Final Historical Records Review Report for CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039 Revision 0 Ravenna Army Ammunition Plant Ravenna, Ohio

> Contract No. W912QR-04-D-0039 Delivery Order No. 0004

> > **Prepared for:**



U.S. Army Corps of Engineers, Louisville District 600 Dr. Martin Luther King Jr. Place Louisville, Kentucky 40202-2267

Prepared by:



ECC 33 Boston Post Road West Suite 420 Marlborough, MA 01752

May 9, 2012

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Environmental Protection Agency

John R. Kasich, Governor Mary Taylor, Lt. Governor Scott J. Nally, Director

May 22, 2012

RE: RVAAP-14 COMPLIANCE RESTORATION SITES, RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES, FINAL HISTORICAL RECORDS REVIEW REPORT, CC-RVAAP 71 AND 83 (PROJECT ID # 267-000859-162)

Mr. Mark Patterson Installation Manager Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266

CERTIFIED MAIL 7010 1060 0000 0089 7025

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Final Historical Records Review Report for CC-RVAAP-71 and CC-RVAAP-83 Ravenna Army Ammunition Plant, Ravenna, Ohio." The final document was received at Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on May 10, 2012. The document was prepared for the U.S. Army Corps of Engineers (USACE) – Louisville District, by ECC, under Contract Number W912QR-04-D-0039, Delivery Order 0004.

Pursuant to the CERCLA process, the property owner usually can provide the expected land uses to assist in ensuring that the investigation addresses all receptors for both current and future land uses. Be advised that due to land use uncertainty, Ohio EPA may require additional work in the future, to address data gaps. It is incumbent upon the Army to finalize land use at Camp Ravenna as soon as possible, otherwise additional work and schedule slippage may result.

This document was reviewed by personnel from Ohio EPA's Division of Environmental Response and Revitalization (DERR). Ohio EPA has determined that all required text changes have been made to this document and considers it to be final and approved, providing there are no additional comments from the Army or Ohio Army National Guard.

If you have any questions, please call me at (330) 963-1292.

MR. MARK PATTERSON RAVENNA ARMY AMMUNITION PLANT MAY 22, 2012 PAGE 2

NOTE TO OHRANG: Please forward to NGB as needed/required.

Sincerely,

Ken mp to

Kevin Palombo Project Coordinator Division of Environmental Response and Revitalization

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CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

ECC has completed the *Final Historical Records Review Report for CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039, Ravenna Army Ammunitions Plant, Ravenna, Ohio.* Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in this project. During the independent technical review, compliance with established policy principals and procedures, utilizing justified and valid assumptions was verified. This included review of data quality objectives; technical assumptions, methods, procedures, and materials used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with the law and existing United States Corps of Engineers policy.

Autra MacDonald

Debra MacDonald, PMP Project Manager

May 9, 2012

Date

Curt Varner, P.E. Senior Engineer

May 9, 2012

Date

Final Historical Records Review Report for CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039 Revision 0 Ravenna Army Ammunition Plant Ravenna, Ohio

> Contract No. W912QR-04-D-0039 Delivery Order No. 0004

> > **Prepared for:**



U.S. Army Corps of Engineers, Louisville District 600 Dr. Martin Luther King Jr. Place Louisville, Kentucky 40202-2267

Prepared by:



ECC 33 Boston Post Road West Suite 420 Marlborough, MA 01752

May 9, 2012

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Ohio EPA - NEDO = Ohio Environmental Protection Agency Northeast District Office

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RVAAP = Ravenna Army Ammunition Plant

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USAEC = United States Army Environmental Command

REIMS = Ravenna Environmental Information Management System

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ACRONYMS AND ABBREVIATIONS

ACM	Asbestos-Containing Material
AMSL	Above mean sea level
ANFO	Ammonium nitrate/fuel oil
AST	Aboveground Storage Tank
BGS	Below ground surface
BRAC	Base Realignment and Closure
BUSTR	Bureau of Underground Storage Tank Regulations
	Camp Ravenna Joint Military Training Center
Camp Ravenna CERCLA	
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CON/HTRW	Containerized Hazardous, Toxic, or Radioactive Waste
CR	Compliance Restoration
DA1	Demolition Area 1
DFFO	Director's Final Findings and Orders
DLA	Defense Logistics Agency
ECC	Environmental Chemical Corporation
EPA	Environmental Protective Agency
EQM	Environmental Quality Management, Inc.
°F	degrees Fahrenheit
GIS	Geographic Information Systems
GOCO	Government-owned, contractor-operated
gpm	Gallons per minute
HMS	Cyclotetramethylene tetranitramine
HRR	Historical Records Review
HTRW	Hazardous, Toxic, or Radioactive Waste
IRP	Installation Restoration Program
LES	Lakeshore Engineering Services, Inc.
MEC	Munitions and Explosives of Concern
MgB	Mahoning Silt Loam, 2-6% slope
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
NCP	National Contingency Plan
NEDO	Northeast District Office
NFA	No Further Action
NGB	National Guard Bureau
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protective Agency
ODNR	Ohio Department of Natural Resources
Or	Orville Silt Loam
PA	Preliminary Assessment

ACRONYMS AND ABBREVIATIONS (CONTINUED)

PG	Professional Geologist
PM	Project Manager
PMP	Project Management Plan
PPE	Personal Protective Equipment
PWS	Performance Work Statement
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAB	Restoration Advisory Board
RDX	Cyclotrimethylene trinitramine
REIMS	Ravenna Environmental Information Management System
RI	Remedial Investigation
RmB	Remsen Silt Loam
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Application International Corporation
SI	Site Inspection
SOHIO	Standard Oil of Ohio
SRC	Site-related Constituent
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
TNB	Trinitrobenzene
TNT	2,4,6-Trinitrotoluene
USACE	United States Army Corp of Engineers
USAEC	United States Army Environmental Command
USATHAMA	United States Army Toxic and Hazardous Material Agency
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

ES.1 Introduction and Scope

Environmental Chemical Corporation (ECC) is submitting this Draft Historical Records Review (HRR) Report to the U.S. Army in accordance with the Performance Work Statement (PWS), Contract No. W912QR-04-D-0039, Delivery Order 0004 for performance- based, firm fixed-price environmental services at 14 Compliance Restoration (CR) sites at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio. The Delivery Order was issued by the United States Army Corps of Engineers (USACE), Louisville District on August 15, 2011. The purpose of these historical records reviews is to provide findings of the comprehensive historical information research for two sites. The information collected was assessed to determine if a potential threat to human health and the environment is present and recommend additional characterization of the areas, as necessary.

The following CR sites were the subject of the HRR:

- CC-RVAAP-71 Barn No. 5 Petroleum Release; and
- CC-RVAAP-83 Former Buildings 1031 and 1039.

Planning and performance of elements of the historical records review are in accordance with the requirements of the Ohio Environmental Protection Agency (Ohio EPA) *Director's Final Findings and Orders* (DFFO) for RVAAP, dated June 10, 2004 (Ohio EPA 2004). The DFFO requires conformance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). The scope of these reviews is equivalent to a Preliminary Assessment (PA) under CERCLA. This Historical Records Review for the two CR sites listed above was prepared following guidance outlined in *Guidance for Performing Preliminary Assessments Under CERCLA* (US EPA 1991). No sampling was conducted as part of these historical records reviews. Any subsequent sampling activities, to be completed at a later date, will be performed under a future site inspection if warranted.

ES.2 Methods and Information Sources

ECC performed a comprehensive search and review of available historical information pertaining to the two CR sites. These historical records included, but were not limited to, technical, analytical, and administrative reports, letters, manifests, aerial photographs, still photography, maps, and drawings. ECC accessed historical information from the following data sources:

- RVAAP Administrative Record;
- RVAAP Environmental Information Management System (REIMS);
- RVAAP public information website (*RVAAP Access* at www.rvaap.org);
- RVAAP historical records storage (e.g. "RVAAP cold storage files");
- Ohio Army National Guard (OHARNG) Camp Ravenna Joint Military Training Center (Camp Ravenna) historical hard copy drawings, maps, work plans, and manifests;
- Ohio State Fire Marshal's Office/Bureau of Underground Storage Tank Regulations (BUSTR) records;
- Ohio EPA Central and Northeast District Offices (NEDO);
- Ravenna City Fire Department;
- Portage County Department of Health

Appendix A presents a summary of reference sources and records reviewed. This appendix includes details regarding the types of files reviewed, the people contacted for interviews, the companies, agencies, and departments contacted for records or information, and other sources. Appendix B provides the glossary of terms; Appendix C is the Preliminary Assessment Form; Appendix D is the Ordnance Technical Data Sheets; Appendices E, F, and G present textual references of source documents, still photography, and maps/drawings, respectively. Textual references include documents such as reports, data, letters, and book excerpts. Still photography includes site area pictures as well as pictures taken of the exterior and interior of buildings. Maps and drawings include design and construction diagrams of buildings, sewage system network maps, and landscaping plans. ECC also conducted interviews in November 2011 with former and current RVAAP and Camp Ravenna employees. Records of interviews are presented in Appendix H.

On November 3, 2011, ECC conducted site visits and perimeter surveys of the two CR sites accompanied by Vista Sciences Corporation Project Manager, Jim McGee. Procedures and requirements for site visitors were followed as detailed in Appendix I, *Final Facility-Wide Safety and Health Plan for Environmental Investigations* (SAIC 2011a). The following inspection items were evaluated during the property visits and photographs were taken to document current site conditions:

- Overall current site conditions including ground cover and evidence of building footprints;
- Evidence of past uses of the property and any hazardous, toxic, and radioactive waste (HTRW) releases (i.e., staining, residue, odor, free product, stressed vegetation, seeps);
- Presence of suspected or known sensitive habitats, natural resources, or cultural resources; and
- Potential preferential pathways for surface water runoff and the nearest receiving surface water body.

Property visit reports are presented in Appendix J and describe the site conditions and observation of the site visits conducted on November 3, 2011. Property visit photographs are presented in Appendix K and document the site conditions observed on November 3, 2011 with photographs, textual descriptions, and maps. Appendix L presents the Munitions Response Site (MRS) Prioritization Protocol. Appendix M presents the Technical Advisory Group Review Fact Sheet. Appendix N presents the responses to comments in the final report. Appendix O presents the historical aerial photographs of the CR sites, which includes aerials from 15 different years between 1937 and 2009. Appendix P contains the underground storage tank (UST) Summary Sheets.

ES.3 Findings, Conclusions, and Recommendations

Section 4.0 of this report summarizes the conclusions and recommendations of the historical records review. A summary of key findings, conclusions, and recommendations are provided in the following sections.

ES.3.1 Findings

CC-RVAAP-71 Barn No. 5 Petroleum Release

- No evidence or documentation of aboveground storage tanks (ASTs) or underground storage tanks (USTs) at this CR site was discovered;
- One documented release of approximately 20 barrels (840 gallons) of gasoline to ground surface at the site was discovered; and
- The gasoline release occurred in 1964 (47 years ago) inside the RVAAP perimeter fence near Barn No. 5.

