PRELIMINARY REVIEW/VISUAL SITE INSPECTION REPORT
OF
NAVAL WEAPONS SUPPORT CENTER
CRANE, INDIANA
EPA ID IN5170023498

Prepared for:

U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Prepared by

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EPA Contract No. 68-01-7038
Work Assignment R05-02-45

March 1987

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March 30, 1987

05-02-45 (P) KEARNEY

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

Reference: EPA Contract No. 68-01-7038, Work Assignment No. R05-02-45, Naval Weapons Supply Center (NWSC), Crane, IN

Dear Ms. Vogtman:

Enclosed please find the Preliminary Review/Visual Site Inspection Report for the above-referenced facility. This report presents the results of the Preliminary Review (PR) and Visual Site Inspection (VSI) portions of the RCRA Facility Assessment (RFA) for this facility. The PR form, VSI trip report, VSI field notes, and VSI photo log are included as attachments to this report.

Based on a review of the available information and observations made during the VSI, 100 Solid Waste Management Units (CWMUs) and three other Areas of Concern were identified at the NWSC facility.

Groundwater contammination has been documented at the Old Burning Pit (SWMU 1), the McCormish Gorge (SWMU 2), the Rockeye Percolation Site (SWMU 5), the Demolition Range (SWMU 58), the Pest Control Area (SWMU 60), the Former Waste Oil Tank Site (SWMU 61), and the Rifle Range (SWMU 63). These units are currently undergoing groundwater assessment to determine the extent of contamination.

Based on the results of the PR and VSI, several units appear to warrant sampling to determine if there has been a release of hazardous wastes or constituents to the environment. These include the Rockeye Loading Area Sumps (SWMU 4), the Roads and Grounds Dump Area (SWMU 20), the PCP Dip Tank (SWMU 21), Building 126 Sump (SWMU 22), the Outside Truck Wash Rack (SWMU 33), the Oil Pan Wash Out/Disposal Rack (SWMU 36), the Cast High

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Ms. Pat Vogtman
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Explosives Fill (SWMU 46), the Paint Shop Building (SWMU 52), the Old Sludge Drying Beds (SWMU 56), the Rifle Range (SWMU 65), Sedimentation Pond #1 (SWMU 64), Mine Fill A (SWMU 65), Mine Fill B (SWMU 66), the Composition Testing Building (SWMU 93), and the Building 106 Settling Pond (SWMU 100).

Because there has been documented contamination at the site, EPA may wish to consider a RCRA Facility Investigation (RFI) at this site. Alternately, further investigation under a sampling visit (SV) appears to be warranted at this facility. This SV should include the units discussed above.

Because of time constraints and controlled access at the site, several minor units could not be observed during the VSI. For units where insufficient information was available to draw conclusions regarding potential for release, the additional information needed has been identified under the sugested further actions for these units. It is anticipated that this information could be obtained during the sampling visit.

If you have any questions, please call me or Gayle Kline, the Work Assignment Manager.

Sincerely,

Gordon Bennett
Technical Director

Kay Breeden
Program Director

cc: [redacted]
G. Kline
D. Ruggery
V. Harris
J. Gers

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TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

A Preliminary Review (PR) and Visual Site Inspection (VSI) were performed to identify and evaluate solid waste management units (SWMUs) and other areas of concern at the Naval Weapons Support Center (NWSC) in Crane, Indiana. The potential for releases to the environment of hazardous waste or constituents was assessed and the need for further actions was evaluated.

The NWSC is a large facility (approximately 100 square miles) and is involved in a wide range of activities, providing materials and support services to the U.S. Navy. The facility is operated by two major tenants - the Crane Army Ammunition Activity (CAAA) and the Defense Reutilization and Marketing Office (DRMO) of the Navy. The CAAA is responsible for a number of activities at the facility including the manufacture and demilitarization of ammunition, storage and treatment of ammunition wastes, and providing general engineering support services. These activities result in the generation of a number of hazardous wastes including explosives contaminated sludge, explosive wastewater treatment sludges (K044), demilitarized munitions wastes, and spent solvents. The DRMO is responsible for the storage and resale of hazardous materials and hazardous wastes generated for the entire NWSC facility.

A total of 100 SWMUs and three Other Areas of Concern have been identified at NWSC as a result of this review. Five of these units are currently regulated under RCRA Interim Status. Due to time constraints during the VSI, some minor SWMUs were not observed. Conclusions regarding release potential to the various environmental pathways have been developed for those units which were observed during the VSI and for which sufficient information was available. Conclusions have not been developed for those minor units that were not observed during the VSI and for which insufficient information was available.

The following is a summary of the SWMUs and other areas of concerns identified during the PR and VSI. Units not observed during the visual site inspection are noted by an asterisk.

1. Old Burning Pit
2. McComish Gorge Dump
3. FS Smoke Storage Facility
4. Rockeye Loading Area Sumps
5. Rockeye Percolation Site
6. Rockeye Loading Area Wastewater Treatment Unit - Building 3004
7. Waste Carbon Container Storage Area Outside of Building 3004
8. Paint Waste Container Storage Area at the Rockeye Loading Area
9. Active Solid Fill Site
10. Old Solid Fill Site
11. Above-ground Waste Oil Storage Tank - Building 2801
12. Classified Papers Incinerator - Building 45
*13. Building 136 Sump
*14. Wastewater Treatment Unit (lead) - Building 136
15. Wastewater Treatment Unit - Plating Shop-Building 3064
16. Drum Storage Area behind Building 3064
17. Battery Shop Dump Building 36
18. Acid Neutralization Pit
*19. PCB Burial Area - (Pole Yard)
20. Roads and Grounds Dump Area

21. PCP Dip Tank

22. Building 126 Dump

*23. Dust Collectors - Building 126

24. Scrap Storage Area Behind Building 126

*25. Red Phosphorous Building Sump - Building 1886

26. Building 133 Sump

27. Railroad Maintenance Shop Wash Area Building 7

28. Railroad Maintenance Shop Oil/Water Separator

29. Auto Maintenance Shop - Building 1820

30. Heavy Equipment Maintenance Shop - Building 1818

31. Truck Wash Area at the Heavy Equipment Maintenance Building

32. Oil/Water Separator at the Heavy Equipment Maintenance Building

33. Outside Truck Wash Rack Adjacent to Building 1818

34. Roll - Off Boxes Outside Building 1820

35. CONEX Hazardous Waste Transfer Containers behind Building 1820

36. Oil Pan Wash Out/Disposal Rack Adjacent to Building 1820

37. Underground Waste Oil Storage Tank -- Building 1818

38. Underground Waste Oil Storage Tank -- Building 1820

*39. Mechancial Maintenance Shop -- Building 56

*40. 400 Gallon Solvent Storage Tank (Building 56 Paint Shop)

*41. Red Phosphorous Mixing Emergency Sump

*42. Booster Area - Lead Azide Sumps - Building 106 and 107

43. Wastewater Treatment Unit Building 3074

44. Lead Azide Loading Pond

45. Open Storage Area Outside Building 2801

*46. Cast High Explosives Fill (Building 146)

47. Central Storage Facility

48. APE 1236 Incinerators Building 146

49. Prototype Incinerator Building 146

50. Defense Reutilization and Marketing Office (DRMO) Hazardous Waste Storage Area

51. DRMO Storage Lot

*52. Paint Shop Building 2889

*53. Load and Fill Area -- Buildings 105, 198 and 200

*54. Wastewater Treatment Unit Building 160

55. Wastewater Treatment Unit - Sewage Plant - Building 3049

56. Old Sludge Drying Beds

57. Sewage Sludge Vacuum Truck and and Discharge Pad

58. Demolition Range

59. Waste Explosive Storage Area at the Demolition Range

60. Pest Control Area Building 2189

61. Former site of Waste Oil Underground Storage Tank near the Pest Control Area

62. Drum Storage Area Adjacent to SWMU #61

63. Rifle Range

64. Sedimentation Pond #1

65. Mine Fill A

66. Mine Fill B

*67. Wastewater Treatment Unit - Building 104

68. Explosive D Wash Areas

*69. Load and Fill Area Sumps Building 104

*70. Steam Out Unit - Building 160

71. Highway 58 Dump Site A

*72. Storage Tanks - Building 160

*73. Bomb Proof Group

74. DRMO Salvage Yard

*75. Heavy Equipment Storage Area - Building 2189

76. Sanitary Sewer System

*77. Turkey Creek Quarry

78. Highway 58 Dump Site B

79. Ammunition Burning Grounds (ABG)

80. Sludge Dewatering Units (ABG)

81. Underground Storage Tanks (ABG)

82. Ash Pile (ABG)

83. Ash Roll-off Boxes (ABG)

84. Open Burning Area (ABG)

85. Dye Burial Grounds

86. Sanitary Landfill

87. Sanitary Landfill Leachate Collection Ponds

88. Sewage Sludge Land Application Area (Landfarm)

89. PCB Storage Facility

90. Sedimentation Ponds 2, 3, and 4

91. Pyro Test Area (Ordnance Testing Area)

*92. Test Track

*93. Composition Testing Facility - Decontamination Building 181

94. Rocket Range

95. Restored Mustard Gas Burial Area

96. Temporary Flammable

*97. Metal Shavings Collection Area

*98. 500 Gallon Tank Wagon

*99. 3-Ton Pump Truck

100. Settling Pond behind Building 106

OTHER AREAS OF CONCERN

A. Underground Diesel Fule/Gasoline Tanks
B. Stream East of McComish Gorge
C. White Phosphorous to Phosphoric Acid Production Building

*Units not observed during the VSI

II. INTRODUCTION

This report presents the results of the preliminary review (PR) and visual site inspection (VSI) performed for the NWSC facility. The PR and VSI were performed at this facility to identify and assess the potential for releases to the environment from SWMUs and other areas of concern. This report was developed using the U.S. EPA's RCRA Facility Assessment Guidance Document.

The information reviewed in preparing this report includes data obtained from EPA Region V and the Indiana State Board of Health including the Part A and Part B permit applications, the SWMU response letter, and available inspection reports. Additional information was obtained through a visual site inspection of the facility conducted on February 17th through 20th.

III. FACILITY AND PROCESS DESCRIPTION

The Naval Weapons Support Center (NWSC), Crane, is located on a 62,463 acre site in southwestern Indiana (Ref. 6, p.B-1). The facility is situated primarily in Martin County and extends into Davies, Green, and Laurence counties, 75 miles southwest of Indianapolis and 75 miles northwest of Louisville, Kentucky. The nearest metropolitan area is Bloomington which is 25 miles northeast of the site (Ref. 6, p.B-1). Figure 1 represents the general location of the NWSC.

The facility operates to "provide material, technical, and logistic support to the Navy" (Ref. 15, Section III). Operations began at NWSC on January 27, 1941 (Ref. 11, p.1). NWSC employs approximately 4,400 people in twenty-one departments and six tenant activities (Ref. 15, Section III). One segment of NWSC's mission is to assist the Crane Army Ammunition Activity (CAAA) who is a tenant on the facility. The CAAA employs 1300 people and is tasked with the "production and renovation of conventional ammunition and related items," engineering and product quality assurance, and the storage, shipment, demilitarization, and disposal of "conventional ammunition and related components" (Ref. 15, Section III).

A variety of hazardous and nonhazardous wastes are generated, stored, treated, and disposed at NWSC. These wastes include: explosive contaminated sludges, residues from munition demilitarization, metal plating wastewater, waste oils, and spent solvents. Explosive contaminated sludges result from the production of ammunition. The sludges are transported by vacuum truck to dewatering surface impoundments (Sludge Dewatering Units (Unit 80)) where the aqueous portion of the sludge is allowed to percolate into underground collection tanks (Unit 81) and the dried residual material is burned in-place. Open burning (thermal treatment) of explosive contaminated material, ordnance, propellant contaminated material, and pyrotechnic loaded items is carried out on the Old Rifle Range (Unit 63) and the Ammunition Burning Grounds (Unit 79) (Ref. 5). Controlled burning of ordnance is accomplished with the use of two 1236 APE Rotary

Incinerators (Unit 48) and one Prototype Rotary Incinerator (Unit 49) (Ref. 5). Prior to 1980, explosive contaminated wastewater was discharged to nearby streams. Presently, this wastewater is treated at various on-site, facility owned, wastewater treatment plants prior to eventual NPDES outfall. Other waste handling processes at NWSC include the treatment of metal plating wastewater and the storage of used oils and waste solvents. The metal plating wastewater is pretreated at the metal plating shop prior to discharge to the facility's sanitary sewer system. Waste oils are stored in two underground tanks at the maintenance shops and in an above-ground storage tank outside of Building 2801. Waste solvents are containerized and stored at the Central Storage Facility.

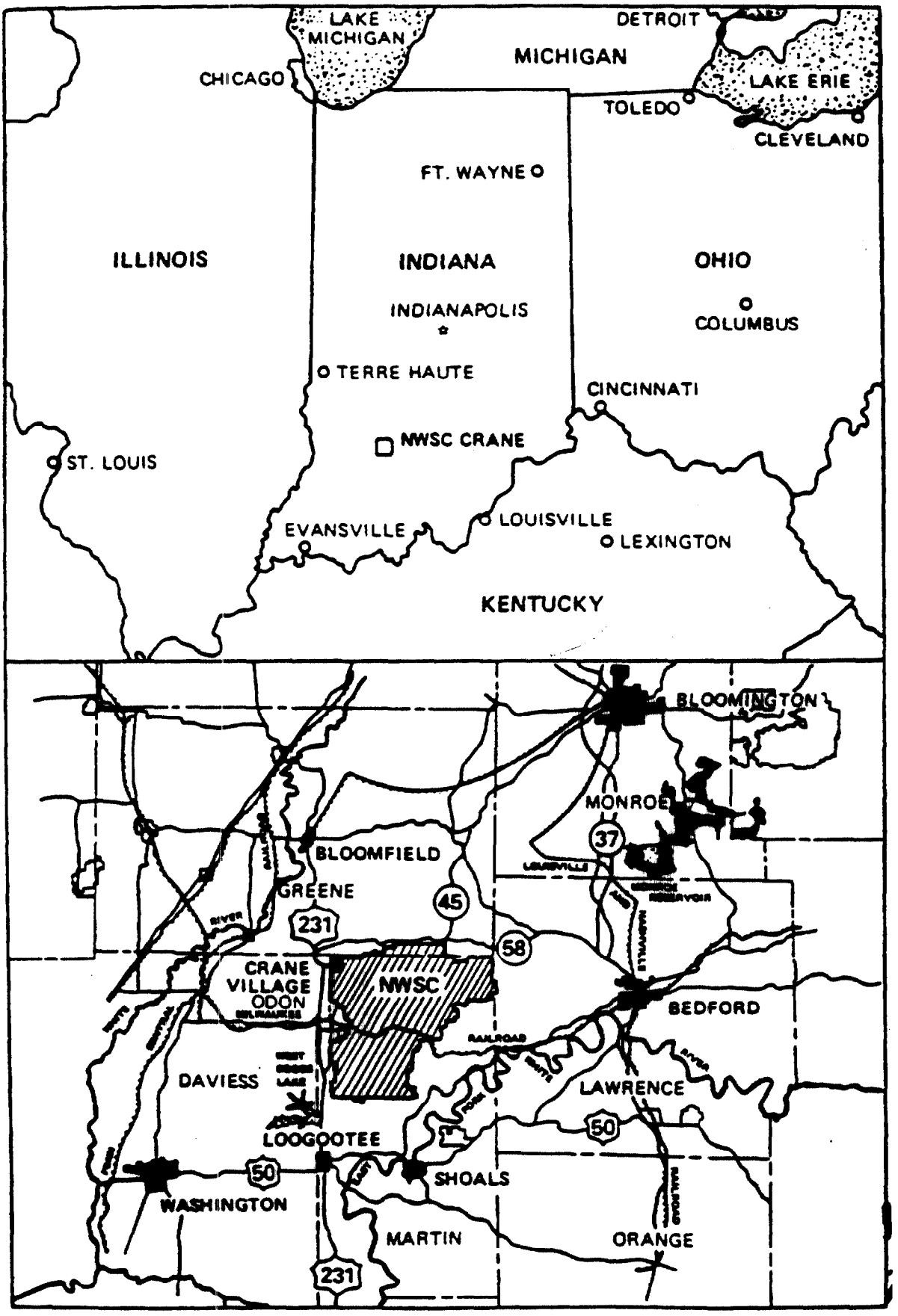

Figure 1: NWSC and Vicinity

IV. ENVIRONMENTAL SETTING

A. Meteorology

The NWSC is located in a temperate climate zone with an average of 44 inches of precipitation annually (Ref. 3, p.5-6). Temperatures vary widely throughout the year with a mean winter low temperature of 26 degrees farenheit and a mean summer high temperature of 89 degrees farenheit. The humidity is generally high, ranging from 40 to 90 percent (Ref. 3, p. 5-6). Winds in southwestern Indiana are generally from the south southwest at an average speed of 8.2 mph (Ref. 21, p.354).

B. Floodplain and Surface Water

The facility is characterized by well developed dendritic surface drainage (Ref. 3, p. 5-19). There are five drainage basins, consisting of seven streams, that carry surface water off site (Ref. 4, p.14). Flow within the drainage basins is generally toward the southwest. The following is a list of drainage basins and the general area that each encompasses within the site (Ref. 4, p.14).

Drainage Basin	Streams Within Basin	Site Drainage Area
Basin I	Furst Creek	Northwest Section
Basin II	Indiana Creek	Extreme Eastern Section
Basin III	Sulphur Creek Little Sulphur Creek	Eastern Section
Basin IV	Boggs Creek Turkey Creek	Central, Southcentral Sections
Basin V	Seed Tick Creek	Southwestern Section

Boggs Creek and Turkey Creek provide the primary surface drainage pathways for the facility. The facility's water supply is from Lake Greenwood in the northwest corner of the site. Lake Greenwood is an 800 acre spring fed lake that discharges to Furst Creek (Ref. 3, p.5-19). Figure 2 provides the location of the surface drainage basins at NWSC.

Sections of facility property bordering the surface drainage routes at NWSC are within the 100 year floodplain. According to NWSC's Part B Permit Application, there are no hazardous waste units located within the 100 year floodplain (Ref. 6, p.B-7).

C. Geology and Soils

The NWSC is underlain by sedimentary rocks of lower Pennsylvanian and upper Mississippian Ages. With the exception of minor outwash and lacustral deposits in the northwest corner of the facility, there are no Pleistocene glacial deposits covering the site (Ref. 19). Surface deposits at NWSC consist of recent (Holocene) and Pleistocene unconsolidated alluvial silt, sand, and gravel and residual soils developed from the underlying rock (Ref. 4, p.10).

The soils covering the NWSC belong to the Zanesville and Muskingum Soil Series (Ref. 4, p. 10). These soils are characterized as dark organic silt loams with underlying mottled tan to gray clay with varying percentages of silt and sand. Soil thickness is variable with values ranging from less than one foot to over 40 feet (Ref. 4, p. 10).

The sedimentary bedrock beneath the facility dips gently to the west southwest. The inclination of the strata reflects NWSC's location on the eastern flank of the Illinois Basin. This section of the basin is comprised of Pennsylvanian and Mississippian strata consisting of shale, sandstone, limestone, and coal (Pennsylvanian) beds. The Pennsylvanian Mansfield Formation (Racoon Creek Group) unconformably overlies the Mississippian Stephensport and West Baden Groups (Ref. 18, Plate No. 1 and p. 151) at the site.

