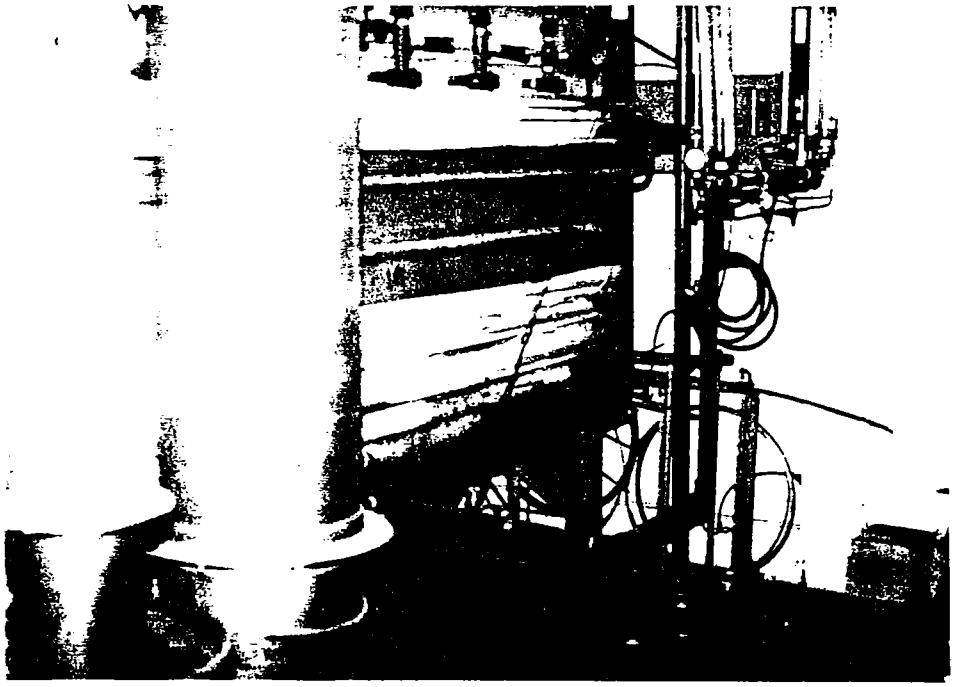
82. Contact Report, DOE-Mound, Meeting regarding GDF Inspection, December 21, 1987.

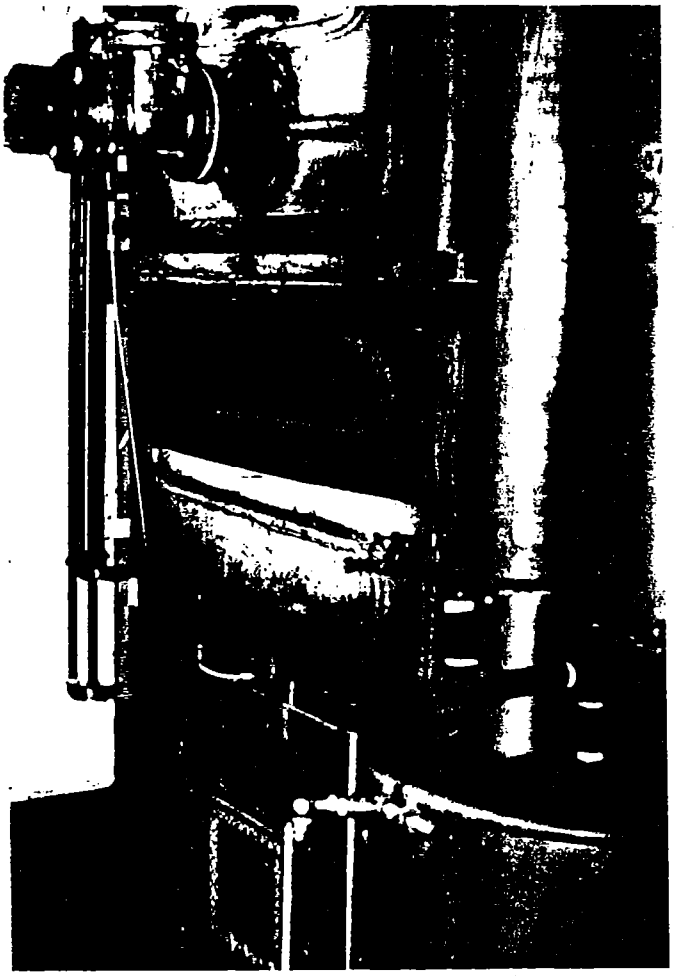
83. Monica B. Roll, Technical Director, A.T. Kearney, Transmittal of Completeness/Technical Review of Part B Application, U.S. DOE, Mound, Miamisburg, Ohio to Pat Vogtman, Regional Project Officer, USEPA Region V, February 11, 1987.

1-1 Sign at entrance to U.S. DOE Mound facility.



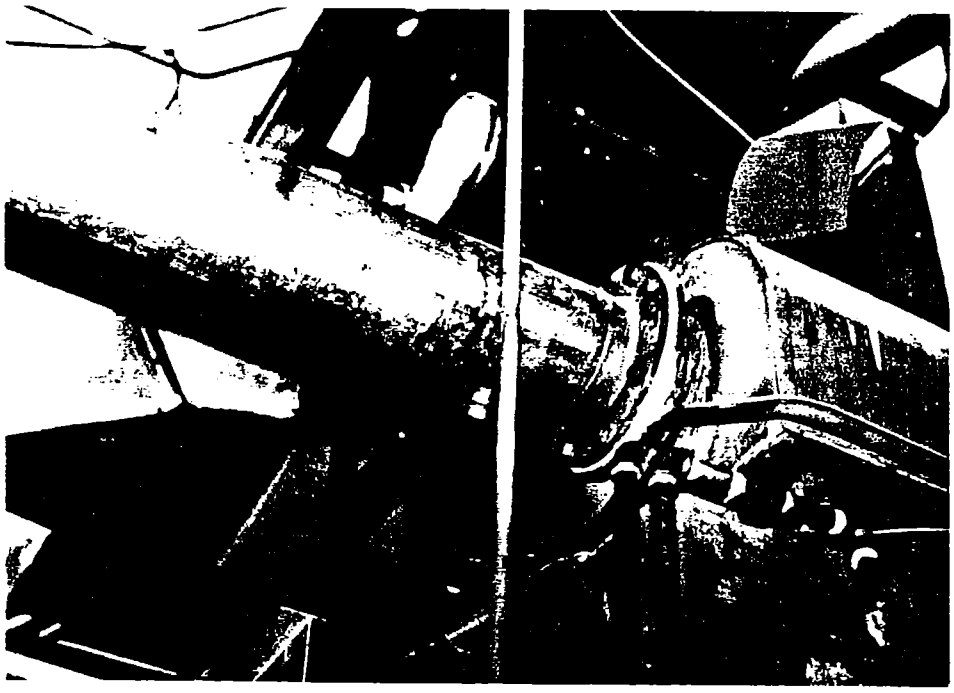
1-2 Entrance to WD Building, looking west.



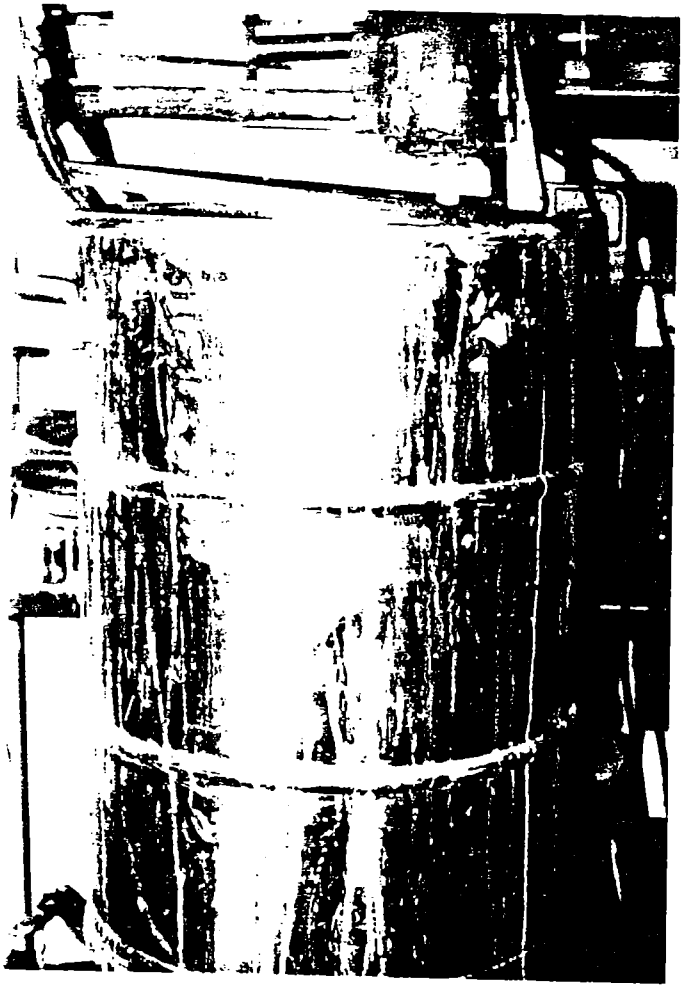


1-3 to 1-5 Closeup views of Glass Melter Furnace (SWMU IN-1).

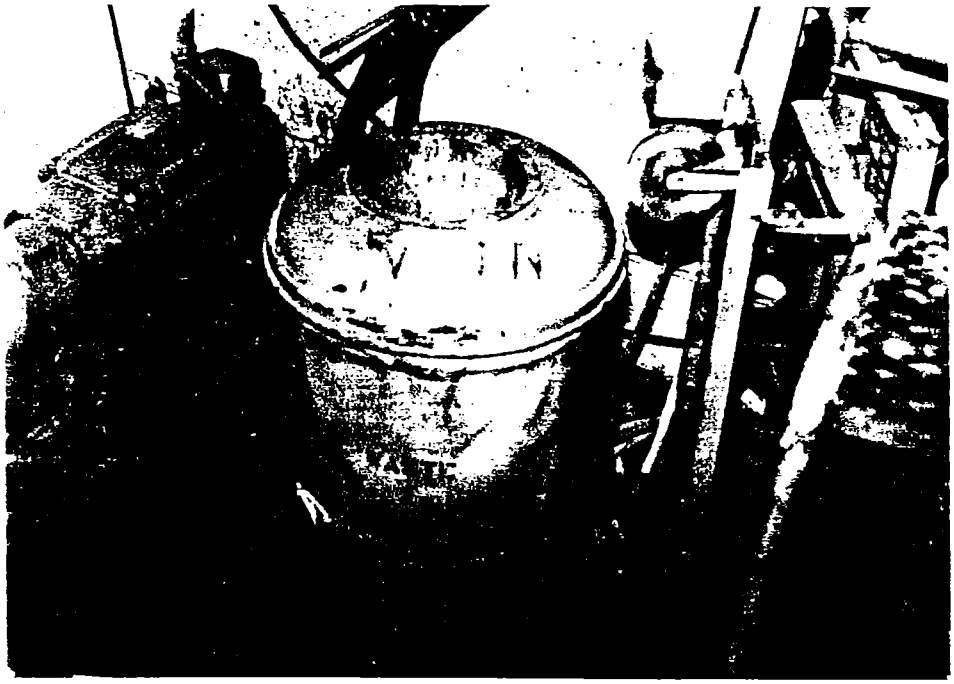
1-6 Molded cooled glass from Glass Melter Furnace (SWMU IN-1).



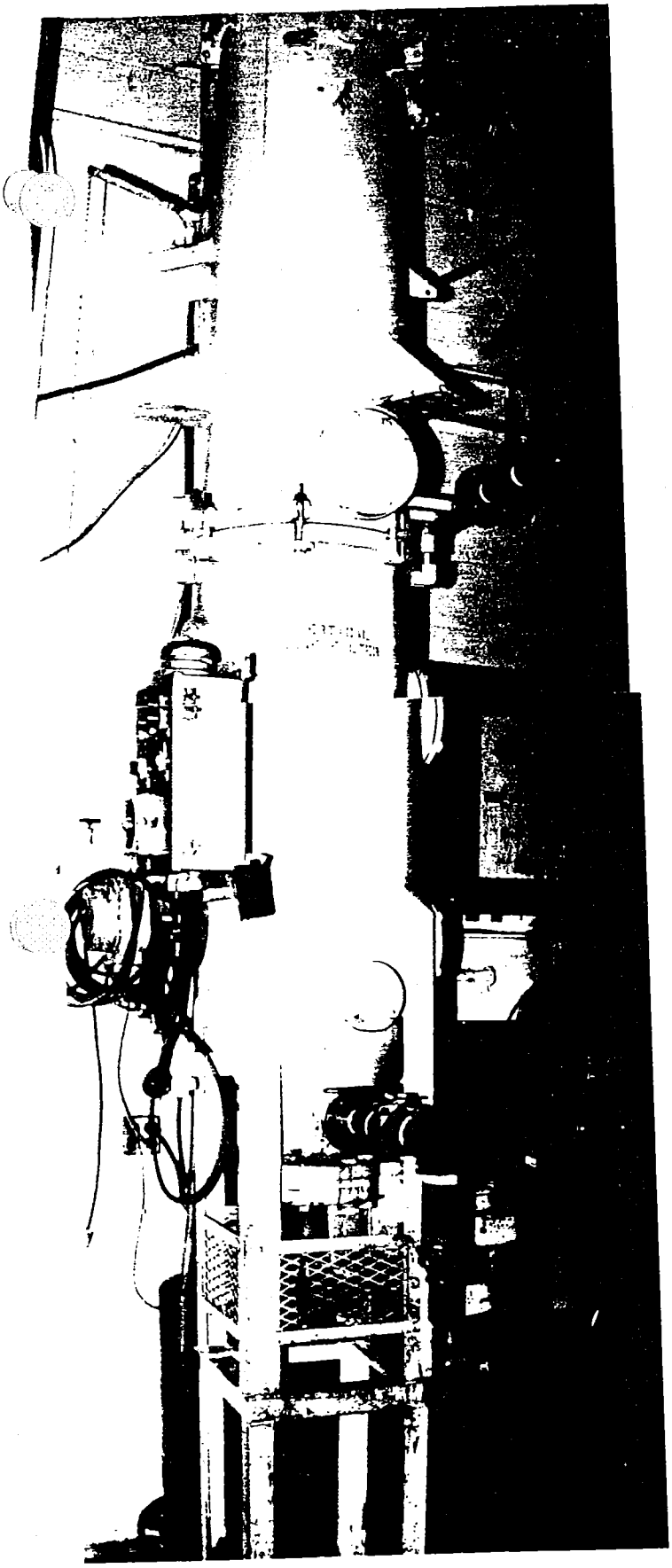
1-7 Off-gas line from Glass Melter Furnace (SWMU IN-1).



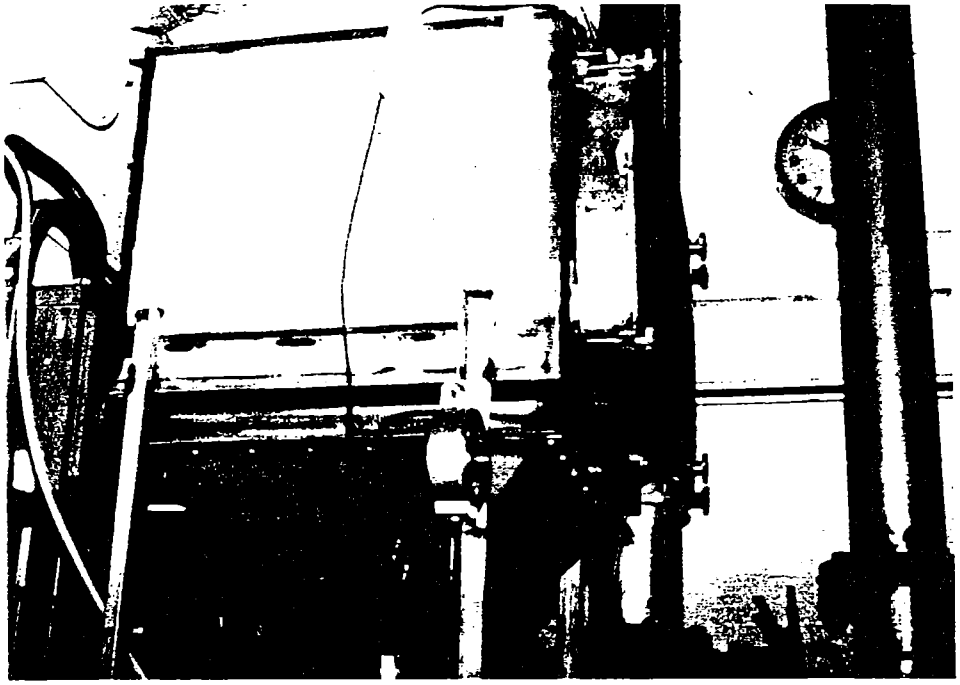
Glass Melter Feed Drum (MI-8). Wastes are handled by Glass Melter Furnace (SWMU IN-1). Note mixer above drum.



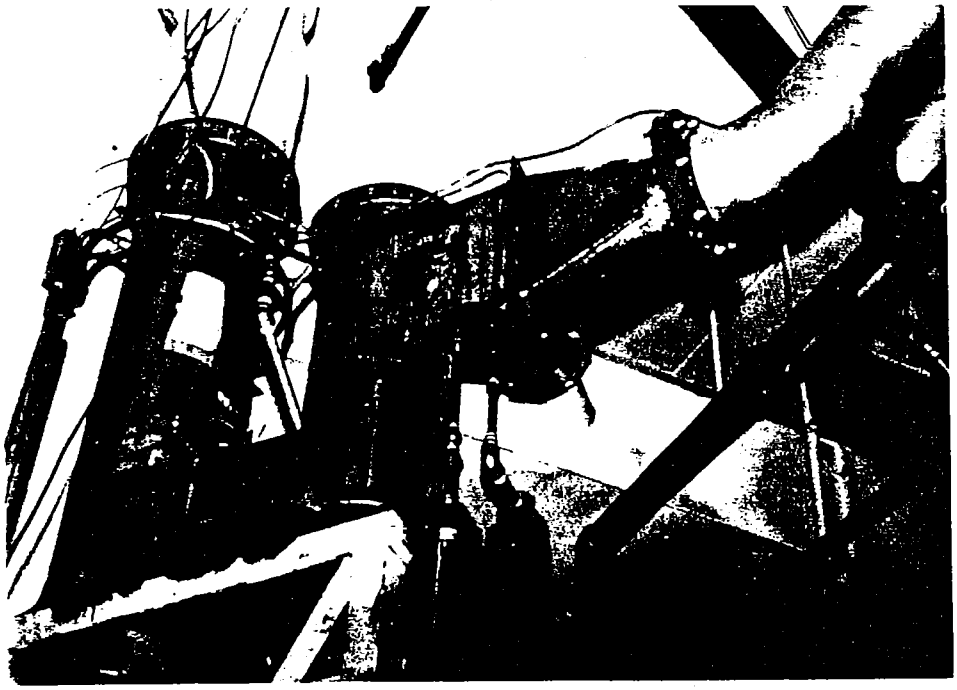
Trash bin for radioactive trash in Glass Melter Furnace room.



1-11 to 1-12 Vertical Leaf Solution Filter (SWMU AP-7). Nozzle is used for discharge of accumulated sludge. Sludge is collected in drums, stabilized, and sent to the Nevada Test Site.



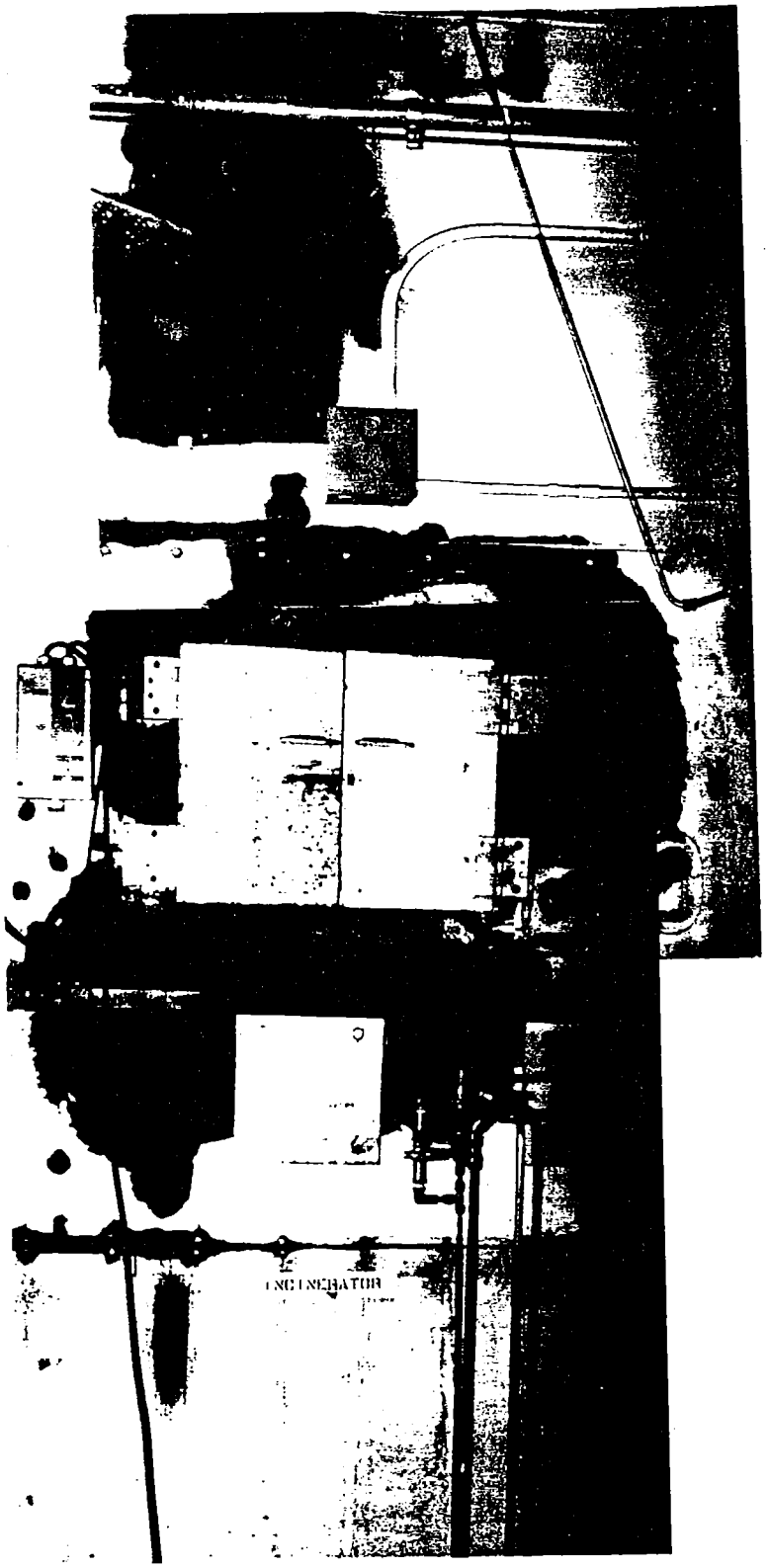
1-13 HEPA Filter (SWMU AP-4) in off-gas scrubber system for Glass Melter Furnace.



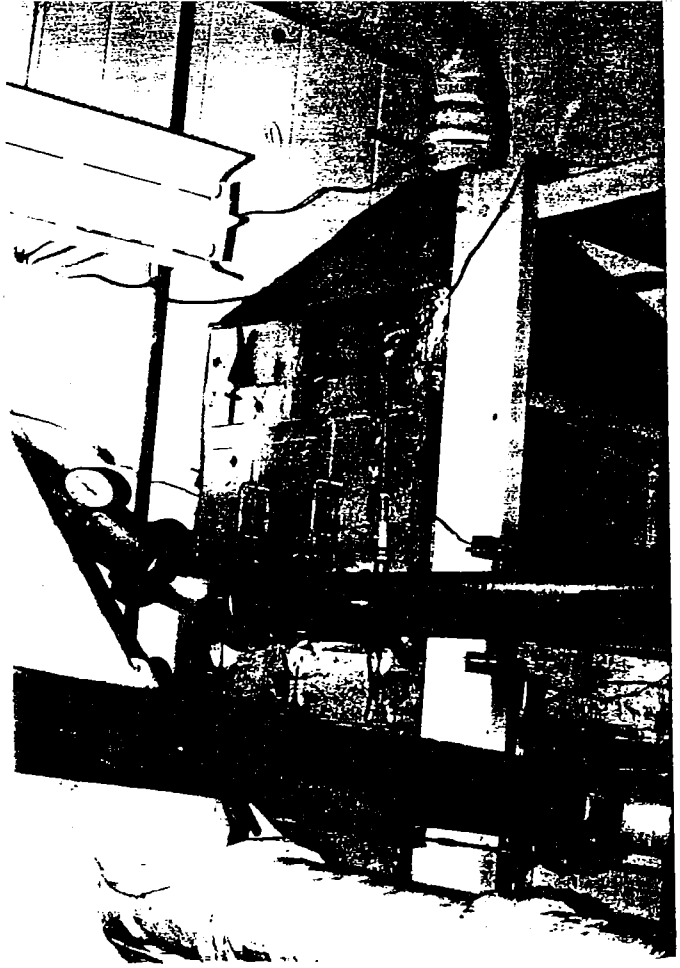
Cyclone Demister (SWMU AP-3) and Venturi Scrubber (SWMU AP-2) on right in off-gas scrubber system.

1-15 Deluge Tank (SWMU AP-1) in off-gas scrubber system.

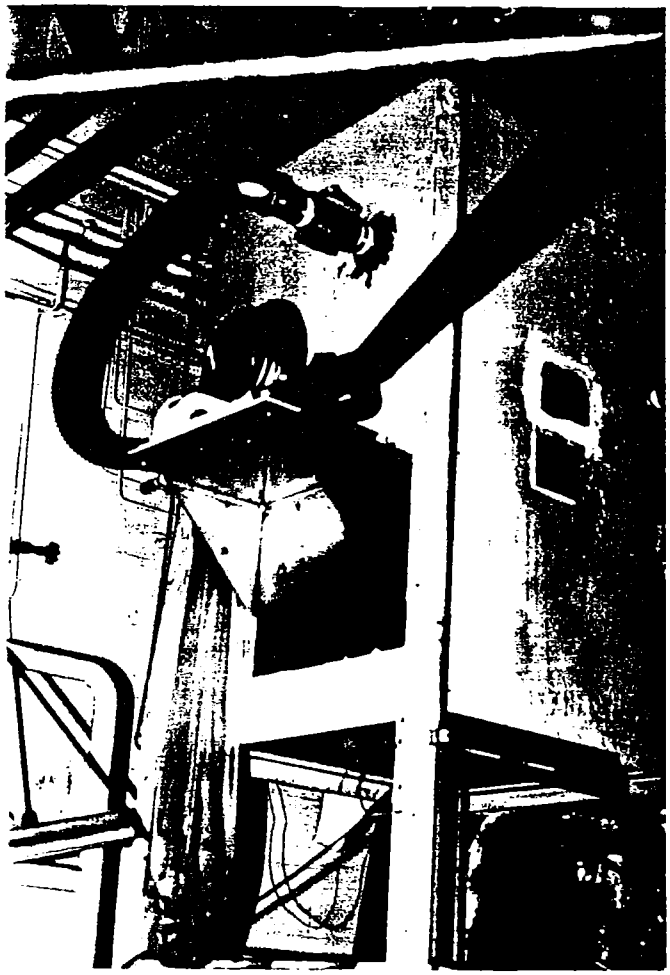
1-16 Recycle Tank (SWMU AP-6) in off-gas scrubber system. Picture did not turn out.



1-17 to 1-18 Old Cyclone Incinerator (SWMU IN-2). Piping is still connected to off-gas scrubber system although the incinerator is inactive.



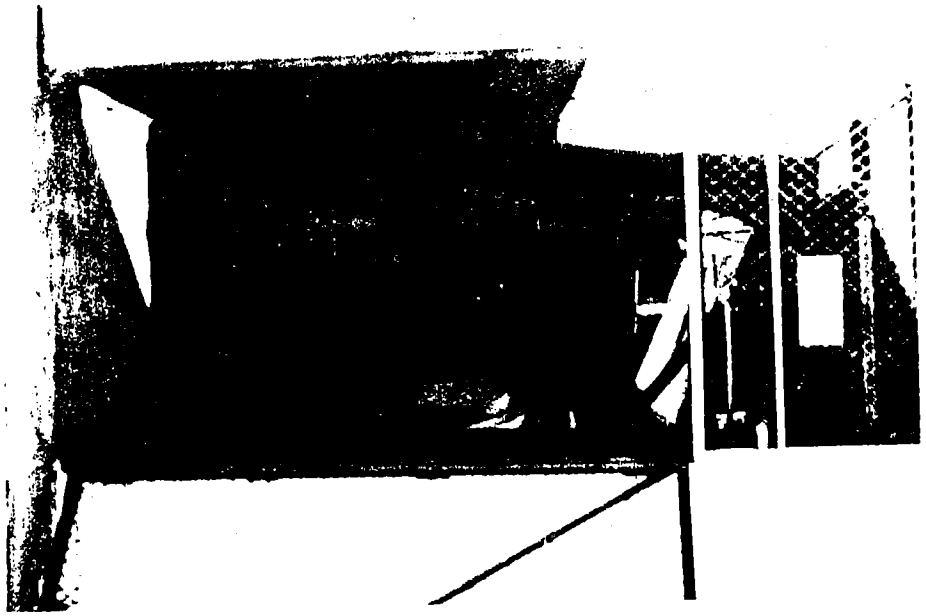
1-19 Iodine Adsorption Filter (SWMU AP-9) of off-gas scrubber system. This unit has never been used according to facility representatives.