CC-RVAAP-83 Former Buildings 1031 and 1039

Former Building 1031 Hospital

- No evidence or documentation of ASTs or USTs at this CR site was discovered;
- The building was heated by steam from Power House #6;
- The building was connected to the George Road Treatment System; and
- No evidence or documentation of a hazardous, toxic, or radioactive release was discovered.

Former Building 1039 Laboratory

- No evidence or documentation of ASTs or USTs at this CR site was discovered;
- The building was heated by steam from Power House #6;
- The building was connected to the George Road Treatment System;
- No evidence or documentation of a hazardous, toxic, or radioactive release was discovered;

- Two interviewees described the existence of a sump located adjacent to the exterior of the southern side of the building;
- No evidence or documentation of a sump was discovered; and
- No documentation of sump demolition was discovered in the *Final Completion Report Munitions Response for the Demolition of Load Lines 5, 7, Building 1039, Transite Removal at Building T-11604 Removal of Remaining Concrete and Miscellaneous Debris at Load Lines 6, 9, and 11* (LES 2007b).

ES.3.2 Conclusions and Recommendations

CC-RVAAP-71 Barn No. 5 Petroleum Release

Based on evidence found during the HRR, the site is considered the area inside the fence near Barn No. 5 where a buried pipeline located outside the fence released approximately 20 barrels (840 gallons) of gasoline to ground surface. Documentation discovered supports the assumption that the pipeline was abandoned (Vorac, 1986), but the process of abandonment method is unknown (abandoned in place, grouted, or removal). Due to the unknown process of abandonment and the projected Unrestricted Guard Use of the area, further investigation of soils is recommended at this CR site.

CC-RVAAP-83 Former Buildings 1031 and 1039

Former Building 1031 Hospital

Based on the evidence found during the HRR, there are no documented releases of hazardous, toxic, or radioactive waste at this site. Wastewater from the building was treated by the George Road Treatment System, hazardous material was removed from the building before it was demolished down to the studs in 2008, and the basement was backfilled with clean material. No Further Action is recommended at this site, as there is no evidence of a release to the environment at this CR site.

Former Building 1039 Laboratory

Based on the evidence found during the HRR, there are no documented releases of hazardous, toxic, or radioactive waste at this site. There were qualitative positive test results for explosive residue on the building exterior and descriptions by two interviewees on November 3 and 4, 2011 reporting the presence of a sump, located adjacent to the south exterior wall of the building, where discharge from the building was collected. However, there was no documentation available on the reported sump area and whether or not it was excavated during demolition activities. Therefore, further investigation is recommended at this CR site.

1.0 INTRODUCTION

ECC is submitting this Preliminary Draft Historical Records Review (HRR) to the U.S. Army in accordance with the Performance Work Statement (PWS) for Contract No.W912QR-04-D-0039, Delivery Order 0004 for performance-based, firm fixed-price environmental services at 14 Compliance Restoration (CR) Sites at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio. The Delivery Order was issued by the United States Army Corps of Engineers, Louisville District on August 15, 2011. This report addresses two CR sites at RVAAP; CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039. Preparation of this HRR Report is equivalent to a Preliminary Assessment (PA) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Program. Any subsequent sampling activities will be performed under future scopes of work.

Planning and performance of elements of the project scope are in accordance with the requirements of the Ohio Environmental Protection Agency (Ohio EPA) *Director's Final Findings and Orders* (DFFO) for RVAAP, dated June 10, 2004 (Ohio EPA 2004). The DFFO requires conformance with CERCLA and the National Contingency Plan (NCP). Accordingly, this HRR Report was prepared following guidance outlined in the *Guidance for Performing Preliminary Assessments Under CERCLA* (US EPA 1991).

1.1 Purpose and Scope

The purpose of this HRR Report is to present the findings collected during the comprehensive background review of available historical information pertaining to these two CR sites, including historical data searches, interviews with current and former employees, site visits, and perimeter surveys of the sites. The information collected was assessed by ECC to determine if a potential threat to human health and the environment is present and additional characterization of the areas is necessary. The scope of this document includes the two sites identified in the PWS as requiring historical records reviews - CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039. Descriptions of each CR site are presented in Sections 2.0 and 3.0, respectively. No sampling was conducted as part of the scope for this HRR report.

1.2 Report Organization

The sections of this HRR Report are organized as follows:

Section 1.0: Description or discussion of the demography and land use, RVAAP environmental setting, and climate.

Sections 2.0 and 3.0: Summary of HRR for CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039, respectively. These sections present the

results of the historical records review for each site including a description or discussion of the following:

- Property descriptions;
- Historical property summary;
- Summary of previous investigations;
- Evaluation of the presence of military munitions and technical data (if present);
- Evaluation of hazardous, toxic, and radioactive waste (HTRW) presence and areas (if
- present);
- Evaluation of containerized hazardous, toxic, and radioactive waste (CON/HTRW) presence and areas (if present); and
- Summary of the pathway and environmental hazard assessment.

Section 4.0: Findings, Conclusions, and Recommendations. This section presents the findings, conclusions, and recommendations for these sites.

Section 5.0: References. This section provides a list of documents referenced in the Historical Records Review Report.

1.3 Facility Description

The RVAAP is located in northeastern Ohio within Portage and Trumbull Counties, approximately 3 miles east-northeast of the city of Ravenna (Figure 1-1). The installation is approximately 11 miles long and 3.5 miles wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east. The installation is surrounded by several communities: Windham to the north, Garrettsville 6 miles to the northwest, Newton Falls 1 mile to the southeast, Charlestown to the southwest, and Wayland 3 miles to the south (SAIC 2011b).

As of February 2006, administrative control of 20,403 acres of the former 21,683-acre RVAAP have been transferred to the National Guard Bureau (NGB) and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site. Currently, RVAAP consists of 1,280 acres in several distinct parcels scattered throughout the confines of the Camp Ravenna Joint Military Training Center (Camp Ravenna). These 1,280 acres consist of former industrial facilities that are being remediated and managed by the Base Realignment and Closure (BRAC) Division, which has the responsibility of overseeing inactive status installations (Prudent 2011).

During the operational years, prior to Camp Ravenna, the entire 21,683-acre property was a government-owned, contractor-operated (GOCO) industrial facility. The RVAAP restoration program encompasses investigation and remediation of past activities over the entire 21,683-acres of the former RVAAP; therefore, references to the RVAAP in this HRR are considered to be inclusive of the historical extent of the RVAAP, which is inclusive of the combined acreages of the current Camp Ravenna and RVAAP, unless otherwise specifically stated.

Former industrial operations at RVAAP consisted of 12 munitions-assembly facilities referred to as "load lines". Load Lines 1 through 4 were used to load explosives into large-caliber shells and bombs. Load Lines 5 through 11 were used to manufacture fuzes, primers, and boosters, which included the use of lead compounds, mercury compounds, and explosives. From 1946 to 1949, Load Line 12 was used to produce ammonium nitrate for explosives and fertilizers prior to use as a weapons demilitarization facility (SAIC 2011b).

In 1950, the facility was placed on standby status and operations were limited to renovation, demilitarization, and normal maintenance of equipment, along with storage of munitions. Production activities resumed from July 1954 to October 1957 and again from May 1968 to August 1972. Demilitarization activities included disassembly of munitions and explosives meltout and recovery operations. Periodic demilitarization of various munitions continued through 1992 (SAIC 2011b).

In addition to production and demilitarization activities at the load lines, other facilities at RVAAP include areas that were used for the burning, demolition, and testing of munitions. In addition, a portion of RVAAP was occupied by various general support facilities such as those for testing, maintenance, administration, and healthcare. Figure 1-2 presents the RVAAP property and identifies the Installation Restoration Program (IRP) and CR sites as well as other property features.

1.4 Demography and Land Use

The RVAAP is located in northeastern Ohio within Portage and Trumbull Counties, approximately 3 miles east-northeast of the city of Ravenna. The 2010 identifies the populations of Portage and Trumbull counties are 161,419 and 210,312, respectively (USCB 2010). Population centers closest to RVAAP are Ravenna, with a population of 11,724, and Newton Falls, with a population of 5,185.

The RVAAP facility is located in a rural area and is not close to any major industrial or developed areas. Approximately 55% of Portage County, in which the majority of RVAAP is located, consists of either woodland or farmland acreage. The closest major recreational area,

the Michael J. Kirwan Reservoir (also known as West Branch Reservoir), is located adjacent to the western half of RVAAP, south of State Route 5.

RVAAP is operated by the BRAC Division of the Army who manages the restoration activities at RVAAP. Camp Ravenna (which is located on the remainder of the property) is owned by NGB who licenses it to the OHARNG for use as a military training site. Training and related activities at Camp Ravenna include field operations and bivouac training, convoy training, equipment maintenance, C-130 aircraft drop zone operations, helicopter operations, and storage of heavy equipment (SAIC 2011b).

1.5 Ravenna Army Ammunition Plant Environmental Setting

This section describes the physical features, topography, geology, hydrogeology, and environmental characteristics of RVAAP. The environmental setting specific to each CR site is included in the individual site descriptions presented in Sections 2.0 and 3.0. The individual CR site descriptions reference the facility-wide information presented below, as applicable.

1.5.1 Physiographic Setting

RVAAP is located within the Southern New York Section of the Appalachian Plateaus physiographic province (USGS 1968). This province is characterized by elevated uplands underlain primarily by Mississippian and Pennsylvanian age bedrock units that are horizontal or gently dipping. The province is characterized by its rolling topography with incised streams having dendritic drainage patterns. The Southern New York Section has been modified by glaciation, which rounded ridges, filled major valleys, and blanketed many areas with glacially derived unconsolidated deposits (i.e., sand, gravel, and finer-grained outwash deposits). As a result of glacial activity in this section, old stream drainage patterns were disrupted in many locales, and extensive wetland areas developed.

1.5.2 Surface Features and Topography

The topography of RVAAP is gently undulating with an overall decrease in ground elevation from a topographic high of approximately 1,220 feet (ft) above mean sea level (amsl) in the far western portion of the facility to low areas at approximately 930 ft amsl in the far eastern portion of the facility (USGS 1977) (USGS 1979).

1.5.3 Soil and Geology

1.5.3.1 Regional Geology

The regional geology at RVAAP consists of horizontal to gently dipping bedrock of Mississippian and Pennsylvanian age overlaid by varying thicknesses of unconsolidated glacial

deposits. The bedrock and unconsolidated geology at RVAAP are presented in the following subsections (USGS 1977) (USGS 1979).

1.5.3.2 Soil and Glacial Deposits

Bedrock at RVAAP is overlain by deposits of the Wisconsin Age Lavery Till in the western portion of the facility and the younger Hiram Till and associated outwash deposits in the eastern two-thirds of the facility (Figure 1-3). Unconsolidated glacial deposits vary considerably in their character and thickness across RVAAP, from zero in some of the eastern portions of the facility to an estimated 150 ft in the south-central portion. Thin coverings of glacial material have been completely removed as a consequence of human activities at locations such as Ramsdell Quarry. Bedrock is present at or near the ground surface in locations such as at Load Line 1 and the Erie Burning Grounds (USACE 2001a).