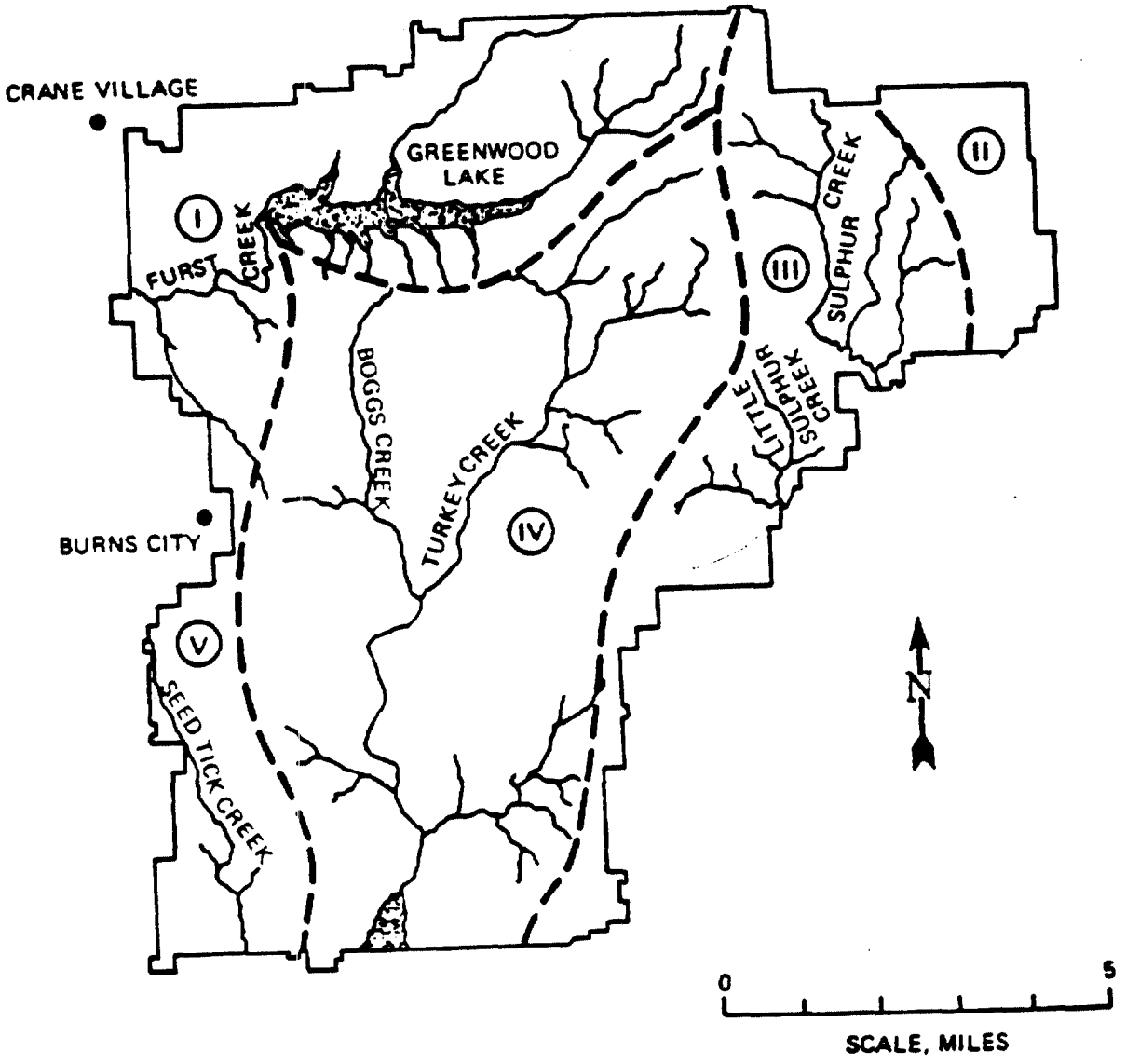

Figure 2 Surface Drainage at the NWSC (Ref. 3, p.5-21)

The Mansfield Formation has two distinct vertical divisions (Ref. 18, p.86). The lower division is comprised primarily of sandstone while the upper division consists of predominantly shale and mudstone (Ref. 18, p.86). Thin bituminous coal beds are prevalent throughout the formation.

The Stephensport Group conformably overlies the older West Baden Group. The Stephensport Group has five formations of which three are limestones and two are interbedded shale/sandstone formations (Ref. 18, Plate No. 2, p.13, 52, 56, and 87). Similarly the West Baden Group consists of the alternating carbonate/clastic lithology characteristic of the Stephensport Group with one exception. There is a noticeable lack of limestone tracer beds within a southwest trending linear area of the West Baden Group. This area, that outcrops northeast of the site, is referred to as the West Baden Clastic Belt (Ref. 18, p.43). The Belt consists of sandstone with adjoining bands of silty to sandy shale within the Elivren Formation (Ref. 18, p.43).

D. Groundwater

Groundwater resources at NWSC have not been studied extensively because the facility utilizes surface waters from Lake Greenwood for human consumption, process operations, and recreation. However, the existing lithologies, occurrences of springs and seeps, and the well developed surface drainage indicate the existence of groundwater that is hydraulically connected to the surface environment.

According to a Naval Assessment and Control of Installation Pollutants (NACIP) study, the groundwater at NWSC is divided into two regimes: one associated with soil/alluvial cover and the other associated with the bedrock (Ref. 3, p.5-22). This study reports that shallow groundwater is generally transient occurring during high precipitation periods. Free water within alluvial deposits is likely to percolate into bedrock or be discharged into intermittent streams along alluvial - bedrock contacts (Ref. 3, p.5-22). Table 1 is adapted from the NACIP study, it exhibits the general water bearing properties of the alluvial deposits and bedrock at NWSC.

Table 1: Water-Bearing Properties of Geologic Deposits at NWSC

(Adapted from Ref. 3, p.5-23, 23)

Geologic Unit	Description	Water Bearing Properties
Qsa	Clay, silt, sand, and gravel deposited by present streams. Organic materials are abundant in places. Limited to valley areas and variable in thickness; thicker along major streams than on minor ones. Generaly less than 15 feet thick. Along many major streams this deposit overlies deposits of outwash gravel, Qgv. Also associated with lake deposits, Qcl/Qsl, and older alluvial deposits, Qsi.	Deposits are permeable and yield some water. Major natural resource where associated with and underlain by valley-train gravel, Qgv, an excellent aquifer.
Qcl	Silt, clay, and sand of former lake areas. In southern Indiana, deposits occur as terraces or as extensive flats, mostly in valleys tributary to major streams. As thick as 150 feet near junction of Ohio and Wabash Rivers. Thinner elsewhere and upvalley; average thick ness 40 feet. In northern Indiana, deposits are broader and generally less than 40 feet thick. Associated with present alluvium, Qsa, and older alluvial deposits, Qsi.	Deposits contain much water, but permeability is low and water cannot be produced in quantity adequate for any use.
Qgv	Gravel, sand, and silt deposited by glacial meltwater; materials are stratifield. Valley-train deposits, Qgv, are long, narrow, and as much as 100 feet thick, along major present or former drainageways and associated with present alluvial deposits, Qsa. Common thickness, 20 to 40 feet. Outwash-plain deposits, Qgp, are broadand 10 to 40 feet thick.	Major natural resource. Deposits are important aquifers. Especially high yields are possible near bodies of surface water that provide continuous recharge. Infiltration areas should be protected from contamination.

Table 1: Water-Bearing Properties of Geologic Deposits at NWSC (Continued)

Geologic Unit	Description	Water Bearing Properties
Racoon Creek Group (Mansfield Formation)	Shale, sandstone, limestone clay, and coal. Maximum thickness 450 feet south, 100 feet north. Forms surface unit in much of outcrop area; remainder is covered by unconsolidated deposits, principally Qt, Qti. Underlain by the West Baden Group (north) through Lower Buffalo Wallow Group (south). About 55% shale, 40% sandstone, 5% other rock types. Coalbeds are as thick as 7 feet in some areas. Clay beds as thick as 10 feet underlie coals. Limestone beds are 3 to 10 feet thick.	Wells in thick sandstone beds in lower part of unit may yield water in quantity adequate for domestic, light industrial, or small municipal use. Quality is generally good, but in areas of surface and underground coal mining, contamination may be severe. Principal contaminants are sulphur and iron. Sulphur content, principally as sulphate, may be as high as a few thousand parts per million; iron content may be as high as 50 parts per million.
Stephensport Group	Limestone, sandstone, and shale. Maximum thickness 200 feet where overlain by the Lower Buffalo Wallow Group; thins and is unconformably overlapped northward where overlain by the Mansfield Formation. Forms surface unit in most of outcrop area. About 40% limestone, 35% sandstone, 25% shale, all in beds 10 to 30 feet thick. Stephensport Group; includes Glen Dean Limestone, Hardinsburg Formation, and Beech Creek Limestone.	Springs and wells in limestone and sandstone yield water in quantity generally adequate for domestic use. High bacterial contamination is common in water from limestone because rapid circulation through large open joints and solution features readily brings contaminants from ground surface. Total hardness (principally calcium bicarbonate) may be several hundred parts per million.

Geologic Unit	Description	Water Bearing Properties
West Baden Group	Shale, sandstone, and limestone. Maximum thickness 150 feet where overlain by the Stephensport Group; thin and is unconformably overlapped northward where overlain by the Mansfield Formation. Forms surface unit in most of outcrop area. About 40% shale, 35% sandstone, 25% limestone, all in beds 5 to 20 feet thick. West Baden Group; includes Elwren Formation, Reelsville Limestone, Sample Formation, Beaver Bend Limestone, and Bethel Formation.	Same as the Stephensport Group.

Due to the lateral lithologic transitions, the hydraulic isolation between alternating sedimentary series is not probable. Groundwater within the bedrock is likely to continue percolating downgradient until a permanent zone of saturation is reached (Ref. 3, p.5-28). Dependent on potentiometric heads, groundwater could also have a vertical flow component as it moves downgradient. Generally, the direction of groundwater flow should be controlled by the regional dip toward the west and will locally follow the topography. Shallow groundwater at the Ammunition Burning Grounds (ABG) flows toward the east and southeast (Ref. 6, p. E-10).

E. Receptor Information

The facility is located in a rural setting. The NWSC encompasses over 100 square miles of which eighty percent is classified as Central Hardwoods Forest (Ref. 3, p.5-29). The land adjacent to the facility consists of woodlands and small farms (Ref. 3, p.5-6). Four small towns serve the general NWSC area: Crane Village, Odon, and Loogootee to the west and southwest, and Bedford to the east of the facility. The nearest metropolitan Center is Bloomington, twenty five miles to northeast of NWSC.

The facility employs approximately 4400 people (Ref. 15) who either live on base or have passes to enter the facility. Entrance without authorization is not permitted at NWSC. Lake Greenwood is a source of potable water and provides recreation for facility personnel.

V. RELEASE PATHWAYS

A. Groundwater

Releases of hazardous constituents to groundwater are a major concern at the NWSC. According to the facility's Part B Permit Application, nine RCRA interim status monitoring wells were installed at the Ammunition Burning Grounds (ABG) in 1981 and four additional wells were installed in 1983 (Ref. 6, p.E-2).

The wells have defined the presence of shallow groundwater within permeable lenses of overburden, unconfined groundwater within the Hardinsburg Formation (uppermost aquifer), and unconfined groundwater within a sandstone unit of the Big Clifty Formation below the shale aquitard on which the Hardinsburg water-bearing zone rests (Ref. 6, p.E-9, 10). Monitoring data from the nine original wells at the ABG indicated a "statistically significant" increase in TOX and TOC for wells 3-1, 3-4, 3-5, and 3-9 (Ref. 6, p.E-6). This increase in indicator parameters was identified in the uppermost aquifer. According to the Permit Application there is no available information on the possible hydraulic connection between the uppermost bedrock aquifer and water bearing zone beneath it (Ref. 6, p.E-12).

The existence of permeable stream bottoms and springs at the facility indicate the potential for release to surface water via groundwater recharge. The NACIP study concludes (without well data) that Boggs Creek may intercept groundwater but most will flow down-dip westward off-site (Ref. 3, p.5-28). Also, stream recharge of groundwater could contaminate groundwater in the event of release to surface water.

As a result of the NACIP study, several groundwater monitoring systems have been installed around historical waste disposal areas. Facility representatives reported during the VSI that there are over 200 monitoring wells on base (Ref. 20).

B. Soils

Due to the open burning, and present and past land application of wastes, in combination with permeable alluvium, there is a high potential for soil contamination in the waste management areas. Contamination of soil and subsequent migration of contaminants into the surface water and groundwater is likely at the NWSC.

C. Surface Water

The well developed drainage network and level of precipitation at NWSC promote the run-off of any pollutants deposited on the surface at the site (Ref. 3, p.5-28). Numerous streams and fine grained alluvial material increase the erosional potential of areas in which wastes are disposed. Sedimentation Ponds (Units 64 and 90) have been constructed on each side of the Demolition Range (Unit 58) to collect potentially contaminated run-off from the area (Ref. 20). However, most of the land based units have no surface release controls. The site has 14 NPDES outfalls (Ref. 6, p.J-2), and operates under NPDES permit IN0021539 (Ref. 5).

D. Air Emissions

The open burning and controlled incineration of explosives at NWSC creates the potential for release to the air. The facility has four variances and six permits for air discharges. The following table summarizes the regulated air releases at the NWSC.

Table 2: Air Variances and Permits at NWSC
(Adapted from: Ref. 6, p.J-1)

A. Variances:

(1) APC 2-1426 -- detonation of lithium thionyl chloride and sulfur dioxide batteries at Demolition Range.

(2) APC 2-1430 -- burning of explosive-contaminated waste, waste explosives, pyrotechnics-contaminated waste and waste pyrotechnics at the Ammunition Burning Grounds and detonation of explosive materials at the Demolition Range.

(3) APC 2-1521 -- testing of specific production smoke and flare signals markers in an area behind Building 2167.

(4) APC 2-1506 -- testing of specific smoke and flare signals/markers at the Ordnance Test Area, Rocket Range and Building - 198.

B. Permits:

The State of Indiana had proposed the following six air permits at NWSC. (No further information was provided by the Part B Application.)

1. #51-05-88-0028
2. #51-05-88-0029
3. #51-05-88-0030
4. #51-05-88-0031
5. #51-05-88-0032
6. #51-05-88-0033

During the VSI, open burning of magnesium explosives was taking place with large clouds of grayish-white smoke being produced. This smoke was evident over a mile from the during area at ground surface along Highway 331 (Ref. 20).

E. Subsurface Gas

The NWSC practices land application of its sanitary sewage sludge and has a sanitary landfill. Due to the nature of the wastes stored and disposed on-site there is no potential for generation of subsurface gas except from the sanitary landfill.

VI. SOLID WASTE MANAGEMENT UNITS (SWMUs)

The Solid Waste Management Units are listed in numerical sequence according to geographic location within facility designated quadrants. The facility is divided into 24 quadrants with Section 1 in the northwestern most corner and Section 24 in the southeastern most corner. Units marked by an asterisk (*) were not observed during the VSI and any information on those units does not reflect visual inspection of the units. Figure 3 is the grid location map of the NWSC facility. Appendix C provides a detailed SWMU Location Map.

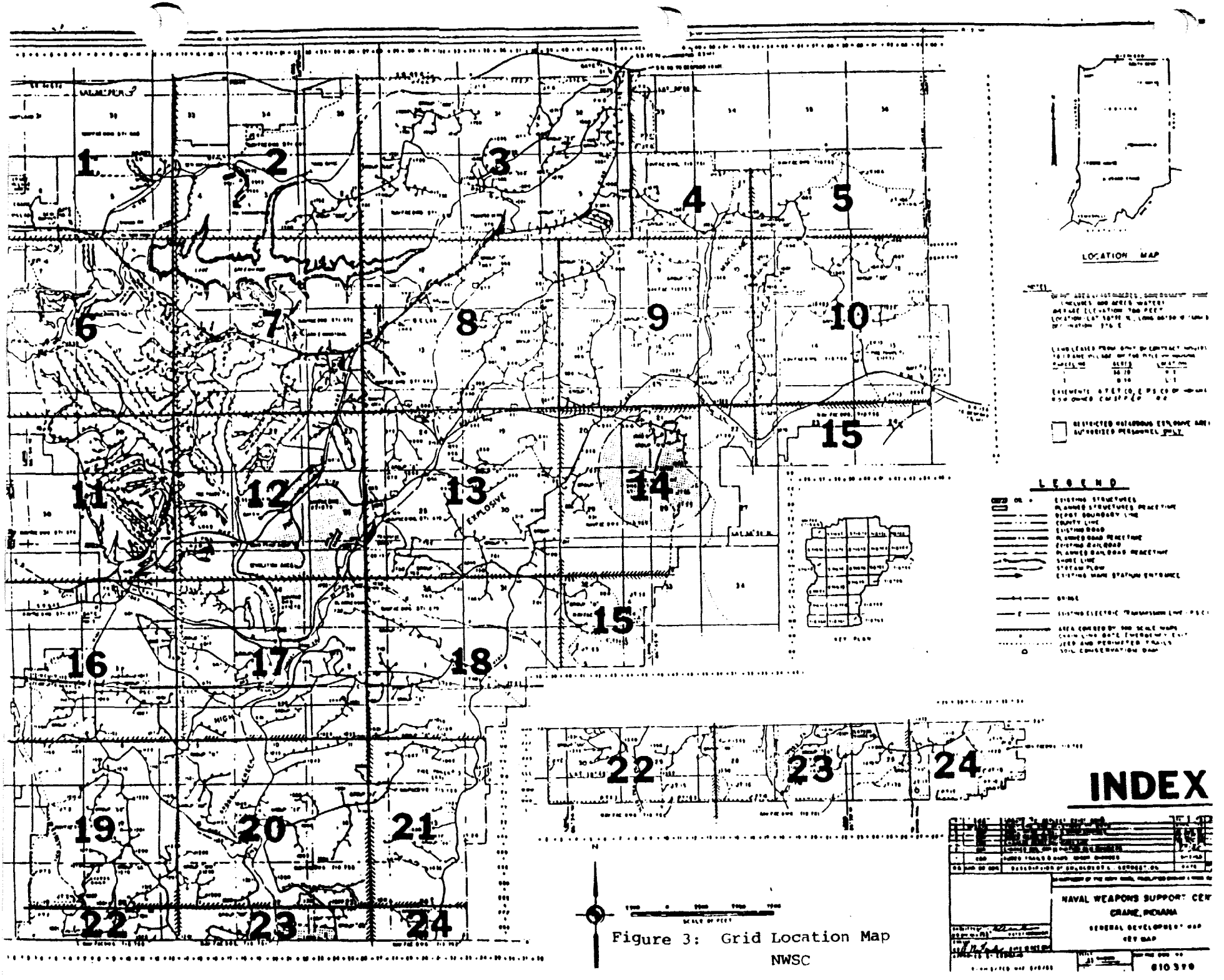

Figure 3: Grid Location Map
NWSC

Section 1

1. UNIT NAME: Old Burning Pit (Ref. 2, p.3)

Unit Description: This unit is located southeast of H331 along an abandoned rail spur. The unit was a natural depression that is presently covered by grass and scrub pine trees (Ref. 20). A small intermittent stream flows through the unit's interior.

Date of Start-Up: The unit became active in 1942.

Date of Closure: The unit became inactive in 1972.

Waste Managed: This unit was the site for burning plant trash and garbage. Residue from the pit and remaining metallics were buried in a gulley north of the unit. This gulley is considered part of the unit. It also received non-burnable wastes such as refrigerators and transformers (Ref. 20).

Release Controls: The unit was an unlined natural depression (ravine) near the Culpepper Branch of Furst Creek.

Release History: The unit has a series of 19 groundwater monitoring wells around it. Trans-1, 2 DCE, Chloroform and TCE have been detected in concentrations exceeding 50 ppb (Ref. 13, p.71). The contaminant plume has a width of approximately 80 to 195 ft. and a length of 500 ft. The plume is moving to the northwest (Ref. 13, p.71).

UNIT 1. (Continued)

Conclusions: Soil/Groundwater: There is documented release to groundwater from this unit. The potential for continuing release to groundwater from this unit is high due to the wastes materials buried and the fact that the unit is not lined or capped.

Surface Water: The potential for release to surface water from this unit is moderate to high due to the stream drainage through the gulley where disposal took place.

Air: The potential for release to air from this unit is low due to the nature of the wastes buried and the condition of the unit.

Subsurface Gas: The potential for generation of subsurface gas from this unit is low due to the nature of the wastes buried.

Suggested Further Action: The facility is currently monitoring the groundwater at this unit as part of the Installation Restoration Program. Continued monitoring of groundwater quality should be performed to determine nature and extent of contamination.

2. UNIT NAME: McComish Gorge Dump (Ref. 3, p.2-1)

Unit Description: This unit was a natural ravine along a tributary to Furst Creek in the northwest corner of the facility. It is presently backfilled and brush covered with elevated mounds of soil along the north and east sides (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: The unit is inactive. Exact date of closure is unknown.

Waste Managed: General garbage and some ordnance material were disposed of in the unit (Ref. 20).

Release Controls: The unit was an unlined natural depression.

Release History: The unit has six monitoring wells in place around it. Monitoring data from the wells was not available for review.

UNIT 2. (Continued)

Conclusions: Soil/Groundwater: The potential for release to groundwater from this unit is high due to the wastes disposed of in the unit and the fact that it was unlined.

Surface Water: The potential for release to surface water from this unit is low due to the separation of the unit from the adjacent stream by an elevated ridge and the well-established vegetative cover.

Air: The potential for release to air from this unit is low due to the wastes disposed of in the unit and the units present condition.

Subsurface Gas: The potential for generation of subsurface gas from this unit is low to moderate dependent on the nature of the reported "garbage" disposed of in the unit.

Suggested Further Action: Continued assessment of groundwater quality should be performed to determine the extent of contamination.

Section 2

3. UNIT NAME: FS Smoke Storage Facility - Buildings 1008, 1815, 1816, 2646, and 1794 (Ref. 5)

Unit Description: These storage units were located in aluminum storage buildings with gravel floors (Ref. 7, p.1). Total storage capacity was 3900 drums. This unit was identified in the modification to the RCRA Part A Application. These drums were removed from the site and transferred to an off-site permitted treatment facility. This work was reported complete in February 1985 (Ref. 7, p.7).

Date of Start-Up: Unknown.

Date of Closure: The drums were removed from the site in February 1985. The buildings are presently empty.

Waste Managed: Surplus FS Smoke (chlorosulfonic acid with sulfur trioxide) was stored in 55-gallon drums until taken off-site.

Release Controls: The drums were stored on gravel surface within aluminum shell buildings. A closure plan has been submitted to the State of Indiana (Ref. 20).

Release History: Unknown.

Unit 3. (Continued)

Conclusions: Soil/Groundwater: The release potential to soil/groundwater from these units was low due to management in containers and the nature of the wastes stored.

Surface Water: The release potential to surface water from these units was low due to management in containers within an enclosed building.

Air: The release potential to air in the past was dependent on the condition of the drums. Presently there is no potential for release to air because the drums have been removed.