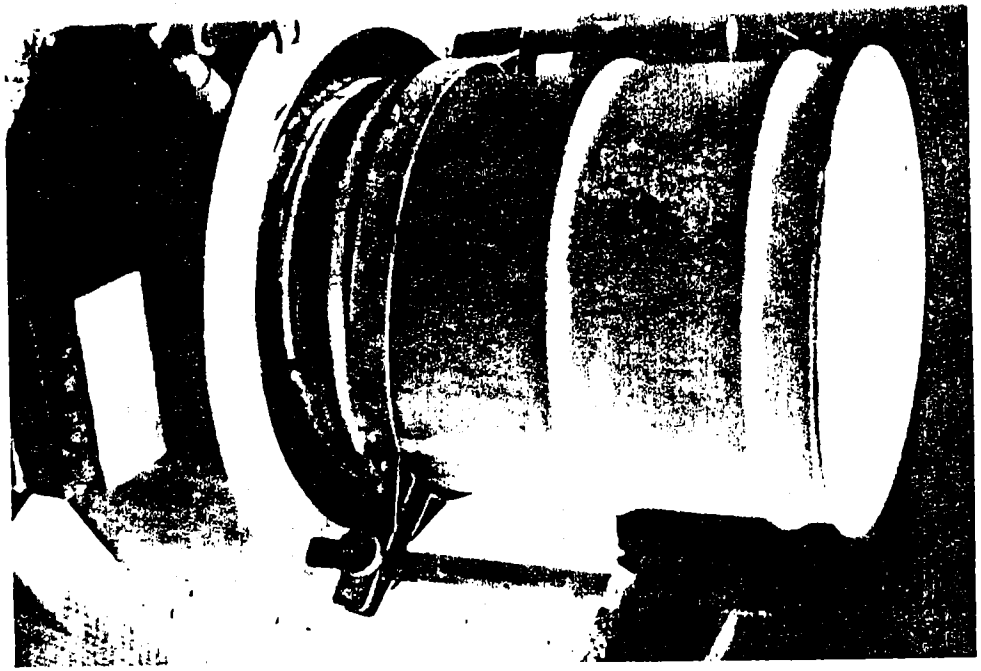


1-20 Glove box for ash removal from Old Cyclone Incinerator (SWMU IN-2).

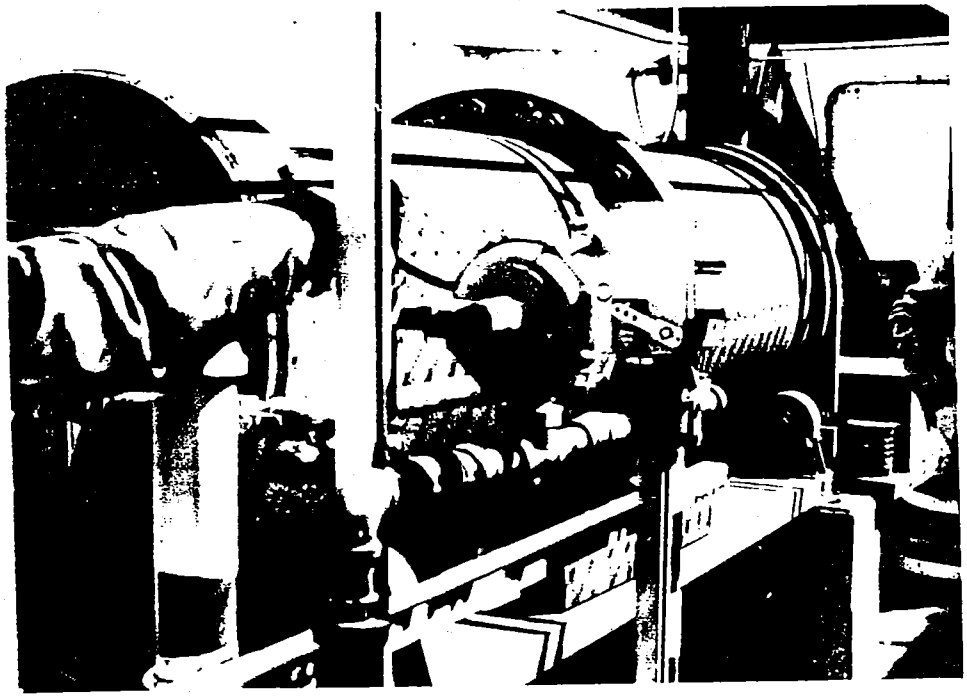
1-21 to 1-24

Concrete mixer and drums of radioactive waste in Staging Area (SWMU CS-18).





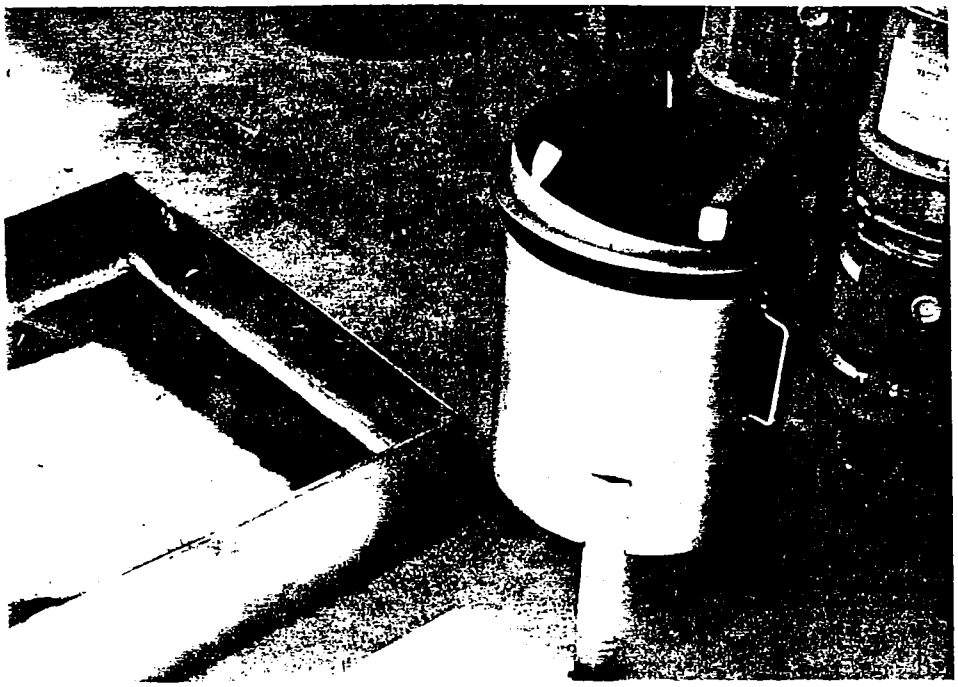
Entry to Retort Building (SWMU OB-3). Note concrete walls.



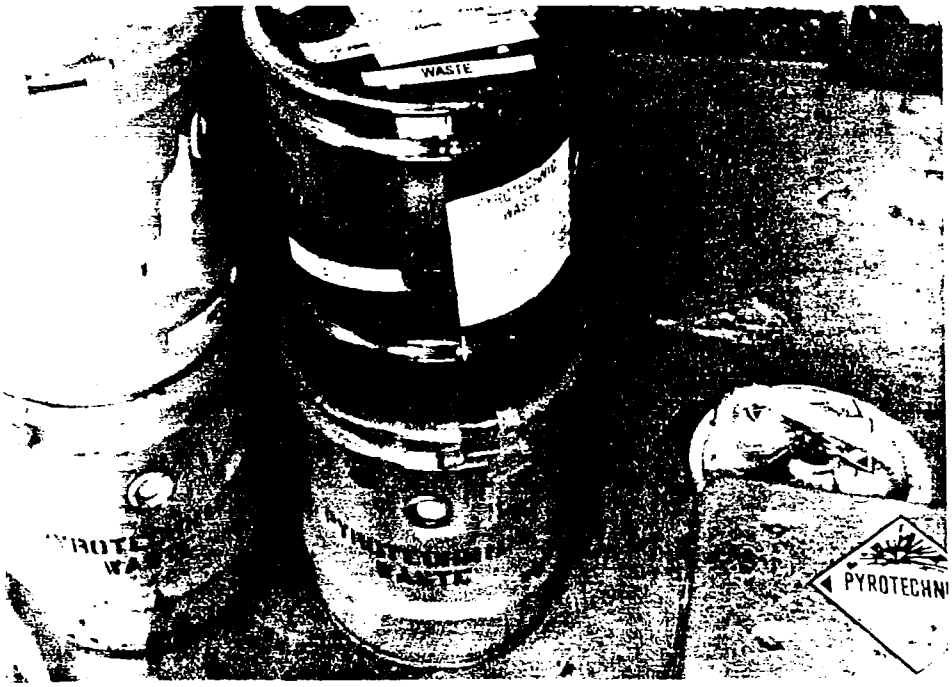
Closeup view of Retort (SWMU OB-3). Stock and waste feed conveyor visible in background. View of ash hopper in foreground was obstructed by operator because of the classified nature of the wastes.

1-29 Drums of residue from Retort (SWMU OB-3).

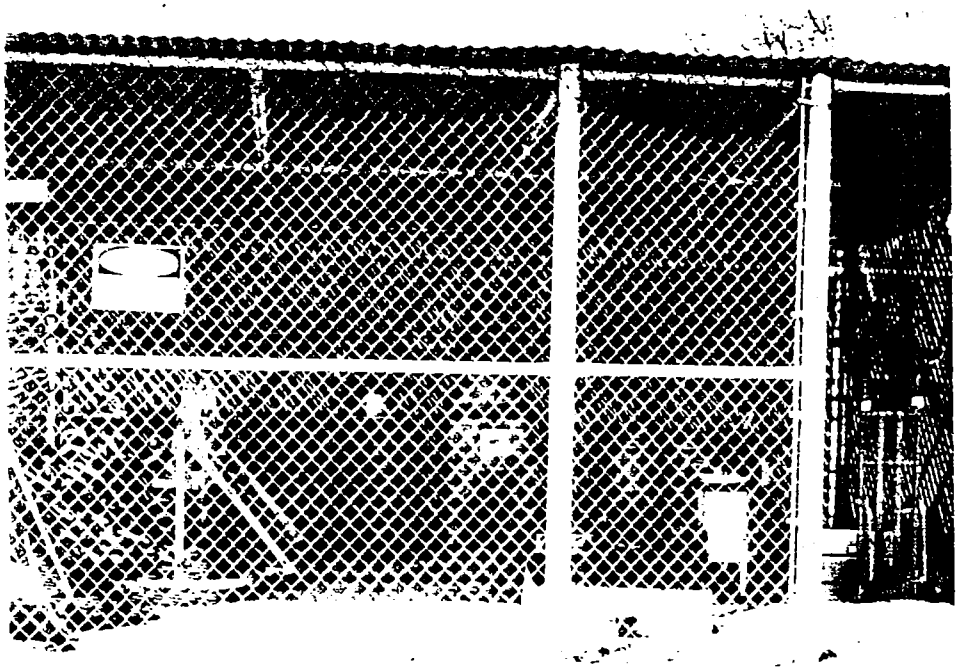
1-30 Waste drums adjacent to Retort (SWMU OB-3).



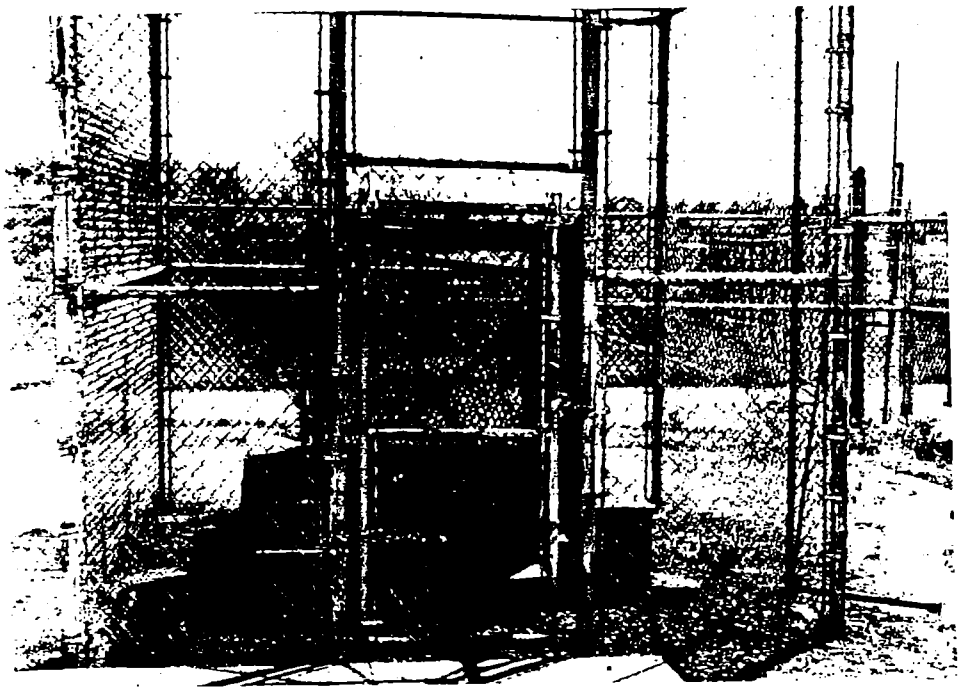
1-31 Biodegradation Unit (SWMU OB-6) in Pyrotechnic Waste Shed (SWMU OB-5). Rectangular metal containment is just to the left of the unit.



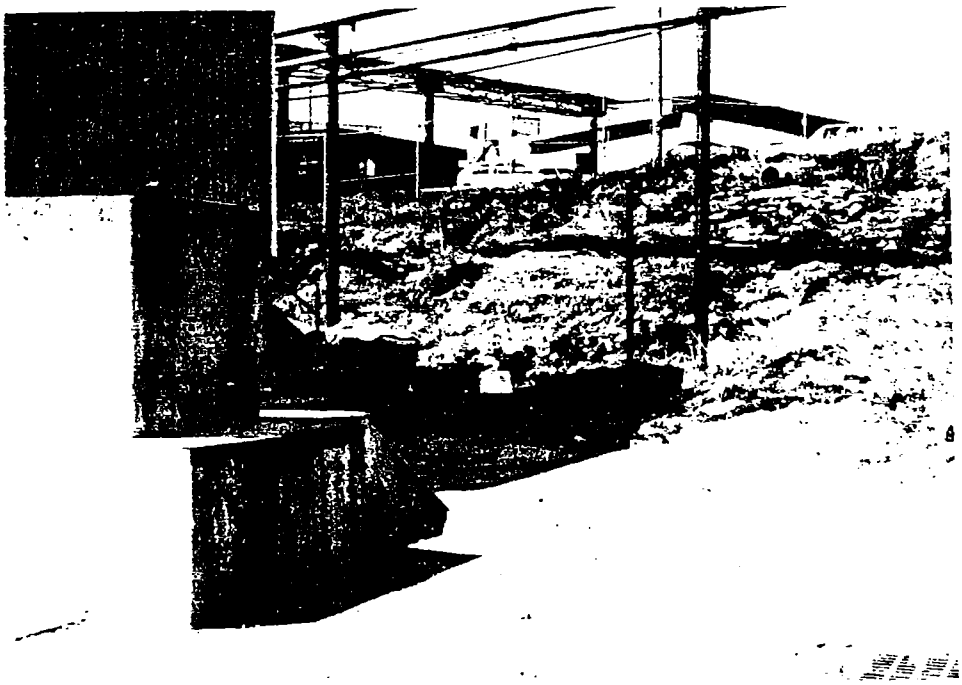
1-32 Closeup of containers of pyrotechnic wastes in Pyrotechnic Waste Shed (SWMU OB-5).

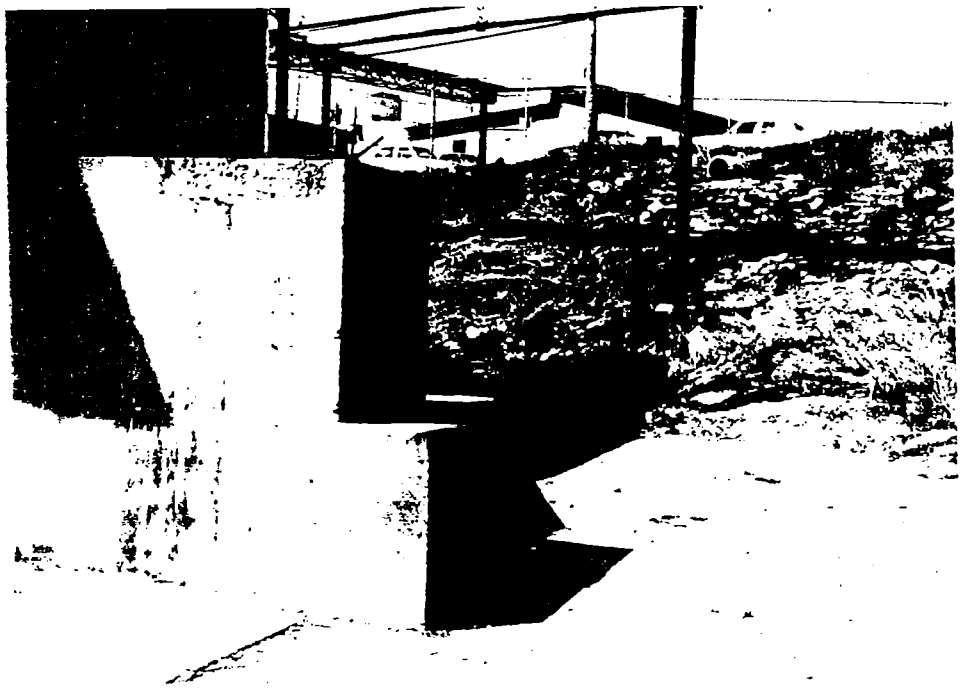


1-33 Overview of Pyrotechnic Waste Shed (SWMU OB-5), looking south.



1-34 Trash Burner (SWMU OB-1) in EOD area, looking north. Note unpaved area within fenced cubicle. This unit was dismantled several days after the picture was taken.



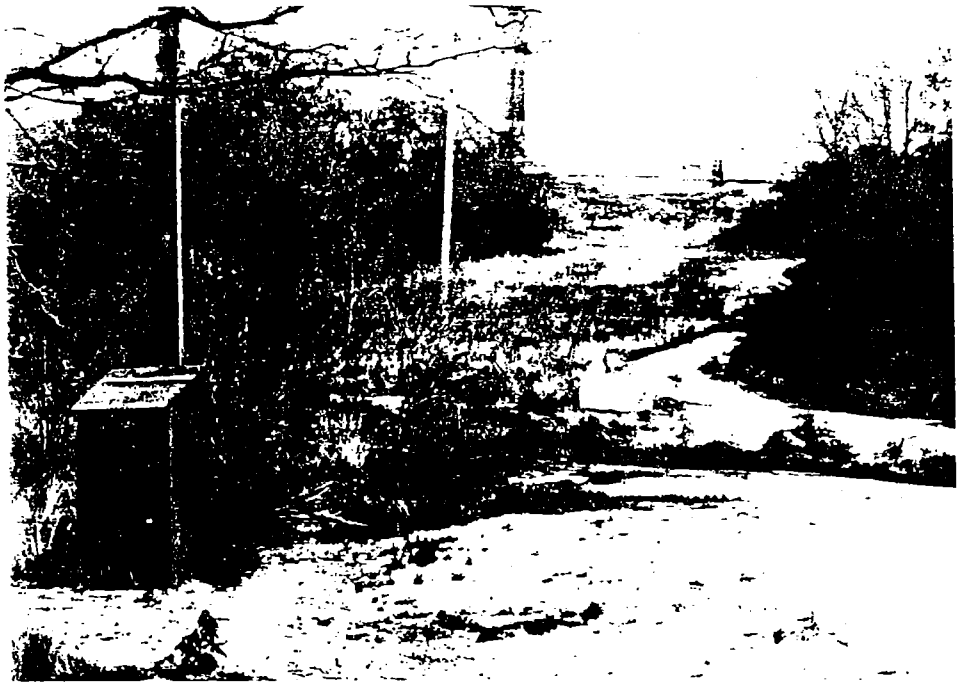


1-35 to 1-36 View to north of former location of Former Solvent Incinerator (SWMU IN-3) and Underground Waste Solvent Tank (SWMU UT -1), marked by standpipe.

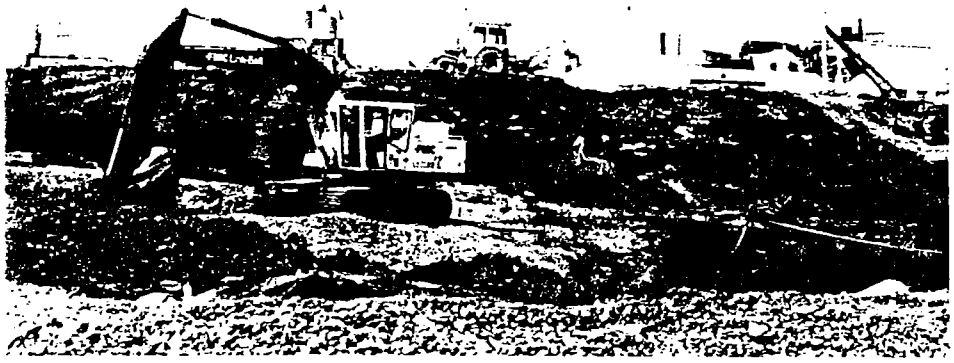
2-1
to 2-3

View of Plant Drainage Ditch

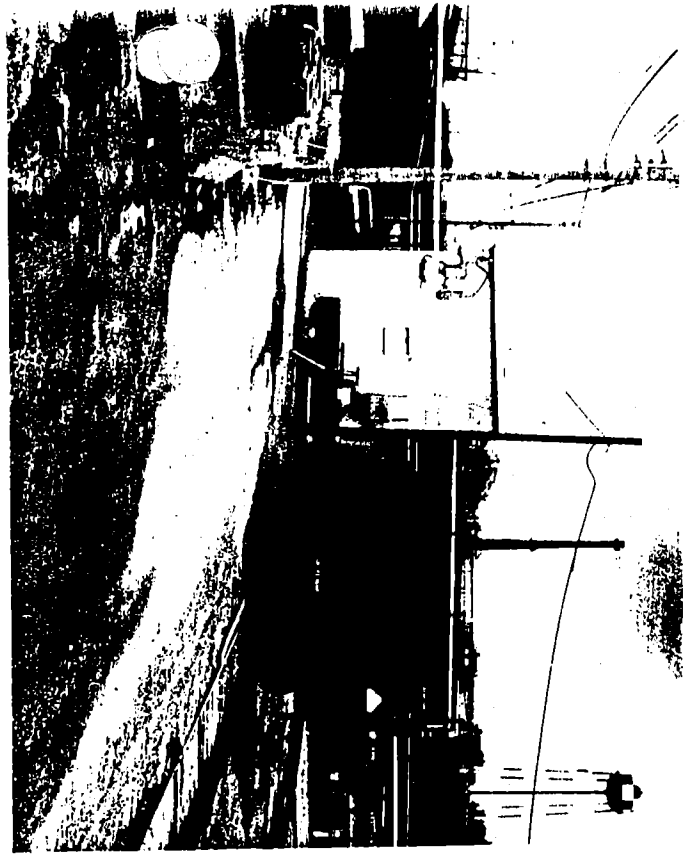
(SWMU MI-1), looking east.

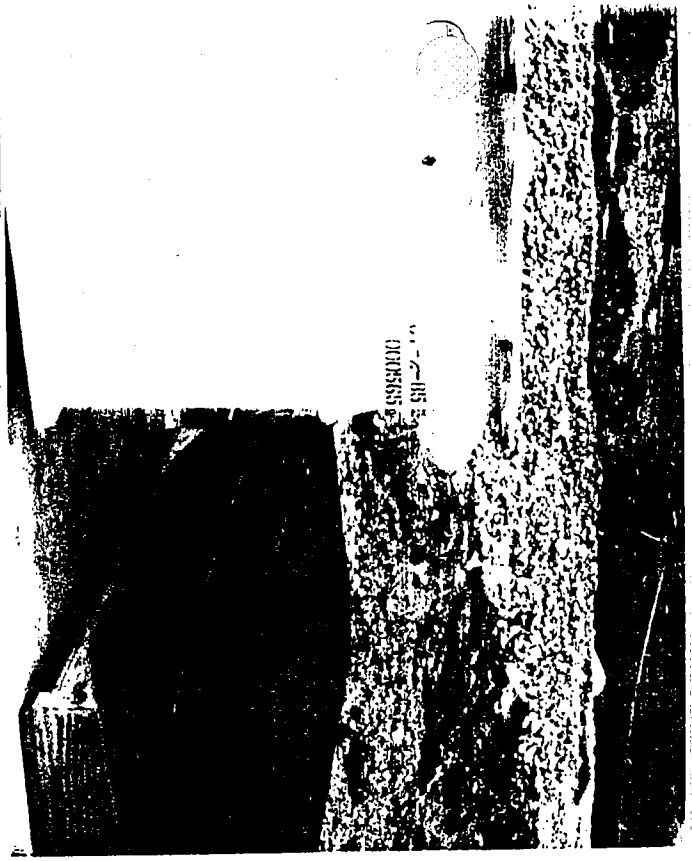


2-4 Trend of Waste Disposal Pipeline (WTS Line) (SWMU MI-2), looking south toward SM/PP Hill.

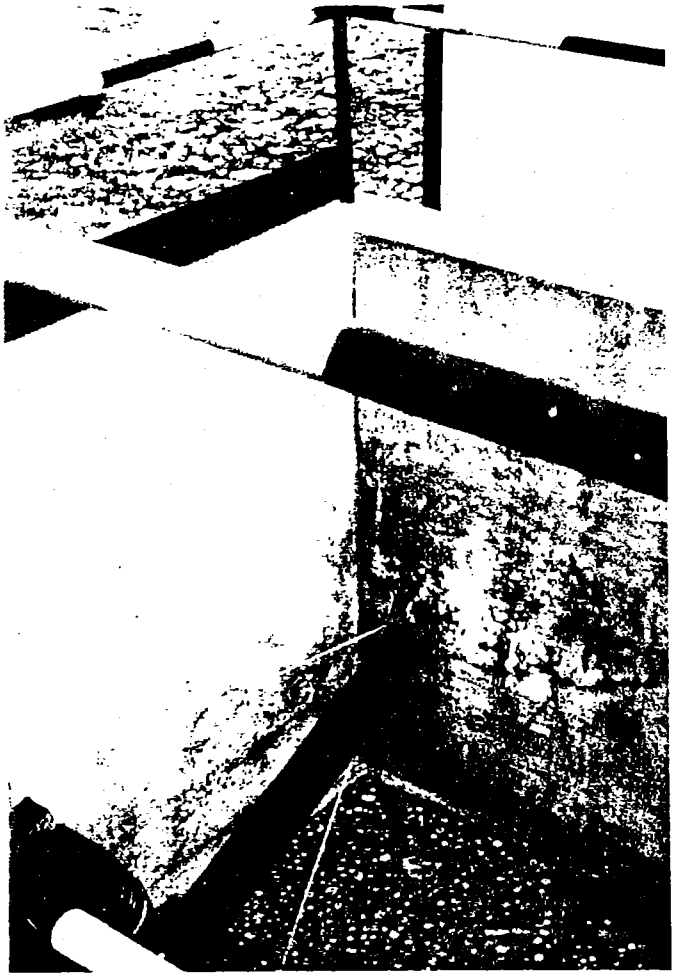


2-5 to 2-6 Radioactive contaminated soil being excavated from site of Pu 238 spill (SWMU MI-2), looking north. Note poly-covered excavating equipment. Pipeline break occurred near top of hill in 1969.

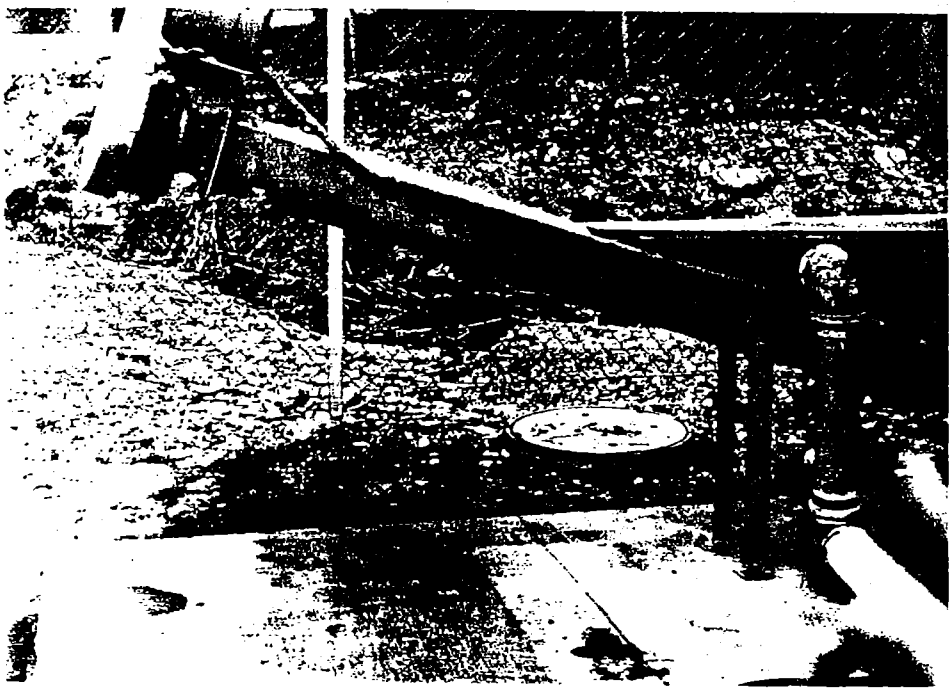




2-7 to 2-9 Staging area (AOC M) for radioactive contaminated soil removed from Pu 238 spill site in Waste Disposal Pipeline (SWMU MI-2). Low specific activity (LSA) wastes will be trucked off-site in wooden boxes. Transuranic wastes (TRU) will be shipped off-site in specially designed rail cars. Green barrels contain dust suppressant.