Thin coverings of glacial material have been completely removed as a consequence of human activities at locations such as Ramsdell Quarry. Bedrock is present at or near the ground surface in locations such as at Load Line 1 and the Erie Burning Grounds (USACE 2001). Where this glacial material is still present, their distribution and character indicate their origin as ground moraine. These tills consist of laterally discontinuous assemblages of yellow-brown, brown, and gray silty clays to clayey silts, with sand and rock fragments. Lacustrine sediment from bodies of glacial-age standing water also has been encountered in the form of deposits of uniform light gray silt greater than 50 feet thick in some areas (USACE 2001).

Soil at RVAAP is generally from the Wisconsin-age silty clay glacial till. Distributions of soil types are discussed and mapped in the Soil Survey of Portage County, Ohio, which describes soil as nearly level to gently sloping and poor to moderately well drained (USDA 1978). Much of the soil at RVAAP was disturbed during construction activities in production and operational areas of the facility.

1.5.3.3 Bedrock Geology

The Sharon Sandstone Member, informally referred to as the Sharon Conglomerate, of the Pennsylvanian Pottsville Formation is the primary bedrock beneath RVAAP (Figure 1-4). In the western half of the facility, the Mercer, Homewood Sandstone, and Sharon Shale Unit predominate. The Sharon Sandstone Member is a highly porous, loosely cemented, permeable, cross-bedded, frequently fractured and weathered, orthoquartzite sandstone, which is locally conglomeratic. The Mercer Member of the Pottsville Formation consists of silty to carbonaceous shale with abundant thin, discontinuous sandstone lenses in the upper portion. The Homewood Sandstone Member ranges from well-sorted, coarse-grained, white quartzose sandstone to a tan, poorly sorted, clay-bonded, micaceous, medium- to fine-grained sandstone. The Sharon Member Shale Unit is gray to black sandy to micaceous shale containing thin coal, underclay, sandstone and siderite zones (SAIC 2011b).

1.5.4 Hydrogeology

1.5.4.1 Regional Hydrogeology

Sand and gravel aquifers are present in the buried-valley and outwash deposits in Portage County, as described in the *Phase I Remedial Investigation Report for High-Priority Areas of Concern* (USACE 1998). Generally, these saturated zones are too thin and localized to provide large quantities of water for industrial or public water supplies; however, yields are sufficient for residential water supplies. Lateral continuity of these aquifers is unknown. Recharge of these units comes from surface water infiltration of precipitation and surface streams. Specific groundwater recharge and discharge areas at RVAAP have not been delineated. The regional potentiometric surface at RVAAP for unconsolidated deposits, bedrock and Sharon Conglomerate are presented in Figures 1-5, 1-6, and 1-7, respectively.

The groundwater table occurs within the unconsolidated zone in many areas of the facility. Because of the heterogeneous nature of the unconsolidated glacial material, groundwater flow patterns are difficult to determine with a high degree of accuracy. Vertical recharge from precipitation likely occurs via infiltration. Laterally, most groundwater flow generally follows topographic contours and stream drainage patterns (SAIC 2011b). Based on the 2011 base-wide gauging data, the general depth to groundwater beneath the base ranges from 0- to 45-ft bgs (EQM 2011).

Within bedrock units at RVAAP, the principle water-bearing aquifer is the Sharon Conglomerate (USATHAMA 1978). Depending on the existence and depth of overburden, the Sharon Conglomerate ranges from an unconfined to a leaky artesian aquifer. Water yields from on-site water supply wells completed in the Sharon Conglomerate ranged into the hundreds of gallons per minute (gpm). Another installation bedrock unit capable of producing water is the Homewood Sandstone, which is only capable of well yields less than 10 gpm (Winslow and White 1966).

Due to the lack of well data in the western portion of RVAAP, general flow patterns are difficult to infer in this area. For much of the eastern half of RVAAP, bedrock potentiometric elevations are higher than the overlying unconsolidated potentiometric elevations, indicating an upward hydraulic gradient (SAIC 2011b). This evidence suggests there is a confining layer that separates the two aquifers. In the far eastern area, the two potentiometric surfaces are at approximately the same elevation, suggesting that hydraulic communication between the two aquifers is occurring (SAIC 2011b).

1.5.4.2 Groundwater Usage and Domestic Water Supply

RVAAP historically used groundwater for both domestic and industrial supplies. Groundwater utilized at RVAAP during past operations was obtained from production wells located throughout RVAAP, with the majority of wells screened in the Sharon Conglomerate. A majority of the production wells were permanently abandoned in 1992. Currently, four groundwater production wells are in use, all of which are in the Administration Area and provide potable water, though they are primarily used as a sanitary water supply. One well services Building 1034 and is located in front of the building between the parking lot and George Road. Another well services Building 1037, Building 1038, and the Post #1 entrance gatehouse. This well is located along the south side of George Road on the west side of Former Building 1039, west of the fence that runs north south in that area (ECC 2011c).

The other two wells were installed in April 2011 by the OHARNG. They are two deep groundwater wells at RVAAP within the Administration Area. These two OHARNG groundwater supply wells are installed in the Sharon Conglomerate aquifer and are located near Buildings 1067 and 1068. The OHARNG well near Building 1067 is on the west side of George Road and north of Building 1067 and the nearby creek. The second OHARNG well is southeast of Building 1068. There is also one inactive non-potable groundwater supply well just south of Winklepeck Burning Grounds along the east side of George Road, which was formerly used to supply water for environmental restoration activities (ECC 2011c).

The Ground Water Pollution Potential of Portage County, Ohio map (ODNR 1990) provides information on the groundwater characteristics of RVAAP. This map indicates the relative vulnerability of groundwater in a specific area to contamination from surface sources. The map presents index values based on several hydrogeologic criteria including depth to water, hydraulic conductivity, topography, and others. Resulting index values range from a low pollution potential (zero) to a high pollution potential (200+). Based on this mapping system, the majority of RVAAP has a moderate pollution potential that ranges between 100 and 139 (ODNR 1990).

1.5.4.3 Regional Surface Water

RVAAP resides within the Mahoning River watershed, which is part of the Ohio River basin. The west branch of the Mahoning River is the main surface stream in the area. The west branch flows adjacent to the west end of the facility, generally in a north to south direction, before flowing into the Michael J. Kirwan Reservoir, which is located to the south of State Route 5 (Figure 1-1). The west branch flows out of the reservoir and parallels the southern RVAAP boundary before joining the Mahoning River east of RVAAP. The facility is marked with marshy areas and flowing and intermittent streams whose headwaters are located in the upland areas of the facility (SAIC 2011b).

The three primary creeks that drain RVAAP are:

- South fork of Eagle Creek;
- Sand Creek; and
- Hinkley Creek.

These creeks have many tributaries. Sand Creek flows generally in a northeast direction to its confluence with the south fork of Eagle Creek. The south fork of Eagle Creek continues in a northerly direction to its confluence with Eagle Creek. Hinkley Creek originates just southeast of the intersection between State Route 88 and State Route 303 to the north of the facility. Hinkley Creek flows in a southern direction through the facility, and combines with the west branch of the Mahoning River south of the facility (USACE 2001a).

Approximately one-third of RVAAP meets the regulatory definition of a wetland, with the majority of the wetland areas located in the eastern portion of the facility. Wetland areas at RVAAP include seasonal wetlands, wet fields, and forested wetlands. Many of the wetland areas are the result of natural drainage or beaver activity; however, some wetland areas are associated with anthropogenic settling ponds and drainage areas (SAIC 2011b).

Approximately 50 ponds are scattered throughout the facility. Many were built within natural drainage ways to act as settling ponds or basins for process effluent and runoff. Others are natural, resulting from glacial or beaver activity. Water bodies at RVAAP could support aquatic plants and animals. Storm water runoff is controlled primarily by natural drainage, except in areas of buildings where a storm sewer system helps to direct runoff to drainage ditches and settling ponds. Additionally, the storm sewer system was one of the primary drainage mechanisms for process effluent during the period that production facilities were in operation.

1.5.5 Climate

The general climate of the RVAAP area is characterized by moderately warm and humid summers, reasonably cold and cloudy winters, and wide variations in precipitation from year to year. Average annual rainfall in the RVAAP area is approximately 38 inches, with the highest monthly average occurring in July and the lowest monthly average occurring in February. Average annual snowfall is approximately 52 inches with the highest monthly average occurring in January. The average annual daily temperature in the RVAAP area is approximately 48 degrees Fahrenheit (°F), with an average daily high temperature of approximately 58 °F and an average daily low temperature of approximately 39 °F. The prevailing wind direction at RVAAP is from the southwest, with the highest average wind speed (approximately 11 miles per hour) occurring in January and the lowest average wind speed occurring in August (7 miles per hour) (SAIC 1996). Thunderstorms occur on approximately 35 days per year and are most abundant

from April through August. The RVAAP area is susceptible to tornadoes; minor structural damage to several buildings on facility property occurred as the result of a tornado in 1985.

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2.0 CC-RVAAP-71 BARN NO. 5 PETROLEUM RELEASE

This section presents a description of the CC-RVAAP-71 Barn No. 5 Petroleum Release including a description of the property, summary of any previous investigations, evaluation of documents reviewed during a historical records search, a description of the potential contaminant sources, migration pathways, contaminant discharge points, and potential receptors based on operational history and property surveys. A summary of findings, conclusions, and recommendations for CC-RVAAP-71 Barn No. 5 Petroleum Release is presented in Section 4.0.

2.1 **Property Description, Acreage, and Land Use**

The site is considered to be approximately 0.6 acres including the footprint of Barn No. 5 and the land between the barn and the fence line in the vicinity of Post No. 6. Barn No. 5 was also referred to as the 'twin silo' barn noted for the two silos that were located on the east end of the barn. The barn foundation was constructed of stone and concrete. The frame and wall were constructed of wood and the roof was fortified with steel trusses. The silos were constructed of vitrified clay tiles. The CR site features and aerial photograph for CC-RVAAP-71 are provided in Figures 2-1 and 2-2, respectively. The fence line lies roughly 150 ft within the RVAAP property line in this area. A letter dated May 13, 1964 (Appendix E) documents the release of approximately 20 barrels (840 gallons) of gasoline from a break in an underground pipeline with subsequent release to the ground surface inside of the fence. The pipeline runs parallel to the RVAAP fence line at this location. Currently, the site is undeveloped and is mainly covered by tall grassy vegetation.

2.1.1 Location

The site is located in the western portion of RVAAP along the southern property fence line. The fence runs between South Patrol Road, which is a dirt and gravel road within RVAAP property lines, and old State Route 5, which is currently named Newton Falls Road. Newton Falls Road is a two lane paved road lying to the south of CC-RVAAP-71. The RVAAP property line is located in the center of Newton Falls Road.

The Buckeye pipeline break and associated release is documented in a letter (Appendix E) prepared by C.F. Craver, RVAAP Security Manager (Security Chief), to H. M. Krengel, Ravenna Arsenal, Inc. General Manager, dated May 13, 1964 that states:

"At 8:00 pm, May 12, 1964, Dan McMinemen reported that a yellow liquid was coming out of the ground inside of our south fence near Barn No. 5. Mr. Blunt [Buckeye Pipeline Company] informed the guard that the product was SOHIO gasoline and he estimated that 20 barrels was lost (Craver 1964)."