Subsurface Gas: There is no potential for the generation of subsurface gas due to the above-ground nature of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

Section 3

4. UNIT NAME: Rockeye Loading Area Sumps (Ref. 2, p.3)

Unit Description: The Rockeye Loading Area is a production facility that loads three inch bomblets. Wastewater is produced from the wash-out of bomb molds. The wastewater presently flows into four concrete sumps that hold wastewater for solids settling prior to pumping into the wastewater treatment system. The sumps are designated A, B, C, and D and are located outside of each building. Explosive contaminated sludge is removed from each sump via a vacuum truck and taken to the Ammunition Burning Grounds Sludge Dewatering Units (Unit 80) (Ref. 20). The sumps appeared to be in good condition during the VSI.

Date of Start-Up: Bomblet production began in 1967.

Date of Closure: These units are presently active.

Waste Managed: Wastewater contaminated with TNT, HMX, and RDX is collected in the sumps.

Release Controls: Prior to 1978, the process wastewater was discharged directly to surface water tributaries. In 1978, a wastewater pretreatment unit was installed.

Release History: In July 1983, process water was released to surface drainage. Monitoring wells 7 and 8 were installed to detect contamination from this release. Wells 7, 8 and 9 were identified as contaminated with RDX and HMX (Ref. 14, p. 17). Wells 3, 7, 8, 9, and 10 with RDX and HMX (Ref. 14, p.17).

UNIT 4. (Continued)

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater from these units is low due to the apparent good condition of the units.

Surface Water: The potential for release to surface water from these units is low due to the low volumes of wastewater produced from rinse operations and pumping into the wastewater treatment unit.

Air: The potential for release to air from these units is low due to the nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the nature of the wastes and design of the unit.

Suggested Further Action:

1. Sediment contained in the surface water tributaries should be sampled to determine the extent of contamination from past practies.

2. Continued assessment of groundwater quality should be performed to determine the extent of contamination.

5. UNIT NAME: Rockeye Percolation Site

Unit Description: This unit was an open area where wastewater from the Rockeye Loading Area was allowed to percolate into the ground via unlined ditches (Ref. 3, p.6-29). The area is located north of the production buildings where drainage is into an intermittent stream.

Date of Start-Up: Assumed to be date of start-up of bomb loading, 1967 (Ref. 20).

Date of Closure: A wastewater pretreatment unit was installed in 1977 which rerouted the wastewater.

Waste Managed: Wastewater containing explosive contaminants; TNT, HMX and RDX from the rinsing operations of bomb molds was allowed to pond and infiltrate the ground.

Release Controls: In 1977, NWSC installed an activated carbon pretreatment system. Prior to 1977 the wastewater was allowed to "percolate" into the ground. Wastewater from Sump "C" was allowed to discharge to Turkey Creek prior to 1977.

Release History: Prior to 1977, a red hue was observed at Sulfur Creek due to process effluent from the Rockeye Area (Ref. 3, p.6-28). Presently, there are 5 monitoring wells around the former area of the site. Data from these wells was not available for review.

UNIT 5. (Continued)

Conclusions:

Soil/Groundwater: Prior to 1977, the potential for release to soil and groundwater was high due to the percolation of wastes in unlined ditches.

Surface Water: The potential for release to surface water from this unit was high in the past because effluent was allowed to flow into Sulfur and Turkey Creeks. Presently, there is low potential for surface water release.

Air: The potential for release to air from this unit is low due to the nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the nature of the wastes and the open nature of the unit.

Suggested Further Action:

1. Continued assessment of groundwater quality should be performed to determine the extent of contamination.

2. Contaminated soils should be sampled in the percolation site to determine the extent of contamination from past practices.

6. UNIT NAME: Rockeye Loading Area Wastewater Treatment Unit - Building 3004

Unit Description: This unit is a carbon-adsorption pretreatment unit that is located adjacent to the Rockeye Loading Area. It consists of an outside, above-grade concrete holding tank, paper roll filters, and three carbon adsorption columns. After treatment, wastewater is discharged to the Sanitary Sewer System (Ref. 20). The unit treats from 1.3 to 11.7 million gallons per year.

Date of Start-Up: 1977 (Ref. 20).

Date of Closure: The unit is presently active. The unit operates 8-10 months per year.

Waste Managed: The unit receives explosive contaminated wastewater (pink water) containing RDX, HMX, and TNT from the Rockeye Loading Area Sumps (Ref. 20).

Release Controls: Effluent from the waste pretreatment facility is discharged to the sanitary sewer. All treatment is located within an enclosed building with concrete floors except for the outdoor holding tank. Effluent from the unit is released to the sanitary sewer.

Release History: Spent carbon is drummed and stored separately outside of the building. All of the equipment appeared to be in good condition during the VSI.

UNIT 6. (Continued)

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater from this unit is low due to the design characteristics of the unit.

Surface Water: The potential for release to surface water from this unit is low due to the treatment of wastes with carbon prior to discharge to the sanitary sewer system.

Air: The potential for release to air from this unit is low due to the nature of the wastes.

Subsurface Gas: There is no potential for the generation of subsurface gas due to the nature of the wastes and design characteristics of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

7. UNIT NAME: Waste Carbon Container Storage Area Outside of - Building 3004

Unit Description: This unit consists of waste carbon from the Wastewater Treatment Unit at the Rockeye Loading Area (Unit 6) in 55-gallon drums on wooden pallets. The pallets are on open ground adjacent to the treatment building. Approximately 25 drums were present during the VSI (Ref. 20).

Date of Start-Up: Assumed to be 1977 (Ref. 20).

Date of Closure: The unit is presently active.

Waste Managed: Containerized waste carbon, contaminated with explosives, is stored on wooden pallets before removal. Approximately 46,000 lb/year (140 drums) of waste carbon is produced. Prior to January 1986, the waste carbon was sent to the burning grounds. It is now sent off-site for disposal (Ref. 20).

Release Controls: The drums were elevated from the ground on wooden pallets with no secondary containment.

Release History: There was no visual evidence of any past spillage on the ground around the drums. The plastic drums were in good condition.

UNIT 7. (Continued)

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater from this unit is low due to the nature of the wastes and apparent good condition of the containers.

Surface Water: The potential for release to surface water is low due to the nature of the wastes and the unit's distance from any local surface drainage.

Air: The potential for release to air from the unit is low due to the nature of the wastes and good condition of the containers.

Subsurface Gas: There is no potential for generation of subsurface gas due to design characteristics of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

8. UNIT NAME: Paint Waste Container Storage Area at the Rockeye Loading Area

Unit Description: The unit consists of several steel 55-gallon drums on metal pallets outside of the south wall of one of the Rockeye production buildings. Drums are stored here for less than 90 days prior to removal to the Central Storage Facility (Unit 47) (Ref. 20).

Date of Start-Up: Assumed to be 1967, start-up of the Rockeye Area (Ref. 20).

Date of Closure: The unit is presently active.

Waste Managed: Paint residues and grit from reutilization efforts within the Rockeye area are drummed and placed on the pallets outside.

Release Controls: The unit rests on a macadam entry way to the Rockeye Loading Area.

Release History: Noticeable paint stains were noted on the pavement and one of the drums had an open bung during the VSI.

UNIT 8. (Continued)

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater from this unit is low due to the small volumes handled and its location on a paved surface.

Surface Water: The potential for release to surface water from this unit is low due to the containerization of wastes and its distance from any local surface drainage.

Air: The potential for release to air from this unit is low dependent on proper closure of containers stored.

Subsurface Gas: There is no potential for the generation of subsurface gas due to the design characteristics of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

9. UNIT NAME: Active Solid Fill Site

Unit Description: This landfill is an excavated hillside that covers 4 acres. The unit receives 10 yd^3 of construction debris per day. It is permitted by the State of Indiana (Ref. 20).

Date of Start-Up: January 1986

Date of Closure: This unit is presently active.

Waste Managed: Wastes managed at a the Solid Fill Site include demolition and construction debris (bricks, concrete, stone, glass, wallboard, lumber roofing materials and paper products). Approximately 10 yd^3 of wastes are disposed per day (Ref. 20).

Release Controls: The unit is an unlined fill with no controlling berm on its west side. The west side slopes toward a gulley below elevated railroad track (Ref. 20). Wastes did not appear to be regularly covered by excavated soil during the VSI.

Release History: There is no groundwater monitoring of this unit.

UNIT 9. (Continued)

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the nature of the wastes (i.e., wood, concrete, etc.) disposed of in the unit.

Surface Water: The potential for release to surface water is low due to the nature of the wastes disposed of in the unit.

Air: The potential for release to air is low due to the nature of the wastes disposed of in the unit.

Subsurface Gas: The potential for subsurface gas is low due to the nature of the wastes disposed of in the unit and the absence of clay capping of the wastes.

Suggested Further Action: Based on the wastes disposed at the site, no further action is suggested for this unit at this time.

10. UNIT NAME: Old Solid Fill Site

Unit Description: This unit was a natural slope that was gradually filled in with construction debris. It covers 4 acres and is located just off Highway 344 in Section 6 (Ref. 20). It was never permitted by the State of Indiana (Ref. 20). The area is presently soil covered, graded, and has very sparse vegetation.

Date of Start-Up: The unit began operations in February 1982.

Date of Closure: The unit became inactive in January 1986. No closure plan is required by the State of Indiana, although the state is aware of planned closure activities (Ref. 20).

Waste Managed: Wastes managed at the Solid Fill Site included construction and demolition debris. The unit had received approximately 10,400 yds^3 of wastes (Ref. 20).

Release Controls: The unit was an unlined, unengineered fill of a hillside. It is presently "closed" with a soil cover and very sparse vegetation.

Release History: There is no groundwater monitoring of this unit.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the nature of the wastes (i.e., wood, concrete, etc.) disposed of in the unit.

Surface Water: The potential for release to surface water is low due to the nature of the wastes disposed of in the unit.

Air: The potential for release to air is low due to the nature of the wastes disposed of in the unit.

Subsurface Gas: The potential for subsurface gas is low due to the nature of the wastes disposed of in the unit and the absence of clay capping of the wastes.

Suggested Further Action: Based on the wastes disposed at the site, no further action is suggested for this unit at this time.

11. UNIT NAME: Above-ground Waste Oil Storage Tank - Building 2801

Unit Description: This unit is a single shell steel tank with a capacity of 5,000 gallons. It is supported by 3 ft. concrete bolsters over a gravel pad with a 3 ft. high cement block retaining wall at its perimeter (Ref. 20). The unit is located outside of Building 2801.

Date of Start-Up: Unknown.

Date of Closure: The unit is presently active.

Waste Managed: The storage tank is used to store 4,000 to 6,000 gallons per year of waste oil collected from throughout the facility. The waste oil is stored until it is sold or used for boiler feed. The oil is transferred into the unit by a portable pump from small containers (i.e., drums, gallon jugs) (Ref. 20).

Release Controls: The unit is elevated from the ground surface and has a retaining wall. However, the surface beneath the tank is gravel.

Release History: There were no visual signs of leakage or spillage during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is presently low due to the apparent good condition of the tank. However, if leakage or spillage during transfer would occur, waste oil would be released to the soil beneath the gravel surface.

Surface Water: The potential for release to surface water is low due to the unit's retention wall and distance from local surface drainage.

Air: The potential for release to air is low due to the nature of the wastes and the closed construction of the tank.

Subsurface Gas: There is no potential for subsurface gas generation due to the design characteristics of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

12. UNIT NAME: Classified Papers Incinerator - Building 45

Unit Description: The incinerator has a capacity of 975 lbs/hour with an annual capacity of 80-100 tons per year (Ref. 1). It is located on a concrete pad with 8 ft. chain link fence at its perimeter. Wastes are ignited by a match (Ref. 20).

Date of Start-Up: 1962 (Ref. 1).

Date of Closure: The unit is currently active (Ref. 1).

Waste Managed: The incinerator burns classified papers and documents. Some old medical supplies including medication and bandages which have exceeded their shelf life have been burned (Ref. 20). No hazardous wastes have been identified to have been burned in the incinerator (Ref. 1). Ash from the incinerator is sent to the Active Solid Fill Site (Unit 9).

Release Controls: There are no apparent air release controls on the Unit (Ref. 20).

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the unit's design characteristics and its location on a concrete pad.

Surface Water: The potential for release to surface water is low due to the unit's design characteristics and wastes managed.

Air: The potential for release of particulates to the air is low due to the small volume of wastes handled, and schedule of operation.

Subsurface Gas: There is no potential for the generation of subsurface gas due to the design characteristics of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

*13. UNIT NAME: Building 136 Sump (Ref. 3, p.6-10)

Unit Description: This 7 ft. x 8.5 ft. unit received wastes from the Lead Azide Production Building after the loading pond (Unit 44) became inactive. The unit was plugged in 1982 and a wastewater treatment unit (Unit 14) was installed. The unit was connected to the sanitary sewer; it had a flow rate of approximately 2300 gallons per week (Ref. 3, p.6-10).

Date of Start-Up: Unknown.

Date of Closure: The unit became inactive in 1982.

Waste Managed: Wastewater containing lead salts was discharged into the sump.

Release Controls: Unknown.

Release History: Unknown.

UNIT 13. (Continued)

Conclusions:	This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.
Suggested Further Action:	Obtain information on unit operation, release history, current status, and condition.

*14. UNIT NAME: Wastewater Treatment Unit (Lead) - Building 136

Unit Description: This unit contains two flocculation chambers and a sand filter, located in Building 136. It pretreats wastewater contaminated with lead compounds. The unit has a capacity of 6,700 gallons, and has been used "very little" (Ref. 1).

Date of Start-Up: 1980.

Date of Closure: This unit is currently inactive, it has been on standby operation since 1984.

Waste Managed: The unit treats wastewater contaminated with lead compounds. Hazardous waste constituents identified as K046 - wastewater from lead initiating compounds.

Release Controls: The wastewater treatment unit is surrounded by a berm.

Release History: Unknown.

UNIT 14. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on unit operation, release history, current status and condition.

15. UNIT NAME: Wastewater Treatment Unit - Plating Shop - Building 3064

Unit Description: This unit, located in Building 3064, pretreats plating wastewater. The capacity is 17,000 gallons. The unit treats wastewater generated from the zinc, cadmium, chrome, and phosphate plating of munition related metal parts and the acid/alkali cleaning of metal parts. It consists of two separate treatment lines, the chrome rinse line, and the cyanide treatment line (Ref. 20). The two lines dump into a below-grade sump designated the Acid/Alkali Holding Tank. Wastewater is then pumped into a pH adjustment tank and the supernatant is discharged to the sanitary sewer system. The resulting sludge is fed through a dewatering press and into a small hopper prior to containerization. One to two drums of cake sludge per day are dried and drummed as hazardous waste for off-site disposal. The water produced during dewatering is gravity fed back into the holding tank (Ref. 20).

Date of Start-Up: 1979.

Date of Closure: The unit is currently active.

Waste Managed: The unit pretreats metal plating wastewater which contains heavy metals, phosphates, and free cyanides prior to treatment.

Release Controls: All tanks except for the holding tank are above-grade and in good condition. They are located on a cement floor within an enclosed building. Floor drains are routed into the holding tank. No release controls for the underground tank were noted.

Release History: There was no visible sign of release during the VSI. However, the sludge hopper had a large hole in it that could cause spillage of sludge onto the floor (Ref. 20).

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the apparent good condition of the tanks and the fact that they are located on top of a concrete pad within a building. The condition of the underground holding tank is unknown.

Surface Water: The potential for release to surface water is low due to the treatment process involved in the unit and release of treated effluent to the sanitary sewer system.

Air: The potential for release to air is low due to the closed nature of the system and the wastes involved.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design characteristics of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

16. UNIT NAME: Drum Storage Area behind Building 3064

Unit Description: This unit consists of containerized wastewater treatment sludge that is stored in 55-gallon drums on wooden pallets prior to removal to the Central Storage Facility (Unit 47) (Ref. 20).

Date of Start-Up: Assumed to be 1979 (Ref. 20).

Date of Closure: The unit is currently active.

Waste Managed: The unit handles containerized wastewater treatment sludge from the metal plating treatment line (Ref. 20).

Release Controls: The drums are elevated from the ground with wooden pallets. There is no secondary containment (Ref. 20).

Release History: There was no visible sign of release during the VSI.

UNIT 16. (Continued)

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is low due to the apparent good condition of the drums and the solidified nature of the waste.

Surface Water: The potential for release to surface water is low due to the containerization of wastes and the unit's distance from any local surface drainage.

Air: The potential for release to air is low due to the nature of the wastes and containerization of the wastes.

Subsurface Gas: There is no potential for the generation of subsurface gas due to the nature of the wastes and the design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

17. UNIT NAME: Battery Shop Dump - Building 36 (Ref. 3, p.2-1)

Unit Description: This unit consisted of a hillside north of the Battery Shop, Building 36. Spent battery acid and waste oil from forklift servicing was disposed of by allowing it to flow down the hill and into Lake Greenwood (Ref. 20).

Date of Start-Up: 1942.

Date of Closure: A sump was installed in 1980 to take the place of open dumping of acid (Ref. 3).

Waste Managed: The wastes disposed of in the unit were spent battery acid containing lead and sulfates and waste oil and oily water from forklift servicing within Building 36.

Release Controls: The unit was an open hillside with no containment or release control provision.

Release History: Surface drainage flows down the hill and into Lake Greenwood (the facility's drinking supply reservoir). Prior to 1975, acid and waste oil generated during forklift servicing were allowed to flow down the hillside and into Lake Greenwood (Ref. 3, p.6-45). The NACIP study has assessed this area and determined that chemical analysis of the soils at the unit and lake water do not exhibit significant levels of lead (Ref. 3, p.2-1).

UNIT 17. (Continued)

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater in the past was high due to open dumping of liquid waste on a hillside. However, the NACIP study reports that no significant levels of lead (i.e., associated with battery acid) have been found in the soils of the unit. This conclusion was not supported by field and laboratory data.

Surface Water: The potential for release to surface water in the past was high due to the open dumping of liquid wastes on a hillside whose runoff flows into Lake Greenwood. However, the NACIP study reports that no significant levels of lead have been found in the lake water.

Air: The potential for release to air in the past was low due to the nature of the wastes disposed.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit and the wastes managed.

Suggested Further Action: Soils should be sampled on the hillside to verify the conclusions of the NACIP report.

18. UNIT NAME: Acid Neutralization Pit - Building 36 (Ref. 10, p.7)

Unit Description: The acid neutralization pit is a below-grade epoxy coated concrete sump outside of the Battery Shop. The unit receives spent sulfuric acid from spent truck batteries. The unit is connected to the sanitary sewer by a manually operated valve (Ref. 10, p.7). Lime is added manually to increase ph, there are no pH monitoring devices on the unit.

Date of Start-Up: Assumed to be 1980 when disposal of acid down hillside ceased (Ref. 20).

Date of Closure: The unit is currently active.

Waste Managed: Spent battery acid is manually poured into the unit by opening the fiberglass cover and pouring directly into the sump.

Release Controls: The unit is epoxy coated and release to the sewer system is manually controlled. pH monitoring is done manually after manual addition of lime. Prior to 1982 the pit was constructed of concrete only. A plastic liner was added to keep the acidic solution from eroding the concrete.

Release History: Unknown.

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is low due to the apparent good condition of the unit.

Surface Water: The potential for release to surface water is low due to treatment of the waste and manual feed to the sanitary sewer system after treatment.

Air: The potential for release to air is low due to the nature of the unit.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open design of the unit.

Suggested Further Action: The facility should consider installing an automatic pH monitor at the unit.

*19. UNIT NAME: PCB Burial Area - Pole Yard (Ref. 3, p.2-1)

Unit Description: This unit is a burial site for three capacitors.

Date of Start-Up: 1977.

Date of Closure: 1977 (one time event).

Waste Managed: Three sealed capacitors containing PCB's were buried in this unit.

Release Controls: NWSC reports that the three capacitors were "hermetically" sealed prior to burial. The state of Indiana indicated that NWSC did not have to remove the capacitors if buried prior to February 19, 1978 (Ref. 3, p.2-1).

Release History: Unknown.

UNIT 19. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the construction and design of the unit, volume of wastes managed, and history of release.

20. UNIT NAME: Roads and Grounds Dump Area

Unit Description: This unit is a melange of material deposited at the base of the hill behind Building 2801 (Ref. 20). The area is heavily vegetated (young trees, brush) with a small intermittent stream at the base of the hill.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Construction rubble and pesticide residues were thought to have been dumped onto the hillside (Ref. 20).

Release Controls: The area was an open hillside with a small intermittent stream at the base of the slope.

Release History: There was no visual evidence of former dumping during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is high due to the reported disposal of liquid pesticide wastes on open ground.

Surface Water: The potential for release to surface water is high due to the disposal of wastes onto an open hillside whose run-off flows into an intermittent stream.

Air: The potential for release to air is low due to the inactivity of the unit an the nature of the wastes disposed of in the unit.

Subsurface Gas: The potential for the generation of subsurface gas is low due to the open nature of the unit.

Suggested Further Action:

1. Soils in the dump area should be sampled to determine extent of pesticide contamination due to past practices.

2. Sediment in the nearby stream should be sampled to determine extent of pesticide contami- nation due to past practices.

21. UNIT NAME: PCP Dip Tank

Unit Description: This unit was located near Building 56. It was used for dipping untreated wood into pentacholorophenol (PCP) (wood preservative). The area is presently occupied by a dirt access road and electric vehicle storage (Ref. 20).