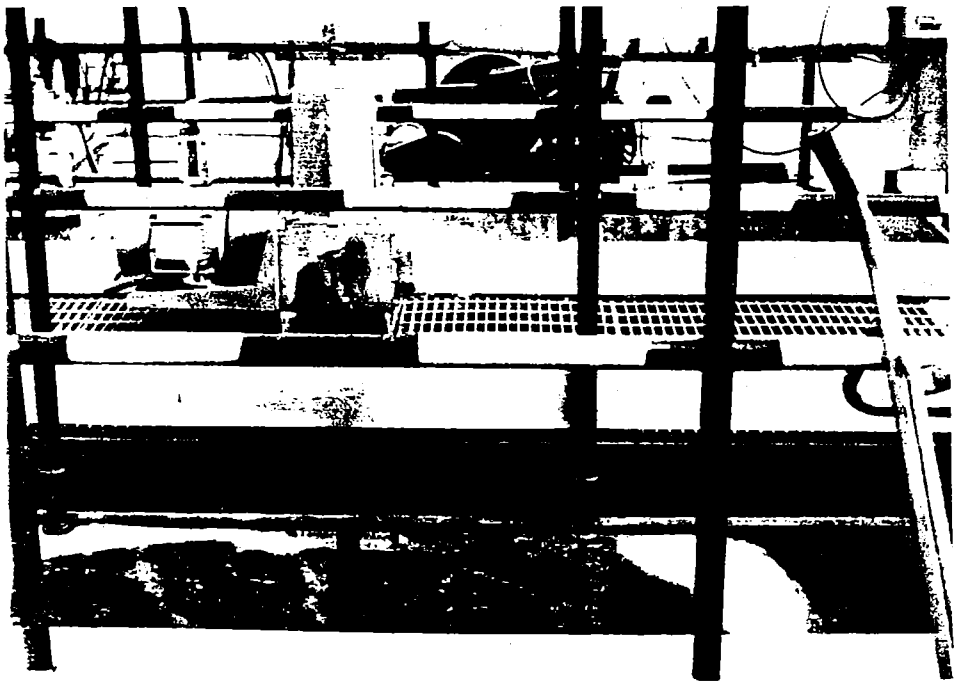


2-10 Grit Chamber (SWMU SD-1) in sanitary wastewater treatment system.



2-11, 2-12 Grit Conveyor (SWMU SD-2) in sanitary wastewater treatment System. Grit would normally be collected by a drum.

2-13 Comminutor (SWMU SD-3) in sanitary wastewater treatment system.

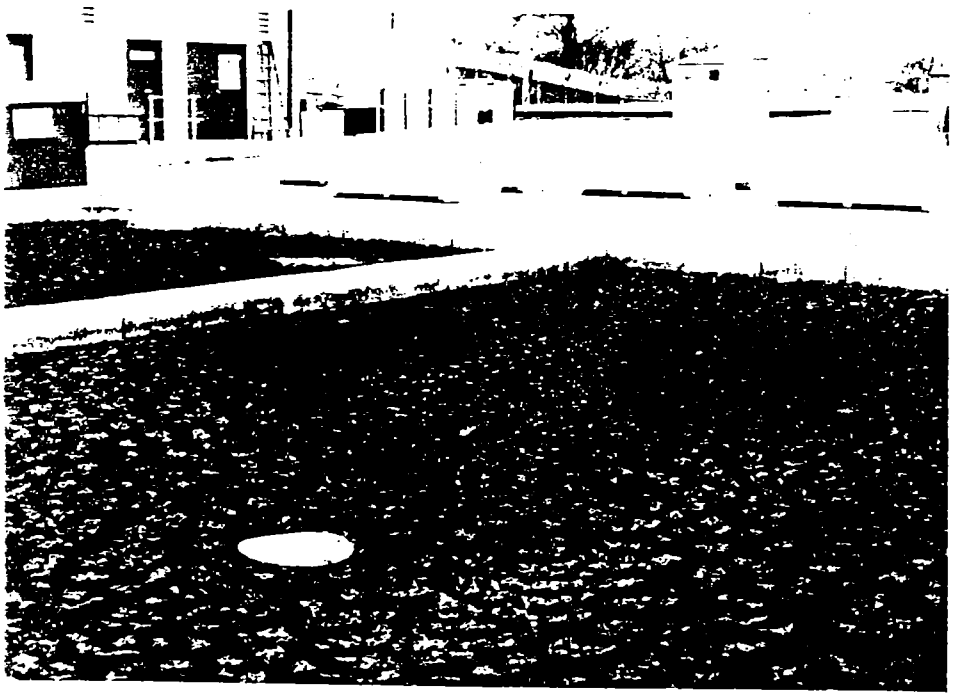


2-14 Parallel Equalization Basins (SWMU SD-4).

2-15 Parallel Aeration Tanks (SWMU SD-5), looking west.

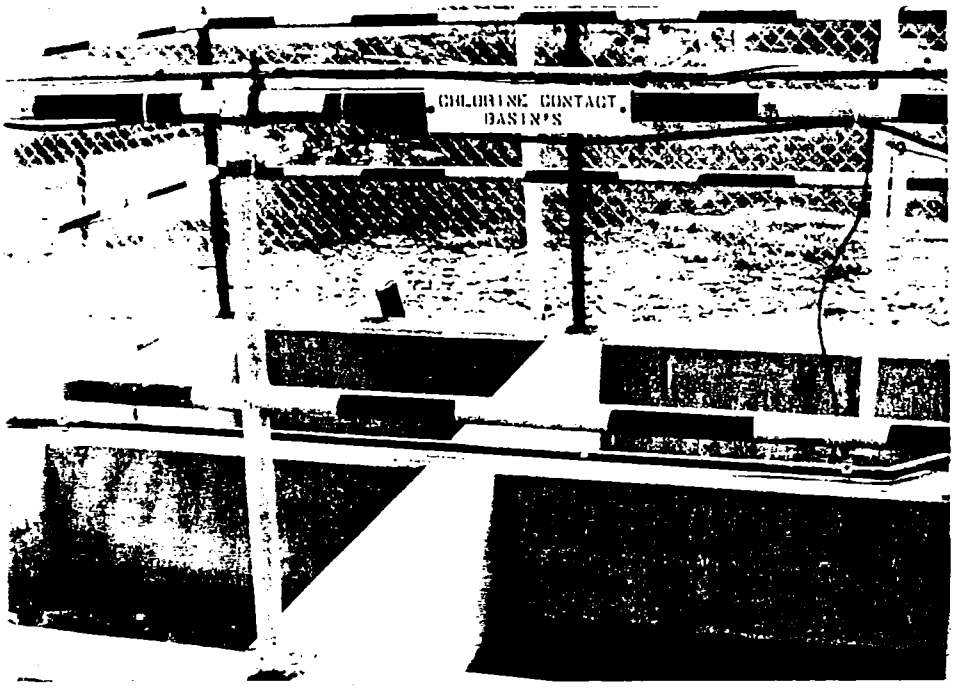
2-16 Clarifiers (SWMU SD-6) in sanitary wastewater treatment system, looking east. Aeration Tanks (SWMU SD-5) are visible in background.

2-17 Cleaned Sludge Drying Beds (SWMU SD-9) in sanitary wastewater treatment system.

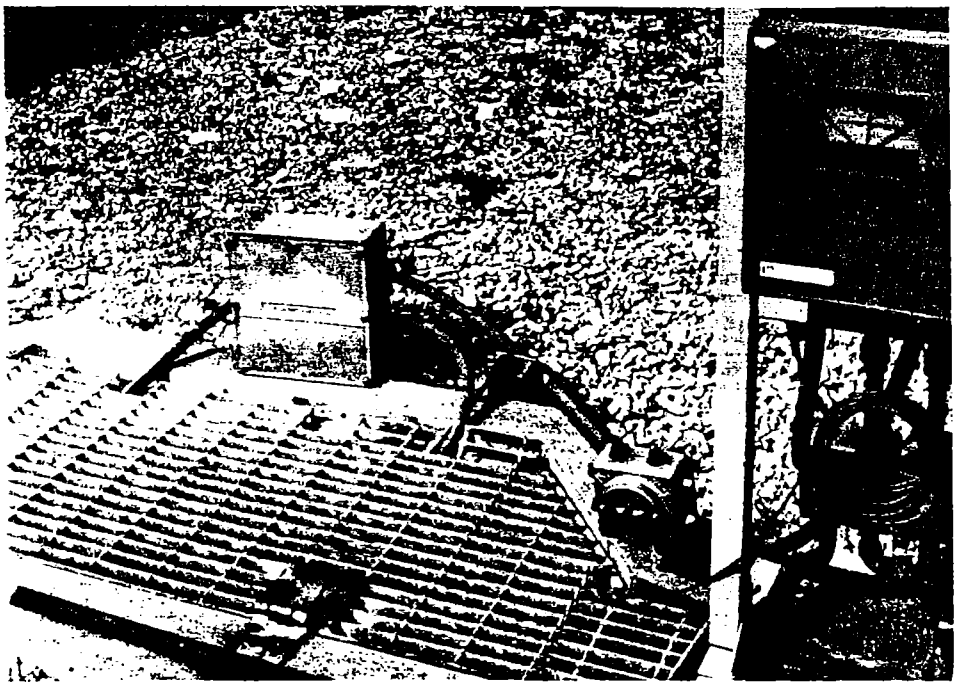


2-18 Active Sludge Drying Beds (SWMU SD-9) containing Pu 238-contaminated sludge. Note LSA boxes in rear for transport of sludge.

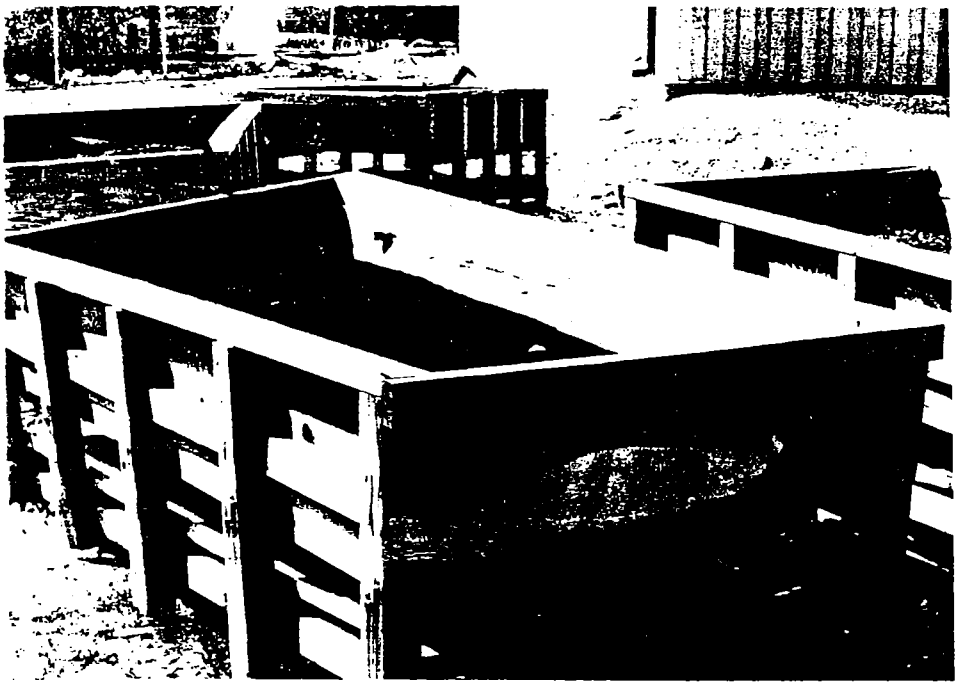
2-19 Indoor Parallel Sand Filters (SWMU SD-7).



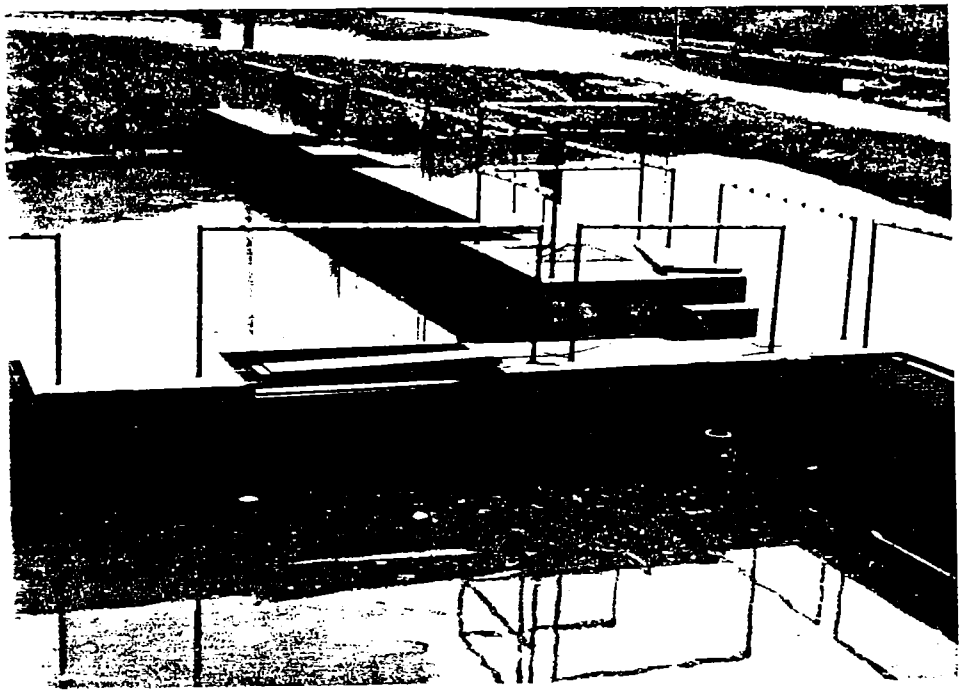
2-20 Four Chlorine Contact Basins (SWMU SD-8) in sanitary wastewater treatment system.



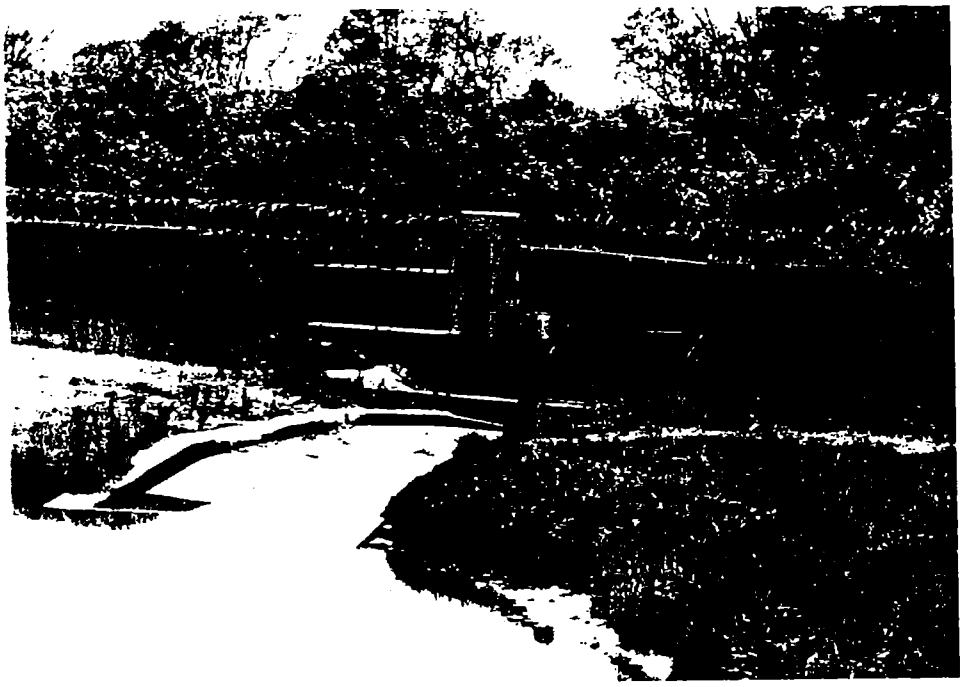
2-21 Grate over Parshall Flume, NPDES Outfall 001.



2-22 Dredge Spoil Drying Beds (SWMU MI-15) containing plutonium-contaminated sludge from Asphalt-Lined Pond (SWMU SI-3).



2-23 Retention Basins (SWMU SI-1), looking south.



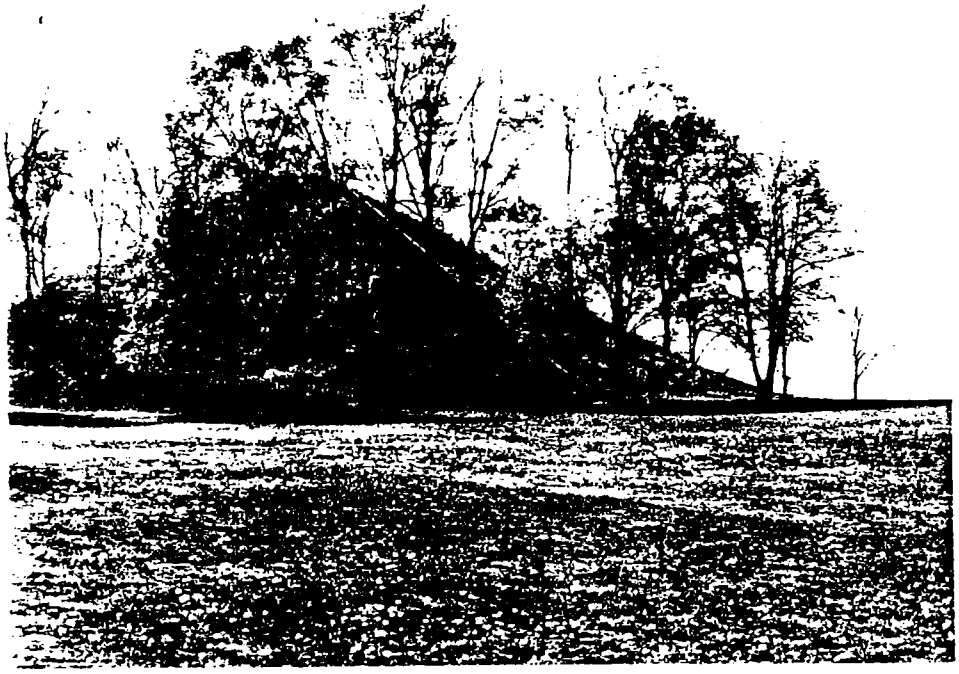
2-24 Overflow spillway from Retention Basin (SWMU SI-1) to Drainage Canal, looking west.

2-25 Rear of Oil Burn Structure (SWMU MI-3), looking southeast. One of Retention Basins (SWMU SI-1) visible in foreground.

2-26 to 2-27 Schematic of sanitary wastewater treatment system within control building.

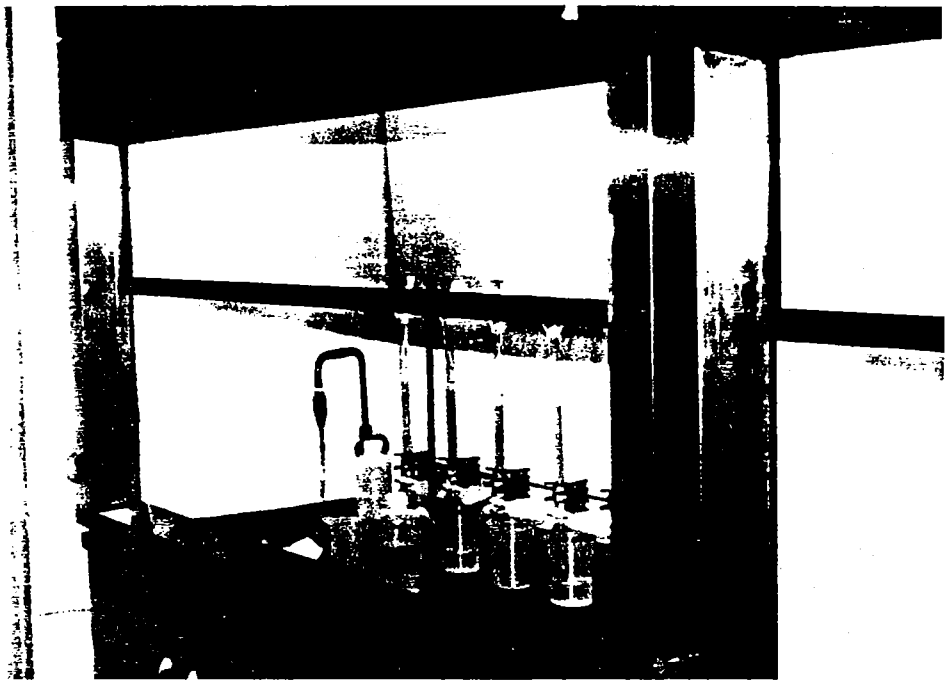
2-28 Representative trash dumpster (SWMU MI-10) behind Building 97. Dumpster is used to store plant trash.

3-1 Unsecured drinking fountain in public park just east of Mound facility. View is toward the north. Water in drinking fountain reportedly exceeds standards for tritium.



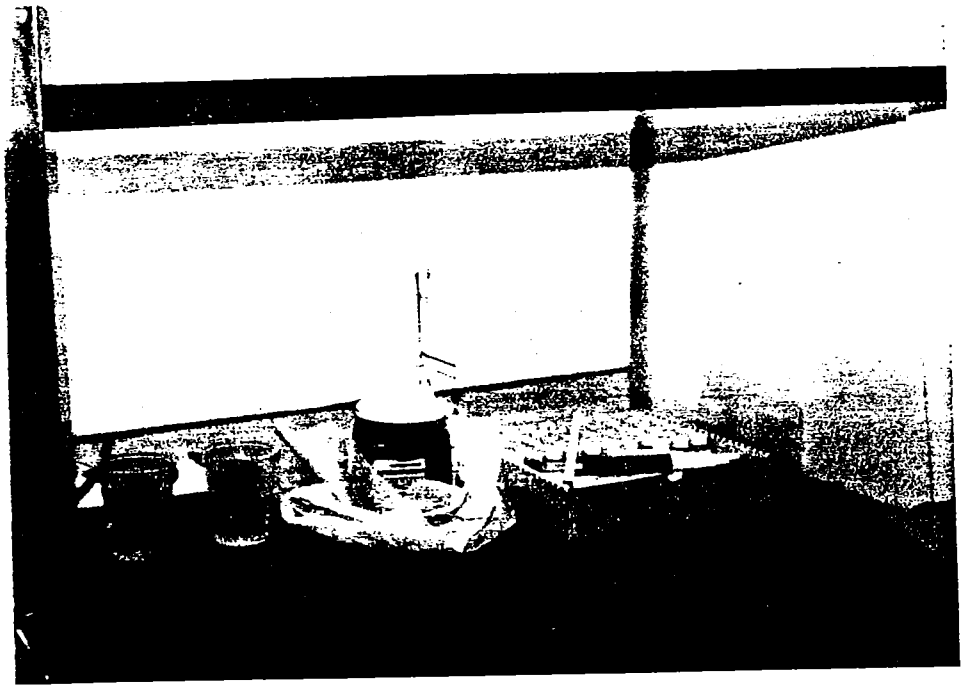
3-2 Miamisburg Mound in public park just east of facility. View is to the northwest.

3-3 Photograph did not turn out because of flash malfunction.



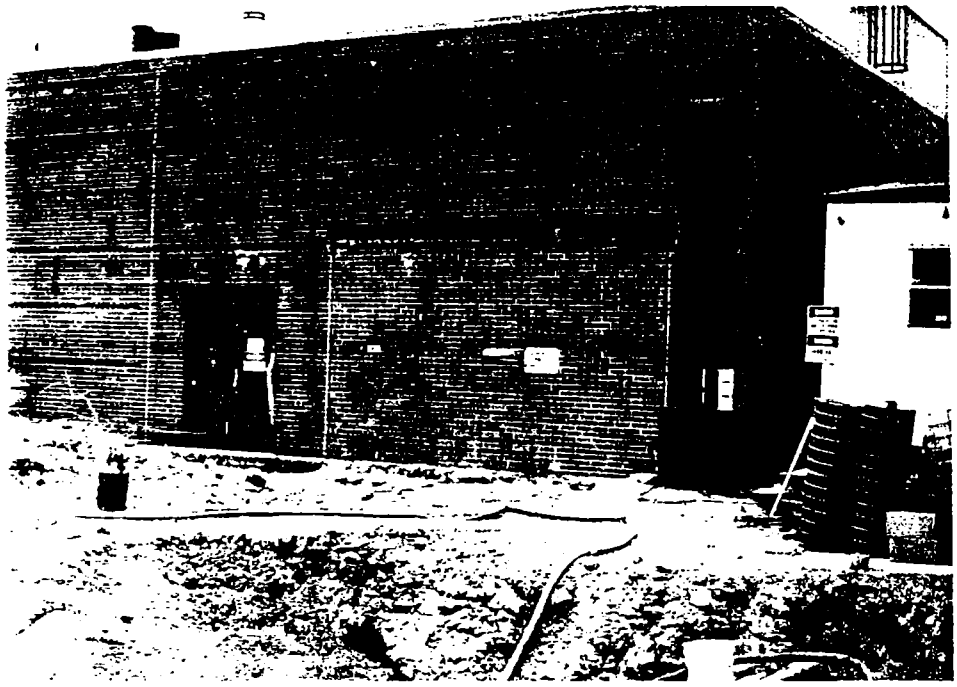
3-4 Representative Ventilation Hood (SWMU AP-11) in E Building. This laboratory area handles acids.

3-5 to 3-7 Bad photographs. Flash unit did not operate.

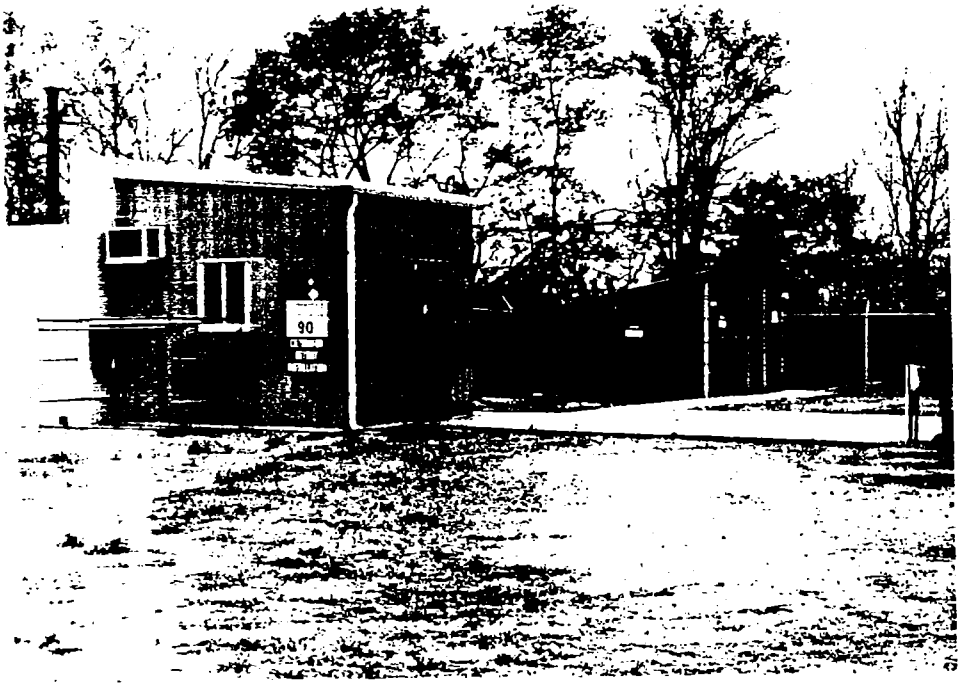


3-8 Ventilation Hood (SWMU AP-11) from scintillation fluid operations in E Building. Facility representative stated that tritium levels in these vials were below mixed low-level radioactive threshold levels.

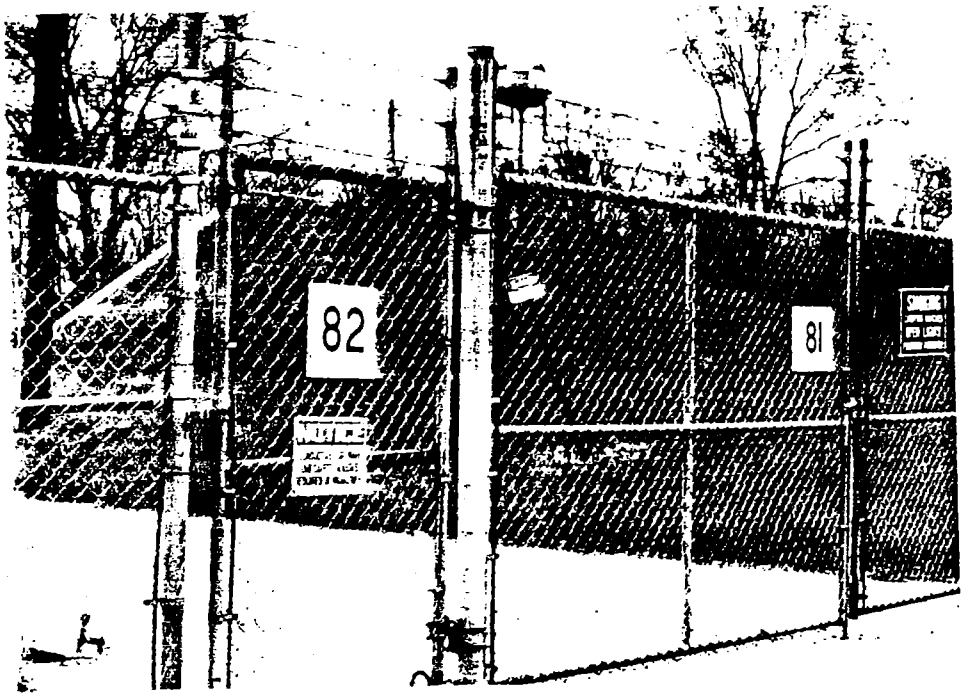
3-9 Storage cans in Room E-133 Scintillation Vial Storage Area (SWMU CS-1) for low-level and high-level radioactive mixed wastes. Cans contain scintillation vials with tritium-contaminated solvents.



3-10 Former site of E Building Solvent Storage Shed (SWMU CS-2). Shed had been dismantled a short time before the VSI.