The Barn No. 5 footprint is directly north of Post No. 6 that used to allow access to RVAAP

through the fence from old State Route 5. Just northwest of the site runs a portion of Hinkley Creek that flows under South Patrol Road from northeast to southwest (Figures 2-1 and 2-2).

2.1.2 Land Use and Ownership History

Barn No. 5 was built prior to 1937, before the Army purchased the land. After the Army acquired the land, the barn was used for the boarding of horses used for patrol of the RVAAP perimeter in the early 1950's. The length of the 'twin silo barn' ran east west, parallel to State Route 5, and was constructed with two silos along the eastern side. The horse patrol was only in existence for two years and was followed by a year of motor scooter patrol. Patrol by pick-up truck replaced the motor scooter patrol and the use of the barn was discontinued (ECC 2011b). The barn was demolished between 1966 and 1979. The fence and access gate were constructed in the early 1940's with Post No. 6 only used on an as-needed basis. The gate remained locked when not in use. The site is undeveloped and no buildings exist on this CR site. This site is currently used by the OHARNG for training and is designated as part of Training Area D. Future OHARNG land use is projected as Unrestricted Guard Use.

2.1.3 Physical Property Characteristics

The topography across the site slopes approximately 10 feet from southeast to northwest towards Hinkley Creek. A letter dated May 13, 1964 (Craver 1964) documents a release of approximately 20 barrels (840 gallons) of gasoline to the ground surface inside of the south fence near former Barn No. 5. The release occurred from a buried Standard Oil of Ohio (SOHIO) pipeline that runs parallel to the RVAAP fence line at this location. Based on the 1964 letter, excavation was completed in order to repair the pipeline on the same day as the reported release. Historical drawings show the 12.5-foot pipeline easement on RVAAP property at the release location that is also depicted on Figure 2-3. The pipeline depth is unknown. Along the north side of the fence is the dirt and gravel road named South Patrol Road. Tall grass grows south of the fence and Post No. 6 access gate, surrounded by denser brush and trees. The majority of the Barn No. 5 footprint, which is approximately 2,280 square feet, is covered with tall grass with the northern edge of the footprint in dense brush. The four corners of the building footprint are marked by 3-ft tall stakes with neon orange flags. Based on the site inspection conducted on November 3, 2011 there is no visual evidence of a gasoline release, such as staining, residue, odor, or stressed vegetation evident at the site area.

2.2 Historical Property Summary

2.2.1 Chronological Property Summary

Minimal documented evidence was found regarding specific years of use for Barn No. 5 or Post No. 6, nor were any records of barn demolition activities discovered. A drawing dated 1943

found during the historical records review showed the 12.5-ft pipeline easement of the SOHIO pipeline from which gasoline was released. Also found was a topographic map dated 1992 depicting the course of the pipeline in the vicinity of Post No.6. A legal document dated 1942 describing the easement (Appendix E) contains a hand-written note that states "Buckeye Pipeline has been abandoned", dated August 15, 1986 (Vorac 1986).

2.2.2 Military Operations

The CC-RVAAP-71 Barn No. 5 Petroleum Release site is currently part of Training Area D that is utilized by the OHARNG for military training purposes. No documented evidence of impact from former and current military operations at this site was found during the HRR.

2.2.2.1 Operations Involving Military Munitions

No documented evidence of military munitions being used at CC-RVAAP-71 Barn No. 5 Petroleum Release was found during the HRR.

2.2.2.2 Operations Involving Hazardous, Toxic, And Radioactive Waste

No documented evidence of operations involving hazardous, toxic, and radioactive waste (HTRW) at CC-RVAAP-71 Barn No. 5 Petroleum Release was found during the HRR. A review of RVAAP UST documents from the Ohio State Fire Marshal's Office conducted by ECC in October 2011 did not identify the presence of ASTs or USTs in the vicinity of the site.

2.2.3 Map Analysis

Barn No. 5 was the only structure that was built on the site grounds, which has since been demolished. Currently, there are no physical structures in the approximate 0.6-acre CR site area. The fence, which is approximately 150 feet north of the center of Newton Falls Road and runs parallel to the RVAAP property line, is the only existing site structure. One design drawing of the barn was discovered during the HRR showing two silos alongside the building and the barn entrance on the broadside of the barn.

2.2.4 Aerial Photographic Interpretation

Historical photographs from 1937, 1940, 1950, 1952, 1959, 1966, 1979, 1985, 1994, 1997, 2000, 2003, 2005, 2006, and 2009 were found during the historical records review. These aerial photographs are presented in Appendix O. The historical aerial photographs were analyzed to identify potential effects of the gasoline release, the relationship between the site and the surrounding areas, and the chronological development of the site. The 1937 and 1940 aerial photographs show the Barn No. 5 structure and surrounding area to be used primarily for agriculture. Barn No. 5 is evident in the 1950 and 1952 photographs at the bend of South Patrol Road. The barn is present in the 1959 and 1966 aerial photos but is not present in the 1979
photograph or any thereafter. The May 1964 letter (Appendix E) that documents the gasoline release states that at 10:45 pm on May 12, 1964, "They [Buckeye Pipeline Company] began to excavate for the repair. The only damage was that an area of grass was killed" (Craver 1964). The 1966 aerial photo was examined for evidence of ground disturbance but the excavation area could not be identified conclusively. It was noted that the nearest body of water is Hinkley Creek, located approximately 300 feet northwest from the center of the clearing where Barn No. 5 was once located.

2.2.5 Interview Findings

Six individuals were interviewed as part of the HRR:

Ray McDaniel, Former RVAAP Employee; Gail Harris, RVAAP Technical Archivist; Jim McGee, RVAAP Project Manager; Gary Wolfgang, Former RVAAP Employee; and Tim Morgan and Katie Tait, OHARNG Environmental Supervisor and Environmental Scientist.

Of particular interest is the information provided by Mr. McGee (ECC, 2011b) in regards to the construction and function of Barn No. 5. Mr. McGee described the twin silos as being constructed of vitrified clay tiles, which most likely stored corn or grain. The barn was used to board horses that were used to patrol the perimeter of the installation.

2.3 **Previous Investigations**

No documentation of environmental investigations or actions at CC-RVAAP-71 Barn No. 5 Petroleum Release was discovered during the HRR.

2.4 Evaluation of Presence of Military Munitions and Technical Data

No documented evidence of the presence of military munitions at CC-RVAAP-71 Barn No. 5 Petroleum Release was found during the HRR.

2.5 Evaluation of Hazardous, Toxic, or Radioactive Waste Presence

No documented evidence of the presence of hazardous, toxic, and radioactive waste at CC-RVAAP-71 Barn No. 5 Petroleum Release was found during the HRR other than the letter dated May 13, 1964 which documents that "a yellow liquid was coming out of the ground inside of our south fence near Barn No. 5" (Craver 1964). The "yellow liquid" is later identified in the letter as "SOHIO gasoline".

2.6 Evaluation of Containerized Hazardous, Toxic, and Radioactive Waste Presence

No documented evidence of the presence of containerized hazardous, toxic, and radioactive waste at CC-RVAAP-71 Barn No. 5 Petroleum Release was found during the HRR.

2.7 Pathway and Environmental Hazard Assessment

The following sections discuss the setting, targets, and environmental hazard conclusions for groundwater, surface water, soil, and air pathways.

2.7.1 Groundwater Pathway

2.7.1.1 Hydrogeologic Setting

The Sharon Conglomerate Unit is the primary geologic formation at the site. The generalized inferred groundwater flow direction of the unconfined aquifer is toward the south-southwest. The generalized inferred groundwater flow direction of the Sharon Conglomerate potentiometric surface is towards the northeast. The inferred unconfined aquifer potentiometric surface is approximately 1,075-ft amsl at the site with groundwater flow in the northwest direction towards Hinkley Creek. Based on the review of the geographic information systems (GIS) ground surface contours and the potentiometric surface contours (SAIC 2011d), the depth to groundwater in the general site area is approximately at 12-ft bgs; however, there are no monitoring wells within the area of the site and the nearest cluster of wells is located approximately 2,500 ft in the northwest direction (SAIC 2011d).

2.7.1.2 Groundwater Targets

Groundwater beneath CC-RVAAP-71 Barn No. 5 Petroleum Release is not currently utilized for domestic drinking or irrigation purposes. However, if groundwater was used for domestic drinking or irrigation purposes in the future there could be potential for human receptor exposure. Currently, the only active drinking water wells are located in the Administration Area, approximately 11,000 ft east of the site.

2.7.1.3 Groundwater Conclusions

No groundwater samples were collected as part of this HRR. Leaching of potential soil contaminants to groundwater is a potential contaminant migration pathway for this CR site, which may require further evaluation.

2.7.2 Surface Water Pathway

2.7.2.1 Hydrogeologic Setting

Hinkley Creek is the nearest surface water body which lies approximately 350 feet northwest from the center of the site and drains generally from north to south eventually discharging to the Kirwan Reservoir approximately 11,000 feet southwest of the site. Hinkley Creek is assumed to be connected to the groundwater in the area of the site based on the pattern of groundwater contours and therefore may be a potential receptor of the 1964 release. One sediment sample was collected by SAIC in October 1999 as part of the *Final Phase I Remedial Investigation for Demolition Area 1* (SAIC 2001). The sediment sample (identified as DA1-046) was collected along the creek bank approximately 450 feet northwest of the site (as shown in Figures 2-1 and 2-2) to characterize the occurrence and distribution of contamination and evaluate potential risks to human health and the environment resulting from operations at Demolition Area 1 (DA1). The results of the sediment sampling indicated that five metals (aluminum, chromium, cobalt, lead, and nickel) were detected in the sediment sample. The metals, reported concentrations, and RVAAP background concentrations are as follows:

Metal	Sediment Sample	Site Background
	DA1-046	Criteria
Aluminum	12,800 J	13,900
Chromium	18.8	18.10
Cobalt	9.4	9.10
Lead	11.6	27.4
Nickel	25.4	17.7

Table 2-1:	Summary of Sediment Data for DA1-046
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Notes:

All results and criteria reported in mg/kg.

Bold result indicates exceedance of facility-wide background criterion.

J = estimated value.

There were no reported detections of volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs) in sediment sample DA1-046. Overland flow is not considered a viable migratory pathway for this release, as the excavation activities conducted to repair the pipeline likely resulted in mixing the gasoline with soil (or volatilization), such that free product would not be expected to travel approximately 350 ft to Hinkley Creek over the vegetated, relatively level, ground surface.

2.7.2.2 Surface Water Targets

Surface water targets include human receptors that use the surface water (Hinkley Creek) for recreation, as well as environmental receptors, such as aquatic plant and animal life, that may be affected by potential groundwater contamination with subsequent migration to surface water.

2.7.2.3 Surface Water Conclusions

Low permeability of the silty clay soil at the site makes leaching to groundwater unlikely, rendering the groundwater to surface water discharge scenario incomplete. Lateral migration of contaminants to surface water via overland flow is also considered unlikely, due to post-release excavation activities and the distance to the nearest surface water body. Therefore, surface water contamination is not considered a viable migration or exposure pathway for CC-RVAAP-71 Barn No. 5 Petroleum Release.