Date of Start-Up: 1950.

Date of Closure: The tank was removed in 1965.

Waste Managed: Spent pentachlorophenol (PCP) was generated from wood preservation.

Release Controls: Unknown.

Release History: NWSC reported that the tank was leaking, but the NACIP Report states that there was no evidence of any release (Ref. 3, p.2-3).

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater from this unit is unknown. The NACIP study reports no indication of release from the unit. This conclusion was not supported by field or laboratory data.

Surface Water: The potential for release to surface water from this unit is unknown. The location of the unit overlooks a steep slope which slopes toward Lake Greenwood.

Air: The potential for past release to air from this unit is unknown due to lack of information on the unit. The unit has been removed and there is no present potential for air release.

Subsurface Gas: The potential for generation of subsurface gas from this unit is unknown due to lack of information on the unit's structure.

Suggested Further Action: Soils should be sampled in the former location of the unit to verify the conclusions of the NACIP report.

22. UNIT NAME: Building 126 Sump (Ref. 3, p.6--3)

Unit Description: This unit is a below-grade concrete sump that receives rinse waters from production rooms in Building 126 via individual drains and a central connector. This rinse water is generated from the washing of grit screens and empty paint barrels (Ref. 20). During the VSI, cracks were observed in the tank, and the retaining wall had deteriorated.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: The unit received rinse water containing phosphorous, manganese, and paint residues (Ref. 20).

Release Controls: The unit discharges directly to the sanitary sewer after solids settle to the bottom. Solids are removed and taken to the CSF (Unit 46).

Release History: Unknown.

UNIT 22. (Continued)

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is moderate due to the relatively poor visual appearance of the sump.

Surface Water: The potential for release to surface water is low; the unit discharges to the sanitary sewer system.

Air: The potential for release to air is low due to the dilute nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the nature of the wastes managed and the open design of the unit.

Suggested Further Action: Soil samples should be taken near the walls of the sump to determine if any contamination has occurred due to the cracks in the sump.

*23. UNIT NAME: Dust Collectors - Building 126 (Ref. 3, p.6-3)

Unit Description: This unit collected explosive dust produced in Building 126. The unit used a wet vacuum pump. The collectors were emptied periodically and taken to the Ammunition Burning Grounds (Unit 79) (Ref. 3, p.6-3).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: The unit collected explosive dust that was trapped using water vapor.

Release Controls: Unknown.

Release History: Unknown.

UNIT 23. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the age, design, and operation of this unit and on the disposition of any wastewater.

24. UNIT NAME: Scrap Storage Area Behind Building 126

Unit Description: This unit consists of a concrete pad with metal canopy. It is used for temporary storage of waste starter mix, fuel oil, and explosive contaminated metal parts. The wastes were observed to be in small containers or jugs during the VSI.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Various scrap products and salvageable parts are placed on the pad for disposal or renovation. The wastes include waste starter mix, fuel oil, explosive contaminated metal parts, and paint residues. During the VSI, three drums of unlabeled wastes (in good condition), three waste paint cans, and a 15-gallon above-ground fuel oil tank were observed.

Release Controls: The unit consists of a concrete pad protected by a metal overhang. There is no perimeter containment.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the containerization of wastes and release controls employed at the unit.

Surface Water: The potential for release to surface water is low due to the containerization of wastes and the unit's distance from any local surface drainage.

Air: The potential for release to air is low due to the containerization of wastes.

Subsurface Gas: There is no potential for the generation of subsurface gas due to the design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

*25. UNIT NAME: Red Phosphorous Building Sump - Building 1886 (Ref. 3, p.6-3)

Unit Description: This unit is located between the Chemical Storage Building 2696 and the Ready Magazine, Building 135. In the event of a fire, all wastewater can be collected in this sump.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Red phosphorous contaminated wastewater.

Release Controls: A six-inch berm surrounds the sump and building.

Release History: Unknown.

UNIT 25. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the operation, period/frequency of use, and integrity of the unit.

26. UNIT NAME: Building 133 Sump (Ref. 3, p.6-8)

Unit Description: This sump receives wastewater from the red phosphorous candle pressing house (Ref. 20). The operation uses red phosphorous, manganese dioxide, magnesium, zinc oxide, and linseed oil within a totally wet operation. The sump consists of three separate concrete chambers that are approximately 6 ft. (l) x 2 ft. (w) x 3 ft. (d).

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Rinsate water contaminated with red phosphorous is allowed to settle in the sumps prior to pumping the supernatant into the Sanitary Sewer System.

Release Controls: Accumulated sludge is hauled to the Sludge Dewatering Units (Unit 80) at the ABG (Unit 79).

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the apparent good condition of the concrete sumps.

Surface Water: The potential for release to surface water is low because rinse water is allowed to settle prior to discharge to the Sanitary Sewer System.

Air: The potential for release to air is low due to the nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open design of the unit and the nature of the wastes handled.

Suggested Further Action: No further action is suggested for this unit at this time.

27. UNIT NAME: Railroad Maintenance Shop Wash Area - Building 7
(Ref. 3, p.6-45)

Unit Description: The Railroad Equipment Shop is used for maintenance of locomotives. Locomotives are washed with a water-soap-diesel fuel mixture which drains into two long wash sumps that drain into an Oil/Water Separator (Unit 28) outside the building. Diesel fuel for the wash operations is stored in steel drums over a drip rack that drains into the wash sumps.

Date of Start-Up: 1942.

Date of Closure: This unit is currently active.

Waste Managed: Wastes generated are diesel/soap rinse waters and waste oil.

Release Controls: An Oil/Water Separator (Unit 28) was installed at this unit in 1972.

Release History: Prior to 1972, the oily wastewater flowed into Lake Greenwood via several ditches. During the VSI, it was observed that the Oil/Water Separator was not working. All waste liquids are currently discharged to the Sanitary Sewer.

UNIT 27. (Continued)

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater from this unit is low due to inside operations over a concrete floor.

Surface Water: The potential for release to surface water is low because the unit drains to the outside Oil/Water Separator and the water is discharged to the sanitary sewer system.

Air: The potential for release to air is low due to the dilute nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the nature of the wastes and the open design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

28. UNIT NAME: Railroad Maintenance Shop Oil/Water Separator

Unit Description: This unit is a large below-grade concrete sump outside of Building 7. The unit was designed to skim oil from rinse waters but, according to an NWSC employee, it has been inoperative and periodically overflows sending waste oil and rinse waters into the Sanitary Sewer System (Ref. 20).

Date of Start-Up: Assumed to be 1942 (Ref. 20).

Date of Closure: The unit is currently in use but it is not operative.

Waste Managed: The unit receives rinse waters consisting of soap, water, and diesel fuel from the locomotive wash area.

Release Controls: There are no release controls other than sewer drains on either side of the sump in case of overflow.

Release History: The unit is reported to periodically overflow and send waste oil and rinse waters into the Sanitary Sewer System.

UNIT 28. (Continued)

Conclusions: **Soil/Groundwater: The potential for release to soil/groundwater is high due to the unit's overflow and its questionable integrity.**

Surface Water: The potential for release to surface water is high due to the periodic overflows and release of untreated/uncollected oils/solvents into the Sanitary Sewer.

Air: The potential for release to air is low due to the nature of the units.

Subsurface Gas: The potential for generation of subsurface gas is low due to the nature of the wastes and open design of the unit.

Suggested Further Action: **The facility should repair the Oil/Water Separator pretreatment unit. There are no provisions at the Wastewater Treatment Plant to treat oily wastes.**

29. UNIT NAME: Auto Maintenance Shop - Building 1820 (Ref. 3, p.6-46)

Unit Description: Automotive repairs are performed in this building. The unit consists of several sumps which collect waste oil, wastewater, and several open top solvent cleaning tanks. Three drums were observed outside of the shop which were in poor condition (rusted and dented), these drums contained lube oil.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Waste oil and rinse waters are allowed to drain via floor drains into an outside Oil/Water Separator (Unit 32) (Ref. 20). Waste solvent is containerized and taken to the CSF (Unit 47). One of the solvent tanks called the "Parts Boiler" produces an alkaline sludge that is removed to one of the used oil tanks (Ref. 20).

Release Controls: The solvent tanks have no secondary containment. Floor drains in the sumps and floors drain to the Oil/Water Separator (Unit 32).

Release History: Noticeable oil spills and solvent contaminated rags were noted during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the unit's indoor setting over a concrete floor.

Surface Water: The potential for release to surface water is low due to the unit's indoor setting and the collection of any rinse waters in an Oil/Water Separator.

Air: The potential for release to air is moderate from the solvent wash tanks due to their open-top design.

Subsurface Gas: There is no potential for generation of subsurface gas due to the nature of the wastes and the open nature of the sumps and tanks.

Suggested Further Action: No further action is suggested for this unit at this time.

30. UNIT NAME: Heavy Equipment Maintenance Shop - Building 1818

Unit Description: Heavy equipment repairs are performed in this building. The unit consists of several sumps that collect waste oil and several open top solvent cleaning tanks.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Waste oil and rinse waters are allowed to drain into an outside Oil/Water Separator (Unit 32) via floor drains (Ref. 20). Waste solvent is containerized and taken to the CSF (Unit 47).

Release Controls: The solvent tanks have no secondary containment. Floor drains route flow into the Oil/Water Separator.

Release History: Noticeable oil spills and solvent contaminated rags were noted during the VSI.

UNIT 30. (Continued)

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is low due to the unit's indoor setting on a concrete floor.

Surface Water: The potential for release to surface water is low due to the unit's indoor setting and the collection of any rinse waters in an Oil/Water Separator.

Air: The potential for release to air is moderate from the solvent wash tanks due to their open-top design.

Subsurface Gas: There is no potential for generation of subsurface gas due to the nature of the wastes and the open nature of the sumps and tanks.

Suggested Further Action: No further action is suggested for this unit at this time.

31. UNIT NAME: Truck Wash Area at the Heavy Equipment Maintenance Building

Unit Description: This unit consists of two indoor concrete wash racks for trucks and heavy equipment. Rinse waters and any waste oil drain into two drip tracks that drain into the Oil/Water Separator (Unit 32).

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Rinse waters are generated from truck wash-downs.

Release Controls: The unit has sloped concrete floors that drain to two drip tracks.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the unit's release controls.

Surface Water: The potential for release to surface water is low because the unit drains into the Oil/Water Separator.

Air: The potential for release to air is low due to the dilute nature of the wastes handled.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit and dilute nature of the wastes.

Suggested Further Action: No further action is suggested for this unit at this time.

32. UNIT NAME: Oil/Water Separator at the Heavy Equipment Maintenance Building

Unit Description: This unit is a below-grade sump outside of Building 1820 that receives rinse waters containing oil/degreasers from the Auto and Heavy Equipment Maintenance Buildings. A thin conveyor belt skims oil and deposits it in a separate adjacent concrete sump where it can be pumped out and into a waste oil storage tank.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Oil and degreaser contaminated rinse water is skimmed in the unit. Waste oil is collected in a separate adjacent sump and the remaining water is discharged to the Sanitary Sewer System.

Release Controls: The unit has a removable closed top and overflow valve into the Sanitary Sewer System.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the unit's release controls and the apparent good condition of the unit.

Surface Water: The potential for release to surface water is low due to the apparent good working condition of the oil skimmer and subsequent discharge to the Sanitary Sewer System.

Air: The potential for release to air is low due to the dilute nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the dilute nature of the wastes.

Suggested Further Action: No further action is suggested for this unit at this time.

33. UNIT NAME: Outside Truck Wash Rack adjacent to Building 1818

Unit Description: This unit consists of a truck wash hose and a raised wooden slat platform. Trucks are allowed to wash down on the rack with rinse waters going through the slats and down the hill into an intermittent stream.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Rinse waters from heavy equipment and truck washings are generated and flow through the raised platform and down the hill.

Release Controls: There are no release controls associated with the unit.

Release History: Due to the unit's design, continuous release of rinse waters to the ground beneath the unit occurs during washing.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is high due to the unit's construction.

Surface Water: The potential for release to surface water is high because the unit's effluent flows directly into an intermittent stream.

Air: The potential for release to air is low due to the dilute nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the dilute nature of the wastes.

Suggested Further Action:

1. Provisions should be made to collect rinse waters and treat these wastes at the sewage plant.

2. Soils should be sampled underneath the platform and in the drainage ditch that flows down the hillside.

34. UNIT NAME: Roll-Off Boxes Outside Building 1820

Unit Description: These units are typical metal roll-off boxes containing scrap cardboard,wood, and general garbage that is hauled to the Sanitary Landfill (Unit 86). These units are common throughout the site at each building that has any type of ongoing activity.

Date of Start-Up: Unknown.

Date of Closure: Numerous roll-off boxes are in use throughout the site.

Waste Managed: Scrap cardboard, wood, and general garbage is placed in the unit until disposal in the Sanitary Landfill.

Release Controls: The units are located on the paved areas behind each building.

Release History: Unknown.

UNIT 34. (Continued)

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the nature of the wastes handled.

Surface Water: The potential for release to surface water is low due to the nature of the wastes handled.

Air: The potential for air release is low due to the nature of the wastes handled and the short storage periods.

Subsurface Gas: The potential for generation of subsurface gas is low due to the above-ground design of the units.

Suggested Further Action: No further action is suggested for this unit at this time.

35. UNIT NAME: CONEX Hazardous Waste Transfer Containers behind Building 820

Unit Description: These units are yellow painted steel transfer vaults in which 4 drums of waste can be placed and transferred to a storage area. There are numerous CONEX containers on site, one of which was behind Building 1820.

Date of Start-Up: Unknown.

Date of Closure: Numerous CONEX containers are in use throughout the site.

Waste Managed: Containerized hazardous waste is temporarily stored in the vaults for transfer between storage areas. The vaults are then moved by forklift and loaders.

Release Controls: The units serve as a release control for containerized wastes during transfer. The units are located on paved areas behind production buildings where containerized waste is generated.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to containerization of wastes within the unit.

Surface Water: The potential for release to surface water is low due to containerization of waste within the unit.

Air: The potential for release to air is low due to containerization of wastes within the unit.

Subsurface Gas: There is no potential for the generation of subsurface gas due to the design characteristics of the unit.

Suggested Further Action: **No further action is suggested for this unit at this time.**

36 UNIT NAME: Oil Pan Wash Out/Disposal Rack
Adjacent to Building 1820

Unit Description: This unit consists of a metal drip pan that gravity feeds a pipe which drains into an underground waste oil storage tank. The pan is erected on wooden posts and a dissipated wooden overhang.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Waste oil from various drip pans and gallon jugs are emptied and washed in the metal drip pan.

Release Controls: There are no release controls employed at the unit.

Release History: The ground beneath the unit is covered with oil stains with remnants of oil encrusted grass at the foot of the posts.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is high due to spillage of waste oil onto the ground.

Surface Water: The potential for release to surface water is moderate due to possible run-off from the affected soils into an intermittent stream at the base of the hill.

Air: The potential for release to air is low due to the nature of the waste.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit.

Suggested Further Action:

1. Soil which shows obvious signs of soil contamination should be removed.

2. Soil sampling should be performed after removal of visually contaminated soil to verify that there is no further contamination.

3. The facility should take steps to ensure no future oil spills (i.e., installation of a containment pad and larger drip pan).

37. UNIT NAME: Underground Waste Oil Storage Tank -- Building 1818

Unit Description: This unit is a single shell steel storage tank that has a capacity of 500 gallons. It receives waste oil from the Oil Pan Wash Out (Unit 36) and oil from the Auto Maintenance Shops (Unit 29).

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: The underground storage tank is used for storage of waste oil prior to transfer to the storage tank in Building 2801 or use as boiler feed.

Release Controls: The unit does not have a leak detection system.

Release History: Severe erosion of the hillside near the unit had fully exposed its vent pipe and part of the tank (Ref. 20).

Conclusions:

Soil/Groundwater: There is a high potential for release to soil/groundwater dependent on the age of the tank and the fact that there is no leak detection system.

Surface Water: The potential for release to surface water is low due to the unit's construction.

Air: The potential for release to air is low due to the design of the unit

Subsurface Gas: The potential for generation of subsurface gas is moderate dependent on the integrity of the tank.

Suggested Further Action: The integrity of the unit should be inspected.

38. UNIT NAME: Underground Waste Oil Storage Tank -- Building 1820

Unit Description: This unit is a single shell steel storage tank that has a capacity of 500 gallons. It receives waste oil from the Heavy Equipment Maintenance Shop (Unit 30) and the Oil/Water Separator (Unit 32).

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: The storage tank is used to store waste oils until transfer to Building 2801 or use as boiler feed.

Release Controls: The unit does not have a leak detection system.

Release History: Unknown.

UNIT 38. (Continued)

Conclusions: **Soil/Groundwater: There is a high potential for release to soil/groundwater dependent on the age and intergity of the tank and the fact that there is no leak detection system.**

Surface Water: The potential release to surface water is low due to the units construction.

Air: The potential for release to air is low due to the design of the unit.

Subsurface Gas: The potential for generation of subsurface gas is moderate dependent on the integrity of the tanks.

Suggested Further Action: The integrity of the unit should be inspected.

*39. UNIT NAME: Mechanical Maintenance Shop - Building 56 (Ref. 3, p. 6-47)

Unit Description: Various mechanical repairs are performed in this building. The unit consists of three 15 gallon solvent tanks.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Waste solvent from degreasing operations is generated and stored in tanks.

Release Controls: Unknown.

Release History: Unknown.

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the status and condition of the unit, release controls, and release history.

*40. UNIT NAME: 400 Gallon Solvent Storage Tank (Building 56 Paint Shop) (Ref. 3, p. 6-47)

Unit Description: This unit located in the paint shop has a capacity of 400 gallons and is used to store waste solvent from the Mechanical Maintenance Shop.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Waste solvents (Agitene) are stored in the tank.

Release Controls: Unknown.

Release History: Unknown.

UNIT 40. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the status and condition of the unit, release controls, and release history.

*41. UNIT NAME: Red Phosphorous Mixing Emergency Sump

Unit Description: This unit is a small dead-end concrete sump that is used to collect any water resides in case of a fire or wash-down. The process is normally dry and the sump is rarely used (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: The unit is put into service when needed

Waste Managed: The unit receives red phosphorous contaminated quench water. If the sump is used, the wastes are pumped out and taken to the ABG (Unit 79).

Release Controls: Unknown.

Release History: Unknown.

UNIT 41. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the age, frequency of use and initegrity of the unit.

*42. UNIT NAME: Booster Area - Lead Azide Sump - Buildings 106-107

Unit Description: Facility representatives reported that prior to the installation of the wastewater treatment unit for Buildings 106-107, lead azide contaminated wastewater was collected in concrete sumps for settling prior to discharge to a central unlined pond (Unit 44).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: The sumps received lead azide contaminated wastewater from production areas within the Building 106-107 complex.

Release Controls: Unknown.

Release History: Unknown.

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Determine the location of the sumps. Obtain information on design, age, and integrity of the sumps.

*43. UNIT NAME: Wastewater Treatment Unit Building 3074

Unit Description: This unit is the wastewater treatment unit for lead contaminated wastewater from the Booster Area (Buildings. 106-107) (Ref. 20). The water is collected in two, 2000 gallon tanks; polymers and powdered activated carbon are added for precipitation of the lead. The supernatant goes into the sanitary sewer system and the sludge is containerized and stored at the CSF (Unit 47). The VSI team did not have access to the unit because the Army was not working on the inspection day (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: The Unit is currently active.

Waste Managed: The Unit treats lead azide contaminated wastewater.

Release Controls: Unknown.

Release History: Unknown.

UNIT 43. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Determine the current status and condition of the unit. Obtain information on unit operation, release controls, and release history.

44. UNIT NAME: Lead Azide Loading Pond (Ref. 3, pp. 2-3)

Unit Description: This unit was an unlined pond that was 15 ft. X 8 ft. X 3 ft. (Ref. 3, p. 6-10). The pond is located near the Lead Azide Production Building (Buildings 106-107).

Date of Start-Up: 1961

Date of Closure: The unit was taken out of service in 1977.

Waste Managed: Wastewater containing lead salts was discharged into the unit from 1961 to 1977. The pond was periodically pumped out and sediments removed to the Ammunition Burning Grounds (Unit 79) for burning (Ref. 3, p. 7-3).

Release Controls: The pond was closed in 1981; contaminated soil and effluent were removed to an off-site approved landfill (Ref. 13, p. 2-3).

Release History: The area is presently "swampy" with heavy grass and low brush vegetation.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater was high in the past due to disposed of wastes in an unlined depression. This potential is presently low due to removal of contaminated soil.

Surface Water: The potential for release to surface water in the past was low due to the units low topographical position relative to the surrounding area. This potential remains low presently due to the removal of wastes and the units topographical position.

Air: The potential for air release is low due to the dilute nature of the wastes and inactivity of the unit.

Subsurface Gas: The potential for subsurface gas generation is low due to the open nature of the unit and the wastes handled.

Suggested Further Action: No further action is suggested for this unit at this time.

45. UNIT NAME: Open Storage Area Outside Building 2801

Unit Description: This unit is located across the dirt access road from the Above-ground Waste Oil Storage Tank (Unit 11). It consists of old empty drums, and scrap wood ready for removal to the Salvage Yard (Unit 74) or the Sanitary Landfill (Unit 86) (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Old empty drums and scrap wood are collected on the open ground surface in a temporary storage area.