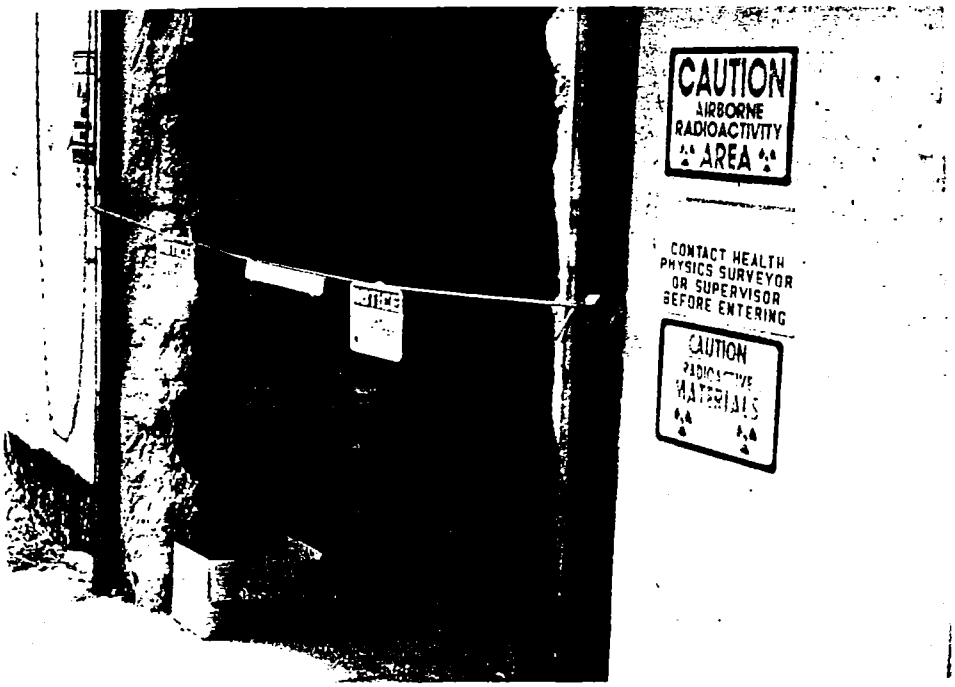


3-11 Building 90-Blockhouse (SWMU OB-4), looking northwest. Pyrotechnic Waste Shed (SWMU OB-5) visible in center background.



3-12 Explosive Waste Storage Bunker (Magazine 53) (SWMU OB-7), looking north.

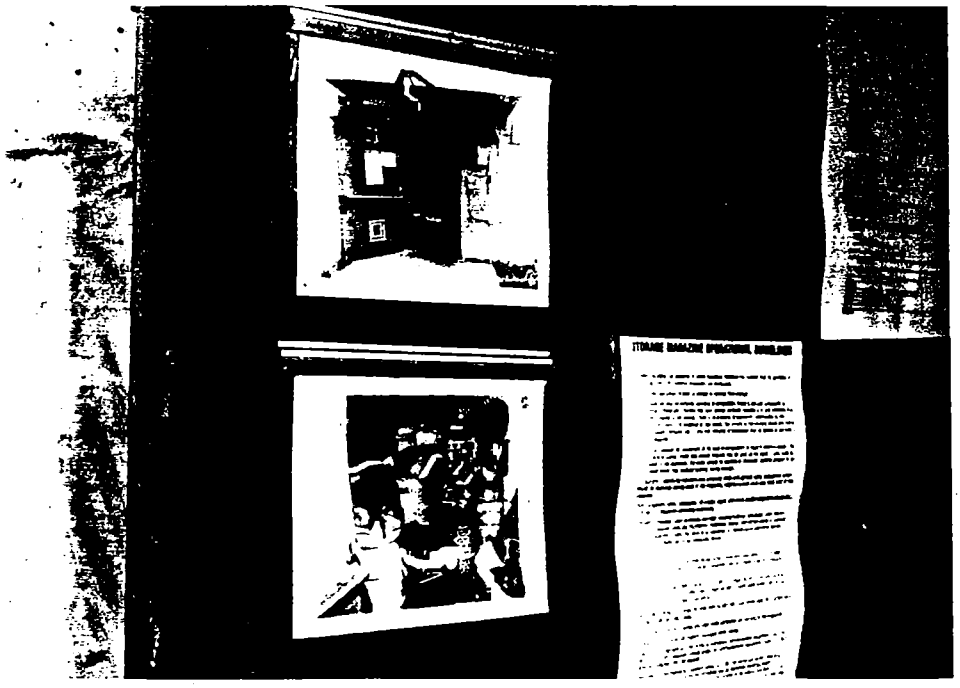
3-13 Thorium Drum Storage Building (Building 21) (AOC A), looking east. Note warning placards. Facility representative stated that drums of thorium ore and cotter material had been stored prior to shipment to Nevada Test Laboratory in



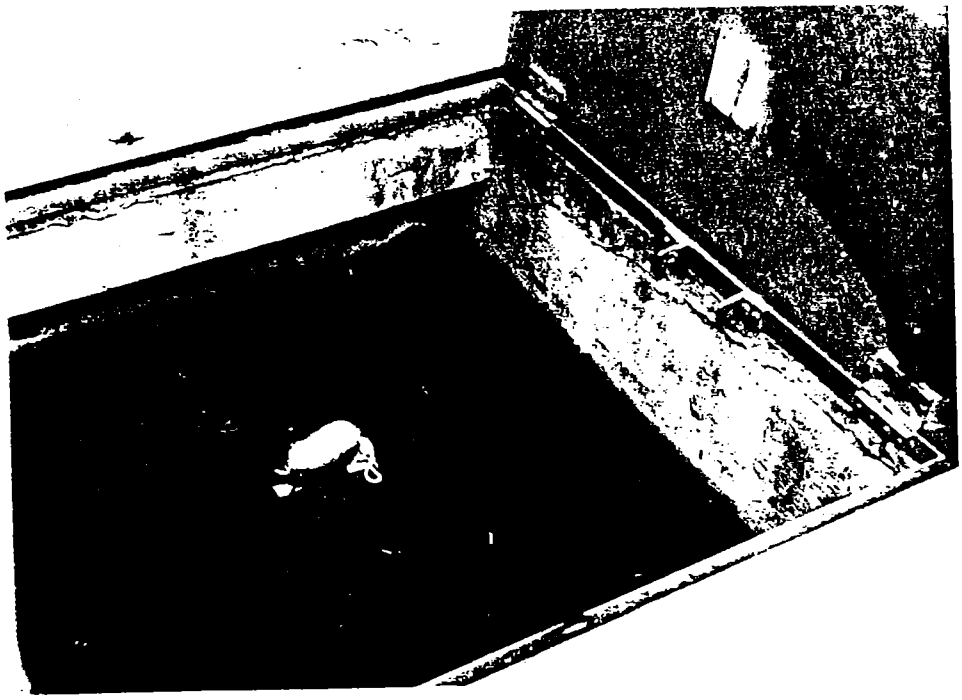
4 Close-up of entry to Thorium Sludge Storage Building (Building 21) showing drums for disposal of rad-contaminated protective clothing (shoe covers).

5 View to the northwest of fenced Thermal Treatment Area. Pyrotechnic Waste Disposal Area (SWMU OB-8) was reportedly located near fence line.

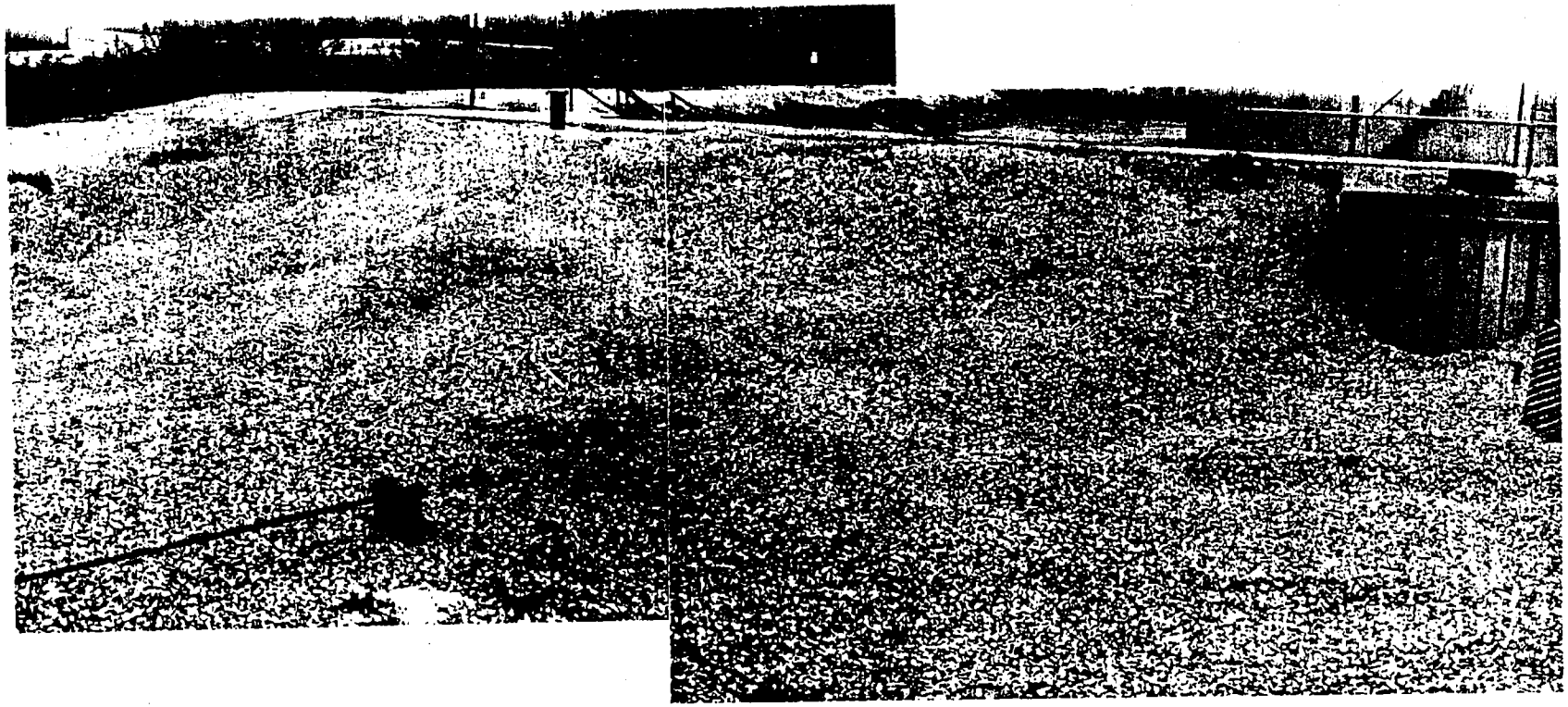
3-16 View to south of Explosive Waste Storage Bunker (Magazine 53) (SWMU OB-7). This bunker no longer contains explosive wastes. Two drums of classified inert materials (which could not be photographed for security reasons) are the only materials now tored in the unit. Bunker is protected by intrusion alarms.



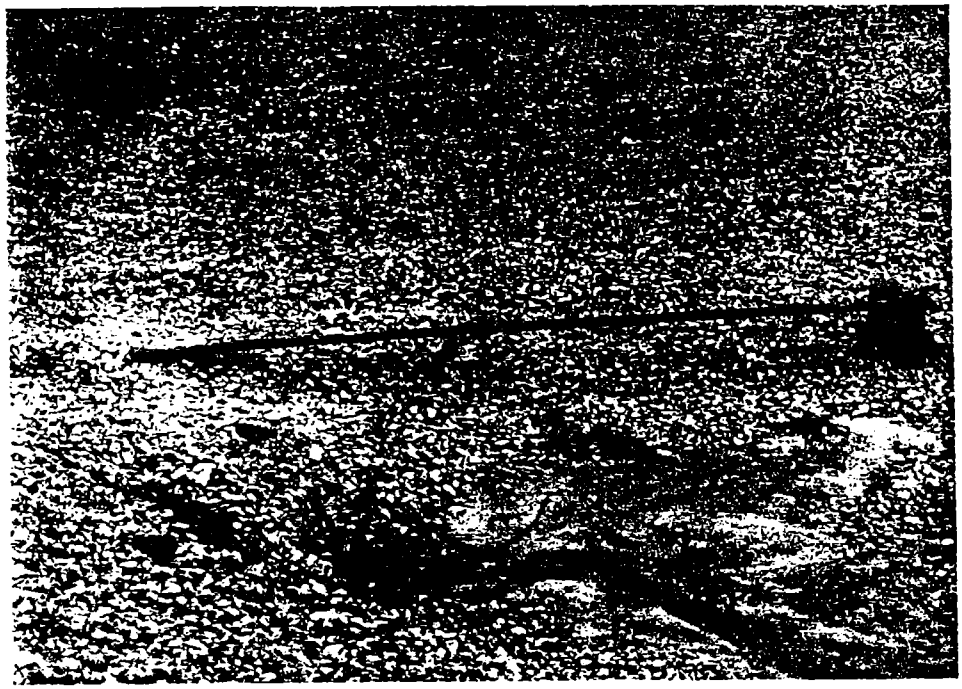
3-17 Picture of photographs showing previous contents of Magazine 53, explosive and classified material.



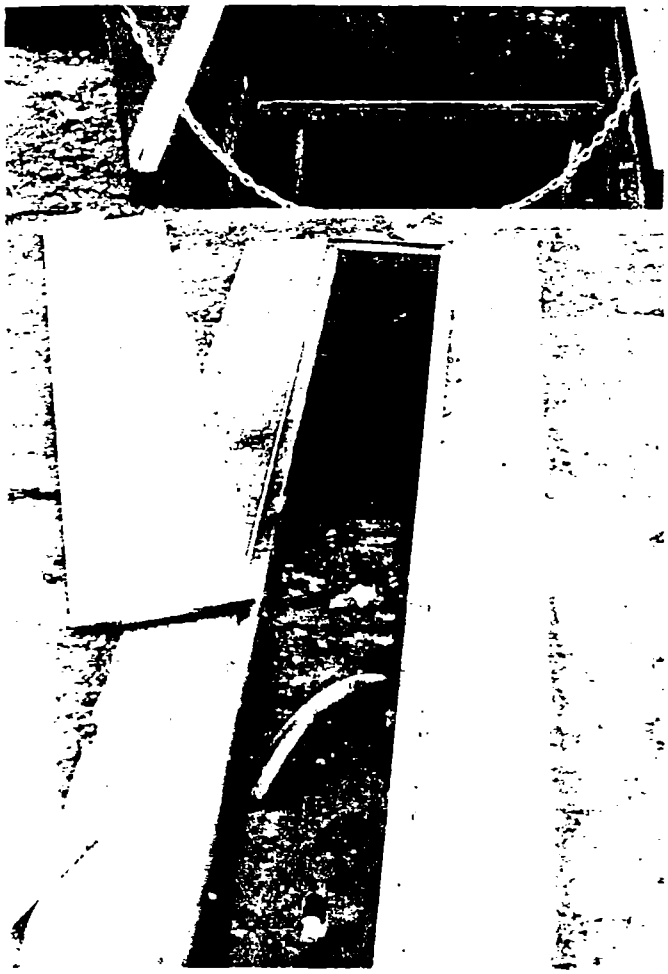
3-18 Building 1 Sump (SWMU SU-2) showing disconnected supply pipe and standing rainwater. Solvents containing trace amounts of explosives were formerly collected here.



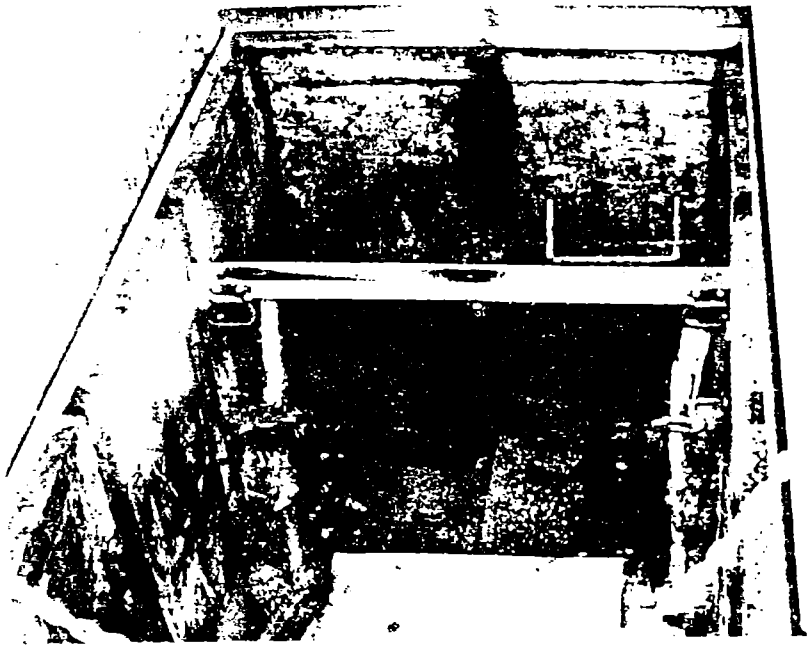
3-19 to 3-20 Southwest to west (left to right) panorama of Building 1 Leach Pit (SWMU SI-4). Fuel Oil Storage Tank is visible in right rear. Monitoring well visible in left background.



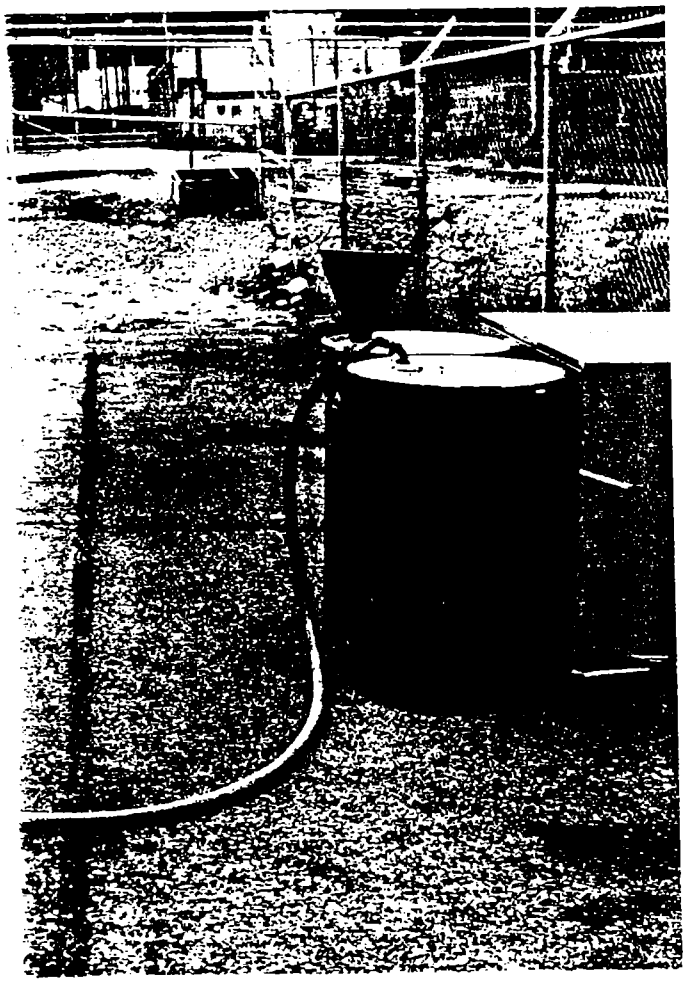
3-21 Detail of inlet pipes to Building 1 Leach Pit. Long copper pipe is the delivery line for Building 43. Corrugated metal pipe barely visible in left foreground (see arrow) routed drainage from storm sewers and a sink in Building 1.



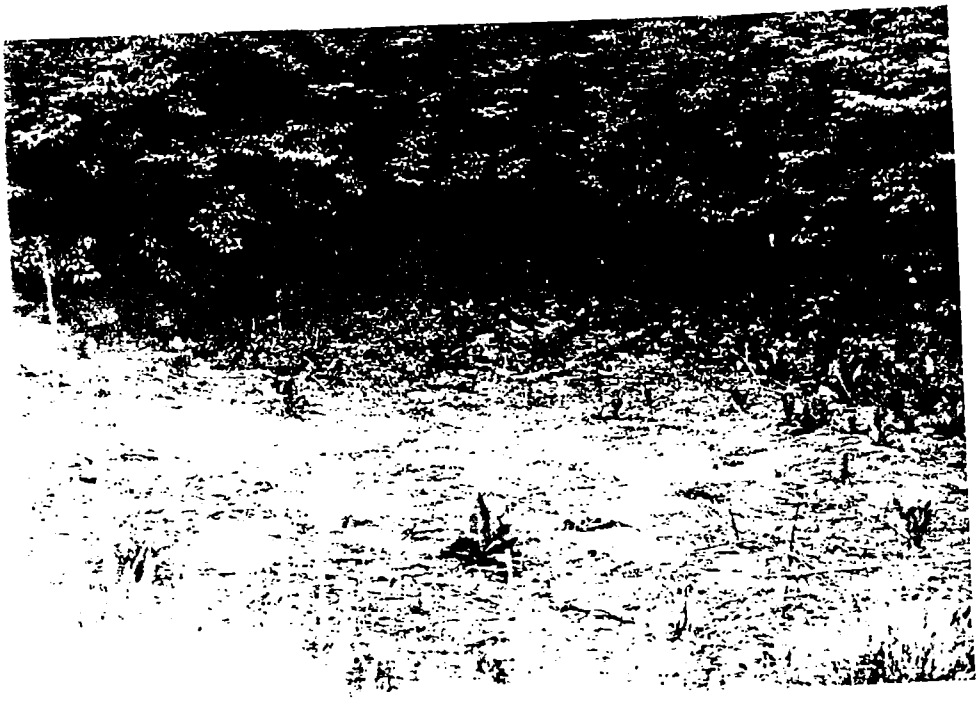
3-22 View to south of Building 27 Concrete Flume (SWMU MI-14). Solvents from this sump are routed to a solvent recovery drum in Building 27 Solvent Storage Area (SWMU CS-12), Photograph 3-24.



3-23 Detail of Building 27 Sump Settling Basin (SWMU SU-3), looking south. Unit is blocked off, visible liquid is rainwater.



3-24 Solvent recovery drums in Building 27 Solvent Storage Area (SWMU CS-12), viewed to the east. Drums are sent to Building 72 (SWMU CS-7), approximately once a week.



3-25 Building 27 Leach Pit (Solvent Settling Pond) (SWMU SI-5), received wastes from Building 27.

3-26 Close-up of inlet pipe to Building 27 Leach Pit (visible just to left and below wooden stake.

3-27 View to north of Building 19 Property Management Salvage and Reclamation. This building only stores scrap metal, wood, and other surplus materials. This unit is not considered to be a SWMU.

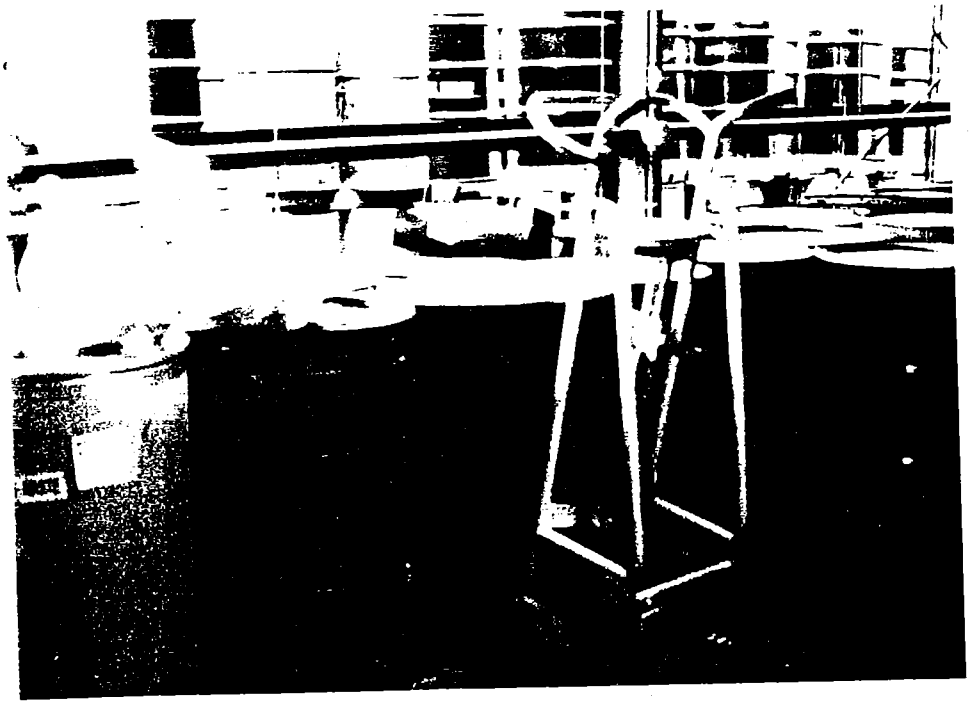
3-29 Entrance to Hazardous Waste Storage Area (Building 72, SWMU CS-7), looking south. Note entry ramp, curbing, and metal grating inside building.

3-30 Empty Drum Storage Area (SWMU CS-14) near Building 72, looking east. Note white stains in background leading to Storm Sewer grate.

3-31 Southeast view of Outdoor HazardousWaste Storage Area (SWMU CS-13) adjacent to Building 72.

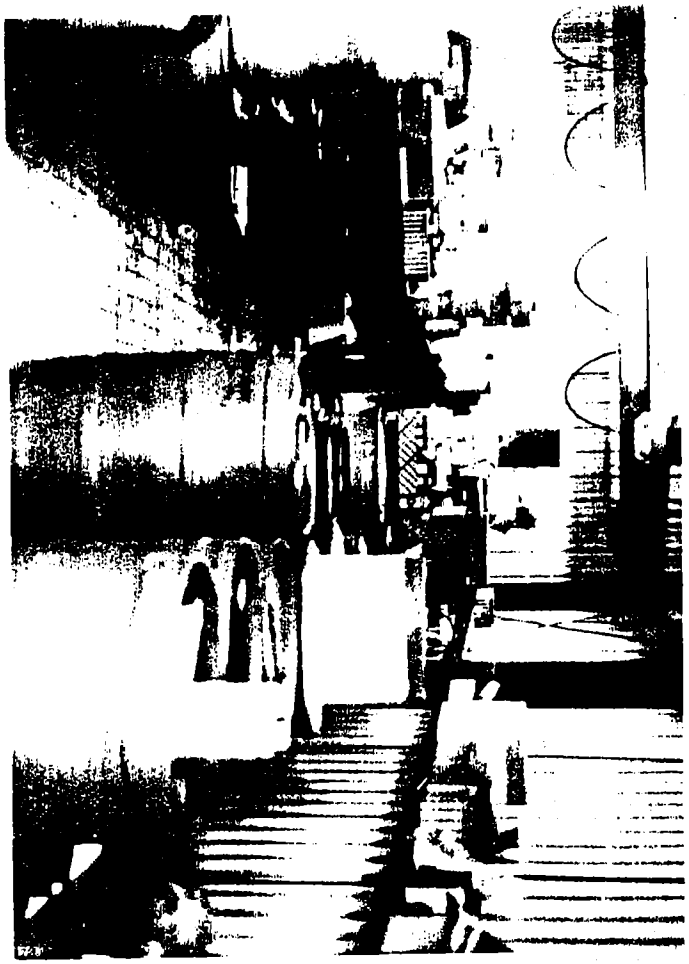
3-32 to 3-33

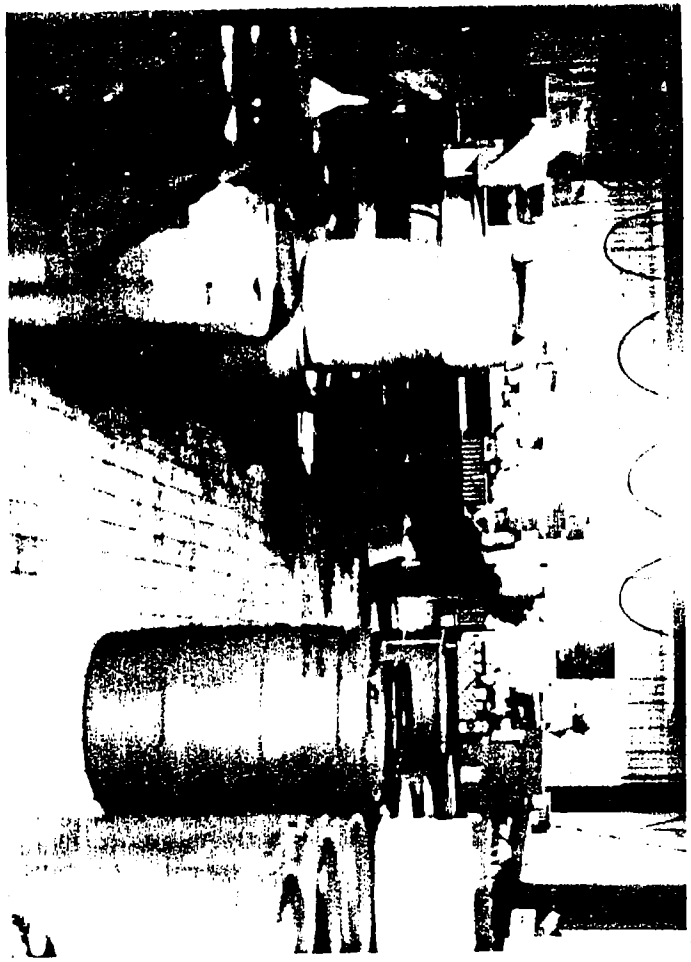
Drums of non-hazardous materials and "empties" just north of Building 72.