2.7.3 Soil Exposure and Air Pathways

2.7.3.1 Physical Conditions

Information obtained from the U.S. Department of Agriculture Portage County Soil Survey (USDA 1978) and online soil maps of Portage County (USDA 2011) indicates that this area has surface soils comprised of two soil types; Remsen Silt Loam (RmB) and Orrville Silt Loam (Or).

- Remsen Series consists of deep, somewhat poorly drained, nearly level to gently sloping soils that formed in silty clay glacial till. Remsen Silt Loam, with 2 to 6 percent slopes, is a gently sloping soil in convex upland areas. Runoff is medium to rapid, permeability is slow.
- Orrville Series consists of deep, somewhat poorly drained, nearly level soils that formed in loamy alluvium on flood plains throughout the county. Orrville Silt Loam is a nearly level soil on narrow flood plains. Runoff is very slow and there is a hazard of frequent flooding.

2.7.3.2 Soil and Air Targets

Current potential soil targets under current and future land use include human and ecological (animal and plant) receptors that may come into contact with surface or subsurface soil. Future OHARNG land use at CC-RVAAP-71 is projected as Unrestricted Guard Use. The records review has indicated that no soil data is available for this CR site. Incidental ingestion and inhalation of impacted soil and air as a result of this reported gasoline spill in 1964 is considered to be unlikely. The contaminants are very volatile; however, the high moisture content of the soil typical of this soil type reduces the potential for dust generation.

2.7.3.3 Soil Exposure and Pathway Conclusions

The records review has indicated that a gasoline spill was reported at CC-RVAAP-71 Barn No. 5 Petroleum Release in May 1964 and has been documented to include a release of approximately 20 barrels (840 gallons) of gasoline followed by excavation activities and repair of the pipeline. Given the 47-year time-span from time of the reported release until present day, and the volatile nature of the contaminants of concern, it is unlikely that any residual contaminants remain in the shallow soil requiring further investigation.

3.0 CC-RVAAP-83 FORMER BUILDINGS 1031 AND 1039

This section presents a description of the CC-RVAAP-83 Former Buildings 1031 and 1039 including a description of the property, summary of any previous investigations, evaluation of documents reviewed during a historical records search, and a description of the potential contaminant sources, migration pathways, contaminant discharge points, and potential receptors based on operational history and property surveys. A summary of findings, conclusions, and recommendations for CC-RVAAP-83 Former Buildings 1031 and 1039 is presented in Section 4.0.

3.1 Property Description, Acreage, and Land Use

This section provides a property description including acreage and land use. The CC-RVAAP-83 Former Buildings 1031 and 1039 site is defined as the footprint of these former buildings and a 30-ft buffer area around the perimeter of each building footprint.

Former Building 1031 was built in 1942 and functioned as the RVAAP hospital. The building footprint of this one story building is approximately 13,500 square feet and T-shaped with the long portion measuring 269 ft by 41 ft and the shorter portion measuring 55 ft by 45 ft (Figures 3-1 and 3-2). The walls were constructed of wood, the roof consisted of asphalt shingles, and the foundation was constructed of concrete masonry units. The floor materials included cement, terrazzo, and linoleum on wood, and the building exterior was covered in asbestos shingles. The building was heated with steam from Power House #6 and had water and sewer connections that conveyed waste water to the George Road Treatment System. The hospital had 40 rooms ranging in function from operation, storage, emergency, recovery, x-ray, photo development, general exam, first aid, offices, and included living quarters including bedrooms, kitchen, and bathrooms (Pfingsten 2009).

Former Building 1039 was built in 1942 and functioned as the RVAAP laboratory where quality control/quality assurance samples from load lines were analyzed. The building footprint of this one story building is approximately 6,100 square feet and rectangle-shaped with dimensions of 121 ft by 51 ft (Figures 3-4 and 3-7). The building is constructed of transite panels (asbestos-containing material) over a wooden frame. The 3-ply roof structure was also constructed of these materials. The floors were constructed of wood and rubber and the foundation consisted of concrete masonry units. The building had a piping network to transport steam for heat and water for amenities such as sinks, toilets, and floor drains (RVAAP 1942). Figure 3-7 presents the first floor plan, with fixtures and intended room uses labeled. Figure 3-8 presents the basement plan showing drainage features. Based on interviews conducted by ECC with Mr. Wolfgang on November 4, 2011 (ECC 2011a) and Mr. McGee on November 3, 2011 (ECC 2011b), the presence of a sump was reported to have once existed on the south exterior wall of the Former Building 1039 laboratory which was used to collect discharge from

the building to settle out contaminants prior to discharge to the George Road Treatment System. The sump was reported to have been constructed of lead-lined concrete approximately 6 ft in depth with dimensions of 6 ft by 6 ft. The sump was filled with sawdust to collect settled material. The liquids discharged to the George Road Treatment System (ECC 2011a) (ECC 2011b).

3.1.1 Location

Former Buildings 1031 and 1039 are located in the Administration Area of the installation, which is centered, in the southern portion of RVAAP. The Former Building 1031 hospital footprint is adjacent to a cluster of housing units with the nearest road being South Service Road (Figures 3-1 and 3-2). The Former Building 1039 laboratory footprint is located on the southwest corner of the intersection of South Service Road and George Road (Figures 3-4 and 3-5). Nearby buildings include Building 1037 (office space) and Building 1034 (maintenance equipment storage).

3.1.2 Land Use and Property Ownership History

Former Buildings 1031 and 1039 consist of the former hospital building and former laboratory building, respectively. Former Building 1031 was constructed in 1942 and functioned as the RVAAP hospital until it reportedly closed in 1988. Former Building 1039 was constructed in 1942 and housed the installation's main laboratory and photo lab. Former Building 1039 was used extensively during World War II, and again during the Korean War; however, there was a limited amount of activity in this building during the Vietnam War. Between wars, the use of the laboratory was halted. During these times, the laboratory was demilitarized and remained dormant. Former Building 1039 was closed in 1972. Future OHARNG land use at CC-RVAAP-83 is projected as Unrestricted Guard Use.

3.1.3 Physical Property Characteristics

The building footprint of Former Building 1031 hospital is approximately 13,500 square feet and is situated in the Administration Area of the installation (Figures 3-1 and 3-2). The site topography is relatively flat and Seibert Markers were installed around the perimeter of the building footprint after the building was demolished by the OHARNG in 2008. As part of the demolition activities, the 6-foot deep basement was left intact and backfilled. The material used for backfill was OHARNG-approved demolished material (brick and block) choked and topped with fill dirt and topsoil onsite (QBS 2008). Depth to groundwater at Former Building 1031 is approximately 12 feet bgs. The site is defined as the footprint of Former Building 1031 and a 30-ft buffer around the perimeter of the building footprint. The footprint and surrounding area is covered with grass. No water bodies are present at the site. Site-related constituents (SRCs) of concern are related to the former generation of x-ray acid/silver mix solutions, and common hospital wastes. The composition of x-ray acids is unknown; however, they likely contained lead and radioactive materials. The hospital wastes typically consisted of infectious materials containing pathogens, sharps, pathological tissues, and pharmaceuticals. The potential historical disposal of these materials through the sanitary waste system is of environmental concern. The historical sanitary lines were constructed of clay pipe, and failure of clay pipe is common. Based on the historical uses at the site, the potential SRCs for the sanitary system at the hospital building are VOCs, SVOCs, and metals (RVAAP 2011). Draft Facility-wide Sewer Remedial Investigation and Feasibility Study (RI/FS) Report is expected to be issued in February 2012, which evaluates the sanitary system.

The building footprint of Former Building 1039 laboratory is approximately 6,100 square feet and is situated in the Administration Area of the installation. The site topography is relatively flat and Seibert Markers designate the perimeter of the building footprint. The site is considered the Former Building 1039 footprint and a 30-ft buffer around the perimeter of the former building footprint. The ground inside the former building footprint is covered with grass which was planted as part of site restoration activities after demolition which was conducted from 2006 to 2007 by Lakeshore Engineering Services, Inc. (LES) (LES 2007b). Following demolition, unpainted and uncontaminated brick and concrete were crushed and recycled offsite and the basement was filled with clean soil (LES 2007b). The surrounding area is covered with grass and no water bodies are present at the site.

The Former Building 1039 laboratory was used for the testing of load line materials. The structure contained three powder test rooms for the routine analyses of lead azide, mercury fulminate, and percussion element mixes. During operations, the building contained and operated a photography laboratory, a chemistry laboratory, and a medical x-ray facility. The photo laboratory was historically used for large-scale photo development activities until its closure in the early 1970s. Site-related constituents (SRCs) of concern are related to the former generation of x-ray acid/silver mix solutions, and the laboratory analysis of powder test room materials (lead azide, mercury fulminate), percussion element mixes, paints, shellac, metals, fuels, and tapes or adhesives (RVAAP 2011). The potential historical disposal of these materials through the sanitary waste system is of environmental concern. The historical sanitary lines were constructed of clay pipe, and failure of clay pipe is common. Based on the historical uses of the site, the potential SRCs for the sanitary system at the former laboratory Building 1039 are VOCs, SVOCs, TAL metals, explosives and propellants (RVAAP 2011). Currently, the Army is investigating the sanitary and sewer system. A Draft Facility-wide Sewer RI/FS Report is expected to be issued in February 2012, which evaluates the sanitary system.

3.2 Historical Property Summary

3.2.1 Chronological Property Summary

Former Buildings 1031 and 1039 were constructed in 1942. Former Building 1031 functioned as a hospital from 1943 until the building closed in 1988. Former Building 1039 functioned as a laboratory during World War II, the Korean War, and to a lesser extent, the Vietnam War. Between wars, the use of the hospital was diminished and the use of the laboratory was halted. During these times, the laboratory was demilitarized and remained dormant. When active the laboratory was used to test load line materials and the photo laboratory was used for large-scale photo development. Former Building 1039 reportedly closed in 1972. As per the RVAAP Fiscal Year 2011 Installation Action Plan, the west end of the hospital building included a gauging lab. The gauging lab was used for the development of large-scale photos for a period of about 1.5 years after the laboratory at Former Building 1039 was closed (RVAAP 2011).

3.2.2 Military Operations

No documented evidence of impact from former and/or current military operations at these sites was found during the HRR.

3.2.2.1 Operations Involving Military Munitions

No documented evidence of military munitions at Former Buildings 1031 and 1039 was found during the HRR.

3.2.2.2 Operations Involving Hazardous, Toxic, and Radioactive Waste

No documented evidence of operations involving HTRW at Former Buildings 1031 and 1039, nor the presence of ASTs or USTs, was found during the HRR.

3.2.3 Map Analysis

Design drawings were examined during the historical records review for both Former Buildings 1031 and 1039. Drawings depicted such features as plumbing, heating, lighting, intended room use, roofing, foundation, and landscaping. However, none of the drawings verified the existence of a sump nor included details regarding the sump at Former Building 1039 described by interviewees (ECC 2011a, 2011b). The following Section 3.2.5 provides a description of the sump.