Release Controls: There are no release controls employed at the unit.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the nature of the waste handled.

Surface Water: The potential for release to surface water is low due to the nature of the waste handled.

Air: The potential for release to air is low due to the nature of the wastes handled.

Subsurface Gas: There is no potential for generation of subsurface gas due to the nature of the wastes and open design of the unit.

Suggested Further Action:

No further action is suggested for this unit at this time.

*46. UNIT NAME: Cast High Explosives Fill (Building 146) (Ref. 3, p.2-4)

Unit Description: This unit consists of an explosive fill area and pressure washout facility. (Ref. 7, p.6).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Waste managed included explosive dust (containing lead, cadmium and chromium) and ash; hazardous constituents containing TNT, RDX, HMX had heavy metals; and wastewater containing RDX, TNT and ammonium picrate. (Ref. 3).

Release Controls: In 1978, a wastewater treatment system was installed which collected the wastewater in sumps, which was then transported to the Rockeye area for treatment. (Ref. 3, p. 6-28).

Release History: Prior to 1978, the wastewater was released to a ditch which conveyed the contaminants to a nearby stream. Dust was released via a ventilation system to the furnace. According to the NACIP survey, the potential for soil, groundwater, and surface water release is significant (Ref. 3).

Conclusions:	**This unit was not observed during the VSI. However, the release history of this unit indicates that there is a high potential for release to soil and groundwater.**
Suggested Further Action:	**Soil sampling should be performed to determine the existence of contamination from the unit.**

47. UNIT NAME: Central Storage Facility (CFS) Ref. 6, p. B-2)

Unit Description: This unit consists of an indoor storage area and an outside storage yard. The storage building is a 40 ft. X 72 ft. metal sided building with an epoxy coated concrete floor. The building is separated into three cells separated by partial cement walls. The outside yard is used for non-liquid container storage and is fenced at its perimeter.

This unit is described as the "single destination for hazardous wastes stored at the NWSC Crane (for periods which may exceed 90 days) prior to being removed to an approved off-site RCRA permitted facility."

Date of Start-Up: 1980 (Ref. 20).

Date of Closure: The unit is currently active.

Wastes Managed: Containerized hazardous wastes including both liquid and solid containerized wastes.

Wastes include: acids/laboratory wastes; oxidizers; caustics; cyanide, stripper solutions and degreasers; solvents; flammables and oil wastes. Wastes are separated by classification.

Release Controls: The indoor storage facility has an epoxy coated collection sump, and 6 inch perimeter curbing. In the event of a spill, drains are individually sealed. The collected liquid is pumped out, and placed in drums for off-site disposal. All solids and flammables are stored outside the storage building.

Release History: There were no visible signs of release during the VSI. A lab pack was open to the air on the east side of the building with apparent salt buildup on one of the containers (Ref. 20).

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low within the storage building due to the release controls employed. The potential for release to soil/groundwater is low in the storage yard due to the solid nature of the wastes within containers.

Surface Water: The potential for release to surface water is low within the storage building due to the release controls employed. The potential for release to surface water in the storage yard is low due to the containerization of wastes and the distance of the unit from any local surface drainage.

Air: The potential for release to air is low due to the apparent good conditions of the drums.

Subsurface Gas: There is no potential for the generation of subsurface gas due to the design of the unit.

Suggested Further Action: This unit is RCRA regulated. No further action is suggested for this unit at this time under the RCRA Corrective Action Program.

48. UNIT NAME: APE 1236 Incinerators - Building 146 (Ref. 6, p. B-4).

Unit Description: This unit consists of two 87.4 ft^3 oil feed rotary kiln incinerators located on the east edge of Building 146 that are used for the demilitarization of various munitions (Ref. 20). The units seem to be in a state of disrepair and are currently inactive (Ref. 20). Each is enclosed by a 10 ft. cement block wall.

Date of Start-Up: 1967.

Date of Closure: The units are presently inactive but are considered to be in operational condition.

Waste Managed: Waste ammunitions are incinerated in the units. The incineration process produces waste ash, baghouse dust and scrap metal. The metal is recovered and sold. The solids are collected in containers and transferred to the Central Storage Facility (Unit 47).

Release Controls: Each unit has a pollution control system which consists of a cyclone, baghouse, draft fan, and stack (Ref. 6, p. D-28). The baghouse collects waste dust through 96 filter bags made of NOMEX felt (Ref. 6, p. D-31). The dust is collected in a hopper and the baghouse is the last air release control device (Ref. 20). The wet scrubber system is not in use.

Release History: One monitoring well has been installed in the area of the incinerators; it has not been sampled.

Conclusions:

Soil/Groundwater: The unit is located on a cement pad within an enclosed cement block wall. The potential for release to soil/groundwater is low.

Surface Water: The potential for release to surface water is low due to the release controls employed at the unit.

Air: The potential for release to air appears to be high during unit operation due to the apparent poor condition of the air pollution control devices. The wet scrubber system is currently inoperative, and facility representatives noted that the particulate abatement system requires repair.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design of the unit.

Suggested Further Action: This unit is RCRA regulated. The units should not be operated until the pollution abatement systems are in good working order.

49. UNIT NAME: Prototype Incinerator - Building 146 (Ref. 6, p. B-3, 4).

Unit Description: This prototype incinerator has a 46.1 ft^3 capacity (Ref. 6, p. I-3). It is located between the two 1236 APE Incinerators (Unit 48). The unit is RCRA regulated (Interim Status) (Ref. 6, p. D-27). The unit's air release stack was completely broken off and the unit appeared be in a general state of disrepair (Ref. 20).

Date of Start-Up: 1967.

Date of Closure: The unit is currently inactive. Facility representatives note that it is due for major repair work.

Waste Managed: Small waste ammunitions are incinerated in the unit.

Release Controls: The unit is located over a concrete pad with a 10 ft. block wall on three sides of its perimeter. The unit air release stack was broken off and lying on the ground behind Building. 146. (Ref. 20).

Release History: One monitoring well has been installed in the area of the incinerators. It has not been sampled.

Conclusions:

Soil/Groundwater: The unit is located on a cement pad within an enclosed cement block wall. The potential for release to soil/groundwater is low.

Surface Water: The potential for release to surface water is low due to the release controls employed at the unit.

Air: The potential for release to air appear to be high during unit operation due to the apparent poor condition of the air pollution control devices.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design of the unit.

Suggested Further Action: This unit is RCRA regulated. The unit should not be operated until the pollution abatement systems are in good working order.

50. UNIT NAME: Defense Reutilization and Marketing Office (DRMO)
Hazardous Waste Storage Area (Building 2035)

Unit Description: This unit consists of metal storage racks within a concrete "bunker" building (Building. 2035). Hazardous materials in assorted container sizes are stored in the racks awaiting resale or recycling. If this is not possible, the material is considered to be a hazardous waste and is taken to the CSF (Unit 47) within 90 days of the waste description.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: All types of hazardous materials that can be considered for resale or reuse. These can include waste stripper materials, out-dated solvents, and non-explosive product that have exceeded their shelf lives (Ref. 20).

Materials observed during the VSI are as follows: barium peroxide, incendiary oil M2, Thermit, and "MICRO" developer.

Release Controls: The unit is contained within a concrete building over a concrete floor.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the containerization of wastes and location of the unit within an enclosed building.

Surface Water: The potential for release to surface water is low due to the containerization of wastes and location of the unit within an enclosed building.

Air: The potential for release to air is low due to the apparent good condition of the containers stored in the unit.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

51. UNIT NAME: DRMO Storage Lot

Unit Description: This unit consists of a level gravel pad that is approximately 1 acre (Ref. 20). The area is fenced at its perimeter and is located on the ridge overlooking the DRMO Storage Area (Unit 50).

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: PCP coated wood pallets and empty ammunitions cases are stored in bulk on the gravel pad prior to disposed or reuse.

Release Controls: There are no release controls employed at the unit.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the nature of the wastes stored.

Surface Water: The potential for release to surface water is low due to the nature of the wastes stored.

Air: The potential for release to air is low due to the nature of the wastes stored.

Subsurface Gas: There is no potential for generation of subsurface gas due to nature of the wastes stored and the open design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

Section 9

*52. UNIT NAME: Paint Shop Building 2889 (Ref. 3, p. 6-48)

Unit Description: This unit consists of a storage area for paint waste. Facility representatives noted that there were several paint shops located throughout the facility.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Paint wastes, spent paint thinner, and acetone are generated and stored in this unit.

Release Controls: Paint wastes are currently collected and disposed of by a chemical service.

Release History: Past practices involved dumping these waste down the hill behind Building 2889.

UNIT 52. (Continued)

Conclusions: This unit was not observed during the VSI. However, the past release history indicates a high potential for release to soil and groundwater.

Suggested Further Action: Soil sampling should be performed to determine the existence of contamination from the unit.

Section 11

*53. UNIT NAME: Load and Fill Area - Buildings 105, 198 and 200 (Ref. 3, p. 2-4)

Unit Description: According to the NACIP survey, this unit encompassed the area including Buildings 105, 198 and 200. (Ref. 3).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Wastes managed contained heavy metals and explosives, including lead, chromium, ammonium picrate, RDX and HMX.

Release Controls: Unknown.

Release History: The load and fill operations produced particulate releases. This contamination was assumed to migrate to surface waters (Boggs Creek) and percolate to groundwater (Ref. 3, p. 2-4).

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the design and opertion of the unit and additional information on release history.

*54. UNIT NAME: Wastewater Treatment Unit Building 160

Unit Description: This wastewater treatment unit has a capacity of 14,000 gallons per day. Waste pink water is treated with carbon adsorption. Approximately 30,000 - 40,000 gallons was treated between 1981 and 1985 (Ref. 1). This unit is located in Building 160.

The unit contains three carbon columns; two are in operation as the primary and secondary (polishing) columns, while the third column is backwashed. The effluent from this unit is sent to the Sanitary Wastewater Treatment Plant (Unit 55). Backwash water is recycled to the beginning of the plant (Ref. 20).

Date of Start-Up: 1980 (Ref. 1).

Date Closure: The unit is currently active.

Wastes Managed: Pink water (TNT contaminated water) is treated at this unit. Waste carbon is generated from the treatment columns. Approximately 46,000 lb/yr (140 drums) of waste carbon is produced from this unit and the carbon columns in Building 3004 (SWMU No. 6). Prior to January 1986, the waste carbon was sent to the burning grounds. It is now sent off-site for disposal.

Release Controls: Unknown.

Release History: Unknown.

UNIT 54. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Determine the current status and condition of the unit. Obtain information on release controls and release history.

55. UNIT NAME: Wastewater Treatment Unit - Sewage Plant - Building 3049

Unit Description: The wastewater treatment plant has a capacity of 1.2 MGD, and usually treats 0.35 to 0.4 MGD. The unit treats sanitary and industrial wastes from throughout the facility (Ref. 20). Treatment is as follows: (Ref. 20)

a) grit chamber/comminutor/equalization (two-65,000 gallon chambers);
b) chlorination;
c) hydrosieve;
d) rotating biological contactors (five contactors);
e) flocculation/clarification with alum (above-ground flocculation chambers);
f) sand/anthracite filtration;
g) chlorination (below-ground holding tank;
h) cascade aeration.

The removed solids are sent to an aerobic digestor. Wastewater generated during backwash of the filters is routed to the equalization chambers.

Date of Start-Up: 1978

Date of Closure: This unit is currently active.

55. UNIT NAME: Wastewater Treatment Unit - Sewage Plant - Building 3049 (Continued)

Waste Managed: Approximately 0.3 - 0.4 MGD of liquid wastes are treated. Both sanitary and industrial wastes are treated at the plant within the same treatment line.

Release Controls: All units, with the exception of the biological contactors, are constructed of concrete. The biological contactors are constructed of fiberglass with a concrete base. These units appear to be in good condition.

Following treatment, the effluent is discharged to Boggs Creek.

Release History: Unknown.

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is low due to the apparent good condition of the concrete tanks and pumping system.

Surface Water: The potential for release to surface water is moderate taking into account all of the industrial effluent that enters the system and is treated with methods used primarily for sanitary sewage.

Air: The potential for release to air is low due to the dilute nature of the wastestream.

Subsurface Gas: The potential for generation of subsurface gas is low due to the design operation of all of the treatment units.

Suggested Further Action: The unit discharges under NPDES Permit No. IN0021539. No further action is suggested for this unit at this time under RCRA corrective action.

56. UNIT NAME: Old Sludge Drying Beds

Unit Description: This unit consists of three soil based cells separated by 2 ft. concrete walls at the sewage treatment plant. These cells were used for sewage sludge drying prior to land application of the sludge. The unit is no longer in use. The sludge applied was apparently the sludge produced prior to the treatment system that is presently in place.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Sludge developed from the sewage treatment plant which potentially certain hazardous constituents from industrial effluent.

Release Controls: The unit is divided into three cells by 2 ft. concrete walls. The unit has a natural soil base and removable slats in each wall for sludge removal.

Release History: Unknown.

UNIT 56. (Continued)

Conclusions: Soil/Groundwater: The potential for release to the soil/groundwater is high due past practices.

Surface Water: The potential for release to surface water is high due to the lack of release controls and the presence of a small stream within 100 ft. of the unit.

Air: The potential for release to air is low due to the condition of the unit.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit.

Suggested Further Action: Soil sampling should be performed in the area of the drying beds to determine potential for contamination.

57. UNIT NAME: Sewage Sludge Vacuum Truck and Discharge Pad

Unit Description: This unit consists of a discharge pipe that is elevated approximately 10 ft. above a paved surface. Sewage sludge from the aerobic digestor is pumped through a delivery line and into a vacuum truck for subsequent land application.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Sewage sludge from the aerobic digestor of the Sewage Treatment Plant.

Release Controls: The discharge hose is located over a paved entry pad.

Release History: Unknown.

UNIT 57. (Continued)

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is low due to hose to truck delivery and the pavement beneath the delivery hose.

Surface Water: The potential for release to surface water is low due to hose to truck delivery and the pavement beneath the delivery hose.

Air: The potential for release to air is low due to the nature of the waste and the hose to truck delivery.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

58. UNIT NAME: Demolition Range

Unit Description: This covers an area of 40 to 50 acres. Open and underground detonation of waste pyrotechnics and munitions and loaded unsafe munitions. Trenches are dug, the wastes are containerized with a detonation charge, and the trench is filled. Residual material is usually left in place (Ref. 20). The area is barren of vegetation with denuded trees at its perimeter.

Date of Start-Up: 1940's

Date of Closure: The unit is currently active.

Waste Managed: Approximately 4230 gallons per day (273 to 3500 tons per year) of waste pyrotechnics and munitions were managed by this treatment unit from 1981 to 1984. Hazardous constituents identified at this unit are D003, and P009 (Ammonium picrate) (Ref. 7, p. 3). Highly dangerous unsafe explosives are detonated by the Explosive Ordnance Disposal on the north edge of the unit (Ref. 20).

Release Controls: This unit is located on a ridge with surface drainage to both Boggs Creek and Turkey Creek. There are four sedimentation ponds that collect contaminated run-off from the unit.

Monitoring wells have been installed in this area.

Release History: Various metal scraps and other debris were stored on the ground outside of the limits of the Demolition Range during the VSI.

Conclusions:

Soil/Groundwater: There is a high potential for release to soil/groundwater due to the nature of the waste treatment.

Surface Water: There is a high potential for release to surface water (specifically the sedimentation pond) from the unit due to open detonation of wastes and the lack of vegetative cover to control run-off.

Air: There is a moderate release potential to air during detonation of wastes.

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

Suggested Further Action:

Continued assessment of groundwater quality should be performed to determine the extent of contamination.

59. UNIT NAME: Waste Explosive Storage Area at the Demolition Range

Unit Description: This unit consists of metal lockers that rest on concrete pads within a fenced area. Waste explosives are kept in the lockers until prepared for detonation. The unit is located on the west edge of the Demolition Range.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Small munitions, unsafe loaded munitions and waste pyrotechnics are stored prior to detonation.

Release Controls: The wastes are stored in containers within metal lockers over a concrete pad.

Release History: Unknown.

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is low due to the release control employed at the unit.

Surface Water: The potential for release to surface waste is low due to the release controls employed at the unit.

Air: The potential for release to air is low due to the containerization of waste within sealed lockers.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

60. UNIT NAME: Pest Control Area Building 2189 (Ref. 2, p. 3)

Unit Description: This unit consists of a concrete sumps and waste pad used for washing pesticide spray tanks. Prior to installation of the sump, pesticide rinse water was sprayed into the trees behind the building (Ref. 20).

Date of Start-Up: 1977 (Ref. 3)

Date of Closure: The unit is currently active

Waste Managed: Pesticide rinse waters are generated and presently discharged to the sanitary sewer after collection in the sump. Pesticides used in the past at NWSC include: 2,4,-D; 2, 4, 5-T; MH-30; Talvon; DDT; Lindane and Chlordane (Ref. 20).

Release Controls: The unit has a 3 inch concrete curb around the wash pad. Four monitoring wells were installed downgradient of Building 2189 in the summer of 1986.

Release History: Pesticide accumulation in the parking lot of Building 2189 and the surrounding soil is considered possible due to the lack of controlled drainage prior to 1977. Prior to 1977, pesticide rinse water was washed down the hillside; containers containing pesticides were reused, punched, and buried in a landfill. This accumulation presents a potential for releases to surface water via runoff and groundwater contamination via percolation. (Ref. 3).

Conclusions: **Soil/Groundwater: The release potential to soil/groundwater in the area behind the unit is high due to past disposal practices. New practices with the collection sumps indicate a low potential for release.**

Surface Water: the release potential to surface water is low due to the discharge of wastes to the sanitary sewer system.

Air: The release potential to air is low due to the dilute nature or the wastes.

Subsurface Gas: The release potential for generation of subsurface gas is low due to the open nature of the unit.

Suggested Further Action: **Continued assessment of groundwater quality should be performed to determine the extent of contamination.**

61. UNIT NAME: Former Site of Waste Oil Underground Storage Tank near the Pest Control Area

Unit Description: This area is presently graded with sparse vegetation and three monitoring wells in place (Ref. 20). A large, old fuel oil tank and several drums filled with fuel oil sludge (Unit 62) are located adjacent to this area. According to facility representatives the tank was in "fair" shape when it was removed.

Date of Start-Up: The tank was installed in the early 1970's.

Date of Closure: The tank was removed in 1983 (Ref. 20).

Waste Managed: The unit stored waste oil and degreasers that were contaminated with PCBs.

Eight drums containing waste fuel oil sludge collected from the underground storage tank are now located in this area. These drums are to be shipped off-site for disposal. Another diesel fuel storage tank, which was previously underground in another location, is now resting above ground north of the drums. The tank is covered with rust and is reported empty. Facility representatives report that the tank was cleaned in 1986 and is now the property of DRMO (Ref. 20).

Release Controls: The unit was a single steel tank that rested on a thin coal layer. The unit did not have a leak detection system. Three monitoring wells were installed in this area in the summer of 1986. Sandy Clay was backfilled into the area after the tank was removed (Ref. 20).

Release History: Soil borings have shown elevated levels of heavy metals (Ref. 13, p. 26). Trans-1, 2, DCE and TCE were detected in the monitoring wells (Ref. 13, p. 26). Facility representatives stated that contamination was probably the result of spills during waste transfer and not tank leakage (Ref. 20).

Conclusions:

Soil/Groundwater: There is documented release to soil/groundwater from this unit.

Surface Water: The potential for release to surface water is low due to removal of the tank and the distance of the unit from any local surface drainage.

Air: The potential for close to air was low due to the design of the unit and the nature of the wastes handled.

Subsurface Gas: The potential for generation of subsurface gas is low due to the nature of the wastes handled.

Suggested Further Action: Continued assessment of groundwater quality should be performed to determine the extent of contamination.

62. UNIT NAME: Drum Storage Area Adjacent to SWMU # 61

Unit Description: This unit consists of eight drums that were filled with fuel oil sludge from tank cleaning and were stored adjacent to SWMU # 61 (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: The drums are being stored temporarily until off-site disposal (Ref. 20).

Waste Managed: Containerized fuel oil sludge was stored in 55 gallon steel drums.

Release Controls: The unit employed no release controls.

Release History: There was no visible sign of release from any of the drums during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the apparent good condition of the drums.

Surface Water: The potential for release to surface water is low due to the apparent good condition of the drums.

Air: The potential for release to air is low due to the nature of the wastes and the apparent good condition of the drums.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

63. UNIT NAME: Rifle Range

Unit Description: This ten-acre unit consists of an open field with three burning pits. Each pit has several burning pans in which "Yellow D" explosive and other explosive contaminated material is burned. Prior to July 1986, burning was conducted on open ground (Ref. 20). This unit has also been used for "bomb cook-off" tests (Ref. 3, p.6-37).

Date of Start-Up: 1940's.

Date of Closure: The unit is currently active.

Waste Managed: "Yellow D" explosive is burned in bulk in metal pans that are approximately 7 ft. (L) X 5 ft. (W) X 1 ft. (D). Ash residues are containerized and taken to the CSF for storage (Ref. 20).

Hazardous constituents identified are D003 and P009. From 1981 to 1984, 7 to 240 tons of wastes per year were managed at this unit.