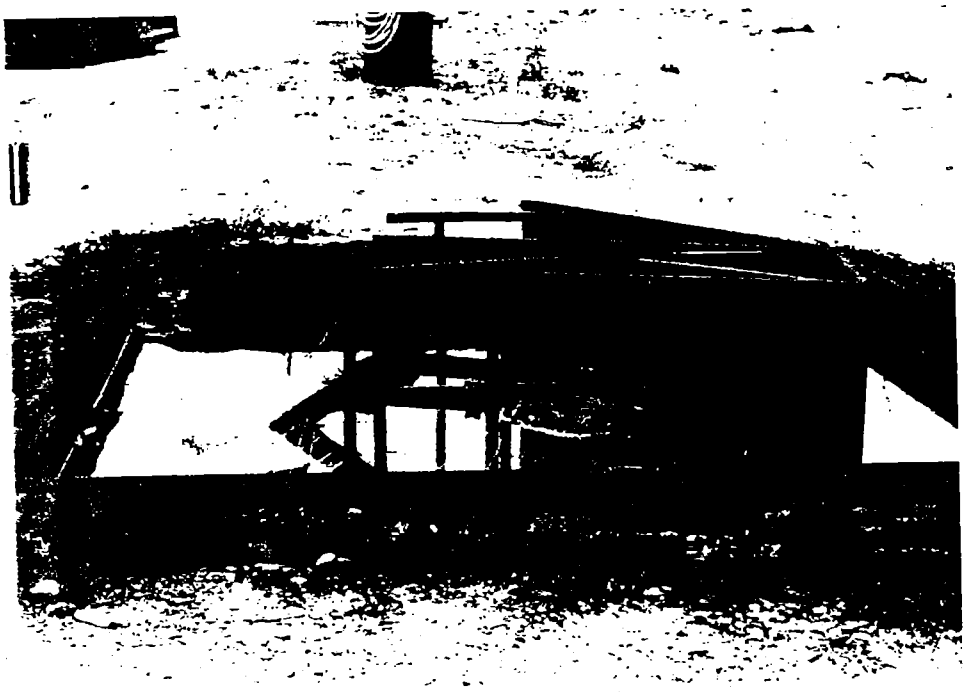
3-34 to 3-37 4-1

South to east panorama of interior of Hazardous Waste Storage Area (Building 72, SWMU CS-7). The entire structure is underlain by concrete-lined sumps.

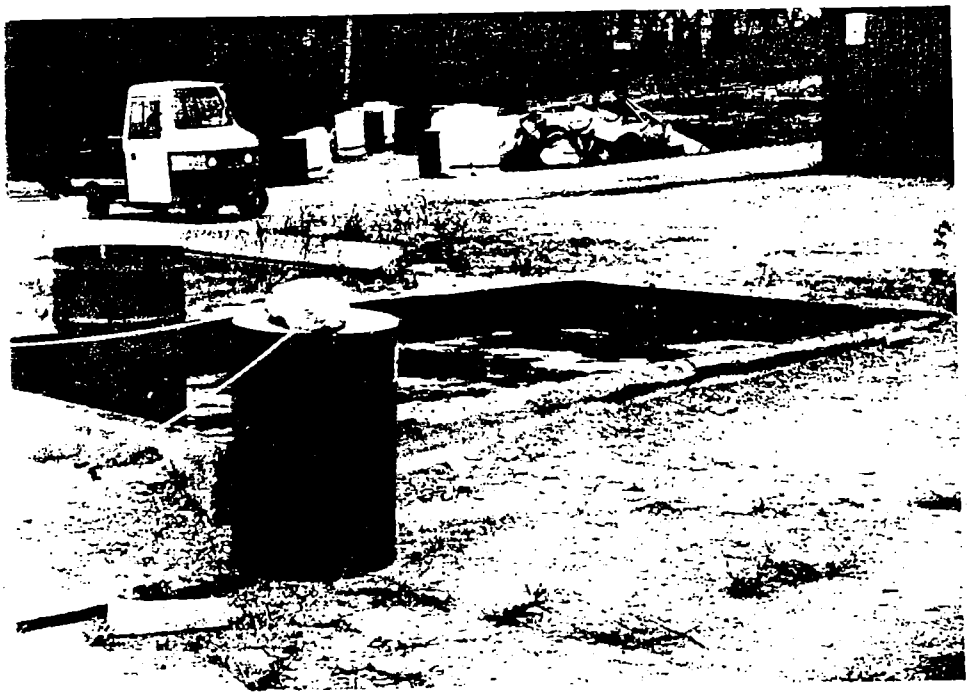




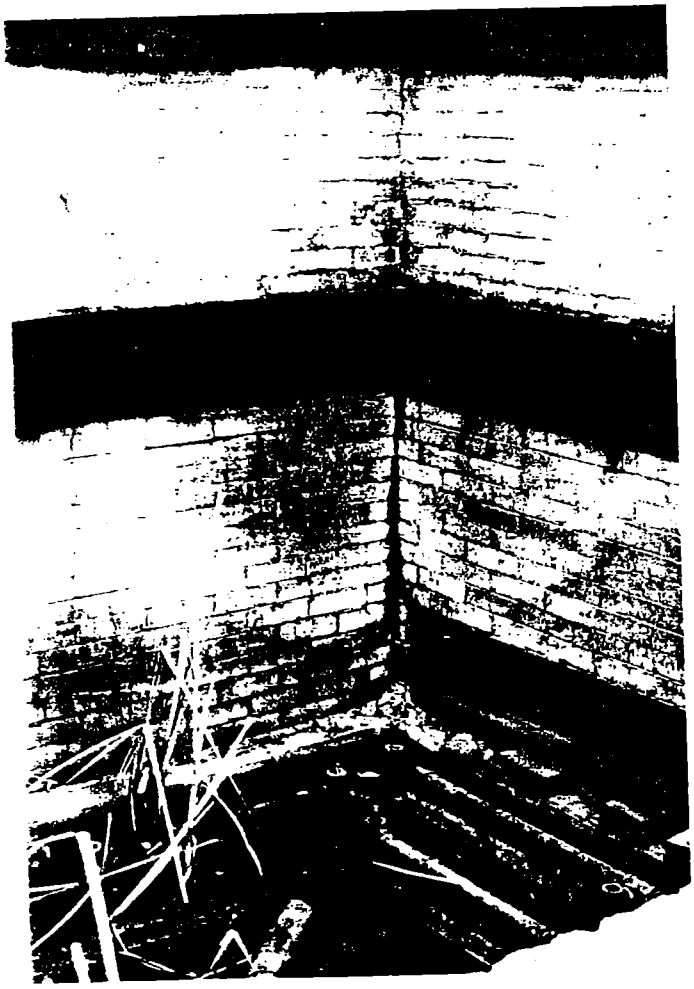
4-2 Barrels of zinc chromate brine wastes delivered to Hazardous Waste Storage Area (SWMU CS-7), looking east.



4-3 View to east of south pit in Fire Fighting Training Facility (SWMU MI-5). Note stained gravel and containment berm.



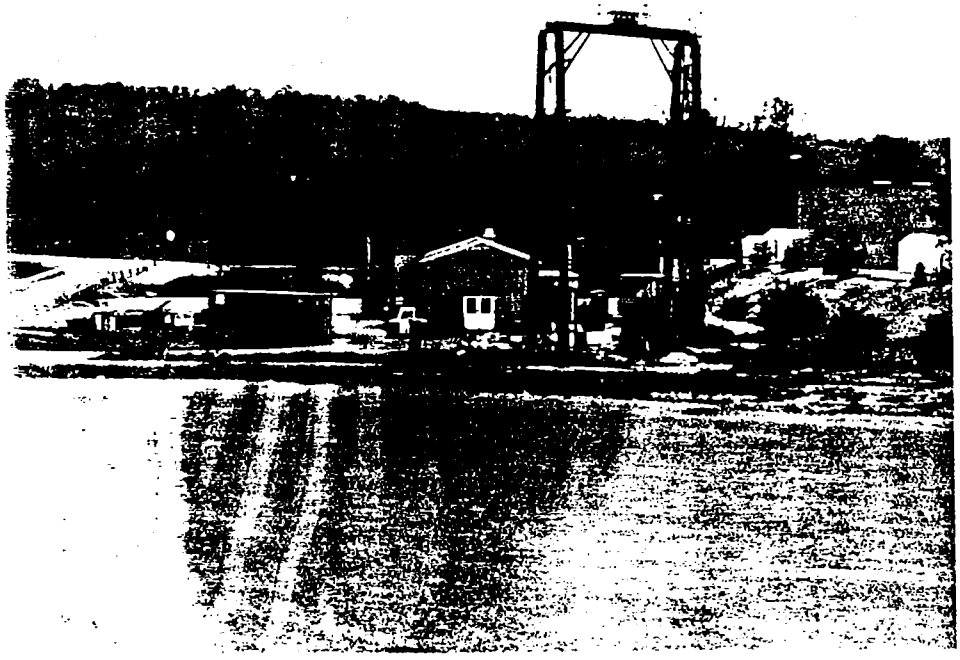
4-4 View to northeast of north pit in Fire Fighting Training Facility (SWMU MI-5).



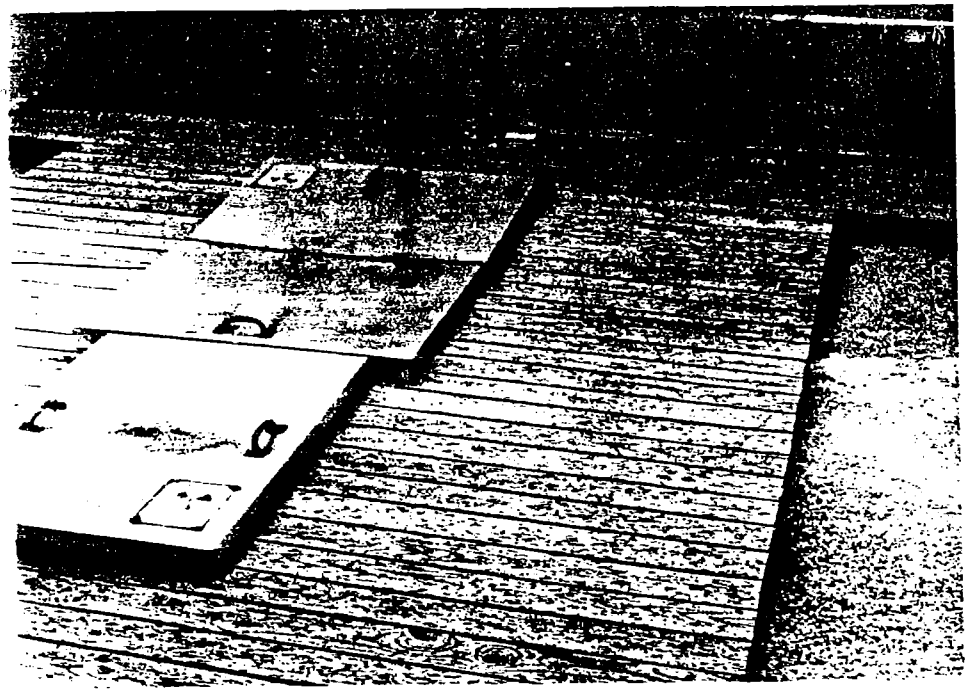
4-5 Interior of Oil Burn Structure (SWMU MI-3), see also Photograph 2-25. Note standing water and reedy vegetation in bottom of pit.

4-6 to 4-7 Overview of Overflow Pond (SWMU SI-2) and in left background, the Lined Landfill (SWMU LF-1). The Past Landfill (SWMU LF-2) underlies most of the area in the background.

4-8 View to east of site of Past Hazardous Waste Storage Area (Old Building 72, SWMU CS-8). Site includes areas on both sides of fence.



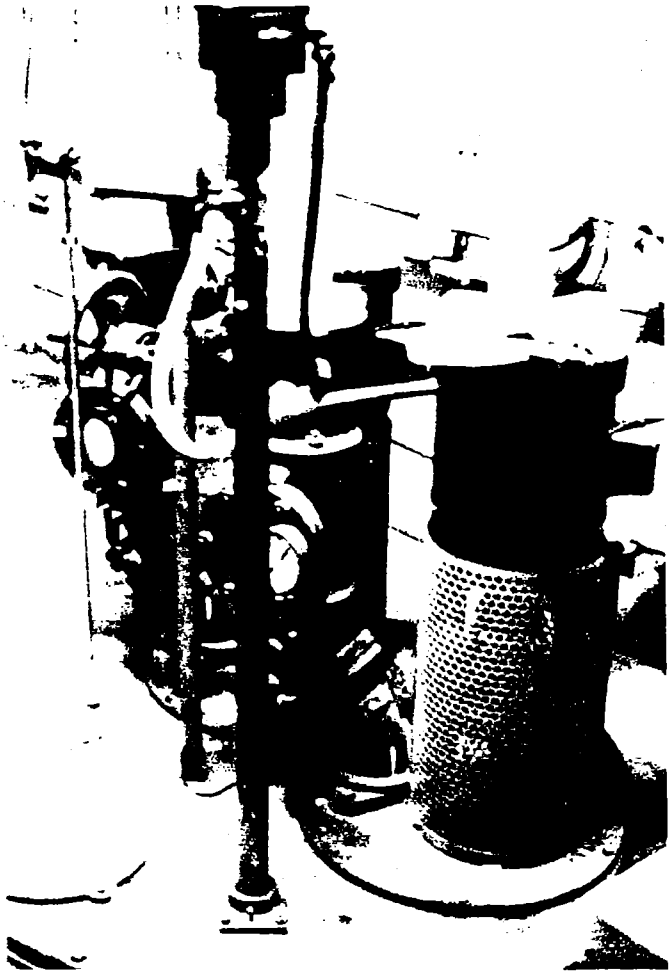
4-9 View 180 degrees from previous photograph showing nearby CEARP monitoring well.



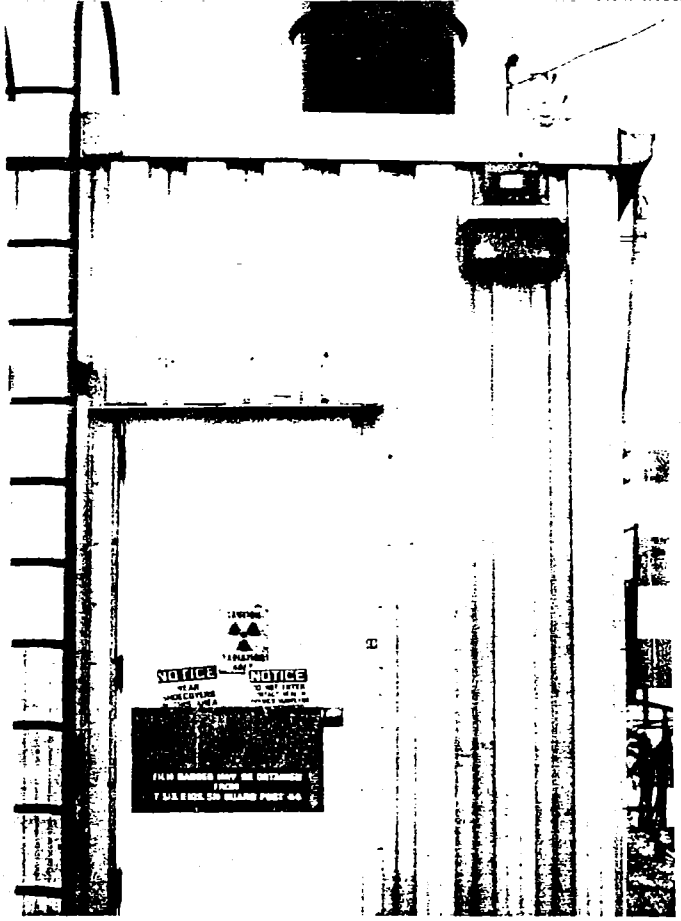
4-10 Two of four Wastewater Influent Tanks (SWMU WD-1), adjacent to WD Building.

4-11 One of two Clariflocculators within WD Building (SWMU WD-2).

4-12 Base of temporarily empty Clariflocculators, showing radioactive sludge.

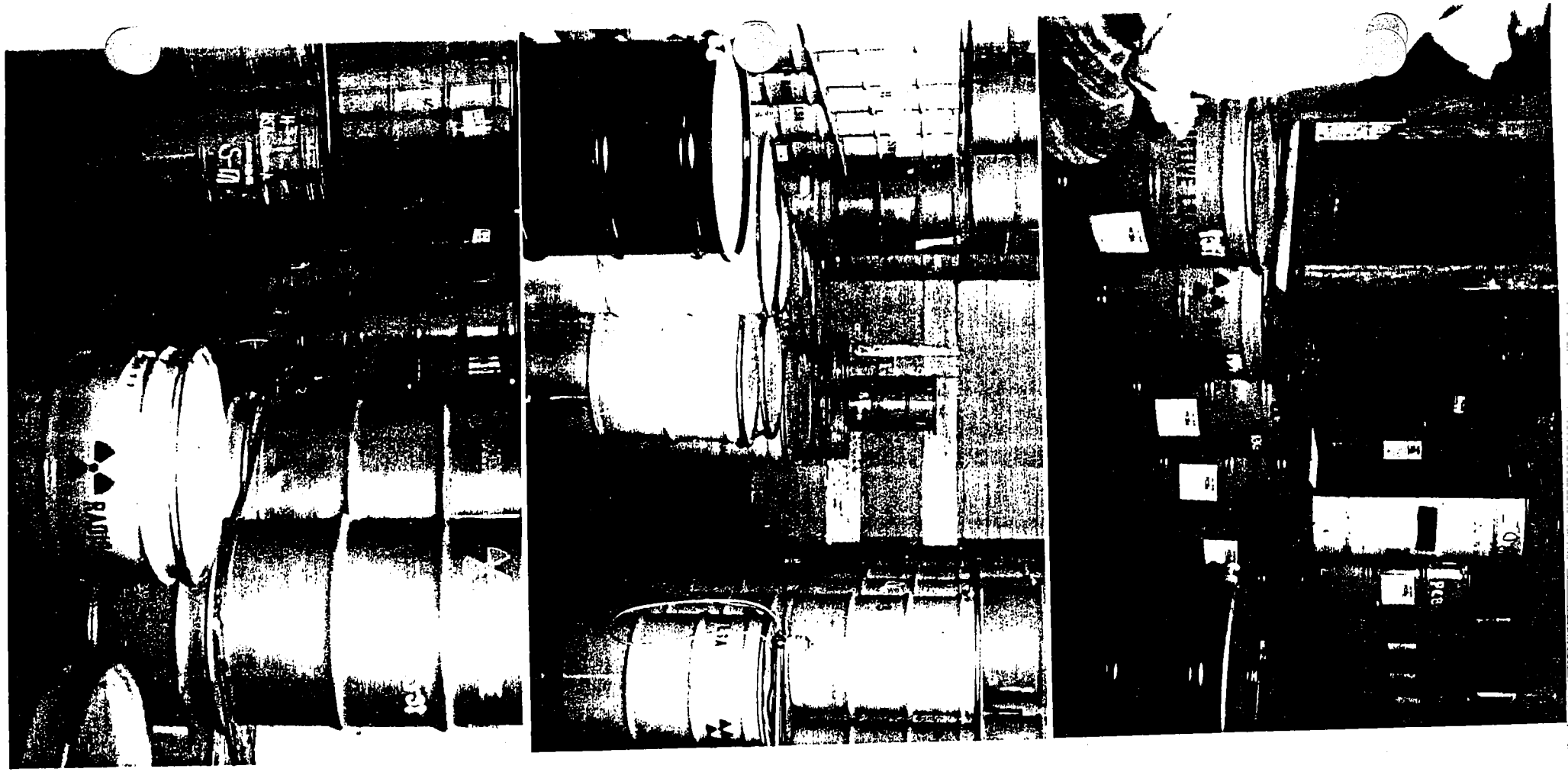


4-13 Sump (from floor drains in WD Building). Spills from Glass Melter (SWMU SU-1) would drain to these floor drains.



4-14 WD Filter Bank (SWMU AP-5) on the roof of WD Building.

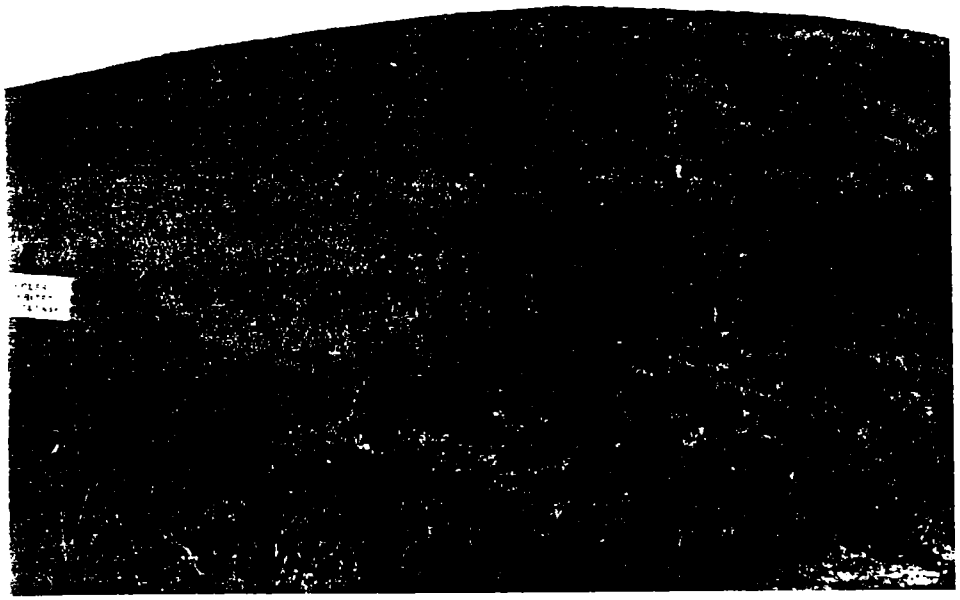
4-15 Off-Gas Strainer (SWMU AP-8) in Glass Melter Off-Gas Scrubber System.



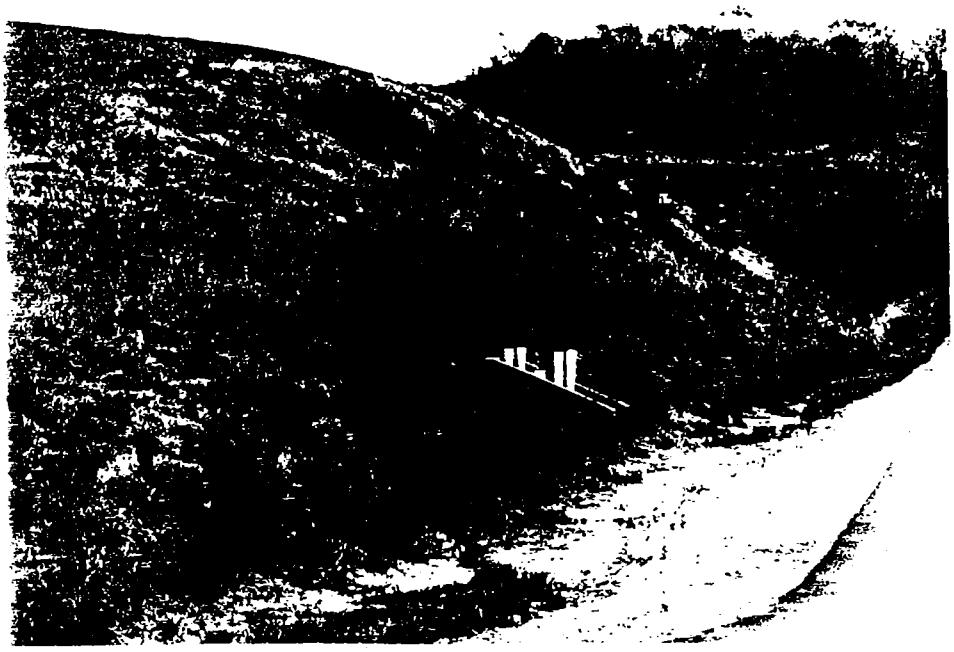
4-16 to 4-18 Panorama of east end of Radioactive/Mixed Waste Storage Area (SWMU CS-9). Most of the approximately 100 drums contain scintillation cocktail wastes. Four drums (see center background of 4-17) contain lead wastes. Smaller drums of barium and silver wastes are also stored in this building.

4-19 View to east of former site of Lithium Carbonate Disposal Area (SWMU MI-6).

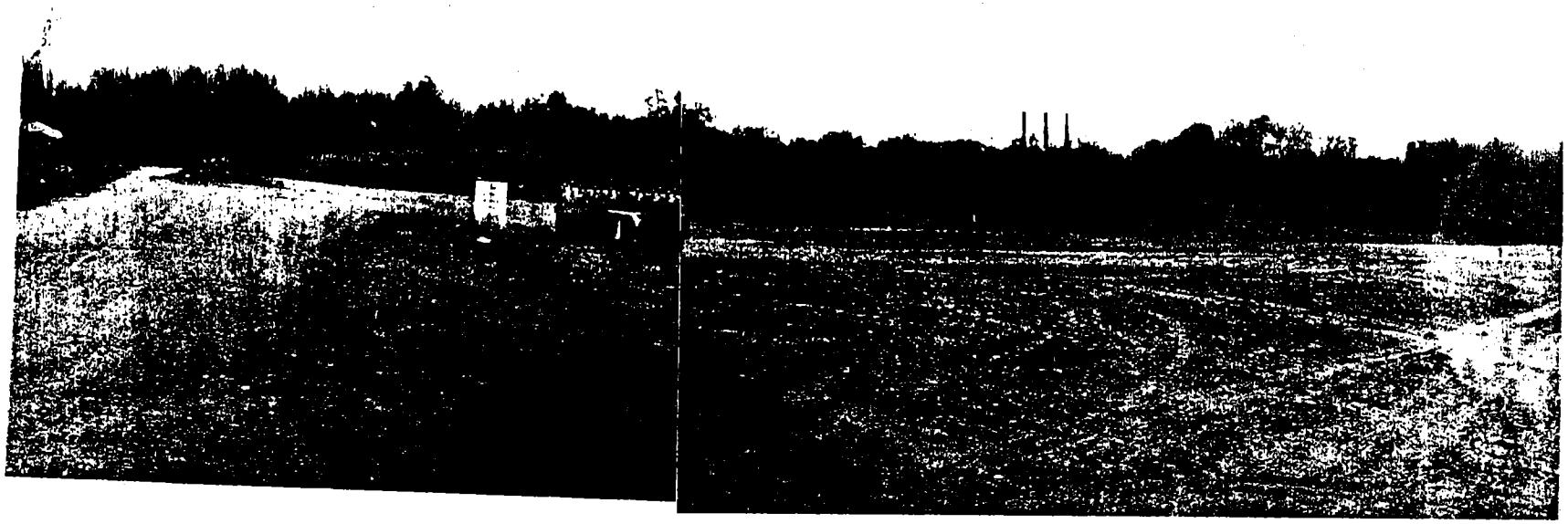
4-20 Underground Aviation Fuel Tank (SWMU UT-2) is located under concrete pad in foreground. Fire Fighting Training Facility pits (SWMU MI-5) are fed by tank and are visible just beyond UST to the south.

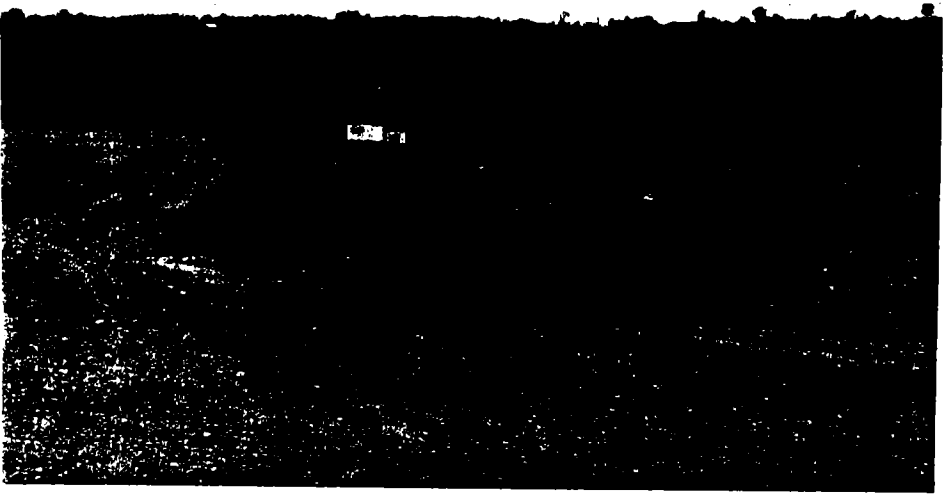


4-21 View to northwest of southwest corner of Past Landfill (SWMU LF-2).

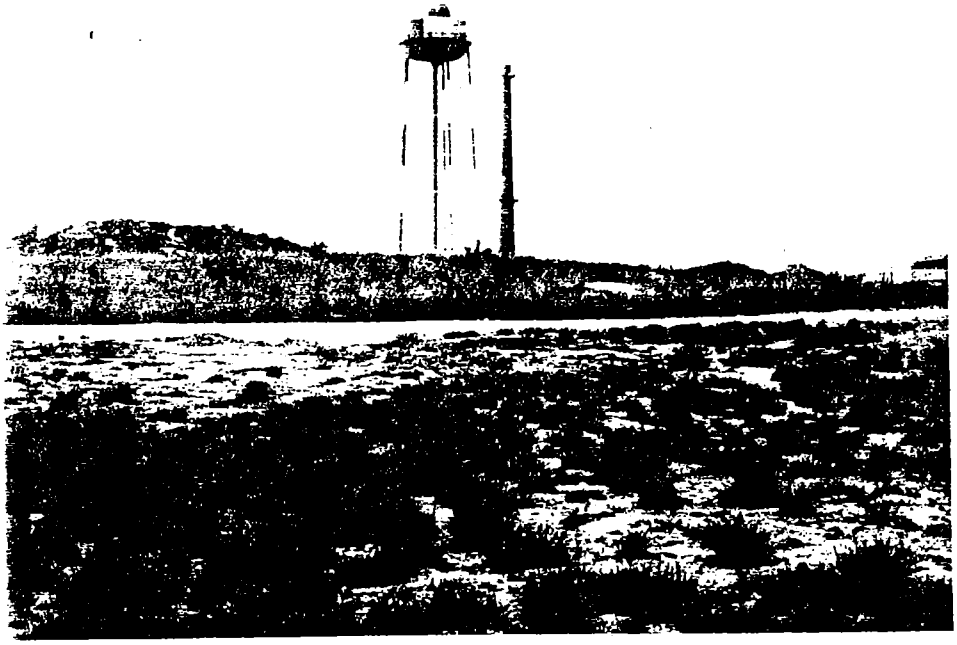


4-22 View to east of monitoring well on south side of Past Landfill (SWMU LF-2).