3.2.4 Aerial Photographic Interpretation

Historical photographs from 1937, 1940, 1950, 1952, 1959, 1966, 1979, 1985, 1994, 1997, 2000, 2003, 2005, 2006, and 2009 were found during the historical records review. These photographs are presented in Appendix O. The historical aerial photographs were analyzed to

identify potential effects of the building use, the relationship between the site and the surrounding areas, and the chronological development of the site. The buildings are not present on the 1937 or 1940 aerials and first appear on the 1950 aerial photograph. The building exteriors remained unchanged with no evidence of any major additions or alterations. The buildings are not present in the 2009 aerials as demolition of Former Buildings 1031 and 1039 took place in 2008 and from 2006 to 2007, respectively.

3.2.5 Interview Findings

Six individuals were interviewed as part of the HRR:

Ray McDaniel, Former RVAAP Employee; Gail Harris, RVAAP Technical Archivist; Jim McGee, RVAAP Project Manager; Gary Wolfgang, Former RVAAP Employee; and Tim Morgan and Katie Tait, OHARNG Environmental Supervisor and Environmental Scientist.

Of particular interest is the information provided by Mr. Wolfgang (ECC 2011a) and Mr. McGee (ECC 2011b) with regard to Former Building 1039. Both interviewees similarly described a sump located along the south exterior wall of the building. They described the sump as cubic in shape, approximately 6-ft wide by 6-ft long and 6-ft deep. The sump was constructed of lead-lined concrete and covered with a wood cover to keep rainwater out. Sawdust was in the bottom of the sump and the waste water that filled the sump overflowed into the sewer lines that conveyed the waste water to the George Road Treatment System. There was no other documented evidence of the sump existence found during the HRR.

3.3 Previous Investigations

During the Explosive Evaluation of Sewers in 2007, 26 sanitary sewer manholes were sampled using DropEx field screening for explosives, none of which indicated the presence of trace explosives residue (LES 2007a). No samples were submitted for laboratory analysis. The Lakeshore sewer effort was conducted without Ohio EPA regulatory oversight or review of the associated work plans, resultant completion report, or its conclusions. The Lakeshore investigation also provided reconnaissance notes that several manholes were inaccessible due to being paved over with asphalt or concrete. No storm sewer structures were evaluated during the Explosive Evaluation of Sewers investigation, and no sewer media samples were collected.

In 2009, SAIC conducted fieldwork including inspections and sampling as part of the Facility-Wide Sewers RI/FS (SAIC 2011c). The 2009 fieldwork included visual survey inspections of sanitary and storm sewer locations and sewer media (sediment and water) sampling and

characterization. The sewer system evaluation was divided into "Functional Areas", one of which was the Administration Area where Former Buildings 1031 and 1039 are located. None of the sanitary or storm sewer locations (manholes) inspected had any visible contamination residues or staining (SAIC 2011c).

One storm sewer water sample (sample identification - ADAsw-020) was collected near Former Building 1031 and laboratory analyzed for metals and explosives. Eleven metals were detected above background concentrations (Figure 3-3) in sample ADAsw-020. Background criteria for surface water are from the final facility-wide background concentrations for RVAAP, published in the Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds (USACE 2001b). No explosives were detected in the storm sewer water sample (SAIC 2011c).

One storm sewer water sample (sample identification - ADAsw-023) and one sanitary sewer sediment sample (sample identification - ADAsd-011) was collected near Former Building 1039. The water sample was laboratory analyzed for metals and explosives. Eight metals were detected above background concentrations (Figure 3-6) in sample ADAsw-023. No explosives were detected in the storm sewer water sample. The sediment sample was analyzed for metals and SVOCs. Thirteen SVOCs were detected above background concentrations (Figure 3-6) in ADAsd-011 (SAIC 2011c).

The RI/FS report concluded that all SRCs found in the subsurface sewer media samples within Administration Area, and evaluated through the stepwise fate and transport screening evaluation, are eliminated as posing future impacts to groundwater. The RI/FS report concluded that none of the point evaluation chemicals of potential concern are impacting downstream receptors and do not warrant evaluation in an FS. No additional investigation was recommended for the sewer system from the ecological risk viewpoint. No further sampling was recommended for the Administrative Area sanitary and storm sewers (SAIC 2011c).

3.4 Evaluation of Presence of Military Munitions and Technical Data

No documented evidence of technical data regarding Former Buildings 1031 and 1039 was found during the HRR.

3.5 Evaluation of Hazardous, Toxic, and Radioactive Waste Presence

Ten solid paint chip samples were collected by OHARNG from Former Building 1031 in December 2007 and analyzed for PCBs prior to demolition activities. Two exterior samples and eight interior samples were collected from various rooms such as the doctor's quarters and the center hall. The reported analytical results were below the Ohio EPA Generic Direct-Contact Soil Standard Summary criteria of 25 mg/kg for PCBs. The reported PCB concentrations from the 2007 paint sampling ranged from 0.47 to 6.1 mg/kg. The 2007 analytical results are presented in Appendix E.

One water sample was collected by OHARNG from standing water on the basement floor in the west side of Former Building 1031 in December 2007 and analyzed for TCLP (toxicity characteristic leaching procedure) metals and PCBs prior to demolition activities. The reported analytical results were below the instrument reporting limit for PCBs. The reported TCLP metal concentrations from the 2007 sampling event were below regulatory levels (Summit 2007). The laboratory data package is provided in Appendix E. The remaining standing water on the basement floor was collected and run through a micron filter in order to collect any asbestos-containing material. All asbestos and other hazardous materials (i.e. mercury-containing equipment and ballasts) were properly removed and disposed of in accordance with all applicable regulations prior to demolition. The building was demolished in 2008.

In May 2006, LES performed Expray tests prior to demolition activities at Former Building 1039. Expray is an aerosol-based field test kit for the detection and identification of Group A explosives (e.g. TNT [2,4,6-trinitrotoluene] and TNB [trinitrobenzene]), Group B explosives (e.g. RDX [cyclotrimethylene trinitramine] and HMS [Cyclotetramethylene tetranitramine]), and compounds containing inorganic nitrates that are used in improvised explosives (e.g. ANFO [ammonium nitrate/fuel oil]). Expray is often used as a pre-blast detection tool. As reported in the Final Completion Report by LES (LES 2007b), of the 46 tests performed at Former Building 1039, there were five separate positive results, in the following locations:

- Room 1- (HMS/RDX) (1 positive);
- Room 4 (TNT) (2 positive);
- Lab Room (HMS/RDX) (1 positive);
- Room 9 (HMS/RDX) (1 positive).

Three photos of Expray test results from Former Building 1039 tests, 1 negative and 2 positive, are presented in the Week #1 Weekly Report included in the Final Completion Report by LES (LES 2007b). The positive results were from a test performed on the basement wall near the ground and a portion of wall near a faucet fixture on the first floor. The negative result was from a test performed on a portion of wall in the basement at eye level. The drain lines within Former Building 1039 were cleared of potential explosive residue by explosive flashings by the demolition contractor as part of the demolition activities due to the positive Expray results.

The material used for fill at Former Building 1039 was reported to be top soil provided from an off-site source that was used to fill the top 2 feet of the basement area of the building. This fill material was sampled in February 2007 for a full analytical suite prior to being used. The

reported results were below instrument detection limits with the exception of metals (total of 18), which were below their respective Ohio EPA Generic Direct-Contact Soil Standard Summary criteria (LES 2007b). It was documented in the LES Final Completion Report that 14 loads of backfill material from Load Line 9 was used to fill the basement of Former Building 1039 to within 2 feet of the ground surface. The relevant sections from the LES Final Complete Report that pertain to the demolition of Former Building 1039 are presented in Appendix E.

3.6 Evaluation of Containerized Hazardous, Toxic, and Radioactive Waste Presence

No documented evidence of the presence of containerized hazardous, toxic and radioactive waste at Former Buildings 1031 and 1039 was found during the HRR conducted on November 3, 2011.

3.7 Pathway and Environmental Hazard Assessment

The following sections discuss the setting, targets, and environmental hazard conclusions for groundwater, surface water, soil, and air pathways.

3.7.1 Groundwater Pathway

3.7.1.1 Hydrogeologic Setting

The Sharon Sandstone Conglomerate Unit is the primary geologic formation at the site. The generalized inferred groundwater flow direction of the Sharon Conglomerate potentiometric surface in the area of Former Buildings 1031 and 1039 is towards the northeast. The inferred unconsolidated aquifer potentiometric surface is approximately 1,030-ft amsl at Former Building 1039 and 1,050-ft amsl at Former Building 1031 with groundwater flow in the east direction. Based on the review of the geographic information systems (GIS) ground surface contours and the potentiometric surface contours (SAIC 2011d), the depth to groundwater in the general site areas of Former Building 1031 and Former Building 1039 are approximately at 12-ft and 6-ft bgs, respectively. However, there are no monitoring wells within the area of either site and the nearest cluster of wells is located approximately 4,000 ft in the northwest direction (SAIC 2011d).

3.7.1.2 Groundwater Targets

Groundwater beneath CC-RVAAP-83 Former Buildings 1031 and 1039 is not currently utilized for domestic drinking or irrigation purposes. However, if future land uses include using this groundwater for domestic drinking or irrigation purposes there is the potential for human receptor exposure, and any terrestrial/aquatic receptors present in the site vicinity. The nearest drinking water well to either building is located west of Former Building 1039 along the south side of South Service Road, west of a fence running in the north south direction. The water

supply is primarily used for sanitary purposes.

3.7.1.3 Groundwater Conclusions

Waste water at Former Buildings 1031 and 1039 was conveyed to the George Road Treatment System. No USTs or ASTs are associated with these former buildings. Based on the records review of the available data on these historical practices at the site, and the shallow soil conditions present beneath the site, it is considered that groundwater approximately 6-ft bgs at Former Building 1031 and approximately 12-ft bgs at Former Building 1039, has been unlikely impacted by the past activities at either of the former building sites due to lack of evidence of a release of SRCs to soil with potential leaching to groundwater.

3.7.2 Surface Water Pathway

3.7.2.1 Hydrogeologic Setting

Surface water within the Administration Area where Former Buildings 1031 and 1039 were located occurs intermittently as storm water runoff over land. There are no perennial surface water features or wetlands adjacent to the building footprints. Natural drainage conveyances exist to the southeast that potentially receive overland runoff. The closest perennial feature to receive drainage from the Administration Area is a tributary to the west branch of the Mahoning River located approximately 3,500 ft southeast of the CR site. Due to the proximity of surface water bodies to the site, surface water is considered to be an unlikely migration pathway for contamination transport at this CR site. Similarly, there is lack of a groundwater discharge to surface water pathway due to proximity of surface water bodies.

3.7.2.2 Surface Water Targets

Surface water targets include human receptors that use surface water for potable water supply or recreation, as well as environmental (e.g. streams, wetlands, sensitive aquatic environments) and physical targets (e.g. public or private water distribution system intakes) that may be affected by groundwater contamination on or adjacent to the building footprints. No perennial streams are located within the site boundaries. There are no observed springs or point groundwater discharge points to a surface water body in the immediate vicinity of Former Buildings 1031 and 1039. Overland flow from runoff would have to travel 1,200 ft over relatively level ground to reach the closest surface water body. Therefore, there is no direct exposure pathway for human receptors or ecological targets to surface water at the CR site. Furthermore, there is lack of evidence of any release of SRCs to surface soil, resulting in runoff.