Release Controls: The burning pans were installed in July 1986 to prevent soil contamination with Yellow D. The burn areas are lined with four layers of plastic and clay.

Release History: Soil around the pans was yellow in color and there was significant ash accumulation within each pit (Ref. 20). There are groundwater monitoring wells for the unit but this data was not available for review.

63. UNIT (Continued)

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is high due to past practices of open burning on the soil.

Surface Water: The potential for release to surface water is high due to the fact that run-off from the area flows into a small stream at the base of the unit.

Air: The potential for release to air is high during burning but is generally low when burning is not taking place.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit.

Suggested Further Action:

1. Continued assessment of groundwater quality should be performed to determine the extent of contamination.

2. Surface water/sediment sampling of the stream downgradient of the unit should be conducted to determine the extent of contamination (if any).

64. UNIT NAME: Sedimentation Pond # 1

Unit Description: This unit is an unlined one acre engineered pond designed to capture possibly contaminated run off from the Demolition Range (Unit 58). Its effluent exits the facility at NPDES outfall 001. The unit is one of four collection ponds for the Demolition Range. The other three are located in Section 7.

Date of Start-Up: 1975.

Date of Closure: The unit is currently active.

Waste Managed: The unit collects surface run-off contaminated with residual explosives from the Demolition Range.

Release Controls: The pond is unlined, but serves to settle out solids in run-off prior to NPDES Discharge.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is moderate due to the nature of the wastestream.

Surface Water: The potential for release to surface water is moderate due to the nature of the wastestream.

Air: The potential for release to air is low due to the dilute nature of the wastestream.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit and the dilute nature of the wastestream.

Suggested Further Action:

1. Surface water sampling should be performed to determine levels of explosives and other contaminants from wastes treated at the Demolition Range.

2. Sediment samples should be taken to determine levels of explosives and other contaminant from wastes treated at the Demolition Range.

65. UNIT NAME: Mine Fill A (Ref. 3, p. 204)

Unit Description: This unit consists of collection sumps and a carbon adsorption wastewater treatment unit for treatment of explosive contaminated rinse waters. "Shock charges", which use very little water, are presently being loaded at the unit (Ref. 20). The VSI team was only able to access the outside of the building.

Date of Start-Up: 1942.

Date of Closure: The unit is presently only producing small amounts of materials.

Waste Managed: Waste rinsewater contaminated with TNT, RDX, HMX and titanium tetrachloride is collected and treated via carbon adsorption.

Release Controls: Collected sludge is recovered from the sumps and taken to the ABG (Unit 79). A particulate abatement system was installed in the mid 1970's (Ref. 3, p. 6-17).

Release History: Unknown. However, prior to installation of the wastewater treatment system, wastewater was allowed to enter surface drainage. Sediments surrounding the Fill are contaminated with trace explosives due to past particulate release (Ref. 3, p.2-4). Facility representatives noted that the probable source of soil contamination was screen pouring of mine powder.

Conclusions: **Soil/Groundwater: There is documented trace contamination of the soils surrounding the unit due to past practices.**

Surface Water: There is high potential for release to surface water due to run-off of contaminated soils into intermittent stream drainage.

Air: The release potential in the past was high due to particulate release. Presently, the potential is low due to pollution controls and a small production volume.

Subsurface Gas: The release potential for generation of subsurface gas is low due to the nature of the wastes.

Suggested Further Action: **Further soil sampling should be performed to determine extent of contamination.**

66. UNIT NAME: Mine Fill B

Unit Description: This unit consists of collection sumps and a container storage area. The unit no longer is used for mine loading, but is used for munitions renovation including grit blasting and painting (Ref. 20). The VSI team was only able to access the outside of the building.

Date of Start-Up: 1942.

Date of Closure: The unit is currently active.

Waste Managed: The unit formerly managed explosive contaminated wastewater that was allowed to enter surface drainage. Presently grit residues and paint wastes are containerized and stored on wood pallets prior to removal to the CSF (Unit 47) (Ref. 20).

Release Controls: Unlike Mine Fill A, the unit does not have an air pollution control system. However, there is no present explosives operation at the unit (Ref. 20).

Release History: Sediments surrounding the Fill are contaminated with trace explosives due to past particulate release (Ref. 3, p.2-4).

Conclusions:

Soil/Groundwater: There is documented trace contamination of the soils surrounding the unit.

Surface Water: There is high potential for release to surface water due to run-off of contaminated soils into intermittent stream drainage.

Air: The release potential in the past was big due to particulate release. Presently the potential is low due to pollution controls and a small production volume.

Subsurface Gas: The release potential for generation of subsurface gas is low due to the nature of the wastes.

Suggested Further Action: Further soil sampling should be performed to determine extent of contamination.

*67. UNIT NAME: Wastewater Treatment Unit - Building 104 (Ref. 3, p. 6-14)

Unit Description: The unit is a carbon adsorption unit (Ref. 20).

Date of Start-Up: 1979.

Date of Closure: This unit is currently active.

Waste Managed: Wastes managed included explosive contaminated wastewater containing wastes from x-ray booths and phosphatizing lines. However, the phosphatizing lines have been discontinued.

Release Controls: Unknown.

Release History: Prior to 1979, the wastewater was discharged into storm drains that flowed into Boggs Creek.

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding potentials to the various pathways.

Suggested Further Action: Obtain information on unit design and operation, and current condition of the unit.

68. UNIT NAME: Explosive D Wash Areas (Ref. 3, p. 6-28)

Unit Description: This unit consisted of four separate processes.

a) hot water rinse of projectiles and bombs to remove explosive D.

b) cooling the hot water to allow the Explosive D to crystallize out of solution

c) return of residual process water to a sump and eventually to Boggs Creek

These operations had occurred in Buildings 104, 105, 198, and 200. The VSI team was only able to access the outside of Building 104 and observe one of the collection sumps. A cement drain lead into the sump where the waste stream was allowed to settle with discharge to Boggs Creek (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: The wash out process is no longer in operation (Ref. 20).

Waste Managed: The wastes managed in the unit include wastewater contaminated with Explosive D.

Release Controls: The unit had no release controls.

Release History: Some staining of soil around the cement drain into the sump was noted during the VSI.

Conclusions:

Soil/Groundwater: The release potential in the past to soil/groundwater was high due to waste management practices. Presently the potential is low due to cessation of the process.

Surface Water: The release potential in the past to surface water was high due to waste management practices in the past. Presently the potential is low due to cessation of the process.

Air: The potential for air release in the past was moderate due to steam cleaning of waste containing Explosive D. Presently there is no potential for air release.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design of the unit and the nature of the wastestream.

Suggested Further Action: Sediments should be sampled in the intermittent stream south of the wash area.

*69. UNIT NAME: Load and Fill Area Sumps Building 104

Unit Description: These sumps are probably collection sumps for TNT contaminated wastewater (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Process rinsewater that is contaminated with explosives.

Release Controls: Unknown.

Release History: Unknown.

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusion regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the exact location of the sumps, period of operation, frequency of use, design, and current condition.

*70. UNIT NAME: Steam Out Unit - Building 160 (Ref. 3, p. 6-28)

Unit Description: This unit consists of a steam stripper to melt residual explosives from casings from demiltarization. After the casings are stripped, they are flushed with water. The solid explosive particles are taken to the Demolition Range.

Waste treatment consists of cooling, paper filtration and carbon adsorption. The wastewater is then held in a sump prior to discharge to the sanitary sewer system.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: The waste managed is described as explosive contaminated wastewater.

Release Controls: Unknown.

Release History: Unknown.

UNIT 70. (Continued)

Conclusions: **This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.**

Suggested Further Action: **Obtain information on unit operation, period of operation, release controls, and release history. Determine the current status and condition of the unit.**

71. UNIT NAME: Highway 58 Dump Site A (Ref. 4, p. 64)

Unit Description: This unit is located between Highway 45 and the NWSC Salvage yard on Highway 58. Disposal was apparently conducted along a hillside with an intermittent stream at the base of the hill.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Unknown.

Release Controls: This area was an unengineered disposal area (Ref. 20).

Release History: The ground on the hillside appeared to be disturbed with pieces of metal, rock, and fallen trees in scattered areas (Ref. 20). There were two monitoring wells in place at the base of the hill. Monitoring data was not available for review.

UNIT 71. (Continued)

Conclusions:	Insufficient information was available to develop conclusions regarding release potentials to the various pathways.
Suggested Further Action:	Continued assessment of groundwater quality should be performed to determine the extent of contamination (if any).

*72. UNIT NAME: Storage Tanks - Building 104 (Ref. 15)

Unit Description: These storage tanks have a total capacity of 36,000 gallons. They are used to store yellow D wastewater. (Ref. 7, pp. 5-6). This unit was deleted from the RCRA Application because wastes are stored less than 90 days. This unit may be part of the Explosive Wash Area (Unit 68).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Yellow D wastewater is collected in the tanks.

Release Controls: Unknown.

Release History: Unknown.

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusion regarding release potentials to the various pathways.

Suggested Further Action: obtain information on the age and integrity of the tanks, release controls, and history of release.

*73. UNIT NAME: Bomb Proof Group

Unit Description: This unit was identified as an open area on a facility section map. No further information was available regarding its purpose.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Unknown.

Release Controls: Unknown.

Release History: Unknown.

UNIT 73. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the design, operation, and condition of the unit, period of operation, types of wastes managed, and release history.

74. UNIT NAME: DRMO Salvage Yard

Unit Description: This unit consists of scrap metal parts, and old tires that are separated into open piles according to metal type and ultimate destination. The area is a natural soil pad and is entirely fenced. It is located near Building 2704 (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: The unit serves as a storage lot for scrap metals and rubber prior to resale or recycling.

Release Controls: The unit is fenced at its perimeter but there are no other release controls.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the nature of the wastes handled.

Surface Water: The potential for release to surface water is low due to the nature of the wastes handled.

Air: The potential for release to air is low due to the nature of the wastes handled.

Subsurface Gas: the potential for generation of subsurface gas is low due to the open nature of the unit and the nature of the wastes handled.

Suggested Further Action: No further action is suggested for this unit at this time.

*75. UNIT NAME: Heavy Equipment Storage Area - Building 2189

Unit Description: This unit houses the one ton stake bed truck that transports containerized hazardous wastes across the site (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Heavy equipment that is potentially contaminated with various hazardous constituents is stored in this building.

Release Controls: Unknown.

Release History: Unknown.

UNIT 75. (Continued)

Conclusions:	This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.
Suggested Further Action:	Obtain information on the exact uses of the unit, including any decontamination operations, and types of wastes managed.

76. UNIT NAME: Sanitary Sewer System (Ref. B-5)

Unit Description: This unit receives wastewater from most processes at the facility. Receives such wastes as: boiler blowdown, explosive rinse water and chemical plating wastewater. See Unit 55 for an explanation of treatment of sewer influent at the facility.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Wastewater from the following units is discharged to the sanitary sewer system:

Unit No.	Unit Name
4/6	Rockeye Loading Area Sumps/Rockeye Loading Area Wastewater Treatment Unit-Building 3004
13/14.	Building 136 Sump/Wastewater Treatment Unit (Lead) - Building 136
15.	Wastewater Treatment Unit - Building 3064
18.	Acid Neutralization Pit - Building 36
22.	Building 126 Sump
25.	Red Phosphorous Building 1886 Sump
26.	Building 133 Sump
27/28.	Railroad Maintenance Shop Wash Area/Oil-Water Separator - Building 7
29.	Auto Maintenance Shop Building 1820
30/32.	Heavy Equipment Maintenance Shop/Oil Water Separator - Building 1818
43.	Wastewater Treatment Unit Building 3074
54.	Wastewater Treatment Unit Building 160
60.	Pest Control Area Building 2189
65.	Mine Fill A
67/69.	Wastewater Treatment Unit/Load and Fill Area Sumps Building 104
70.	Steam Out Unit Building 160
80/81.	Sludge Dewatering Units/Underground Storage Tanks ABG
87.	Sanitary Landfill Leachate Collection Pond
100.	Settling Pond Behind Building 106

76. UNIT NAME: Sanitary Sewer System (Ref. B-5)

Release Controls: **Unknown. The route of the sanitary sewer system was not provided.**

Release History: **The facility is currently attempting to send dye tracers through the sewer system.**

Conclusions: **Soil/Groundwater: There is a potential for release of waters to soil/groundwater from the sanitary sewer system. The extent of release cannot be verified until completion of the dye tracer study.**

Surface Water: There is a potential for release of wastes to surface water. The extent cannot be verified until completion of the dye tracer study.

Air: The potential for release of wastes to air is low due to the nature of the unit.

Subsurface Gas: The potential for generation of subsurface gases is low to moderate due to the nature of the wastes.

Suggested Further Action: Completion of the dye tracer study.

Section 13

*77. UNIT NAME: Turkey Creek Quarry (Ref. 3, p. 6-58)

Unit Description: **This unit consisted of an old stone quarry where garbage was burned and buried. This area is about 1000 ft. south of the H99 bridge over Turkey Creek. During the VSI, facility representatives reported that they were not familiar with this unit (Ref. 20), and that it may be Highway 58 Dump Site A (Unit 71).**

Date of Start-Up: **Unknown.**

Date of Closure: Unknown.

Waste Managed: Garbage, not specified.

Release Controls: Unknown.

Release History: Unknown.

Conclusions: **This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.**

Suggested Further Action: **Obtain information on the operation of this unit including information on the history of wastes managed.**

78. UNIT NAME: Highway 58 Dump Site B (Ref. 4, p. 67)

Unit Description: This disposal unit is located 4 miles south of magazine 871, near bridge 1854. The unit is at the base of a massive sandstone outcrop. There are visibly rusted containers and metal parts at the surface.

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Fifteen crushed and rusted drums were observed in this area during the VSI; the contents are unknown.

Release Controls: The unit was an unengineered disposal area. Seven monitoring wells have been installed in this area.

Release History: Unknown.

UNIT 78. (Continued)

Conclusions:	**Insufficient information was available to develop conclusions regarding release potentials to the various pathways.**
Suggested Further Action:	**Continued assessment of groundwater quality should be performed to determine the extent of contamination (if any).**

79. UNIT NAME: Ammunition Burning Grounds (ABG)

Unit Description: This unit is a 40 acre site in which various explosives are "thermally treated" (i.e., openly burned). The area is a valley bounded by ridges. Little Sulfur Creek runs through the middle of the valley. This unit encompasses other SWMUs (Units 80, 81, 82, 83, and 84). The unit has been regulated under CERCLA (Ref. 6 p. E-2) and has been studied by the U.S. Army Corps of Engineers since 1981 (Ref. 6 p. E-2). Sixteen monitoring wells have been installed around the Unit.

Date of Start-Up: 1940's.

Date of Closure: The unit is currently active.

Waste Managed: Open burning of ordnance and ordnance contaminated materials (TNT, RPX, HMX, heavy metals, and organics) has taken place since 1965 (Ref. 3, p. 2-3). Over 10,000 major weapons were destroyed on this site including waste explosives, propellants, and pyrotechnics (Ref. 3, p. 6-62). Prior to 1965, the area was used as a munitions testing area. From 1981 to 1984, 1,783 to 3,770 tons per year of wastes were burned (Ref. 20).

Release Controls: The unit consists of several open burning areas with no release control. Burning of propellants has recently been conducted in metal burning pans instead of the ground surface (Ref. 20).

Release History: Seven organic compounds were identified in monitoring wellls with concentrations exceeding 50 ppb (Ref. 13, p. 19). The groundwater at the unit is mounded with flow to the east, south, and west (Ref. 13, p. 21). The contaminant plume is oval shaped with an approximate 180 ft. width and 325 length. The U.S. Army Corps of Engineers were coring on the northwest side of the ABG during the VSI (Ref. 20).

Burning was taking place during the VSI with large clouds of white smoke filling the west side of the Valley (Ref. 20).

Conclusions: Soil/Groundwater: There is documented contamination of soil due to open burning of wastes on the ground surface (Ref. 20).

Surface Water: The potential for release to surface water is high due to the proximity of Little Sulphur Creek and the lack of release controls to prevent run-off at the unit.

Air: The potential for release to air is high during open burning of explosive wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit.

Suggested Further Action: Continued assessment of groundwater quality should be performed to determine the extent of contamination.

80. UNIT NAME: Sludge Dewatering Units (ABG) (Ref. 6, p. B-4 and 5)

Unit Description: Three single shell, steel, sludge dewatering units with a capacity of 14,500 gallons per unit are located at the Ammunition Burning Grounds (Unit 79). These units are RCRA interim status units (Ref. 6, p.E-1).

Explosive sludge is placed into the unit and dewatered by filtration. The liquid waste (filtrate) is collected by an underdrain system. The dewatered sludge is then ignited, and burned in place. The units have a "metal cover" that is removed after dewatering, but before the dewatered sludge is burned (Ref. 6, p. C-7).

Sludge Dewatering Units #1 and #2 receive sludge from Buildings 146, 160 and the Rockeye Area. Sludge Dewatering Unit #3 receives sludge from the pyroproduction line (Building 133) (Ref. 6, p. B-4 and 5).

Filtrate from each unit goes into underground holding tanks. Filtrate from Sludge Dewatering Units #1 and #2 is treated at Building 160 (Unit 54) or 3004 (Unit 6) and discharged under NPDES authority (Ref. 6, p. B-5). Filtrate from Sludge Dewatering Unit #3 is sampled and analyzed; if determined hazardous, it is containerized and stored at the Central Storage Facility (SWMU No. 60). If determined non-hazardous, it is discharged to the Sanitary Sewer System (Unit 76).

Date of Start-Up: 1975

Date of Closure: The units are currently active (Ref. 6, p. D-23).

Waste Managed: Wastes managed are pyrotechnic liquid sludges. Sludge in Units #1 and #2 contains RDX, HMX, and TNT. Sludge handled by Unit #3 is a red phosphorous sludge.

Release Controls: Each unit is lined with a single synthetic 30 mil PVC liner (Ref. 6, p. D-23). Filtrate is collected via a 6 inch PVC perforated pipe installed at the base of each unit. According to a June 25, 1986 letter from NWSC to the USEPA, Crane plans to retrofit the Sludge Dewatering Units with a double liner to meet the November 8, 1988 deadline. Currently the units have a single PVC membrane with a sand and clay base (Blueprint #4315). The units dikes were constructed of local clay with an average permeability of 3.6 X 10^{-6} cm/sec (Ref. 6, Appendix D-13-2).

Soil borings in the area close to the Sludge Dewatering Units indicate that there is an average of 6.7 ft of soil characterized as sandy clay. (Ref. 6, Appendix D-13-2). The soil is underlain by a sandstone of the Hardinsburg Formation.

Release History: The units are monitored by a series of eight groundwater monitoring wells. These wells are installed by the U.S. Army Corps of Engineers to comply with RCRA regulation Subpart F. In June 1983, four additional wells were installed at the ABG, but are considered observation wells for the Ash Pile (Unit 82).

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is moderate to high due to possible liner disturbance during burning of wastes within the unit.

Surface Water: The potential for release to surface water is low due to the collection of filtrate in underground storage tanks.

Air: The potential for release to air is high during burning of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the nature of the wastes and design of the unit.

Suggested Further Action: Continued assessment of groundwater quality should be performed to determine the extent of contamination.

81. UNIT NAME: Underground Storage Tanks (ABG) (Ref. 5)

Unit Description: This unit consists of three tanks used to collect filtrate from the SDUs (Unit 80). The tank associated with SDUs #1 and #2 are 25,000 gallon steel tanks and the steel collection tank associated with SDU #3 holds 12,000 gallons (Ref. 5). These units were deleted from the RCRA Part A application because wastewater storage is less than 90 days (Ref. 5).

Date of Start-Up: December 1983 (Ref. 1).

Date of Closure: The units are currently active.

Waste Managed: The first two tanks collect waste explosive pyrotechnic pink water filtrate and the third tank collects red phosphorous contaminated wastes. Generally, one million gallons per year are stored in the tanks (Ref. 20). When the tank is full, the wastewater is recycled via a vacuum truck to the Rockeye Carbon Treatment Facility.

Release Controls: According to facility representatives the volume of each tank is checked daily to monitor for leakage, the volume of wastewater is logged to ensure there are no leaks. On occasion, fluid levels have risen due to unreported sludge disposal in the SDUs and subsequent filtrate influent into the tanks (Ref. 20).

Release History: On one occasion, a pipe burst, leaking water into the tank. Measurement of volume indicated that the quantity of liquid had increased, not decreased (Ref. 20).

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the relatively young age of the tanks.

Surface Water: The potential for release to surface water is low because the units are underground tanks with only a transfer pipe for surface outlet.

Air: The potential for release to air is low due to the design of the unit and the nature of the wastes.

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

Suggested Further Action: No further action is suggested for this unit at this time.

82. UNIT NAME: Ash Pile (ABG) (Ref. 6, p. B-6)

Unit Description: The ash pile was a RCRA interim status unit that had a capacity of 12,300 $yd.^3$. The unit was described as an open pile of heterogeneous ash and metal fragments. Presently, the area is excavated with some loose soil on the upslope side of the former pile area (Ref. 20). The unit is located on a moderate slope above a parking lot on the western side of the ABG (Ref. 20)..