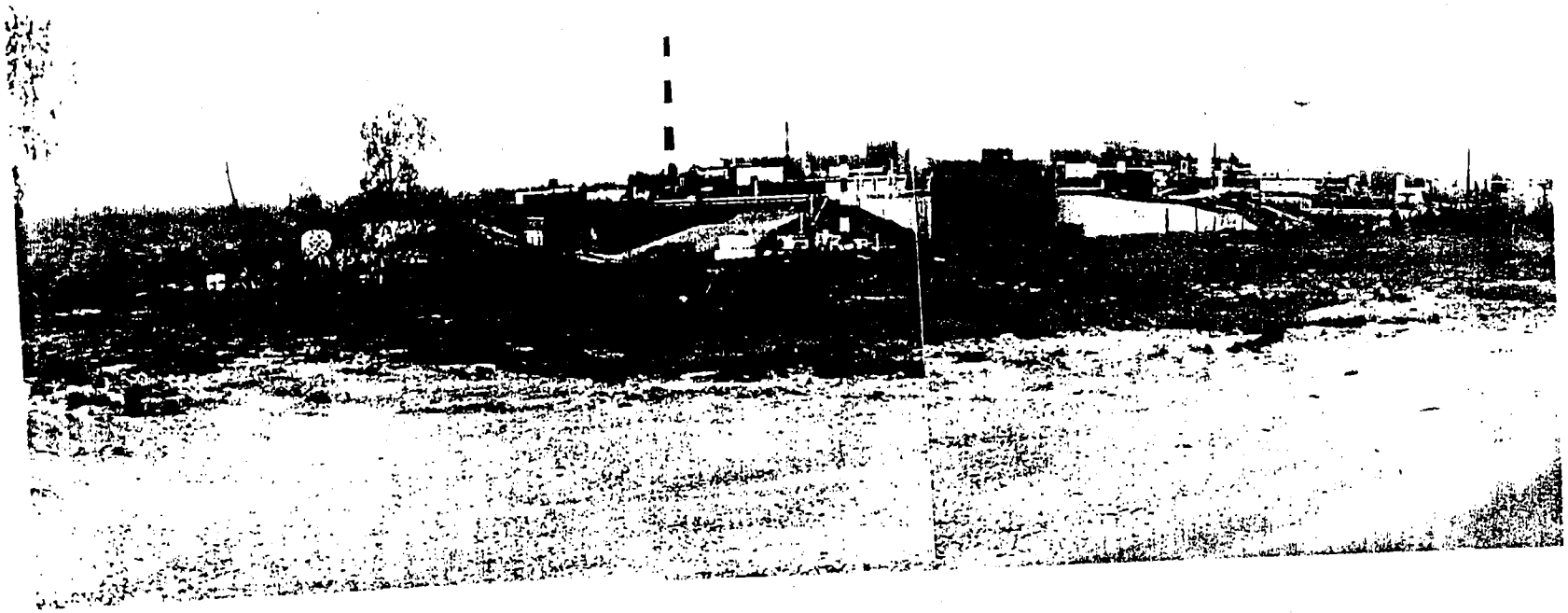


4-23 to 4-26 South to west panorama (left to right) of Spoils Disposal Area (SWMU LF-3).



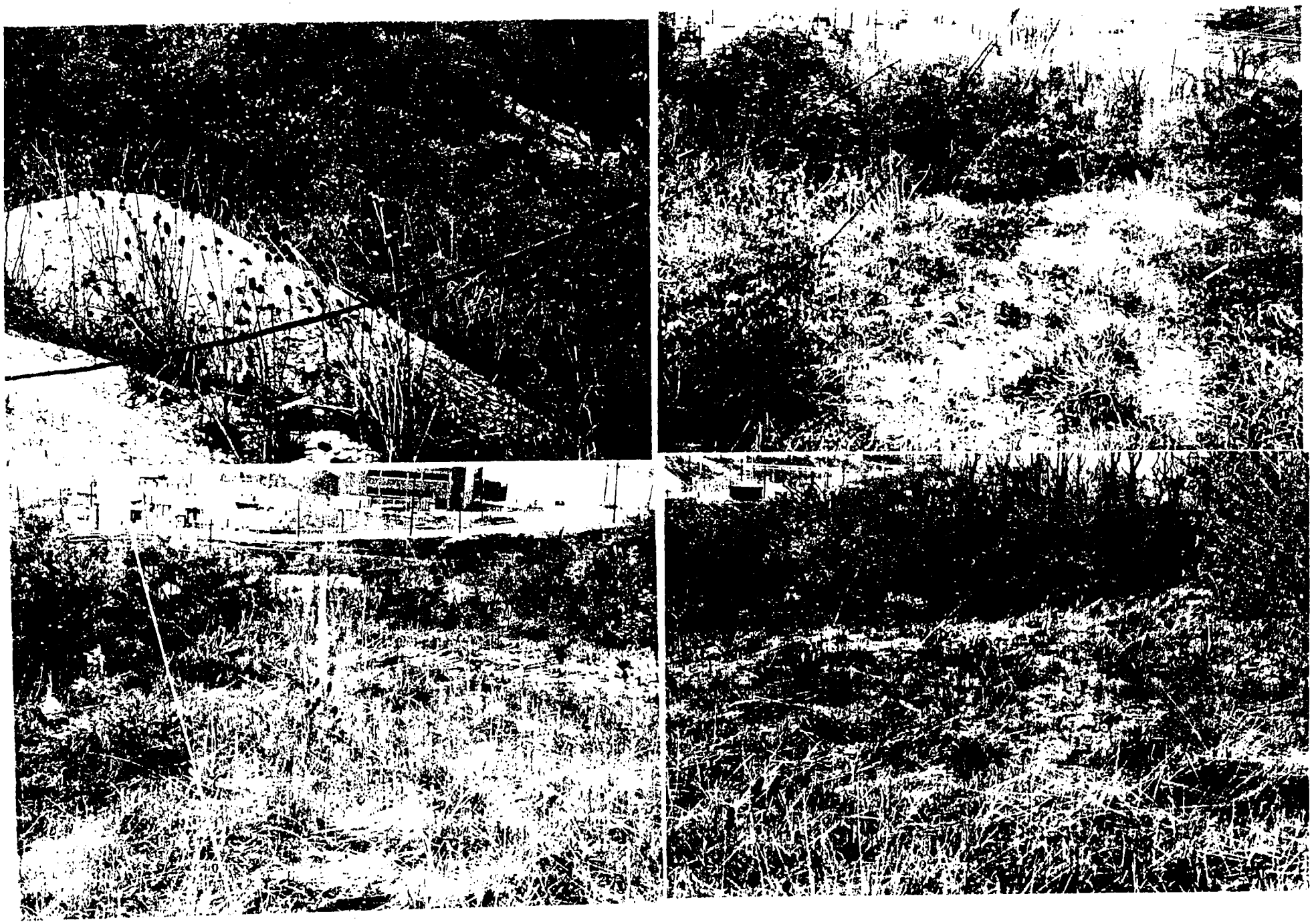
4-27 Site of Waste Oil Drumfield (SWMU CS-6), looking north. One drum of ethylene glycol was observed in this area during the VSI.

4-28 SM/PP Hill-7 (Orphan Soil Pile(s)), (AOC II), viewed to northwest.



4-29 to 4-30 Northwest to north panorama of Old Firing Range Drum Disposal Area (SWMU CS-10).

4-31 to 4-32 South to southwest view of Dredged Material Disposal Area (SWMU LF-4, near SM Water Tower).

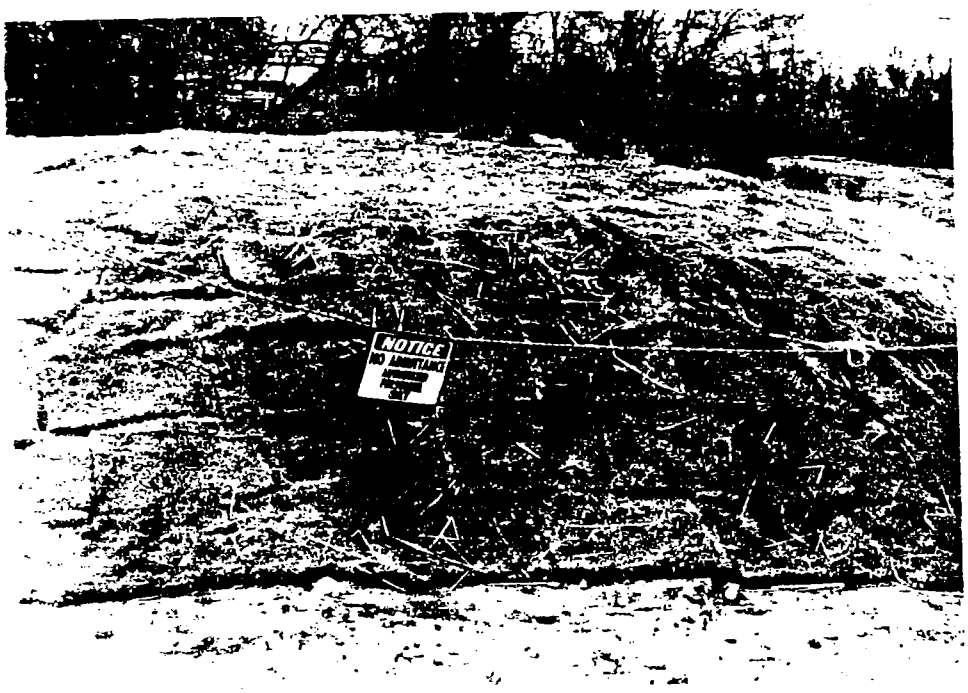


4-33 to 4-36 South to north panorama of SM/PP Hill 5 (Old Spoils Area) (AOCHF). This area reportedly contains construction debris.

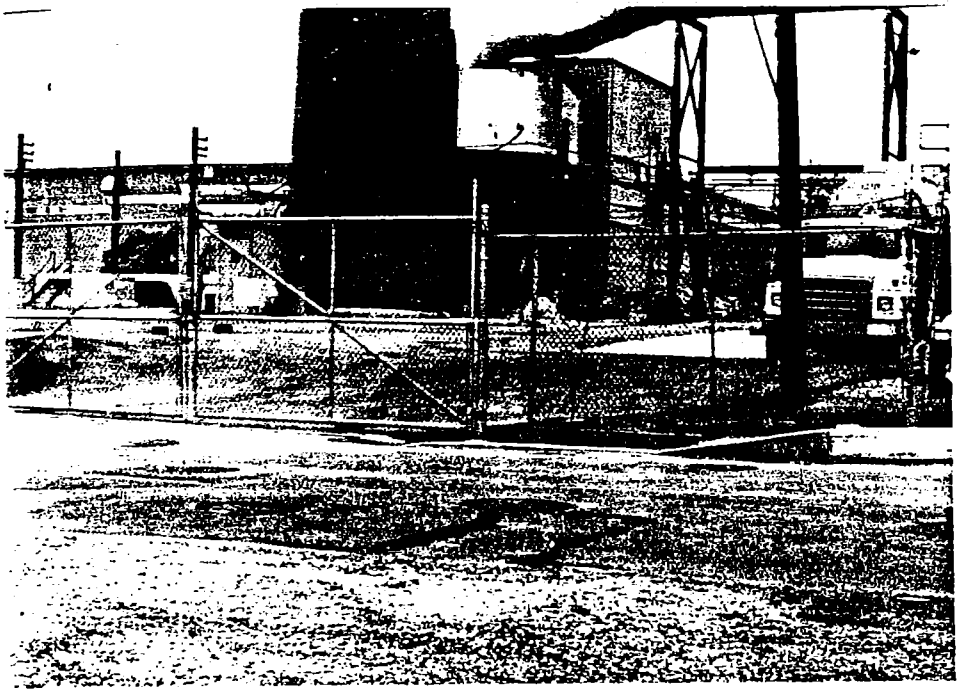
5-1 View to east of Hillside Catch Basin (SWMU SI-6), at base of hill below Old Spoils Area (SWMU LF-4). This unit receives runoff from SWMU LF-4.

5-2 Close-up of fossiliferous limestone near location of Photograph 5-1.

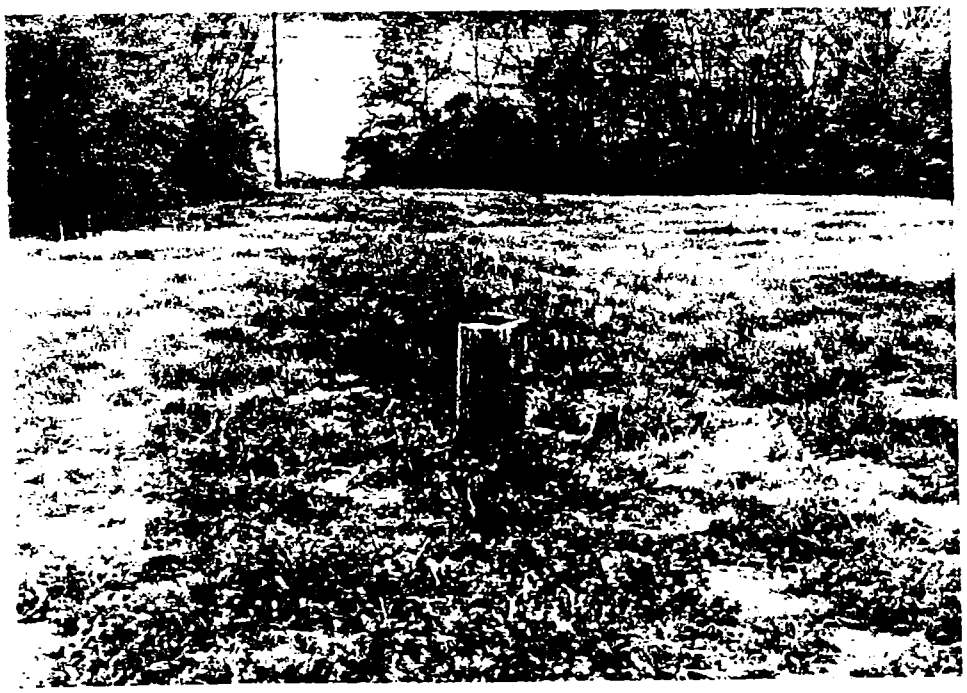
5-3 General vicinity of Acid Leach Bed (SWMU MI-11) in SM/PP Area. View is to the west.



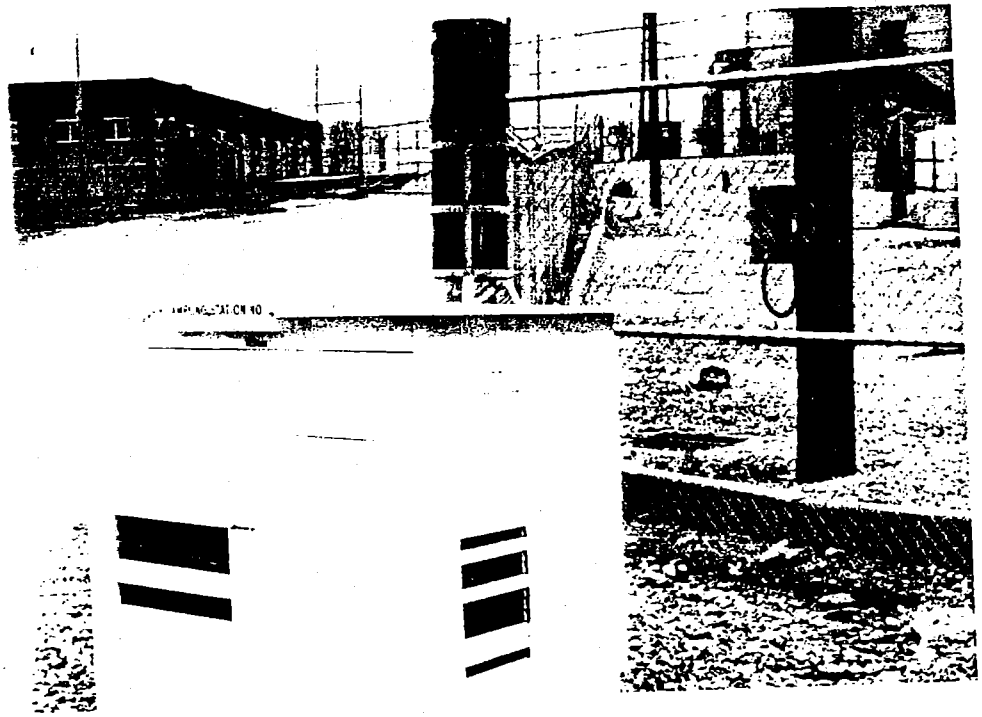
5-4 SM/PP Hill-6 (New Thorium Soil Area) (AOC GG), viewed to north.



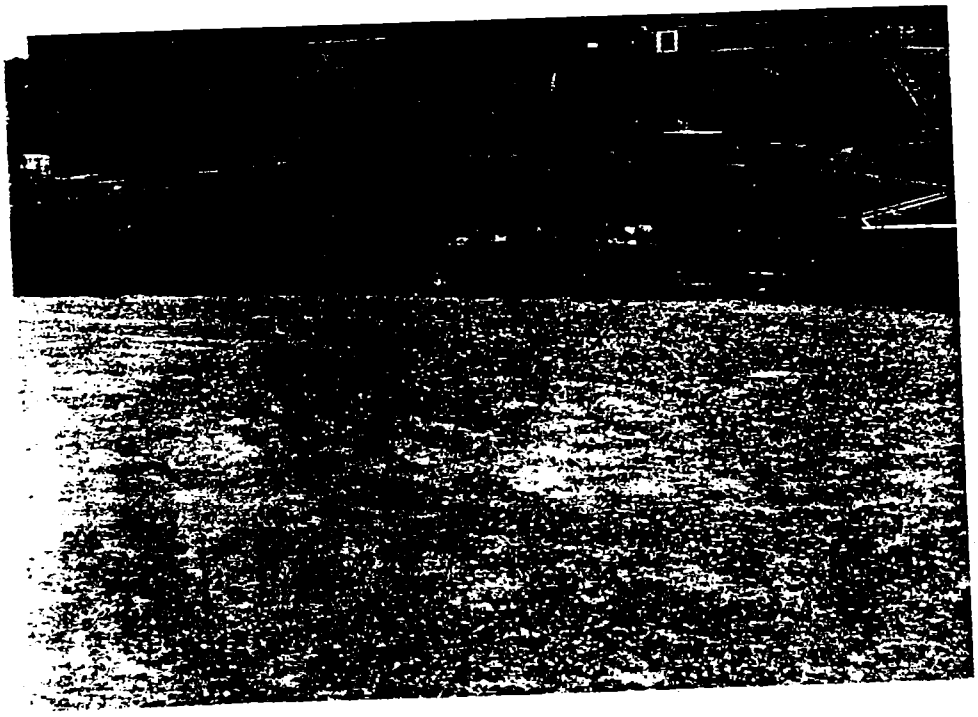
5-5 Former site of Soil Contamination Area SM/PP Hill-3 (AOC X), near SM Building. View is to the east.



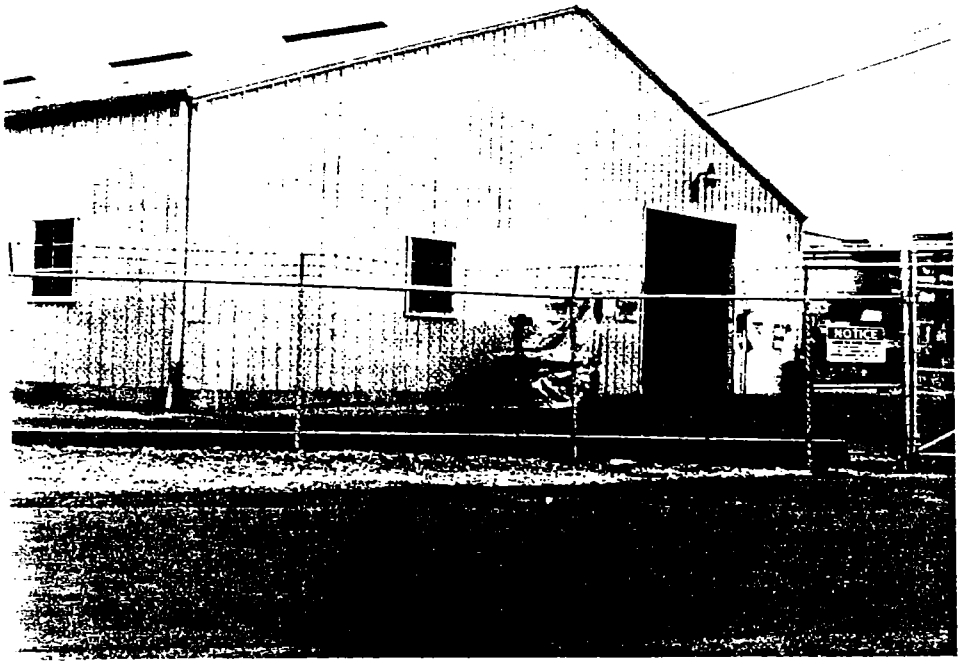
5-6 View to east of SM Septic Leach Field in Soil Contamination Area 14 (AOC C).



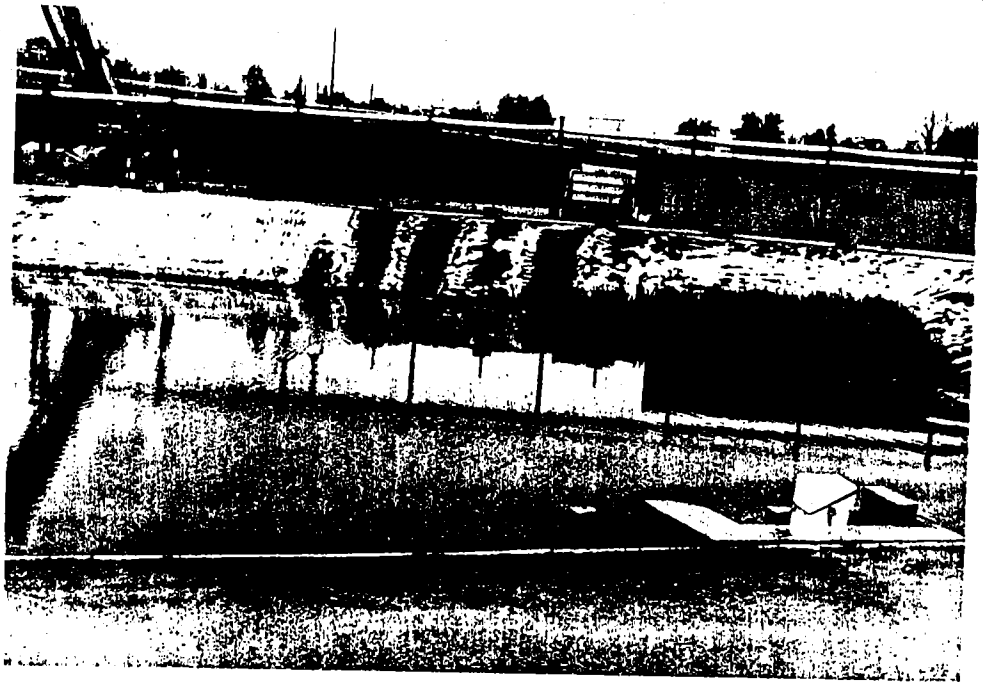
5-7 One of several air sampling stations at the facility. This unit is on SM/PP Hill.



5-8 Soil Contamination Area SM/PP Hill-4 (AOC EE), looking west.

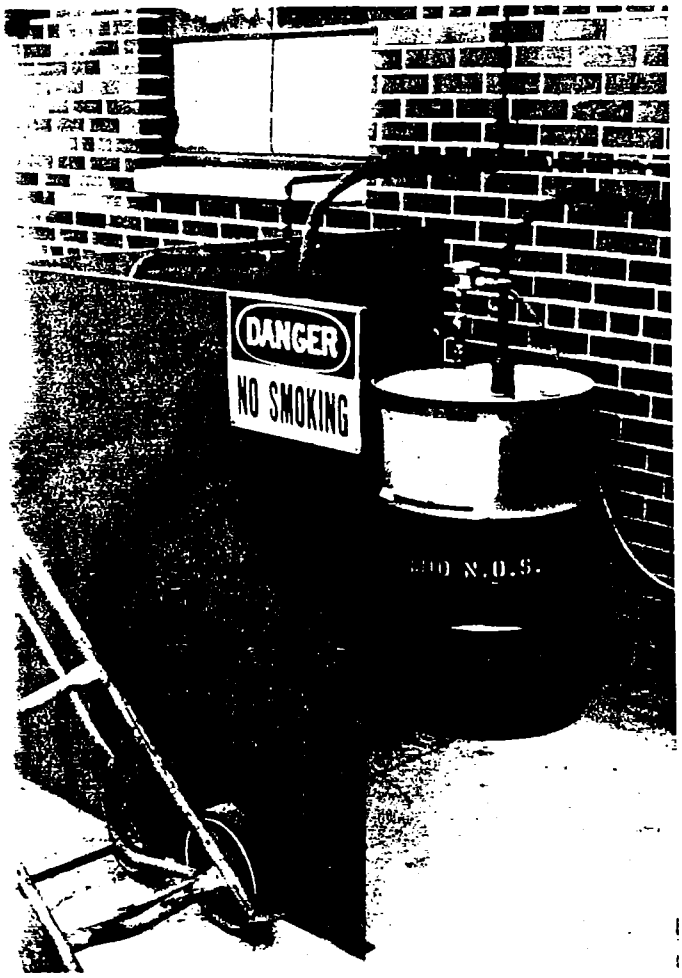


5-9 Site of Soil Contamination Area SM/PP Hill-2 (AOC W), view is to the east.



5-10 to 5-12 East to north panorama of Asphalt-lined Pond (SWMU SI-3).

5-13 Parking lot over Contaminated Soil Area Valley-6 (AOC KK), looking southwest.

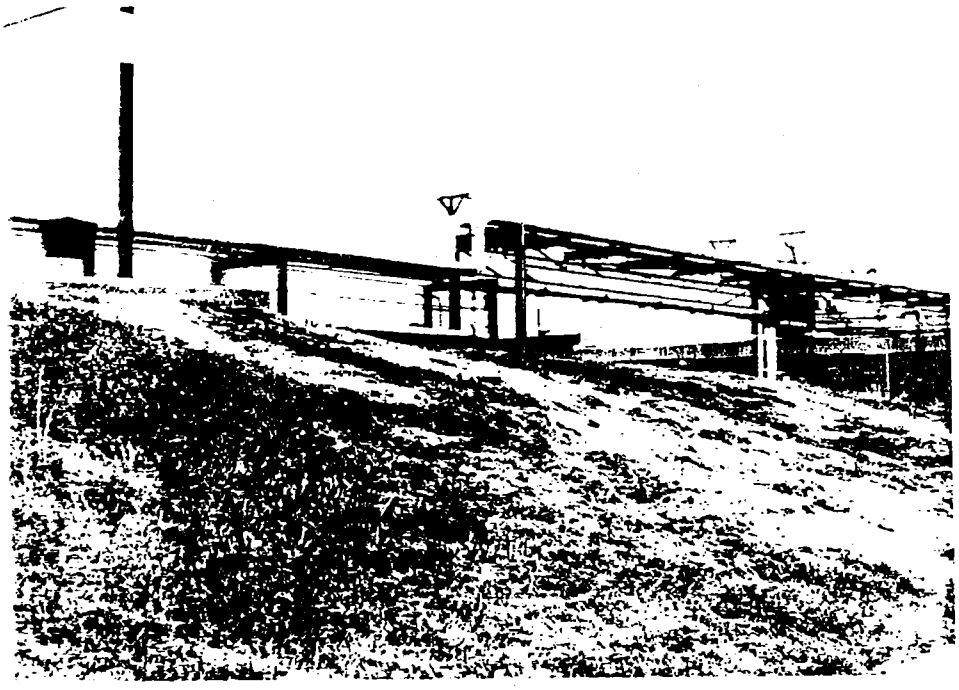


5-14 Building 28 Solvent Storage Area (SWMU CS-3).

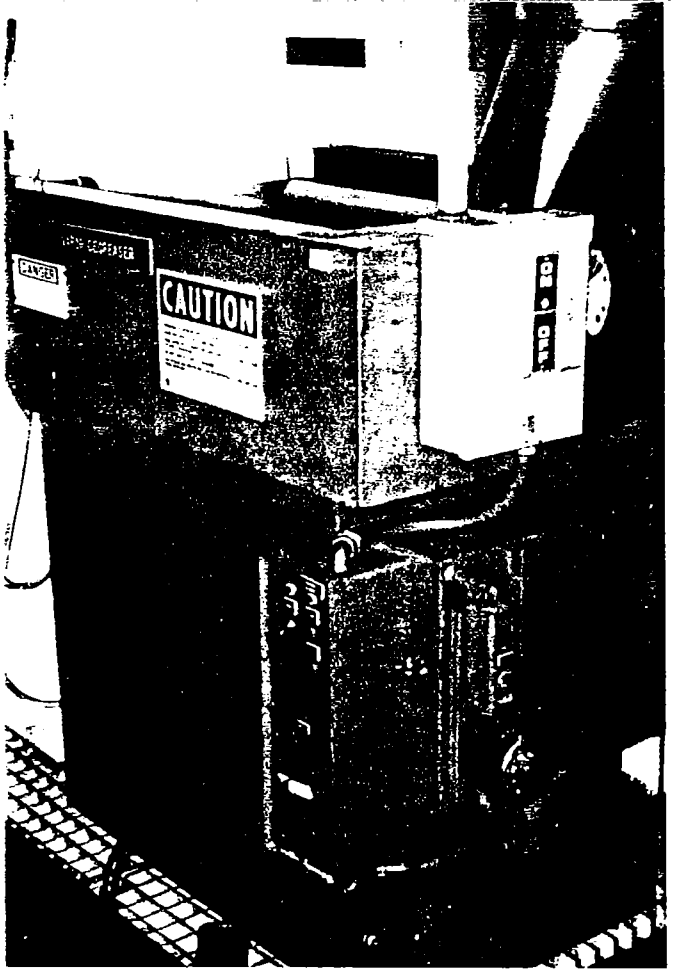
5-15 Cooling Tower Basins (SWMU MI-8) on left and Cooling Tower Drum Storage Area (SWMU CS-16), looking north.

5-16 Closeup of waste oil drum in Cooling Tower Waste Drum Storage Area (SWMU CS-16).