3.7.2.3 Surface Water Conclusions

Surface water flow and sediment transport are not considered viable migration pathways for

potential contamination related to Former Buildings 1031 and 1039. There are no perennial surface water streams or wetlands in the immediate vicinity of the site boundaries and, therefore, further investigation of this pathway is not considered to be warranted.

3.7.3 Soil Exposure And Air Pathways

3.7.3.1 Physical Conditions

The Administration Area is located within Hiram Till glacial deposits. The soil type found at Former Buildings 1031 and 1039 is the Mahoning silt loam, 2-6% slopes (MgB) (USDA 2011). Mahoning silt loam is a gently sloping, poorly drained soil formed in silty clay loam or clay loam glacial till, generally where bedrock is greater than 6-ft bgs. The Mahoning silt loam has low permeability, with rapid runoff and seasonal wetness (USDA 1978). Descriptions of the soil type and the Sharon Conglomerate are presented in Section 1.5.

3.7.3.2 Soil And Air Targets

Current potential soil targets include human and ecological (animal and plant) receptors that may come into contact with surface or subsurface soil, with any contaminants present at the former Buildings 1031 and 1039 sites. Considering the design of the sump described by former employees, any releases to soil would most likely have been to subsurface soil. Terrestrial and aquatic ecological receptors present in the vicinity of the building footprints may also be exposed to potential soil contaminants in the future.

Airborne contamination is not considered a viable migration or exposure pathway at Former Buildings 1031 and 1039. The likely contaminants associated with the former buildings have low probability of contaminant release to the air and would likely have been to subsurface soil only. The building footprints either are covered with grass or have exposure of clean fill used after building demolition. RVAAP is located in a humid climate and soil moisture content is typically high, which reduces the potential for dust generation.

3.7.3.3 Soil Exposure And Air Pathway Conclusions

There is no evidence to suggest the occurrence of soil impact at Former Building 1031, as there is no evidence of a release. However, at Former Building 1039, the potential presence of the sump used to collect discharge from the building presents a potential exposure pathway to shallow soils localized within the former sump area. Also, it has not been documented if this sump was removed or buried during the demolition of the building. Due to lack of information on the reported sump, discovered during interviews (ECC 2011a) (ECC 2011b), the potential for subsurface soil exposure from Former Building 1039 (specifically from the sump area) has been identified. Airborne migration of contaminants is not considered a viable migration pathway.

4.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This section summarizes the findings of the historical records review and provides recommendations for either No Further Action (NFA) or to proceed with further assessment or investigation.

The factors and supporting rationale for a recommendation of NFA are as follows:

- 1. No historical records documenting uses or releases of potential contaminants were found and visual inspection of the site did not indicate evidence of possible contaminant releases (e.g. stained soil, residues, or remaining equipment).
- 2. Historical documentation was discovered that contaminant sources have been removed and/or sites closed in accordance with the appropriate regulatory requirements (e.g. BUSTR, NPDES).
- 3. Historical analytical data was discovered supporting that environmental media contaminated by past releases or operations have been removed or mitigated.

The factors and rationale for a recommendation of further assessment or investigation are as follows:

- 1. Historical records were found documenting activities that used, or may have resulted in releases of material, reagents, or waste potentially containing SRCs.
- 2. Visual inspection of the site indicated potential sources of contamination may be present (e.g. tanks, remaining equipment, coal residues) or evidence of possible contaminant releases (e.g. stained soil or residues).
- 3. No records of prior environmental sampling were discovered.
- 4. Historical evidence of releases and analytical data were discovered, but not all potentially impacted environmental media have been assessed or contamination mitigated.

4.1 CC-RVAAP-71 Barn No. 5 Petroleum Release

4.1.1 Findings

- No evidence or documentation of aboveground storage tanks (ASTs) or underground storage tanks (USTs) at this CR site was discovered;
- One documented release of approximately 20 barrels (840 gallons) of gasoline to ground surface at the site was discovered; and
- The gasoline release occurred in May 1964 (47 years ago) inside the RVAAP perimeter fence near Barn No. 5.

- An excavation action was conducted the same day as the reported spill to repair the pipeline. There was no follow-up environmental sampling associated with this release at Barn No. 5.

4.1.2 Conclusions and Recommendations

Based on evidence found during the HRR, the site is considered to be the area approximately 0.6 acre including the Barn No. 5 building footprint and the area inside the fence near Barn No. 5 where a buried pipeline, located outside the installation fence, released approximately 20 barrels (840 gallons) of SOHIO gasoline to ground surface during an isolated event. No further documentation of hazardous material use, disposal, or releases at Barn No. 5 was discovered during the HRR. Therefore, it is unlikely that the former barn footprint is associated with contamination. Residual contamination associated with the historic pipeline release is considered unlikely due to the volatile nature of gasoline constituents, which were released 47 years ago, and characteristics of the silty clay soil, which would limit the leaching potential of the contaminants to groundwater, which is estimated to be approximately 12-ft bgs. Due to the distance from the gasoline release to Hinkley Creek of approximately 350 ft, in conjunction with the excavation activities that immediately followed the release, it is considered unlikely that surface water has been affected by this historical release. The analytical results of the one sediment sample collected in October 1999 along the banks of Hinkley Creek (approximately 450 feet northwest of the site) indicated that no VOCs or SVOCs were detected above instrument detection limits. Lead, a constituent of gasoline, was reported at a concentration of 11.6 mg/kg in the sediment sample; however, the reported concentration is below the Facility-Wide Background criteria of 27.4 mg/kg for lead.

There is only one incident identified during the HRR associated with Barn No. 5 Petroleum Release: the historic release of approximately 840 gallons of SOHIO gasoline. Due to the relatively small volume of the release in conjunction with the age (47 years ago), the volatile nature of gasoline constituents, and potential soil contaminant that might migrate into groundwater, additional investigation of the soils is recommended at CC-RVAAP-71 Barn No. 5 Petroleum Release.

4.2 CC-RVAAP-83 Former Buildings 1031 and 1039

4.2.1 Findings

Former Building 1031 Hospital

- No evidence or documentation of ASTs or USTs at this CR site was discovered;
- The building was heated by steam from Power House #6;
- The building was connected to the George Road Treatment System; and

- No evidence or documentation of a hazardous, toxic, or radioactive release was discovered during this HRR.

Former Building 1039 Laboratory

- No evidence or documentation of ASTs or USTs at this CR site was discovered;
- The building was heated by steam from Power House #6;
- The building was connected to the George Road Treatment System;
- No evidence or documentation of a hazardous, toxic, or radioactive release was discovered;
- Two interviewees, Mr. Gary Wolfgang (ECC 2011a) and Mr. Jim McGee (ECC 2011b) interviewed on November 3, 2011 and November 4, 2011, respectively, described the existence of a 6 ft deep lead-lined concrete sump with dimensions 6 ft by 6 ft, located adjacent to the exterior southern side of the building was used to settle out solids prior to waste water discharge from Former Building 1039 to the sewer system;
- No evidence or documentation of the reported sump was discovered in any historical design drawings and the sump was not located on any figures, drawings, or photos reviewed during this HRR; and
- No documentation of the sump demolition was discovered in the *Final Completion Report Munitions Response for the Demolition of Load Lines 5, 7, Building 1039, Transite Removal at Building T-11604 Removal of Remaining Concrete and Miscellaneous Debris at Load Lines 6, 9, and 11* (LES 2007b).

4.2.2 Conclusions and Recommendations

Former Building 1031 Hospital

Based on the evidence found during the HRR, there are no documented releases of hazardous, toxic, or radioactive waste at this site, though historically some of these types of materials may have been used for photograph development and x-ray equipment use in the building. Wastewater from the building that may have contained hazardous constituents was treated by the George Road Treatment System. Hazardous waste including lead paint and asbestos-containing material was identified, removed from the building, and properly disposed of before the building was completely demolished in 2008. The basement was backfilled with tested clean material. Based on a review of the available information, any residual impacts to soil, groundwater, surface water and air are considered unlikely. No Further Action is recommended at Former Building 1031.

Former Building 1039 Laboratory

Based on the evidence found during the HRR, there are no documented releases of hazardous, toxic, or radioactive waste at this site, though historical use of Former Building 1039 reportedly may have included use of hazardous material used in the testing of quality control/quality insurance testing of samples collected from the load lines and the activity of photo development that took place at the building. Qualitative positive test results (i.e., Expray testing) for explosive residue on the building exterior were reviewed during this HRR. Five positive Expray test results that indicated the presence of explosive residues were discovered. Another key finding during this HRR for Former Building 1039 was identified through interviews with two former RVAAP employees, Mr. Wolfgang (ECC 2011a) and Mr. McGee (ECC 2011b), who provided detailed descriptions of a 6 ft deep, lead-lined concrete sump located along the south exterior wall of Former Building 1039. There are no records documenting the demolition of the reported sump and no drawings were found to confirm the location of the sump. The LES Final Completion Report does not mention the sump area nor demolition or abandonment of the sump. Since the reported sump was used to collect discharge from the building's floor drains and sink traps and discharged to the sewer system, and may potentially remain buried at the former building site area, it is a potential source of environmental contamination. Based on a review of the available information, additional investigation at Former Building 1039 is recommended specifically in the vicinity of the reported sump described to be along the southern exterior wall of the former building.

5.0 **REFERENCES**

Environmental Chemical Corporation (ECC). 2011a. Personal Interview with Gary Wolfgang, Former RVAAP Employee. Conducted on November 4.

ECC. 2011b. Personal Interview with Jim McGee, Vista Sciences Corporation. Conducted on November 3.

ECC. 2011c. Teleconference with Tim Morgan, Environmental Supervisor, OHARNG. December 7.

Environmental Quality Management, Inc. (EQM). 2011. Final Facility-wide Groundwater Monitoring Program Report on the April 2011 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio. September.

Craver, C.F. 1964. Buckeye Pipe Line Break. May.

Lakeshore Engineering Services, Inc. (LES). 2007a. Final Completion Report Explosive Evaluation of Sewers at Ravenna Army Ammunition Plant, Ravenna, Ohio. November.

LES. 2007b. Final Completion Report Munitions Response for the Demolition of Load Lines 5, 7, Building 1039, Transite Removal at Building T-1604 Removal of Remaining Concrete and Miscellaneous Debris at Load Lines 6, 9, and 11. Ravenna, Ohio. December.

McDowell, Lorraine Legere. 1943. Building the Ravenna Ordnance Plant: A Job History.

Ohio Department of Natural Resources (ODNR). 1990. Groundwater Pollution Potential of Portage County, Ohio, Ground Water Pollution Potential Report No. 22. Division of Water. Groundwater Resources Section. Columbus, Ohio. October.

Ohio Environmental Protection Agency (Ohio EPA). 2004. Director's Final Findings and Orders for the Ravenna Army Ammunition Plant. Ravenna, Ohio. June.

Pfingsten, Ralph A. *History of the Ravenna Arsenal*. Copyright 2009 by The Northern Ohio Railway Museum. Printed in Lakewood, Ohio at Adkins and Company, Inc.