Date of Start-Up: 1945

Date of Closure: This unit became inactive in 1982. According to facility representatives, ash and soil have been recently removed to an off-site disposal area (Ref. 20). Closure is not complete. However, closure activities are proceeding under a semi-approved closure plan. Presently, closure is proceeding with verbal approval (Ref. 20).

Waste Managed: The waste type disposed of in the unit was listed as ash and residue from open burning of explosives and pyrotechnics. Hazardous constituents are: TNT, RDX, HMX, etc. Currently, ash is placed in roll-off boxes and removed by contractor.

Release Controls: A closure plan has been submitted to the Indiana Department of Environmental Management. NWSC planned to remove the pile beginning July 1, 1986 (Ref. 8, p. 22). The unit was an open pile of ash situated on a moderate slope on the western side of the ABG (Ref. 20).

Release History: Results of a 24 foot soil core sample showed elevated levels of lead, barium, RDX and TNT. Four monitoring wells were installed in 1983. Analysis information was not provided (Ref. 14). The unit is located on a hillside underlain by the Hardinsburg Sandstone and the Golconda Limestone. The groundwater gradient is very steep reflecting the topographic change (Ref. 14, p.6).

UNIT 92. (Continued)

Conclusions:

Soil/Groundwater: There is documented soil/groundwater contamination from this unit due to the open storage/disposal of wastes on an open ground surface.

Surface Water: The potential for release to surface water in the past was high due to the lack of run-off controls on the pile and the proximity of Little Sulphur Creek.

Air: The potential for release to air was low due to the nature of the wastes..

Subsurface Gas: The potential for generation of subsurface gas was low due to the nature of the wastes.

Suggested Further Action:

1. Continued assessment of groundwater quality should be performed to determine the extent of contamination.

2. Closure should be completed under the State approved Closure Plan.

83. UNIT NAME: Ash Roll-Off Boxes (ABG)

Unit Description: Four steel roll-off boxes are used to store residual ash from the SDUs (Unit 80). The boxes are then removed for off-site disposal of the ash. These boxes are stored on a soil pad and are covered with tarpaulins (Ref. 20). The boxes took the place of the ABG Ash Pile (Unit 82).

Date of Start-Up: Approximately 1982

Date of Closure: The units are currently active.

Waste Managed: Residual ash from explosive contaminated sludges and unburned metal scraps are stored in the units.

Release Controls: The units are covered (removable tops) and are located over a soil pad (Ref. 20).

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the apparent good condition of the units.

Surface Water: The potential for release to surface water is low due to the design of the units.

Air: The potential for air release is generally low except during ash transfer when particulate generation may occur.

Subsurface Gas: There is no potential for generation of subsurface gas due to the above-ground nature of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

84. UNIT NAME: Open Burning Area (ABG)

Unit Description: This unit is an open area at the northern end of the ABG that covers approximately one acre (Ref. 20). Explosive contaminated wood and other scrap items are openly burned in a large pile.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Wooden cartons, pallets, and scrap wood that is potentially contaminated with explosives is openly burned on the ground surface.

Release Controls: There are no release controls employed at the unit. There was no defineable boundary to the unit (i.e. wood scraps at variable places within a general area).

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is high due to open burning on the ground.

Surface Water: The potential for release to surface water is high due to the lack of release controls and the proximity of Little Sulphur Creek.

Air: The potential for release to air is high during burning of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit.

Suggested Further Action:

1. Secondary containment should be employed to prevent run-off.

2. Soil sampling should be performed to determine the extent of contamination from the unit (if any).

85. UNIT NAME: Dye Burial Grounds (Ref. 3, p. 2-4)

Unit Description: This unit was an unlined disposal pit for waste dyes. The unit consisted of 3 main trenches 10 ft. wide X 6 ft. deep X 50 ft. long (Ref. 3, p. 6-62). The area is presently heavily vegetated (small trees) with a dirt access road over a section of the former unit (Ref. 20).

Date of Start-Up: 1952

Date of Closure: 1964

Waste Managed: Approximately 50 tons of toxic and carcinogenic waste dyes used in pyrotechnic development were disposed in the unit.

Release Controls: The unit consisted of three unlined pits.

Release History: Seven monitoring wells surround the burial grounds, no monitoring data was available for review (Ref. 20).

UNIT 85. (Continued)

Conclusions: Soil/Groundwater: There is suspected soil/groundwater contamination from this unit due to the disposal of liquid wastes in unlined trenches.

Surface Water: The potential for release to surface water is low due to the heavy vegetative cover over the unit.

Air: The potential for release to air is low due to the soil cover over the unit and the inactivity of the unit.

Subsurface Gas: The potential for generation of subsurface gas is low due to the nature of the wastes disposed of in the unit.

Suggested Further Action: Continued assessment of groundwater quality should be performed to determine the extent of contamination (if any).

86. UNIT NAME: Sanitary Landfill

Unit Description: This landfill is unlined and covers an area of 65 acres, with a capacity of 4.2 million cubic yards. The unit receives 1000 cubic yards of waste per day. The landfill is licensed by the State of Indiana, operating permit No. 51-2 (Ref. 1). There is one active cell and one cell that is ready to accept wastes (Ref. 20). The area is filled by the trench method, and has a capacity remaining of 1.5 years. The landfill is currently undergoing redesign to an area fill operation which will extend the capacity to receive wastes to approximately 25 years (Ref. 20). There are several monitoring wells in place around the unit.

Date of Start-Up: 1972.

Date of Closure: This unit is currently active.

Waste Managed: The landfill receives plant trash, demolition and construction debris, and excess polyester filling from the warhead pressing area in Building 105 (Ref. 13, p. 617). The unit also received asbestos waste and barium sulfate in the past as approved by the State of Indiana (Ref. 20).

Release Controls: The landfill is unlined, but rests on "clayey' soils with low permeability. Infiltration from groundwater into the fill and leachate from each fill area are collected by the Leachate Collection System (4 inch perforated PVC piping) which is directed to the Leachate Pond (Unit 87) and finally to the Sanitary Sewage Treatment Plant (Ref. 20). The fill area is required to be covered at the end of each day with topsoil. However, the VSI team visited the unit at 4:00 p.m., and the wastes were not covered.

Release History: Monitoring data were not available for review (Ref. 20).

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is high due to the fact that the unit is unlined and is open to filtration of precipitation.

Surface Water: The potential for release to surface water is low due to the design of the unit and its distance from any local surface drainage.

Air: The potential for release to air is low due to the nature of the wastes disposed in the unit.

Subsurface Gas: The potential for generation of subsurface gas is high due to the disposal of sanitary garbage in the unit and subsequent soil covering.

Suggested Further Action:

1. **Continued assessment of groundwater quality should be performed to determine the extent of contamination (if any).**
2. **Further investigation is required to determine if subsurface gas is accumulating.**

87. UNIT NAME: Sanitary Landfill Leachate Collection Ponds

Unit Description: This unit consists of two unlined excavated ponds with a total capacity of 30,000 gallons. Each pond is at the base of the landfill below the elevation of the fill. The units were partially ice-covered during the VSI and had approximately 1 ft. of freeboard (Ref. 20).

Date of Start-Up: Approximately 1979 (Ref. 20).

Date of Closure: These units are currently active.

Waste Managed: Waste received is leachate from the sanitary landfill. The leachate is pumped from the unit into the sanitary sewer for treatment at the sewage treatment plant.

Release Controls: The units are unlined ponds with continuous feed to the sanitary sewer system.

Release History: Unknown.

Conclusions:

Soil/Groundwater: The potential for release to groundwater is high because the units are unlined.

Surface Water: The potential for release to surface water is low due to continuous feed of leachate into the sewer system by a pump house. During periods of high rainfall, this potential would be high due to lack of freeboard on the ponds.

Air: The potential for release to air is low due to the nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit and the dilute nature of the wastes.

Suggested Further Action: Continued assessment of groundwater quality should be performed to determine the extent of contamination (if any).

88. UNIT NAME: Sewage Sludge Land Application Area (Landfarm) (Ref. 1)

Unit Description: This unit consists of 18 miles of roadside where liquid sludge front the sewage treatment plant is land applied. This procedure is occurring with verbal agreement (interim authorization) by the State of Indiana; it has not yet been permitted by the State (Ref. 20). A permit is currently being negotiated. The VSI documented a roadside area along Highway 26A where sludge was spread (Ref. 20).

Date of Start-Up: 1980 (Ref. 1)

Date of Closure: The unit is currently active.

Waste Managed: Sludge that is accumulated in the aerobic digestor at the Sewage Treatment Plant is spread along 18 miles of roadside by a vacuum truck. Approximately 40,000 gallon of sludge per month is land applied (Ref. 1). The sludge contains three percent solids.

Release Controls: There are no release controls associated with this unit. According to facility representatives, the State of Indiana requires a separate spray nozzle system.

Release History: Past routes of land application were not provided.

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is high due to open disposal on the ground surface.

Surface Water: The potential for release to surface water is high due to the proximity of intermittent streams and slopes along areas where land application is conducted.

Air: The potential for release air is low due to the nature of the wastes.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit.

Suggested Further Action: Continued compliance under agreement with the State of Indiana.

89. UNIT NAME: PCB Storage Facility

Unit Description: This TSCA regulated unit was identified during the VSI. This unit consists of one enclosed metal building with a concrete floor that is sloped inward from the access door. It is located slightly north of the Sanitary Landfill (Unit 86).

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Electrical transformers are stored on metal and wooden pallets. NWSC contracts out for drainage and removal of the transformers (Ref. 20).

Release Controls: The transformers are stored on pallets over a concrete floor. There is no collection sump in the building for possible spills.

Release History: Unknown.

Conclusions: Soil/Groundwater: The potential for release to soil/groundwater is low due to the concrete pad and inward sloped floor.

Surface Water: The potential for release to surface water is low due to the nature of the wastes and the inward sloped floor.

Air: The potential for release to air is low due to the nature of the wastes stored at the unit.

Subsurface Gas: There is no potential for generation of subsurface gas due to the design of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

90. UNIT NAME: Sedimentation Ponds 2, 3, and 4

Unit Description: These three units are unlined diked earthen retention ponds designed to capture possibly contaminated run-off from the Demolition Range (Unit 58) (Ref. 20). Pond 002 covers an area of 4 acres; pond 3, an area of 1 acre; and pond 4, an area of 8 acres. Each pond serves to settle out solids in run-off prior to NPDES discharge.

Date of Start-Up: 1984.

Date of Closure: These units are currently active.

Waste Managed: The unit collects surface run-off contaminated with residual explosives from the Demolition Range.

Release Controls: The ponds are unlined. The pH is adjusted with soda ash at the outfall to pond 4. Freeboard at each pond appeared to be adequate.

Release History: One of the ponds (NPDES 004) had a lowered level of PH (5.3) and NWSC representatives set up a line feed system to treat the water as it was discharged (Ref. 20). Each pond has an outfall that is regulated by NPDES permit.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is moderate due to the nature of the wastestream.

Surface Water: The potential for release to surface water is moderate due to the nature of the wastestream.

Air: The potential for release to air is low due to the dilute nature of the wastestream.

Subsurface Gas: The potential for generation of subsurface gas is low due to the open nature of the unit and the dilute nature of the wastestream.

Suggested Further Action:

1. Surface water sampling should be performed to determine levels of explosives and other contaminants from wastes treated at the Demolition Range.

2. Sediment samples should be taken to determine levels of explosives and other contaminants from wastes treated at the Demolition Range.

Section 20

91. UNIT NAME: Pyro Test Area (Ordnance Testing Area)

Unit Description: This unit consists of a large open field and a concrete building used for quality assurance test burning of pyrotechnic lots. Boggs Creek flows through the center of the testing field.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Residual deposits from quality assurance testing of pyrotechnics are generated at this unit.

Release Controls: There are no provisions for release control. Residual deposits are usually left in place (Ref. 20).

Release History: Unknown. There is no groundwater monitoring of this area.

Conclusions:

Soil/Groundwater: There is a moderate potential for release to soil/groundwater due to open ignition of pyrotechnics over the ground surface.

Surface Water: There is a moderate potential for release to surface water due to open ignition of pyrotechnics over the ground surface and the proximity of Boggs Creek.

Air: The potential for release to air is high during ignition of pyrotechnics.

Subsurface Gas: There is a low potential for generation of subsurface gas due to the open nature of the unit and the nature of the wastes handled.

Suggested Further Action:

1. Soil sampling should be conducted to determine if there is any contamination from residual material from pyrotechnic ignition.

2. Surface water/sediment sampling should be performed to determine the extent of contamination into Boggs Creek.

*92. UNIT NAME: Test Track

Unit Description: **This unit was identified as a possible SWMU on one of the NWSC Crane section maps. Facility representatives were not familiar with the terminology. The map indicates that this unit is west of the Pyro Test Area (Unit 91).**

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Unknown.

Release Controls: Unknown.

Release History: Unknown.

UNIT *92. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the design, location and use of the unit; determine current status and condition.

*93. UNIT NAME: Composition Testing Facility - Decontamination Building-(Building 181) (Ref. 3, p. 6-40)

Unit Description: This unit was used for the sawing and inspection of bombs (Ref. 20). Wastewater was collected in a barrel. The barrel overflowed onto the ground and into an intermittent stream (Ref. 3). Facility representatives stated that this area is presently used for lithium battery testing (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: Presently, lithium battery testing is conducted within Building 181.

Waste Managed: The wastewater collected was contaminated with explosives (i.e., TNT, RDX, HMX).

Release Controls: Unknown.

Release History: Prior to cessation of bomb sawing and inspection, wastewater flowed into an intermittent stream.

UNIT *93. (Continued)

Conclusions: The unit was not observed during the VSI. However, past release history indicates a high potential for release to surface water.

Suggested Further Action: Surface water/sediment sampling should be performed to determine the extent of contamination (if any).

*94. UNIT NAME: Rocket Range

Unit Description: This unit was identified on a NWSC, Crane section map. The VSI team was able to observe the general area from a distance but did not have clearance to enter (Ref. 20). The area consisted of an open field, a drop tower, and a canopy building.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: It is assumed that residual deposits from test burns of rockets are generated at this unit.

Release Controls: Unknown.

Release History: Unknown.

UNIT *94. (Continued)

Conclusions: **Insufficient information was available to develop conclusions regarding release potentials to the various pathways.**

Suggested Further Action: **Obtain information on design and current condition of the unit.**

Section 24

95. UNIT NAME: Restored Mustard Gas Burial Area (Ref. 2, p.3; Ref. 3, p. 2-4)

Unit Description: This unit covers 10 acres in the southeast corner of the facility. This area is presently heavily vegetated. An old 4ft. barbed wire fence exists around the perimeter. Facility representatives stated that the wastes had been excavated and removed to a Nuclear Regulatory Commission site (Ref. 20). Twelve monitoring wells were installed around the unit (Ref. 13, p.6).

Date of Start-Up: Unknown.

Date of Closure: Not provided; the unit is currently inactive.

Waste Managed: Mustard Gas Bombs and radioactive thorium nitrate were buried in this unit.

Release Controls: Clean-up attemps were made in 1974 and 1980 to neutralize the gas and remove the wastes to an NRC approved landfill. The unit has no release controls other than the natural vegetation that is covering it. The unit is underlain by 2 to 15 feet of silty clay soil and interbedded sandstone and shale of the Pennsylvanian Mansfield Formation. The groundwater table is located at an average of 15.5 feet below the surface (Ref. 13, p. 11).

Release History: Organic contamination of the groundwater was documented in all 12 monitoring wells. Compounds discovered were: 1, 2 - DCA, TCE, TCA, bromoform and dibromochloromethane (Ref. 13, p. 19).

Conclusions:

Soil/Groundwater: There is documented contamination of groundwater at this site.

Surface Water: There is a low potential for surface water release due to removal of wastes and the heavy vegetative cover.

Air: There is a low potential of release to air due to removal of the wastes.

Subsurface Gas: There is a low potential for generation of subsurface gas due to removal of the wastes.

Suggested Further Action: Continued assessment of groundwater quality should be performed to determine the extent of contamination.

96. UNIT NAME: Temporary Flammable Storage (Ref. 7, p. 1)

Unit Description: This unit, located in Building 1487 magazine, is used for storage of drums containing "unknown wastes" awaiting sampling and analysis before removal to the Central Storage Facility (Unit No. 60) (Ref. 7, p. 7). The unit has a capacity of 85 drums (4250 gallons). The unit is a semi-circular concrete magazine. Only one drum was stored in the unit during the VSI. Facility representatives place this unit in Section 3 (Ref. 20). Drums are stored for less than 90 days.

Date of Start-Up: Unknown.

Date of Closure: The unit is currently active.

Waste Managed: Flammable wastes solvents, paints and sealers, and other undetermined wastes are stored in containers until transport to the CSF.

Release Controls: The unit is a concrete building consisting of thick concrete walls and an epoxy coated concrete floor (Ref. 20).

Release History: There was no visual evidence of any past spillage during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil/groundwater is low due to the containerization of wastes and the structure of the unit.

Surface Water: The potential for release to surface water is low due to the structure of the unit and containerization of wastes.

Air: The potential for release to air is low due to the apparent good condition of the storage drum(s).

Subsurface Gas: There is no potential for generation of subsurface gas due to the structure of the unit.

Suggested Further Action: No further action is suggested for this unit at this time.

*97. UNIT NAME: Metal Shaving Collection Area (Ref. 3, p. 6-58)

Unit Description: This unit is a pad upon which oil coated metal shavings were placed prior to reclamation. The size, shape, and materials of construction were unreported. Facility representatives were not familiar with this unit. (Ref. 20).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Scrap metal/waste oil were reported to be stored in an open pile (Ref. 3, p. 6-58).

Release Controls: Unknown.

Release History: Unknown.

UNIT 97. (Continued)

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the design, operation, release history, and current condition of the unit.

*98. UNIT NAME: 500 Gallon Tank Wagon (Ref. 6, p. B-9)

Unit Description: This 500 gallon tank wagon transports red phosphorous contaminated sludge from the pyro production area (Building 133) to Sludge Dewatering Unit #3 (Unit 80) (Ref. 6, p. B-9).

Date of Start-Up: Unknown.

Date of Closure: Unknown.

Waste Managed: Red phosphorus contaminated sludge is transported by this unit.

Release Controls: Unknown.

Release History: Unknown.

UNIT 98. (Continued)

Conclusions: This unit was no observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the design, age and frequency of use of this unit. Determine the integrity of the unit.

*99. UNIT NAME: 3-Ton Pump Truck (Ref. 3, p. B-9)

Unit Description: **This unit has a capacity of 1250 gallons; it is used to transport explosive contaminated sludge to Sludge Dewatering Units 1 and 2 (Unit 80).**

Date of Start-Up: **Unknown.**

Date of Closure: **Unknown.**

Waste Managed: **Explosive contaminated sludge is transported by this unit.**

Release Controls: Unknown.

Release History: Unknown.

Conclusions: This unit was not observed during the VSI. Insufficient information was available to develop conclusions regarding release potentials to the various pathways.

Suggested Further Action: Obtain information on the design, age, and frequency of use of this unit. Determine the integrity of the unit.

100. UNIT NAME: Settling Pond Behind Building 106

Unit Description: This unit was identified during the VSI. It is a small unlined pond that, in the past, had received caustic water from a phosphatizing line in Building 107 (Ref. 20). It presently receives oily water from compressors. The water is periodically pumped into the sanitary sewer system via a concrete sump and pump.

Date of Start-Up: Unknown.

Date of Closure: The unit is presently active.

Waste Managed: In the past, caustic waters were discharged to the pond and allowed to flow into an intermittent stream. Presently oily wastewater from compressors in Building 107 enters the pond via several drainage pipes.

Release Controls: The unit is pumped out when liquid level rises. The pumps are manually started (Ref. 20).

Release History: The edges of the pond were oil stained and the surface of the pond exhibited on oily sheen with oil accumulation. Facility representatives stated that malfunction of the pumping system has caused overflow of the pond and subsequently oily water has been released down the slope and into an intermittent stream.

UNIT 100. (Continued)

Conclusions:

Soil/Groundwater: There is a high potential for release of oily water to soil/groundwater due to the fact that the pond is unlined and that it has overflowed.

Surface Water: There is a high potential for release to surface water due to the previous documentation of overflow into intermittent stream drainage.

Air: There is a low potential for release to air due to the nature of the wastes handled.

Subsurface Gas: There is a low potential for generation of subsurface gas due to the open design of the unit and the nature of the waste handled.

Suggested Further Action:

1. Soil sampling should be performed to determine extent of contamination (if any).
2. Sediment sampling should be performed to determine extent of contamination (if any).
3. An alternative treatment system should be considered, such as a sump with oil/water separator.

A. Underground Diesel Fuel/Gasoline Tanks

NWSC has several fueling stations with underground fuel storage tanks. One of the tanks was excavated and stored above-ground near SWMU #61. The tank was in deteriorated condition with obvious spillages near its fill pipe. Old single shelled storage tanks should be inspected to assess their potential for leakage.

B. Stream East of McComish Gorge (Unit 2)

During the visual inspection of McComish Gorge, the inspection team noted a small stream that was discolored by a bright orange-red tint. Facility representatives were not aware of any upstream mining activity. The stream has its headwater in the town of Crane and flows onto the base just north of McComish Gorge. The cause of stream discoloration should be investigated.

C. White Phosphorus to Phosphoric Acid Production Building

This area was identified in Section 12 prior to inspection of Mine Fill B. Surplus white phosphorous will be processed into phosphoric acid via an incineration process. Facility representatives stated that this will take place under the supervision of the State of Indiana as a recycling operation (Ref. 20).