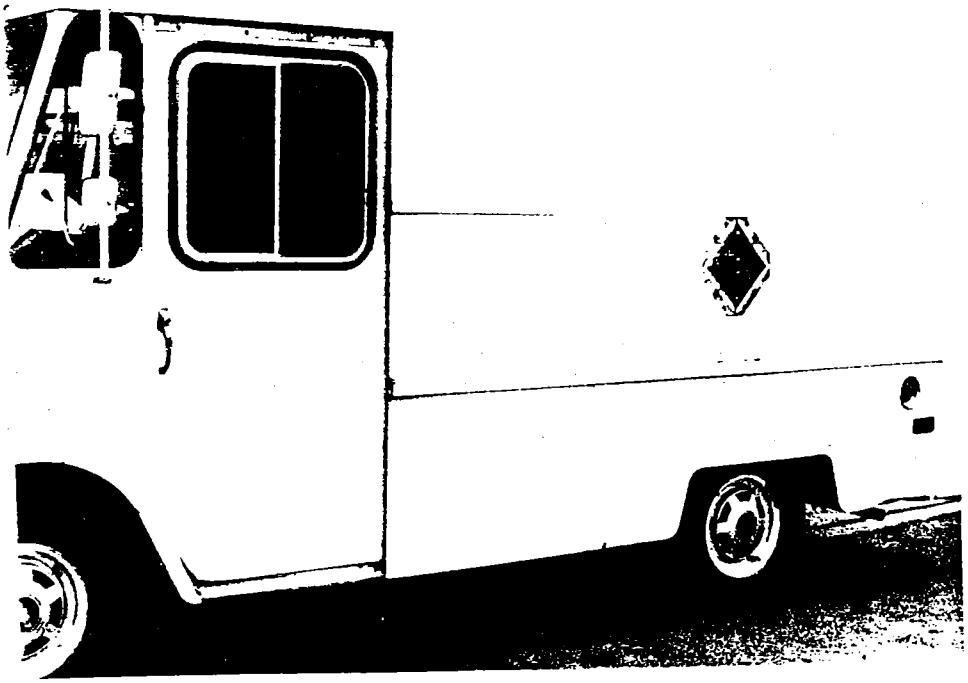
5-17 Closeup of drums labelled "Unknown" located in Cooling Tower Drum Storage Area (SWMU CS-16).



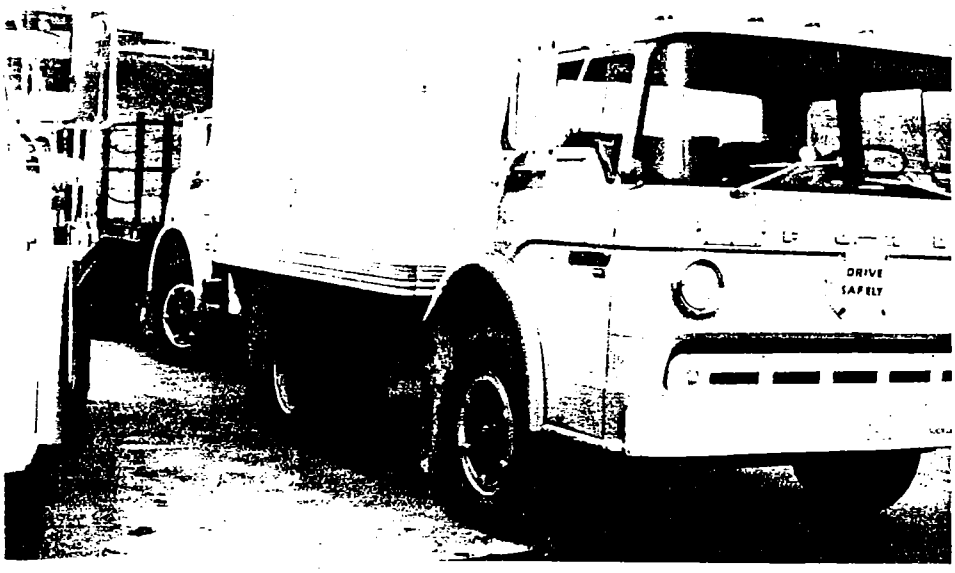
5-18 Fuel Oil Storage Area (AOC O) near Power House, looking northwest. Note stained ground and stressed vegetation.



6-1 Vapor Degreaser (SWMU MI-12) in M Building Plating Shop. Note flow grating over concrete sump. Any spills are pumped to drums for ultimate disposition at Building 72.

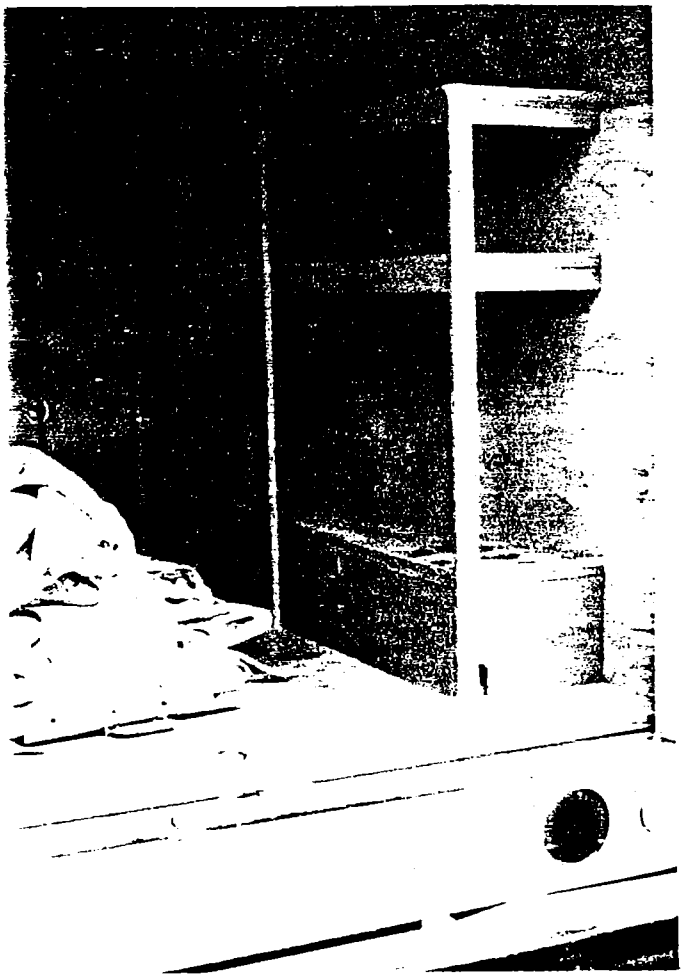


6-2 Step Van (SWMU MI-4) at Building 61 for on-site transport of explosive materials and wastes. Truck also doubles as a mail vehicle (see Photograph 6-5 for view of interior).

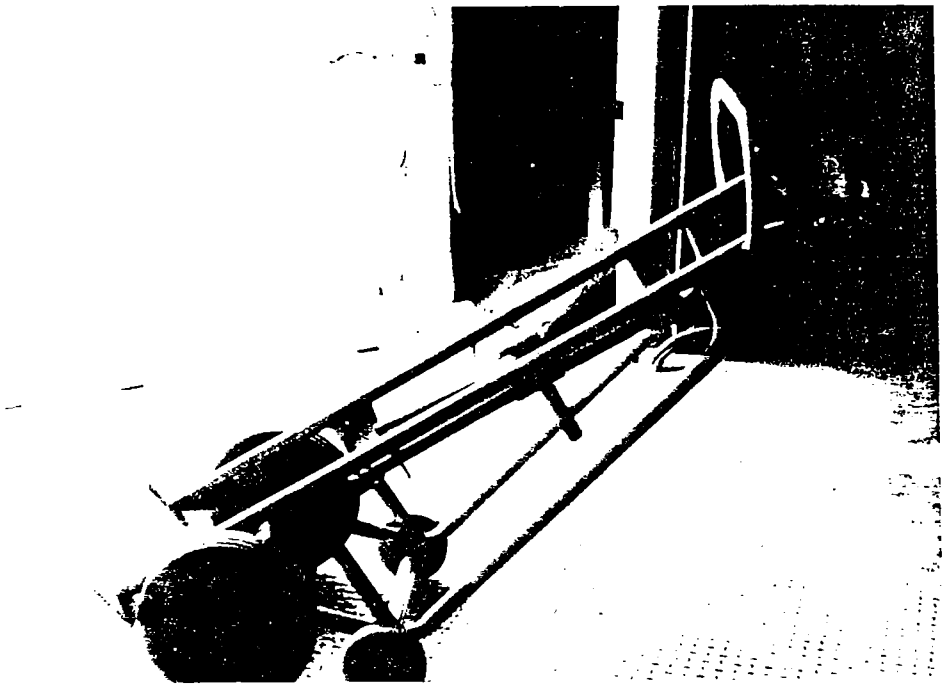


-3 Box Truck (SWMU MI-4) at Building 61 for off-site transport of explosive wastes.

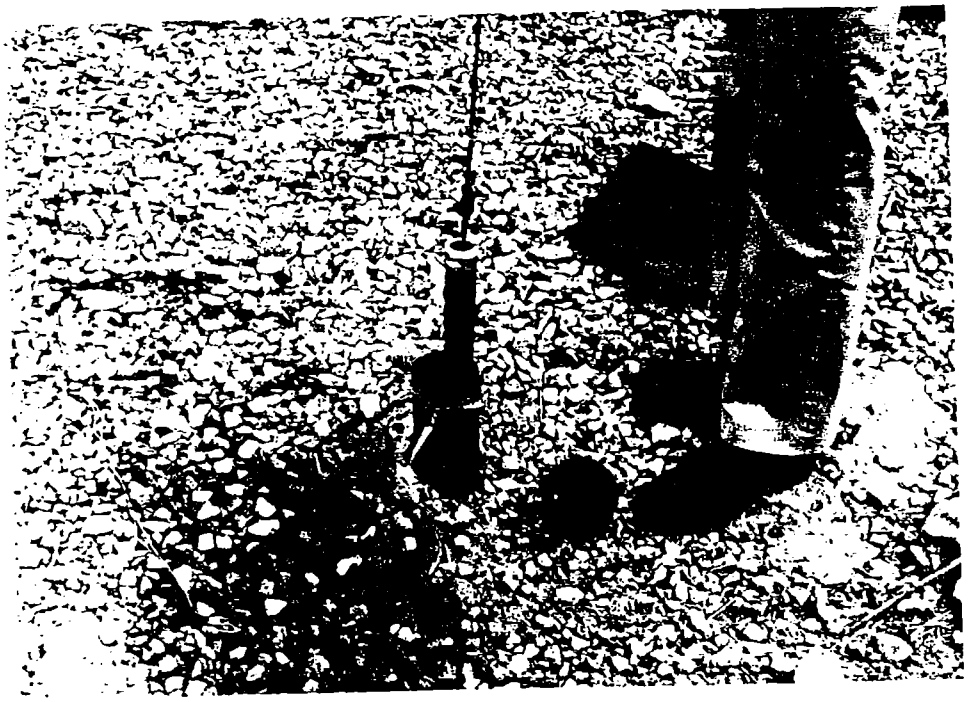
Stake Bed Truck (SWMU MI-4) at Building 61 for transport of hazardous wastes.



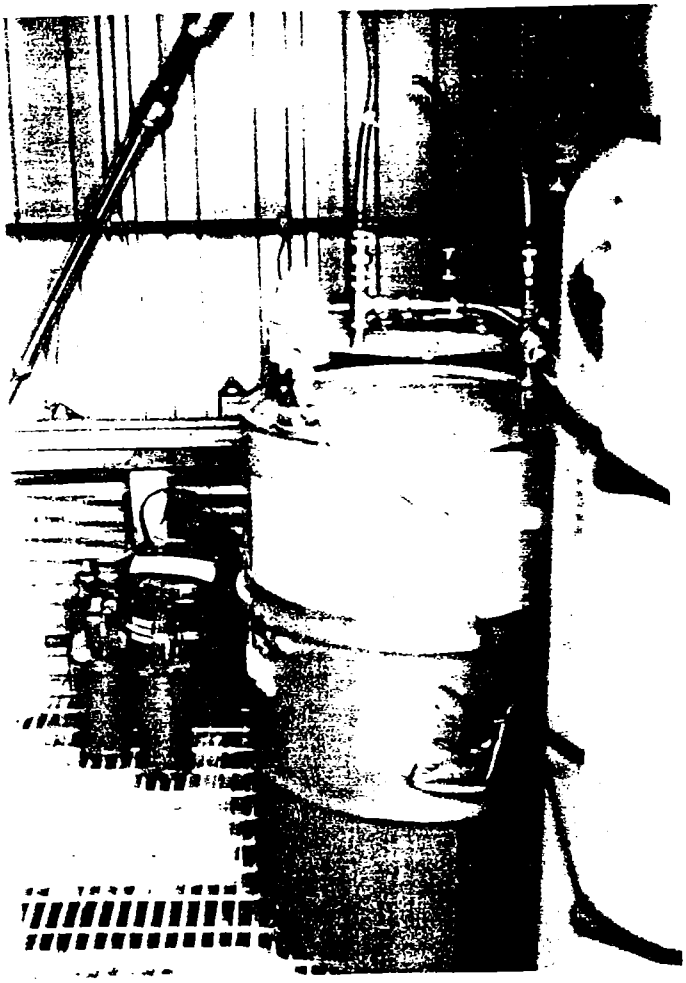
6-5 Interior of Step Van shown in Photograph 6-2. Note shelving for pyrotechnic production materials and wastes.



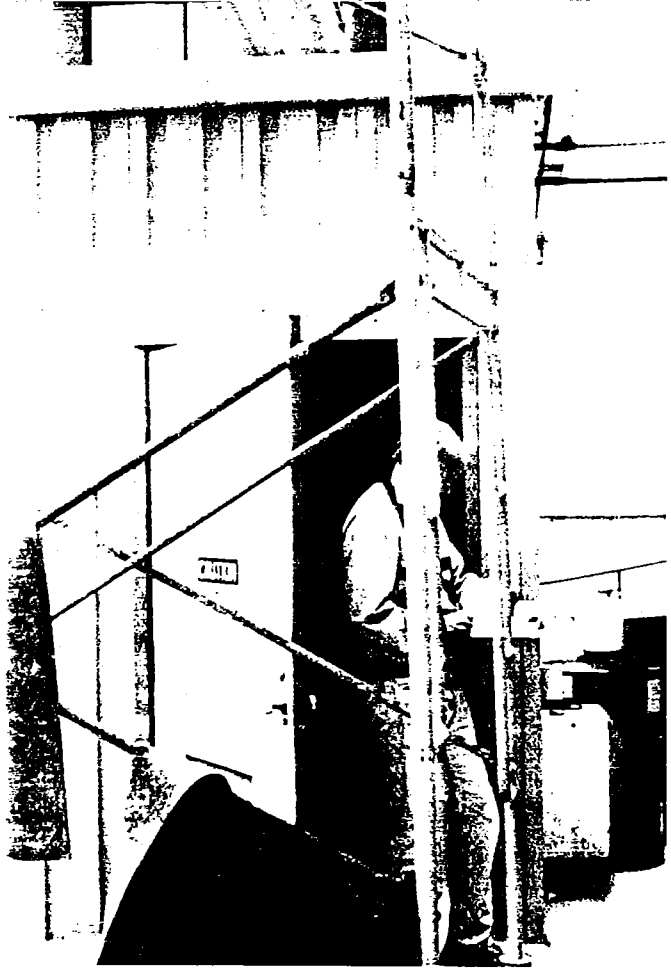
6-6 Drum Cart (SWMU MI-4) inside Building 61 for transporting explosives and hazardous materials to Waste Collection Vehicles.



6-7 Contaminated Monitoring Well 34-1 (SWMU MI-13) between Buildings T and HH. Note dark-colored liquid in boiler, discolored bailer rope, and staining on ground.



6-8 Interior of DS Building Solvent Storage Shed (SWMU CS-4). Drum in foreground is marked "D001 Flammable NOS."

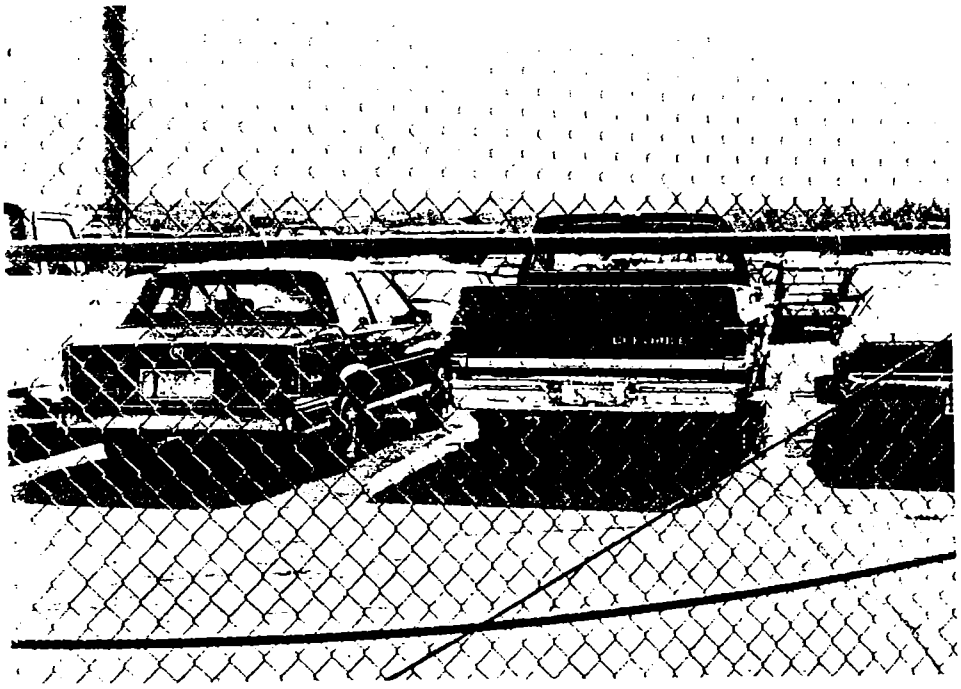


6-9 Outside of DS Building Solvent Storage Shed (SWMU CS-4).

6-10 Two hazardous waste drums temporarily stored outside Building B Solvent Storage Shed (SWMU CS-5).

1 Waste solvent bay in Building B Solvent Storage Shed (SWMU CS-5), temporarily vacant for repairs. Floor drain in shed formerly drained to Storm Sewer.

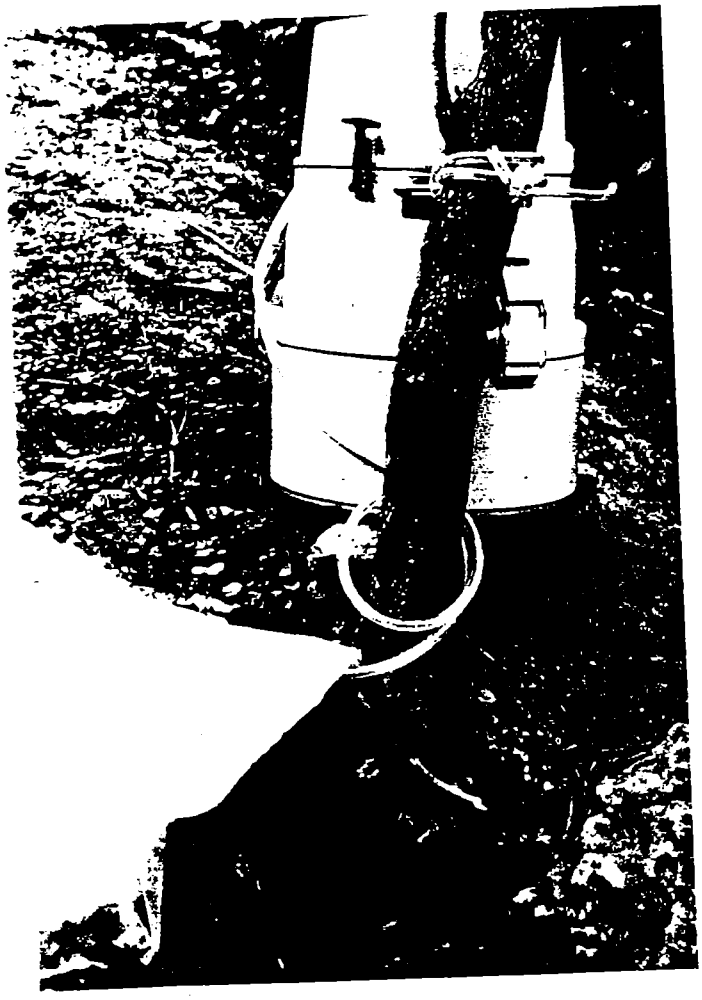
12 Trash, waste oil, and product drums in Temporary Drum Storage Area (CS-15) outside Building B Solvent Storage Shed (SWMU CS-5). At least one of the waste drums came from the dismantled E Building Solvent Storage Shed (SWMU CS-2). Note uncurbed concrete pad and plywood sheets.



6-13 Site of former Chromium Trench (SWMU MI-7), looking east.

6-14 View down toward north exit gate toward North Slope Springs (S006 and S007) (AOC D).

6-15 North Slope Spring (S006). The observed discharge at the time the picture was taken was approximately one drop per ten seconds.

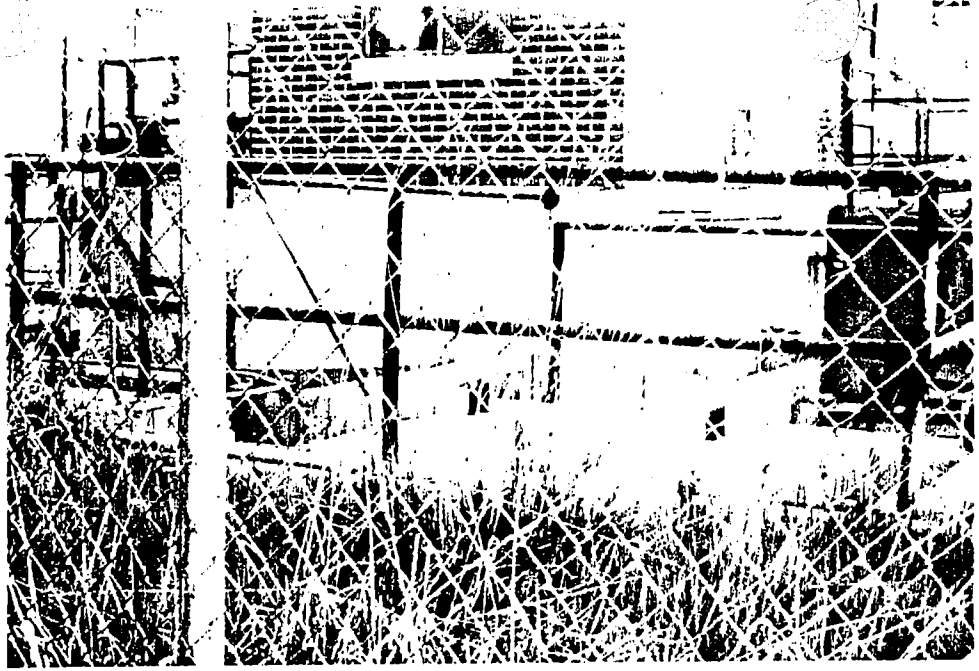


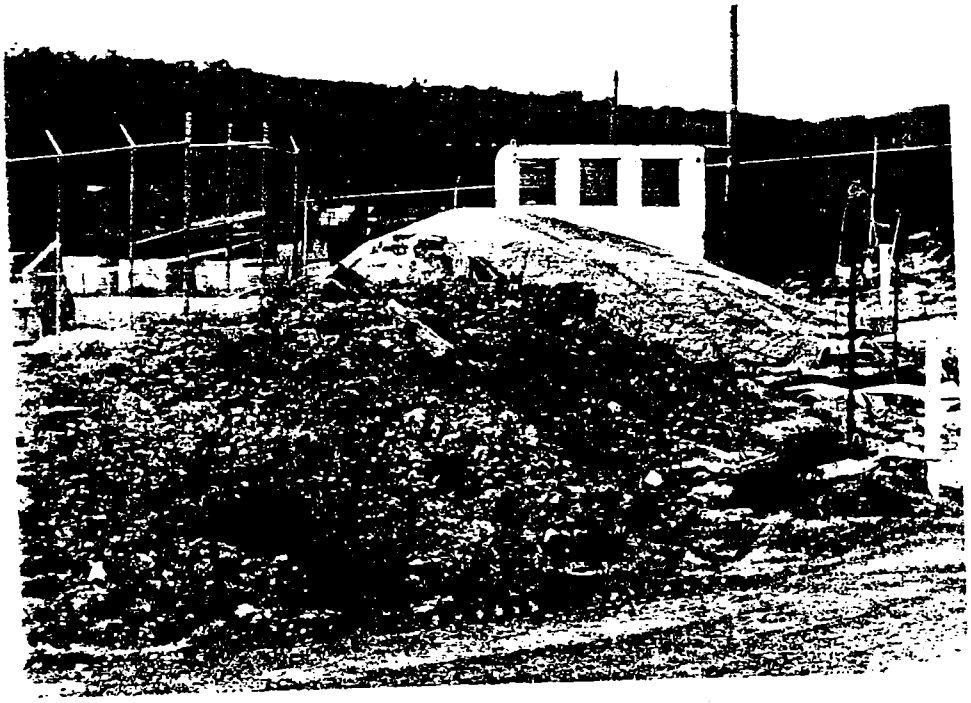
6-16 Automotive sampling station and discharge wier at North Slope Spring (S007). Discharge was about one gallon per minute.

6-17 View to west of Contaminated Soil Area Main Hill-3 (AOC Z), just up the hill from Building 48.

18 View of SW Building (to the north), the site of Contaminated Soil Area Main Hill-7 (AOC F).

6-20 to 6-22 Northeast to southeast (left to right) panorama of Old Sanitary Treatment Plant (SWMU SD-11).

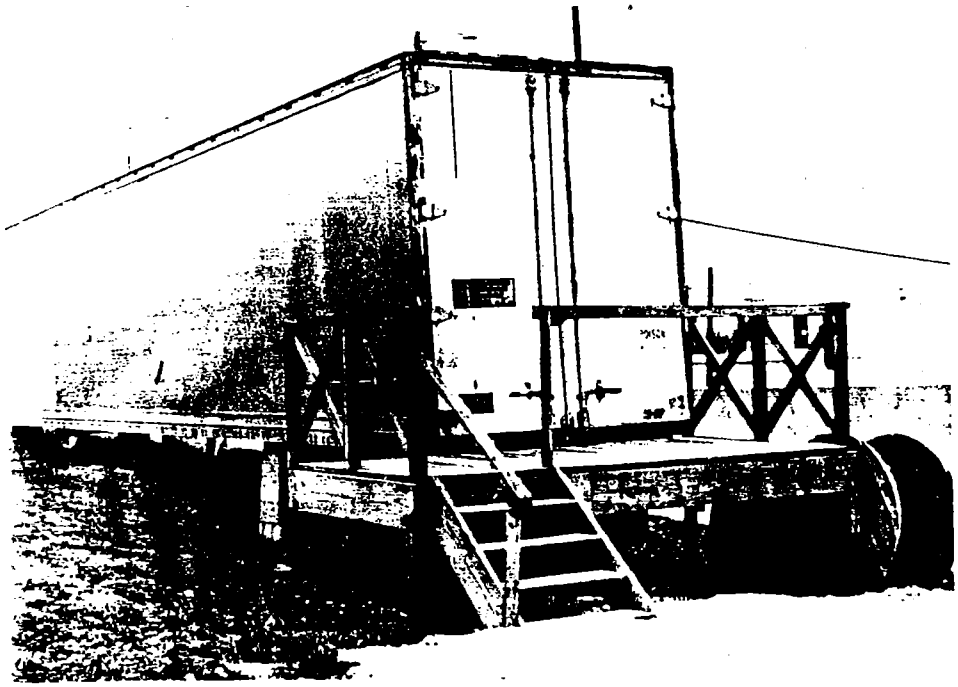




6-23 Contaminated soil for excavation of WD Line Spill (SWMU MI-2) which overlies Contaminated Soil Areas Main Hill-1, 2, and 4 (AOCs U, V, AA). This site was the former location of the Sludge Drying Ponds for the Old Sanitary Treatment Plant (SWMU SD-11).

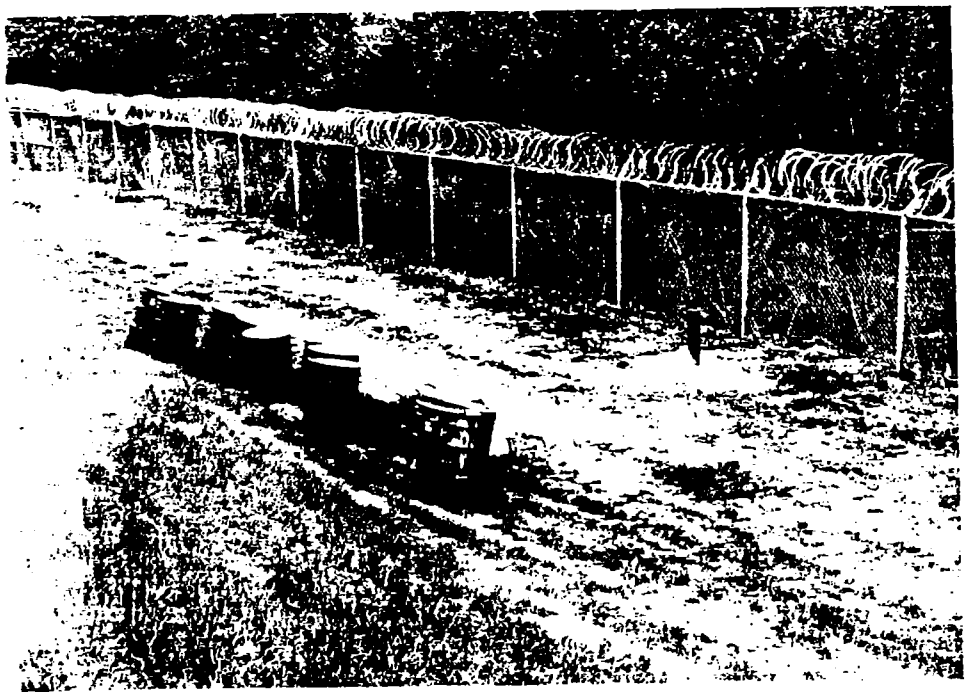
6-24 Permanent monitoring installation for Hillside Hole (AOC G). Observed discharge was apparently one gallon per minute. A facility representative indicated that average tritium concentrations varied between 200 to 400 nCi/l (which exceeds EPA's limit of 20 nCi/l but is less than DOE's limit of 2000 nCi/l.

6-27 View to south of second group of barrels containing drilling fluids taken from location of Photograph 6-26.



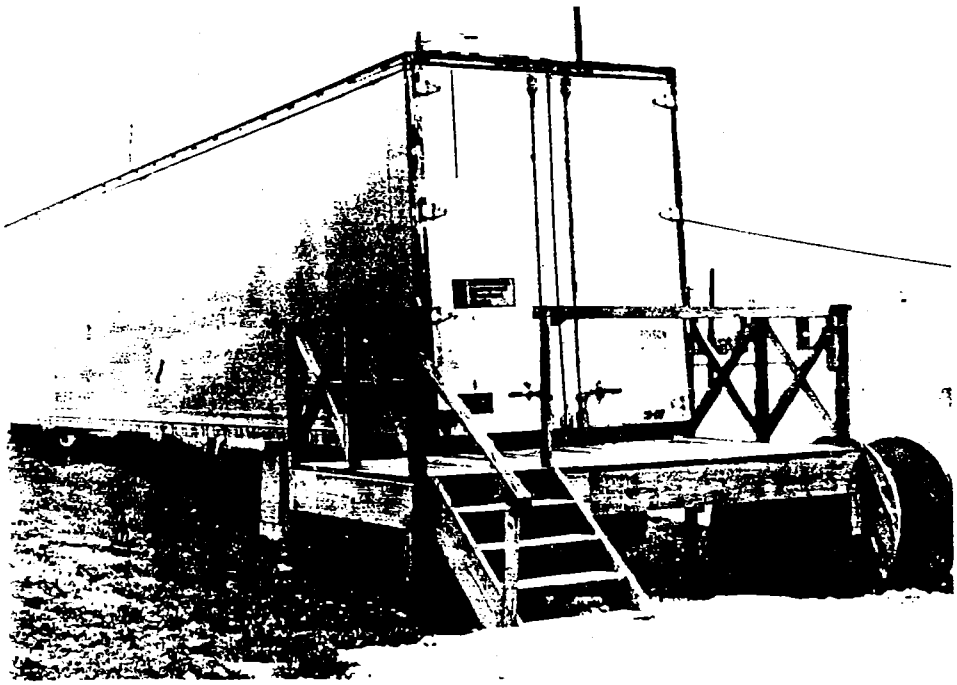
28 Trailer truck with Poison Placards parked near Guard Station. This unit is used to store surplus computer equipment and is not considered to be a SWMU.

6-25 Detail of discharge view from Hillside Hole (AOC G).



6-26 Group of barrels (SWMU CS-11) containing drilling fluids for western monitoring well 15 new Overflow Pond (SWMU SI-2). Barrels were marked "B" for barium.

6-27 View to south of second group of barrels containing drilling fluids taken from location of Photograph 6-26.

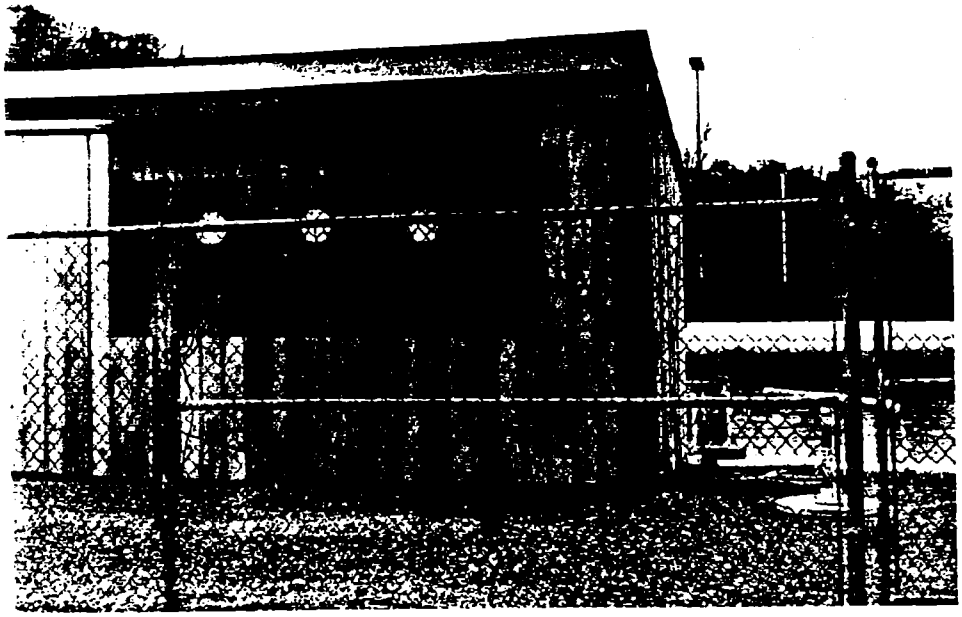


28 Trailer truck with Poison Placards parked near Guard Station. This unit is used to store surplus computer equipment and is not considered to be a SWMU.

6-29 to 6-32 East to south panorama of South Pond (AOC L). The pond received drainage from Pu 238 Spill in 1969.

6-33 View of North Canal (AOC I), looking south.

6-34 Photograph did not turn out.



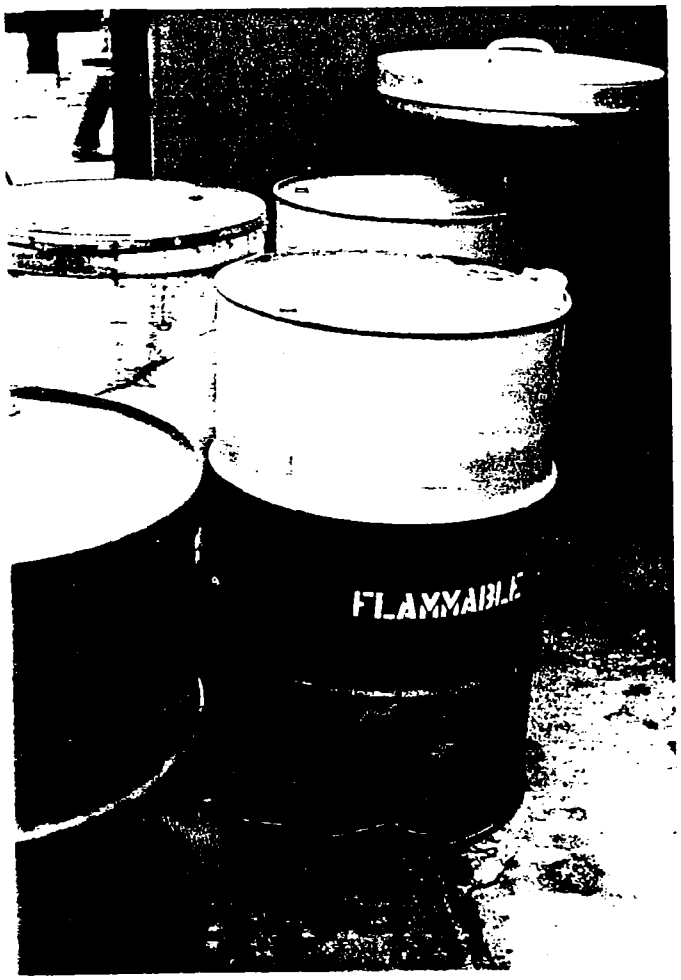
6-35 View to south of North Pond (AOC K). This pond was lined and reconstructed as a solar energy heating pond for a nearby swimming pool.

6-36 Portion of South Property Dump (SWMU LF-5), looking southwest.

7-1 Oil stain on South Property Dump (SWMU LF-5).

Overview of dump area, looking north toward DOE production facilities.

Area of recent unauthorized trash disposal on South Property Dump, looking south.



6-19 Waste oil drums and an unlabelled fiberpack drum (left rear) adjacent to SW Building Staging Area, (SWMU CS-19). Note poor condition of fiberpack drum.

10

© 1991 Wilson Jones Company

MOUND

Inter-Office Correspondence

From : R. J. Janowiecki
Waste Management

Date : July 28, 1988

Subject : VISUAL INSPECTION REPORT

Reference :

cc : A. D. Bickerton-DAO
C. S. Friedman
R. A. Neff

TO : R. K. Blauvelt

I called Bill Rohrer of Pope-Reid Associates on July 28 to inquire about the Visual Inspection Report that he was to prepare for U. S. EPA following his May 3-6 inspection of Mound solid waste management units.

Rohrer submitted the report to Region V for arrival by July 15. He could not comment on the report findings or areas of concern.

Region V will use the report to determine whether corrective action will be required at Mound as part of our RCRA permit, which the Agency is currently processing.

Dick

R. J. Janowiecki

RJJ:ar

11

© 1991 Wilson Jones Company

MOUND

Inter-Office Correspondence

From : R. J. Janowiecki
Technical Support

Date : August 22, 1988

cc : A. D. Bickerton-DAO
C. S. Friedman
R. A. Neff

Subject : Phone Call - Region 5

Reference :

TO : R. K. Blauvelt

Kae Lee of U.S. EPA Region 5 called on August 19:

-He has sent to me for information purposes three sections of the RFA report prepared by Pope-Reid containing their findings from the RCRA Facility Assessment conducted at Mound in May. (The RFA report should indicate those areas of Mound that may require further investigation in a RCRA Facility Investigation or RFI to fully characterize the extent of releases.) I told Kae that we have taken a look at several areas of Mound as part of DOE's Environmental Restoration Program and that we are formulating plans for field work. I said that we would like to review the RFA report findings to see what further study the contractor has suggested to EPA.

-He has sent to me some comments that he received recently from Ohio EPA following their review of the supplementary information submitted to Region 5 in June 1987 as part of our Part B permit application. He said that OEPA noted some deficiencies in the information provided; I told him we would be happy to correct them.

Dick

R. J. Janowiecki

RJJ:ar

© 1991 Wilson Jones Company

OhioEPA
State of Ohio Environmental Protection Agency
Southwest District Office
South Main Street
yton, Ohio 45402-2086
(513) 449-6357
FAX (513) 449-6249

RJJ

Richard F. Celeste
Governor

February 21, 1989

Re: U.S.DOE-MOUND
MONTGOMERY COUNTY
HAZARDOUS WASTE
OH6890008984

Mr. James Morley
Area Manager
U.S. DOE-Mound
Dayton Area Office
P.O. Box 66
Miamisburg, OH 45342

Dear Mr. Morley:

On February 9, 1989, I met with Mr. Dick Blauvelt, Mr. Dan Carfagno, and Mr. Richard Janowiecki to discuss and inspect various Solid Waste Management Units (SWMUs) identified in AT Kearney's Preliminary Review/Visual Site Inspection Report for Mound. The purpose of my visit was to identify those SWMUs where RCRA activities (treatment, storage or disposal of hazardous waste) may have occurred or may be currently occurring. In many cases, the narrative provided by the AT Kearney report was insufficient to make this identification.

Messrs. Blauvelt, Carfagno, and Janowiecki were able to answer most of my questions regarding the sites of concern. However, we were not able to determine the status of some of the sites pending further investigation. We agreed that the best way to resolve this matter would be for me to request a written response from Mound regarding the status of these SWMUs. This letter serves as a formal request for this information.

I have listed below those SWMUs of concern.

AT Kearney Unit #	Unit Name
LF-4	Hillside Disposal Area
SI-4	Building 1 Leach Pit
SI-5	Building 27 Leach Pit
CS-1	Scintillation Vial Storage Area
CS-2	Building E Solvent Storage Shed
CS-3	Building 28 Solvent Storage Area
CS-4	DS Building Solvent Storage Shed
CS-5	Building B Solvent Storage Shed
CS-6	Waste Oil Drumfield

CS-7	Hazardous Waste Storage Area
CS-8	Past Hazardous Waste Storage Area
31 CS-9	Radioactive/Mixed Waste Storage Area
CS-11	Drilling Mud Drum Storage Areas
CS-12	Building 27 Solvent Storage Area
CS-13	Outdoor Hazardous Waste Storage Area
CS-15	Building B Temporary Drum Storage Area
CS-18	WD Building Drum Staging Area
CS-19	SW Building Drum Staging Area
21 IN-1	Glass Melter Furnace
OB-1	Trash Burner
54 OB-2	Thermal Treatment Unit
52 OB-3	Retort (Rotary Kiln)
OB-5	Pyrotechnic Waste Shed
20 OB-7	Explosive Waste Storage Bunker
55 OB-8	Pyrotechnic Waste Disposal
67 UT-1	Waste Solvent Storage Tank
MI-9	Glass Melter Feed Drum
MI-14	Building 27 Concrete Flume

I will need the following information for each unit, when applicable, in order to properly identify its status under RCRA.

1. A brief description of the activities conducted in the units. Specify whether RCRA wastes are/were handled in some manner at each of the units.

2. For units no longer active, consider whether a RCRA permit would have been required for the activities that were conducted. Specify dates of closure for those units where the Kearney report was not specific.

3. For active units, consider whether a RCRA permit is required for the activity conducted. Provide justification as necessary.

4. For units that Mound considers to be covered under an interim status permit, indicate whether the unit is identified in the original Part A Permit submitted to the U.S.EPA, or is identified in a later revision of this Part A. When the unit is first identified in a permit revision, indicate the date of this revision.

Please submit this information as soon as possible. If you have any questions or comments, please call me at (513) 449-6357.

Sincerely,

Paul D. Pardi

Paul D. Pardi
Solid & Hazardous Waste Management Unit

PDP/lal

EG&G MOUND APPLIED TECHNOLOGIES
PO BOX 3000 MIAMISBURG OHIO 45343-0987 • TEL (513) 865-4020

MAR 16 1989

Mr. James A. Morley, Area Manager
U. S. Department of Energy
Dayton Area Office
P. O. Box 66
Miamisburg, OH 45343

Dear Mr. Morley:

RCRA Solid Waste Management Units

Enclosed you will find information requested by Mr. Paul Pardi of the Ohio EPA in his letter to you dated February 21, 1989. The request asks for supplemental information about some of the Solid Waste Management Units (SWMUs) identified in the AT Kearney Preliminary Review/Visual Site Inspection Report. The intent is to clarify the RCRA status of these sites.

Please forward this enclosure to Mr. Pardi for his review. Let me know if you have any questions.

Very truly yours,

Richard K. Blauvelt

Richard K. Blauvelt
Senior Waste Management Specialist

Approval P C Adams
for Jack L. Clark
Director, Administration

RKB/dlm
B-046

Enclosure

cc: J. A. Morley (2)

bc: D. C. Carfagno
C. S. Friedman
R. J. Janowiecki
R. A. Neff

DRAFT

Mr. Paul D. Pardi
Ohio Environmental Protection Agency
Southwest District Office
40 South Main Street
Dayton, OH 45402-2086

Dear Mr. Pardi:

Enclosed you will find the response to your memo of February 21, 1989, concerning some of Mound's Solid Waste Management Units (SWMUs) as identified in the AT Kearney Report.

I hope that this will clarify any questions you had regarding the RCRA status of these units. If you wish to discuss the details of the enclosure, please contact Richard Blauvelt of the EG&G Mound staff at 865-3698.

Sincerely,

James A. Morley
Area Manager

Enclosure
M-011

MOUND RESPONSE TO OHIO EPA REQUEST FOR ADDITIONAL INFORMATION ON SELECTED SOLID WASTE MANAGEMENT UNITS

LF-4 HILLSIDE DISPOSAL AREA

Construction and building debris and soil were placed on this hillside slope. We have no knowledge or record that hazardous wastes were put there.

No RCRA permit would have been required because no known hazardous wastes were involved.

This site is scheduled for sampling during Mound's Environmental Restoration (ER) program.

SI-4 BUILDING 1 LEACH PIT

Highly aqueous waste containing a small amount of acetone and potentially trace amounts of explosive were discharged to this pit for evaporation of the solvent and biodegradation of the explosive. When this practice was discovered and its potential for environmental impact realized by site regulatory personnel, samples of the pit contents were taken and analyzed for ignitability. No samples were found to be ignitable. Operation of the pit was discontinued in 1985, and the pit soil was excavated.

No RCRA permit would have been required because the pit contents did not exhibit the ignitability characteristic and were thus considered non-hazardous.

SI-5 BUILDING 27 LEACH PIT

Aqueous waste containing a small amount of solvent and traces of explosive were discharged to this pit for evaporation of the solvent and biodegradation of the explosive. When this practice was discovered and its potential for environmental impact realized by site regulatory personnel, samples of the pit contents were taken and analyzed. Samples, collected when certain conditions were used in the upstream process generating the waste, showed flash points under 140°F; at other operating conditions, flash prints were greater than 140 degrees F. Sediment samples from the surface of the pit indicated a few ppm of RDX explosive. Operation of the pit was discontinued in 1985.

A RCRA permit would have been required once we found that hazardous wastes were being managed in the pit. Operation of the pit was stopped, and the liquid waste from the upstream process was collected into drums for ultimate offsite shipment and disposal.

Instead of formally closing this unit, we decided to investigate the area during Mound's Environmental Restoration Program, and to conduct remediation as needed.

CS-1 SCINTILLATION VIAL STORAGE AREA

Scintillation vials are closed plastic containers, with approximate volumes of 20 ml to 250 ml, containing solvent and radioactive materials, typically tritium or plutonium-238. Solvents typically consist of trimethylbenzene, xylene, naphthalene or 1,4-dioxane. After analyzing vial contents for radioactivity level, the closed vials are stored in either of two closed 20-gallon metal containers in the analytical laboratory (E-133). When the metal containers are full, low-level tritium vials (<50 μCi/l) are taken to Bldg. 72 and high-level tritium vials (>50 μCi/l) are taken to Bldg. 23 for storage as hazardous waste or radioactive mixed waste, respectively. All plutonium-238 vials are taken to Bldg. 23.

A RCRA permit is not required for this area because each container of vials is filled and relocated to a central storage facility in less than 90 days.

CS-2 BUILDING E SOLVENT STORAGE AREA

Drums of raw materials and waste solvents had been temporarily stored in this enclosed shed, which was demolished in 1988 to make room for new construction. During demolition, soil under the shed floor appeared visually to be contaminated with solvent. The soil was excavated until no solvents could be detected by analysis of soil samples. Data from this work was provided to Geoff Leking of the Ohio EPA.

This temporary storage area did not require a RCRA permit because each hazardous waste container was stored for less than 90 days before it was transferred to our central waste storage facility.

CS-3 BUILDING 28 SOLVENT STORAGE AREA

This outdoor concrete pad was used to temporarily store one or two 55-gallon drums of waste solvent that was generated in laboratories in the building adjacent to the pad and pumped through tubing into the drums. When full, the drums were transferred to our central waste storage facility.

No RCRA permit is required for this temporary storage area because each hazardous waste container is stored there for less than 90 days.

CS-4 DS BUILDING SOLVENT STORAGE SHED

Drums of raw materials and hazardous solvent wastes were temporarily stored in this enclosed shed. Waste were pumped into the drums from laboratories in the building adjacent to the shed.

No RCRA permit is required for this temporary storage area because each hazardous waste container is stored for less than 90 days before it is transferred to our central waste storage facility.

CS-5 BUILDING B SOLVENT STORAGE SHED

Drums of raw material and solvent are temporarily stored in this enclosed shed. Waste solvent generated in laboratories in an adjacent building is pumped through tubing into the drum in the shed. When filled, the drums are transferred to our central storage facility.

No RCRA permit is required for this area because each container of waste is stored there for less than 90 days before it is moved to our central storage facility.

CS-6 WASTE OIL DRUMFIELD

Drums of oil and hazardous waste were temporarily stored on skids in this field during a period when the former drum storage facility had to be demolished to make room for new construction but before the new storage facility was ready for occupancy. In our closure plan for the former drum storage facility, which was approved by Ohio EPA, we noted the need to temporarily store our waste inventory in the field pending completion of the new storage facility.

No revision in our Part A permit application was made with respect to this temporary situation because we notified the Ohio EPA regarding the activity and we received no feedback from the Agency indicating that further action was needed on our part.

Hazardous wastes were shipped from the field area to offsite facilities for treatment and disposal. Oil and other non-RCRA wastes were temporarily placed outside of the new storage facility, but within the fenced area, after that facility was ready for use.

CS-7 HAZARDOUS WASTE STORAGE AREA

Containers of hazardous waste had been stored at this facility until a sufficient quantity of drums were accumulated to warrant offsite shipment for final disposition. This facility replaced another storage unit of the same capacity which had to be demolished to make room for new construction.

A RCRA permit is required for this storage facility. This unit is considered to be under interim status. The unit was identified in a revision to our Part A in May, 1985, at the time the facility was being readied for use.

CS-8 PAST HAZARDOUS WASTE STORAGE AREA

Containers of hazardous waste had been stored at this facility until a sufficient quantity of drums were accumulated to warrant offsite shipment for final disposition. Ohio EPA approved the closure plan for this unit in August 1985. During closure, the concrete base was broken up and disposed. Soil around the base of the unit was excavated until no volatile organic constituents could be detected in the analysis of core samples. Findings were reported to Ohio EPA.

A RCRA permit was required for this facility. The unit was considered to be under interim status. The capacity and proposed location of this facility were indicated in our Part A permit application submitted to EPA Region 5 in November 1980 and to Ohio EPA on April 9, 1981; a photograph and more detailed description of the unit were provided in a later revision to the Part A.

CS-9 RADIOACTIVE MIXED WASTE STORAGE AREA

Containers of radioactive mixed waste are being stored in a portion of an enclosed building pending the availability of an offsite facility permitted to accept this waste for ultimate disposition. Most of this storage facility contains drums of solidified radioactive waste; only a small area is used for storage of radioactive mixed waste.

A RCRA permit is required for this unit. The area for the storage of radioactive mixed waste was described in a revision to our Part A dated November 7, 1986 and in our Part B permit application submitted to EPA Region 5 that date; an information copy of our Part B was sent to Ohio EPA at Region 5's request shortly thereafter.

CS-11 DRILLING MUD DRUM STORAGE AREA

Twenty-three drums of soil and limestone, removed during drilling of monitoring wells in the summer of 1987, are temporarily being stored in this

area. Radioactivity in the waste was found to be only at background levels. Based on preliminary data, there is no evidence that this material is a RCRA hazardous waste, as discussed with Paul Pardi of Ohio EPA on February 9, 1989. We expect to follow Mr. Pardi's recommendation to dispose of this material as non-hazardous soil.

CS-12 BUILDING 27 SOLVENT STORAGE AREA

Drums of wastewater, containing a small amount of acetone or other solvent and a trace amount of explosive, are temporarily stored on a concrete pad adjacent to the building where the waste is generated. Periodically, these drums are shipped offsite for ultimate disposition or transferred for temporary storage in our waste storage facility, Bldg. 72.

A RCRA permit is not required for this unit because wastes are shipped offsite within 90 days of generation; in the unlikely event that this is not possible, the wastes are moved to Bldg. 72 within 90 days.

CS-13 OUTDOOR HAZARDOUS WASTE STORAGE AREA

Drums of oil and other non-RCRA hazardous wastes had been temporarily stored on an asphalt pad within the fenced area surrounding Bldg. 72, the central hazardous waste storage facility, until ready for offsite shipment.

No RCRA permit would have been required for this unit because no known RCRA hazardous wastes were involved.

All of these materials have been shipped offsite for disposal.

CS-15 BUILDING B TEMPORARY DRUM STORAGE AREA

This concrete pad, adjacent to B shed, was used to temporarily store drums of raw materials and waste during upgrading of B shed. Full drums of waste were transferred to our central waste storage facility.

No RCRA permit was required for this unit because drums of hazardous waste were filled and transferred to our central storage facility within 90 days.

CS-18 WD BUILDING DRUM STAGING AREA

Drums containing glass for use in our glass melter (waste thermal treatment unit) are stored on an outdoor concrete pad outside of WD Annex where the melter is located.

No RCRA permit is needed for this area because no hazardous wastes are involved.

CS-19 SW BUILDING DRUM STAGING AREA

Drums of waste oil and antifreeze were placed on a concrete pad for transfer to our central waste storage facility.

No RCRA permit would have been required for this unit because no RCRA hazardous wastes are involved.

IN-1 GLASS MELTER FURNACE

This research and development unit has been used on two occasions to conduct preliminary experiments to determine the unit's capability for thermally destroying selected hazardous wastes. No known radioactive mixed wastes have been burned in the unit. In January 1985, brief experimental burns were conducted using simulated hazardous wastes; in June 1987, other simulated wastes were briefly burned. State and Federal EPA representatives witnessed the 1985 tests. Results of both of these experiments were reported in our Part B permit application. The furnace has been shut down since April 1988.

This unit is considered to be under interim status. A RCRA permit is required to burn hazardous and radioactive mixed waste in this unit. In a revision to our Part A in November 1984, we described this unit and indicated that it was available but presently not being used for hazardous waste

treatment. Prior to the first use of the unit for test runs involving hazardous waste, we submitted a revision to our Part A in January 1985 indicating that the glass melter will be evaluated with respect to burning such waste. Our Part B permit application, submitted to Region 5 in November 1986, included this equipment among the units for which we are seeking a RCRA permit.

OB-1 TRASH BURNER

Combustibles lightly contaminated with explosives had been burned occasionally in this unit. Complete combustion is expected when burning combustibles that include explosives. Submission of a formal closure plan was inadvertently omitted before the simple above-ground fenced enclosure was dismantled in May 1988.

This unit is considered to have been under interim status. A RCRA permit would have been required to burn reactive wastes in this unit. The storage and treatment of waste explosives was noted in our Part A application of November 1980 to EPA Region 5 and subsequently to Ohio EPA. Brief supplementary information regarding this activity was submitted to Ohio EPA in July 1981. Subsequent Part A revisions, and our Part B submission contained additional descriptive information regarding this activity.

Ohio EPA has issued air permits to conduct onsite open burning of explosives at Mound under certain conditions.

We plan to sample the soil under this former unit as part of our Environmental Restoration program.

OB-2 THERMAL TREATMENT UNIT

Explosive wastes are occasionally burned in a thermal treatment unit called an "incinerator" by burn area operating personnel. The Mound designed and constructed unit consists of a 55-gallon drum, cooled externally, and containing a fan near the inside top to swirl the air inside the drum of burning waste.

This unit is considered to be under interim status. A RCRA permit is required to burn reactive waste by thermal treatment in this unit. The storage and treatment of waste explosives was noted in our Part A application of November 1980 to EPA Region 5 and subsequently to Ohio EPA. Brief supplementary information was submitted to Ohio EPA in July 1981. Subsequent Part A revisions and our Part B submission contained additional descriptive information regarding this activity.

Ohio EPA has issued air permits to conduct open burning of waste explosives at Mound under certain conditions.

OB-5 PYROTECHNIC WASTE SHED

Pyrotechnic powders and pyrotechnic-contaminated wastes are saturated with mineral oil, double-bagged, and sealed in metal cans which are stored on a covered and fenced concrete pad prior to thermal destruction onsite.

This unit is considered to be under interim status. A RCRA permit is required for this storage unit. The storage of waste explosives was noted in our Part A application of November 1980 to EPA Region 5 and subsequently to Ohio EPA. Subsequent Part A revisions and our Part B submissions contained additional descriptive information regarding this activity.

OB-7 EXPLOSIVE WASTE STORAGE BUNKER

Containerized explosive wastes are stored in Magazine 53, a bunker, prior to onsite thermal destruction.

This unit is considered to be under interim status. A RCRA permit is required for this storage unit. The storage of waste explosives was noted in our Part A application of November 1980 to EPA Region 5 and subsequently to Ohio EPA. Subsequent Part A revisions and Part B submission contained additional descriptive information regarding this activity.

OB-8 PYROTECHNIC WASTE DISPOSAL

Water was added to pyrotechnic waste and the resulting, essentially non-reactive, wastewater solution was then poured onto the ground for evaporation and biodegradation. Only approximately 20 gallons of solution were handled annually in this manner. This procedure was discontinued in 1985. The area will be sampled as part of Mound's Environmental Restoration program.

The addition of water to a reactive waste to render it essentially non-reactive could be considered waste treatment subject to RCRA permitting. However, when this practice was discovered and its potential for environmental impact realized by site regulatory personnel, the practice was terminated.

UT-1 WASTE SOLVENT STORAGE TANK

This underground storage tank had contained solvent wastes generated onsite and intended for burning in an incinerator located in an adjacent building. After operating for a brief period, the incinerator was shut down in late 1973; it was dismantled in the second quarter of 1979. Although the tank has been inactive since that time, it has remained in the ground. The tank appears to be free of bulk solvent, but it does contain a small amount of sludge which has been sampled as part of Mound's Environmental Restoration program.

No RCRA permit would have been required for this unit because it was not used for the deliberate storage of hazardous waste on or after November 19, 1980, the date used by EPA to define an existing hazardous waste management facility that could be subject to RCRA regulations.

MI-9 GLASS MELTER FEED DRUM

This unit is essentially a 55-gallon drum, located near the glass melter thermal treatment unit, that is used to contain materials while they are being fed into the melter for thermal destruction studies.

No RCRA permit is required for this unit because it is not deliberately used to treat or dispose of hazardous waste or to contain such waste strictly for storage.

MI-14 BUILDING 27 CONCRETE FLUME

This concrete flume is located in the floor of a building where explosive powder is produced. Wastewater from the production process is collected in the 100-gallon capacity unit, from which it is pumped into drums twice a day when powder is being produced. Visual inspection of the concrete flume showed no visible cracks; however, integrity of the unit is scheduled to be evaluated in Mound's Environmental Restoration program.

No RCRA permit is required for this unit. It is essentially a catch basin used to temporarily collect wastewater from a process, so that it can be promptly pumped into drums for offsite disposition. It is not used to deliberately treat, store or dispose of hazardous waste.

RJJ:3-13-89