VII. OTHER RELEASE INFORMATION

There is no other release information for the NWSC facility.

VIII. SUMMARY OF SUGGESTED FURTHER ACTIONS

Table 3: Summary of Suggested Further Actions

Unit #	Unit Name	Suggested Further Action
1	Old Burning Pit	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
2	McCormish Gorge Dump	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
3.	FS Smoke Storage Facility	- No further action is suggested for this unit at this time.
4.	Rockeye Loading Area Sumps	- Sediment sampling in the surface water tributaries should be performed. - Continued assessment of groundwater quality should be performed to determine the extent of contamination.
5.	Rockeye Percolation Site	- Soils in the percolation area should be sampled. - Continued assessment of groundwater quality should be performed to determine the extent of contamination.
6.	Rockeye Loading Area Wastewater Treatment Unit - Building 3004	- No further action is suggested for this unit at this time.
7.	Waste Carbon Container Storage Area Outside of Building 3004	- No further action is suggested for this unit at this time.
8.	Paint Waste Container Storage Area at the Rockeye Loading Area	- No further action is suggested for this unit at this time.
9.	Active Solid Fill Site	- No further action is suggested for this unit at this time.
10.	Old Solid Fill Site	- No further action is suggested for this unit at this time.
11.	Above-ground Waste Oil Storage Tank - Building 2801	- No further action is suggested for this unit at this time.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
12.	Classified Papers Incinerator - Building 45	- No further action is suggested for this unit at this time.
13.	Building 136 Sump	- Obtain information on unit operation, release history, current status and condition.
14.	Wastewater Treatment Unit (lead) - Building 136	- Obtain information on unit operation, release history, current status and condition.
15.	Wastewater Treatment Unit - Plating Shop-Building 3064	- No further action is suggested for this unit at this time.
16.	Drum Storage Area behind Building 3064	- No further action is suggested for this unit at this time.
17.	Battery Shop Dump Building 36	- Soils should be sampled on the hillside to verify the conclusions of the NACIP report.
18.	Acid Neutralization Pit	- No further action is suggested for this unit at this time.
19.	PCB Burial Area - (Pole Yard)	- Obtain information of the design and construction of the unit, volume of waste managed, and history of release.
20.	Roads and Grounds Dump Area	1. Soil sampling should be performed to determine the extent of contamination. 2. Sediment sampling of the nearby stream should be performed to determine the extent of contamination.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
21.	PCP Dip Tank	- Soils should be sampled in the former location of the unit to verify the conclusions of the NACIP report.
22.	Building 126 Sump	- Soil samples should be taken near the wall of the sump to determine if any contamination has occurred due to the cracks in the sump.
23.	Dust Collectors - Building 126	- Obtain information on the age, design, and construction of the unit and on the disposition of any wastewater.
24.	Scrap Storage Area Behind Building 126	- No further action is suggested for this unit at this time.
25.	Red Phosphorous Building Sump - Building 1886	- Obtain information on the operation, period/frequency of use, and integrity of the unit.
26.	Building 133 Sump	- No further action is suggested for this unit at this time.
27.	Railroad Maintenance Shop Was Area Building 7	- No further action is suggested for this unit at this time.
28.	Railroad Maintenance Shop Oil/Water Separator	- The unit should be repaired (i.e., function to remove waste oil from wastewater).
29	Auto Maintenance Shop - Building 1820	- No further action is suggested for this unit at this time.
30.	Heavy Equipment Maintenance Shop - Building 1818	- No further action is suggested for this unit at this time.
31.	Truck Wash Area at the Heavy Equipment Maintenance Building	- No further action is suggested for this unit at this time.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
32.	Oil/Water Separator at the Heavy Equipment Maintenance Building	- No further action is suggested for this unit at this time.
33.	Outside Truck Wash Rack Adjacent to Building 1818	1. Provisions should be made to collect rinse waters and treat the rinsate through the Sewage Treatment Plant. 2. Soils should be sampled underneath the platform and in the drainage ditch that flows down the hillside.
34.	Roll - Off Boxes Outside Building 1820	- No further action is suggested for this unit at this time.
35.	CONEX Hazardous Waste Transfer Containers behind Building 1820	- No further action is suggested at this time.
36.	Oil Pan Wash Out/Disposal Rack Adjacent to Building 1820	1. Soil showing obvious signs of contamination should be removed. 2. Soil sampling should be done after removal of visually contaminated soil to verify that there is no further contamination. 3. Steps should be taken to ensure no future oil spills (i.e. installation of a containment pad and use a larger dip pan).
37.	Underground Waste Oil Storage Tank -- Building 1818	- The integrity of the unit should be inspected.
38.	Underground Waste Oil Storage Tank - Building 1820	- The integrity of the unit should be inspected.
39.	Mechanical Maintenance Shop -- Building 56	- Obtain information on the status and condition of the unit, release controls, and release history.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
40.	400 Gallon Solvent Storage Tank (Building 56 Paint Shop)	- Obtain information on the status and condition of the unit, release controls, and release history.
41.	Red Phosphorous Mixing Emergency Sump	- Obtain information on the age, frequency of use, and integrity of the unit.
42.	Booster Area - Lead Azide Sumps - Building ~~106~~ 134 and ~~107~~ 138	- Determine the location of the sumps. obtain information on design, age, and integrity of the sumps.
43.	Wastewater Treatment Unit Building 3074	- Determine the current status and condition of the unit. Obtain information on unit operation, release controls, and release history.
44.	Lead Azide Loading Pond	- No further action is suggested for this unit at this time.
45.	Open Storage Area Outside Building 2801	- No further action is suggested for this unit at this time.
46.	Cast High Explosives Fill (Building 146)	- Soil sampling should be performed to determine the existence of contamination from the unit.
47.	Central Storage Facility	- No further action is suggested for this unit at this time under the RCRA Corrective Action Program.
48.	APE 1236 Incinerators Building 146	- This unit is RCRA regulated. The units should not be operated until the pollution abatement systems are in good working order.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
49.	Prototype Incinerator Building 146	- This unit is RCRA regulated. The units should be operated until the pollution abatement systems are in good working order.
50.	Defense Reutilization and Marketing Office (DRMO) Hazardous Waste Storage Area	- No further action is suggested for this unit at this time.
51.	DRMO Storage Lot	- No further action is suggested for this unit at this time.
52.	Paint Shop Building 2889	- Soil sampling should be performed to determine the existence of contamination from the unit.
53.	Load and Fill Area -- Buildings 105, 198 and 200	- Obtain information on the design, operation and condition of the unit and additional information on release history.
54.	Wastewater Treatment Unit Building 160	- Determine the current status and condition of the unit. Obtain information on release controls and release history.
55.	Wastewater Treatment Unit - Sewage Plant - Building 3049	- No futher action is suggested for this unit at this time under the RCRA Corrective Action Program.
56.	Old Sludge Drying Beds	- Soil sampling should be performed in the area of the drying beds to determine potential for contamination.
57.	Sewage Sludge Vacuum Truck and Discharge Pad	- No futher action is suggested for this unit at this time.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
58.	Demolition Range	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
59	Waste Explosive Storage Area at the Demolition Range	- No further action is suggested for this unit at this time.
60.	Pest Control Area Building 2189	- Continued assessment of groundwater quality should be performed to determined the extent of contamination.
61.	Former site of Waste Oil Underground Storage Tank near the Pest Control Area	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
62.	Drum Storage Area Adjacent to SWMU #61	- No further action is suggested for this unit at this time.
63.	Rifle Range	1. Continued assessment of groundwater quality should be performed to determine the extent of contamination. 2. Surface water/sediment samples should be conducted to determine extent of contamination in the downgradient stream.
64.	Sedimentation Pond #1	1. Surface water sampling should be performed to determine levels of explosives and other contaminants from wastes treated at the Demolition Range. 2. Sediment samples should be taken to determine levels of explosives and other contaminants from wastes treated at the Demolition Range.
65.	Mine Fill A	- Further soil sampling should be performed to determine extent of contamination.
66.	Mine Fill B	- Further soil sampling should be performed to determine extent of contamination.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
67.	Wastewater Treatment Unit - Building 104	- Obtain information on unit design and operation and current condition of unit.
68.	Explosive D Wash Areas	- Sediments should be sampled for explosive waste contaminants in the intermittent streams south of the wash area.
69.	Load and Fill Area Sumps Building 104	- Obtain information on the exact location of the sumps, age, frequency of use, design, and current condition.
70.	Steam Out Unit - Building 160	- Obtain information on unit operation, age, release controls, release history, current status and condition.
71.	Highway 58 Dump Site A	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
72.	Storage Tanks - Building 104	- Obtain information on age, integrity, release controls, and release history.
73.	Bomb Proof Group	- Obtain information on the design, operation, and condition of the unit and on age, types of wastes managed, and release history.
74.	DRMO Salvage Yard	- No further action is suggested for this unit at this time.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
75.	Heavy Equipment Storage Area - Building 2189	- Obtain information on unit operation and types of wastes managed.
76.	Sanitary Sewer System	- Completion of the dye tracer study.
77.	Turkey Creek Quarry	- Obtain information on unit operation and types of wastes managed.
78.	Highway 58 Dump Site B	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
79.	Ammunition Burning Grounds (ABG)	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
80.	Sludge Dewatering Units (ABG)	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
81.	Underground Storage Tanks (ABG)	- No further action is suggested for this unit at this time.
82.	Ash Pile (ABG)	1. Continued assessment of groundwater quality should be performed to determine the extent of contamination. 2. Closure should be completed under a State approved closure plan.
83.	Ash Roll-off Boxes (ABG)	- No futher action is suggested for this unit at this time.
84.	Open Burning Area (ABG)	1. Secondary containment should be employed to prevent runoff. 2. Soil samples should be taken to determine the extent of contamination.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
85.	Dye Burial Grounds	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
86.	Sanitary Landfill	1. Continued assessment of groundwater quality should be performed to determine the extent of contamination. 2. Further investigation is required to determine if subsurface gas is accumulating.
87.	Sanitary Landfill Leachate Collection Ponds	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
88.	Sewage Sludge Land Application Area (Landfarm)	- Continued compliance under agreement with the State of Indiana
89.	PCB Storage Facility	- No further action is suggested for this unit at this time.
90.	Sedimentation Ponds 2, 3, and 4	1. Surface water sampling should be performed to determine levels of explosives and other contamination from the Demolition Range. 2. Sediment samples should be taken to determine levels of explosives and other contaminants from the Demolition Range.
91.	Pyro Test Area (Ordnance Testing Area)	1. Soil sampling should be conducted to determine if there is any contamination from residual material due to pyrotechnic ignition. 2. Surface water/sediment sampling should be performed to determine the extent of contamination of Boggs Creek.
92.	Test Track	- Obtain information on the design, location, operation, and condition of the unit.

Table 3: Summary of Suggested Further Actions (Cont'd)

Unit #	Unit Name	Suggested Further Action
93.	Composition Testing Facility - Decontamination Building 181	- Surface water/sediment sampling should be performed to determine the extent of contamination.
94.	Rocket Range	- Obtain information on the design and condition of the unit.
95.	Restored Mustard Gas Burial Area	- Continued assessment of groundwater quality should be performed to determine the extent of contamination.
96.	Temporary Flammable	- No further action is suggested for this unit at this time.
97.	Metal Shavings Collection	- Obtain information on the design, operation, and condition of the unit.
98.	500 Gallon Tank Wagon	- Obtain information on the design, age, frequency of use, and condition of the unit.
99.	3-Ton Pump Truck	- Obtain information on the design, age, frequency of use and condition of the unit.
100.	Settling Pond behind Building 106	1. Soil sampling should be performed to determine extent of contamination. 2. Sediment sampling should be performed to determine extent of contamination in surface drainage adjacent to unit. 3. An alternative treatment system should be considered, such as a sump with oil/water separator.

IX. LIST OF REFERENCES

1. Solid Waste Management Unit Response Letter, Volume I, Section II, subsects. 1.0, 2.0, June 13, 1985.

2. Solid Waste Management Unit Study-CERCLA Sites: in Solid Waste Management Unit Response Letter, Volume I, Section III, June 13, 1985.

3. Initial Assessment Study Of Naval Weapons Support Center, Crane, Indiana, Navy Assessment and Control of Installation Pollutants, May 1983: in Solid Waste Management Unit Response Letter, Appendix H, June 13, 1985.

4. Hydrogeologic Investigation of Waste Disposal Sites at The NWSC, Crane, Indiana, Geotech. Lab., USAE Waterways Experiment Station, April 1982.

5. RCRA Part A Permit Application, October 12, 1984.

6. RCRA Part B Permit Application, October 12, 1984.

7. Part A Completeness Review Deficiency Response, NWSC IN5170023498, May 7, 1986.

8. Part B Completeness Review Deficiency Response, NWSC IN5170023498, April 29, 1986.

9. Potential Hazardous Waste Site Preliminary Assessment, Part 3, April 16, 1981.

10. Hazardous Waste Permit Application for NWSC, Nov. 18th, 1980.

11. Part A Completeness Review - Deficiency Response, NWSC Crane, April 29, 1986.

12. Spill Contingency Plan, NWSC, Crane, Indiana, November 1980.

13. Appendix B, Definition Of Contaminated Ground-Water Plumes at Selected Waste Disposal Sites, NWSC, Crane, Indiana, April 1984.

14. Appendix E, Hydrogeology of ABG, Ash Pile, NWSC, Crane, Indiana, February 1984.

15. RCRA Facility Review For Solid Waste Management Units, EPA, Region V, September 25, 1985.

16. Letter from J.D. Faris (NWSC) to Martin Hamper, U.S. EPA Region V, June 25, 1986.

IX. LIST OF REFERENCES (Continued)

17. Facility Management Plan Approval, Martin Hamper, U.S. EPA Region V, June 27, 1986.

18. Compendium of Paleozoic Rock-Unit Stratigraphy in Indiana - A Revision, State of Indiana Geological Survey, Bulletin 59, 1986.

19. Telephone Conversation with Henry Gray, Head Stratigrapher, IN GS, January 28, 1987.

20. Visual Site Inspection Field Notes, A. T. Kearney Inc., February 17, 18, 19, and 20, 1987.

21. Climates of the States, 1985, Gale Research Co., Vol I, 758p.

X. ATTACHMENTS

A. Attachment 1 is the Visual Site Inspection Summary.

B. Attachment 2 is the Visual Site Inspection Photo Log.

C. Attachment 3 is the SWMU Location Map.

D. Attachment 4 is the Preliminary Review Form.

ATTACHMENT A

Visual Site Inspection Summary

Naval Weapons Support Center (NWSC)
Crane, Indiana

Date: February 17-20, 1987

Participants: Donald A. Ruggery, Jr. (ATK)
Vanessa Harris (ATK)

Facility Representatives:

James Hunsicker - Environmental Manager - Navy
Phil Keith - Environmental Assistant - Navy
Jo Kay Belcher - Engineering Technician - Navy
Randall Burcham - Environmental Coordinator - Army
Brian DeMonia - Environmental Protection Specialist - DRMO

The above listed facility representatives were not all present for the entire four day site visit. Each representative's presence is noted in the field book when accompanying the VSI team.

Conditions: The weather was cold and windy with light snow and sleet. Temperatures were in the mid teens to low twenties (°F).

Day 1 -- Tuesday, February 17, 1987

The participants met with Jim Hunsicker (NWSC Crane Environmental Protection Branch Manager), Phil Keith (NWSC Crane Environmental Assistant), and Randall Burcham (Crane Army Ammunitions Environmental Coordinator) to review the objectives of the Visual Site Inspection. Hunsicker and Burcham provided a brief historical description of the facility's operation. The team then discussed preliminary findings from the file review and logistics of the site visit agenda. Because of the large number of potential SWMU's, the remainder of the day was spent discussing potential SWMU's and information requirements.

Day 2 -- Wednesday, February 18, 1987

The VSI participants, guided by Phil Keith, toured Sections 7, 8 12 and 16 of the facility. Sixty-eight percent of the potential SWMU's are located in these areas. The presence of significant snow-cover prevented the participants from viewing units that were outside. Twenty-seven potential SWMU's were observed. Army facilities were not inspected because clearance had not been granted.

ATTACHMENT A

Visual Site Inspection Summary

Naval Weapons Support Center (NWSC)
Crane, Indiana (Continued)

Day 3 -- Thursday, February 19, 1987

The participants, guided by Jim Hunsicker, toured Sections 1, 2, 3, 6, 14 and 20. The outside units in Sections 7, 8 and 12 were also inspected. Thirty-six potential SWMU's were observed.

Day 4 -- Friday, February 20, 1987

The participants toured the Sewage Treatment Plant, guided by Jo Kay Belcher. The participants then inspected the remainder of the facility, guided by Jim Hunsicker and Phil Keith. The participants were only able to inspect the outside of several Army Production Areas because these operations were closed. Twenty-six potential SWMU's were observed including the army areas.

Facility Representatives provided a complete copy of a NACIP report on NWSC, confirmation studies of the NACIP report by the Hazardous Materials Technical Center, and a clean copy of a facility map.

The following lists all of the units that were observed during the VSI. Out of 100 identified SWMUs, 25 were not inspected during the VSI.

Units Observed During the VSI

Unit No.	Unit Name
1.	Old Burning Pit
2.	MC Comish Gorge
3.	FS Smoke Storage Facility Bldgs. 1008, 1815, 1816, 2646, and 1794
4.	Rockeye Loading Area Sumps
5.	Rockeye Loading Area Percolation Site
6.	Rockeye Loading Area Wastewater Treatment Unit Bldg. 3004
7.	Waste Carbon Container Storage Area Oustide of Bldg. 3004
8.	Paint Waste Container Storage Area at the Rockeye Loading Area
9.	Active Solidfill Site
10.	Old Solidfill Site
11.	Aboveground Waste Oil Storage Tank Bldg. 2801
12.	Classified Papers Incinerator Bldg. 45
*	
*	
15.	Wastewater Treatment Unit-Plating Shop-Bldg 3069
16.	Drum Storage Area Behind Bldg. 3064
17.	Battery Shop Dump
18.	Acid Neutralization Pit
*	
20.	Roads and Grounds Dump Area
21.	PCP Dip Tank

ATTACHMENT A

Visual Site Inspection Summary

Naval Weapons Support Center (NWSC)
Crane, Indiana (Continued)

22. Bldg. 126 Sump
*
24. Scrap Storage Area Behind Bldg. 126
*
26. Bldg. 133 Sump
27. Railroad Mt. Shop Wash Area-Bldg. 7
28. Railroad Mt. Shop Oil/Water Separator
29. Auto Mt. Shop Bldg. 1820
30. Heavy Equipment Mt. Shop Bldg. 1818
31. Truck Wash Area at the Heavy Equipment Mt. Bldg.
32. Oil/Water Separator at the Heavy Equipment Mt. Bldg.
33. Outside Truck Wash Rack Adjacent to Bldg. 1818
34. Roll-Off Boxes Outside Bldg 1820
35. CONEX Hazardous Waste Transfer Containers
36. Oil Pan Wash Out/Disposal Rack Adjacent to Bldg. 1820
37. Underground Waste Oil Storage Tank Bldg. 1820
38. Underground Waste Oil Storage Tank Bldg. 1818
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*
*
43. Wastewater Treatment Unit Bldg. 3074/Booster Area
44. Lead Azide Loading Pond - Bldg. 106
45. Open Storage Area Outside Bldg. 2801
*
47. Central Storage Facility (CSF)
48. APE 1236 Incinerators
49. Prototype Incinerator
50. Defense Reutilization and Marketing Office (DRMO) Hazardous Waste Storage Area
51. DRMO Storage Lot
*
55. Wastewater Treatment Unit - Sewage Plant - Bldg. 3049
56. Old Sludge Drying Beds
57. Sewage Sludge Vacuum Truck and Discharge Pad
58. Demolition Range
59. Waste Explosive Storage Area at the Demolition Range
60. Pest Control Area Bldg. 2189
61. Former Site of Waste Oil Underground Storage Tank
62. Drum Storage Area Adjacent to SWMU #61
63. Rifle Range
64. Sedimentation Pond #1
65. Mine Fill A
66. Mine Fill B
*

ATTACHMENT A

Visual Site Inspection Summary

Naval Weapons Support Center (NWSC)
Crane, Indiana (Continued)

68. Explosive D Wash Areas Bldg 104 (105, 198, 200)
71. Highway 58 Dump Site A
*
74. DRMO Salvage Yard
76. Sanitary Sewer System
78. Highway 58 Dump Site B
79. Ammunition Burning Grounds (ABG)
80. Sludge Dewatering Units (ABG)
81. Underground Storage Tanks (ABG)
82. Ash Pile (ABG)
83. Ash-Roll-Off Boxes (ABG)
84. Open Burning Area (ABG)
85. Dye Burial Grounds
86. Sanitary Landfill
87. Sanitary Landfill Leachate Collection Ponds
88. Sewage Sludge Land Application Area (Landfarm)
89. PCB Storage Facility
90. Sedimentation Ponds 2, 3, and 4
91. Pyro Test Area (Ordnance Testing Area)
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94. Rocket Range
95. Restored Mustard Gas Burial Area
96. Temporary Flammable Storage
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100. Settling Pond Behind Bldg. 106