Prudent Technologies, Inc. 2011. Final Historical Records Review Report for 2010 Preliminary Assessment Compliance Restoration Sites CC-RVAAP-78 Quarry Pond Surface Dump and CC-RVAAP-80 Group 2 Propellant Can Tops. April.

QBS, Inc. (QBS). 2008. Final Environmental Work Plan for the Demolition of Various Buildings at the Ravenna Training Logistics Site. January.

RVAAP. 2011. FY 2011 Ravenna Army Ammunition Plant Installation Action Plan. Ravenna, Ohio. June.

Science Applications International Corporation (SAIC). 1996. Preliminary Assessment for the Characterization of Areas of Contamination, Ravenna Army Ammunition Plant, Ravenna, Ohio. February.

SAIC. 2001. Final Phase I Remedial Investigation Report for Demolition Area 1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio. December.

SAIC. 2011a. Facility-Wide Safety and Health Plan for Environmental Investigations, Revision 0. February.

SAIC. 2011b. Draft Historical Records Review Report for the 2010 Phase I Remedial Investigation Services at Compliance Restoration Sites (9 Areas of Concern) Ravenna Army Ammunition Plant, Ravenna, Ohio. October.

SAIC. 2011c. Preliminary Draft Facility-Wide Sewers Remedial Investigation/Feasibility Study Report, Ravenna Army Ammunition Plant, Ravenna, Ohio. September.

SAIC. 2011d. Ravenna Army Ammunition Plant Geographic Information System Spatial Data. October.

Summit Environmental Technologies, Inc. (Summit). 2007. Laboratory Report, Client ID, RU #61 Basement Area W. December.

United States Army Corps of Engineers (USACE). 1998. Phase I Remedial Investigation Report of High-Priority Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna Ohio. February.

USACE. 2001a. Facility-wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio. March.

USACE. 2001b. Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio. April.

USACE. 2011. 2011 PBA Performance Work Statement Environmental Investigation and Remediation 14 Compliance Restoration Sites (CC-RVAAP-68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 83). Attachment F - Summary of Future Land Use, Ravenna, Ohio. May.

United States Army Toxic and Hazardous Materials Agency (USATHAMA). 1978. Installation Assessment of Ravenna Army Ammunition Plant, Records Evaluation Report No. 132. Ravenna, Ohio. November.

United States Census Bureau (USCB). 2010. 2010 Census Data. December. United States Department of Agriculture (USDA). 1978. Soil Survey of Portage County, Ohio. June.

USDA. 2011. Soil Map of Portage County, Version 4. Website: *www.websoilsurvey.nrcs.usda.gov.* November.

United States Environmental Protection Agency (US EPA). 1991. Guidance for Performing Preliminary Assessments Under CERCLA. Hazardous Site Evaluation Division, Washington, D.C. September.

United States Geological Survey (USGS). 1968. Mineral Resources of the Appalachian Region. U. S. Geological Survey Professional Paper No. 580.

USGS. 1977. Ravenna Quadrangle, Portage County, Ohio. 7.5 Minute Series (Topographic). Scale 1:24,000. Original 1960, photo inspected 1970, photo revised 1977.

USGS. 1979. Windham Quadrangle, Ohio. 7.5 Minute Series (Topographic). Scale 1:24,000. Original 1959, photo revised 1979.

Vista Sciences Corporation (Vista). 2009. Ravenna Army Ammunition Plant Submission Format Guidelines, Version 18. December.

Vorac, Thomas. 1986. Handwritten note by Thomas Vorac on Pipeline Right-of-way document dated January 1942.

Winslow, J.D., and G.W. White. 1966. Geology and Ground-water Resources of Portage County, Ohio. Geological Survey Professional Paper 511.

FIGURES




















1 inch = 200 feet





























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1 inch = 80 feet

Former Building

30-ft Buffer

Storm Sewer Water Sample Location

Manhole

----- Drainage Ditch

Former Steam Line

Sewer Line

---- Drainage Flow

----- Underground Drainage Pipe

Map Coordinates: WGS 84, UTM Zone 17N in Meters Aerial photograph from USGS.
Sewer/Manhole/ Drainage Ditch/ Former Steam Line from utilities drawing, Accession No. 1000.2A.
Concentrations shown are for SRCs detected above background at each sample location.
Sampling results shown obtained from the Preliminary Draft Facility-Wide Sewers Remedial linvestigation/Feasilbility Study Report (SAIC 2011).





	ADAsd-011	
	Sewer Type:	Sanitary
-011	Media:	Sewer Sediment
Sanitary	Collection Date:	10/1/2009
Sewer Sediment	Depth (ft):	8.8
10/1/2009	Concentration:	mg/kg
8.8	Anthacene	0.032 J
mg/kg	Benz(a)anthracene	0.14
0.51 J	Benzo(a)pyrene	0.12
50.7 J	Benzo(b)fluoranthene	0.19
10.8	Benzo(ghi)perylene	0.07 J
0.68 J	Benzo(k)fluoranthene	0.061 J
97.6	Chrysene	0.13
• 10 10 1	Dibenz(a,h)anthracene	0.021 J
	Fluoranthene	0.33
A MARTINE	Fluorene	0.011 J
+ b	Indeno(1,2,3-cd)pyrene	0.065 J
and the second	Phenanthrene	0.15
1 Cater 1	Pyrene	0.25

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS LOUISVILLE, KENTUCKY

Figure 3-6 CC-RVAAP-83 Former Building 1039 Sewer RI/FS Sample Results RVAAP/CAMP RAVENNA RAVENNA, OHIO





stver D:\OtherGIS\Ravenna\MapDocuments\HRR\HRR_Fig3-6_CC83_Bkdg1039_BasementPlan

APPENDIX A

REFERENCE SOURCES AND RECORDS REVIEWED

A.1 INTRODUCTION

Environmental Chemical Corporation (ECC) is submitting this Preliminary Draft Historical Records Review (HRR) Report to the U.S. Army in accordance with the Performance Work Statement (PWS), Contract No. W912QR-04-D-0039, Delivery Order 0004 for performance based, firm fixed-price environmental services at 14 Compliance Restoration (CR) sites at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio. The Delivery Order was issued by the United States Army Corps of Engineers, Louisville District on 15 August 2011. The purpose of this historical records review is to provide the findings of a comprehensive historical information research for two sites. The information collected was assessed to determine if a potential threat to human health and the environment may be present and to recommend additional characterization of the areas, if necessary.

The following Compliance Restoration sites were the subject of the HRR:

- CC-RVAAP-71 Barn No. 5 Petroleum Release; and
- CC-RVAAP-83 Former Buildings 1031 and 1039.

This appendix lists persons and organizations contacted to obtain historical information for the CR sites included in the HRR Report. This appendix details the scope of research completed at each repository, including research conducted that provided no useful information. This appendix allows for assessment of research completed and for later verification if additional research is required prior to the start of a Site Inspection (SI). The following historical information sources were utilized during preparation of the HRR Report:

- Interview of knowledgeable people, including current and former employees of RVAAP and Ohio Army National Guard (OHARNG) Camp Ravenna Joint Military Training Center (Camp Ravenna) personnel;
- OHARNG Camp Ravenna historical hard copy drawings and map files;
- RVAAP Administrative Record, RVAAP Environmental Information Management System (REIMS), RVAAP public information website (RVAAP Access at www.rvaap.org), and historical records storage (e.g. RVAAP "cold storage files"); and
- Ohio State Fire Marshal Office (OSFM), Ohio Environmental Protection Agency (Ohio EPA) Division of Emergency and Remedial Response (DERR) Central Office and Northeast District Office, and the Ravenna City Fire Department.

A.2 INVERVIEWS

ECC conducted interviews with knowledgeable people listed below who have been, or are currently, involved with RVAAP operations. Interview records are contained in Appendix H of

the HRR Report.

- Mr. Gary Wolfgang former employee of RVAAP from 1968 until 1993 in positions ranging from safety inspector to safety director. ECC interviewed Mr. Wolfgang on November 4, 2011.
- Mr. Jim McGee currently employed by Vista Sciences Corporation, operations and maintenance contractor for RVAAP as a Project Manager. Mr. McGee is a former employee of RVAAP dating from 1964 to 1979 in positions such as maintenance and security manager and maintenance supervisor. ECC interviewed Mr. McGee on November 3, 2011.
- Ms. Gail Harris currently employed by Vista Sciences Corporation, operations and maintenance contractor for RVAAP. Since 2004, Ms. Harris has managed the historical records as the Technical Archivist at RVAAP. ECC interviewed Ms. Harris on November 3, 2011.
- Mr. Ray McDaniel former employee of RVAAP from 1942 to 1984 in positions such as explosives operator, guard, and mechanical inspector. ECC interviewed Mr. McDaniel on November 4, 2011.
- Mr. Tim Morgan and Ms. Katie Tait Mr. Morgan is the Environmental Supervisor at the OHARNG Camp Ravenna. Since 1988, Mr. Morgan has managed environmental programs for RVAAP/Camp Ravenna. Ms. Tait is the Environmental Specialist at the OHARNG Camp Ravenna. Since 2005, Ms. Tait has been the technical lead for restoration and compliance at Camp Ravenna.

A.3 OHIO ARMY NATIONAL GUARD CAMP RAVNNA MAP FILES

On November 3, 2011, in coordination with Ms. Katie Tait, Environmental Specialist, and Mr. Tim Morgan, Environmental Supervisor with the OHARNG Camp Ravenna, ECC conducted an in-person review of the RVAAP historical hard copy drawings and map files maintained by OHARNG. The files are maintained at the Camp Ravenna Administration Offices located at 1438 State Route 534 SW, Newton Falls, OH 44444.

A.4 RVAAP ADMINISTRATIVE RECORD, ENVIRONMENTAL INFORMATION MANAGEMENT SYSTEM, AND HISTORICAL RECORDS STORAGE

The primary sources of information ECC reviewed for the HRR Report included electronic documents, files, scanned drawings, Geographic Information System files, and aerial

photographs maintained electronically in REIMS, the RVAAP Administrative Record, the RVAAP public information website (*RVAAP Access*), and in the RVAAP "cold storage files". In addition to web-accessible data, RVAAP provided historical archive information to ECC stored on an external hard drive.

Historical documents, letters, field notes, drawings, maps, ground-based photos, and aerial photographs relevant to the CR sites were downloaded and/or copied from these data sources during the historical records review. As information was discovered, files were placed in directories for each CR site in order to compile the following appendices:

- Appendix E Textual References of Source Documents;
- Appendix F Still Photography References;
- Appendix G Maps/Drawings References; and
- Appendix O Report Plates.

In the appendices noted above, document file names were retained as indexed on the source media in many cases so that future reference to the original information source can be made.

A.5 LIBRARY OF CONGRESS

The Library of Congress document search retrieved the following online file:

Historic American Engineering Record (HAER), Ravenna Army Ammunition Plant, 69 pages, 1984, available at http://www.loc.gov/pictures/item/OH0416/. This document presents the results of an historic properties survey of the Ravenna Army Ammunition Plant and states there are no Category I or II historical properties at RVAAP. Neither Building 1031 nor Building 1039 were mentioned in this document.

A.6 FINGINGS FROM INTERNET SEARCHES

ECC researched the internet using Google search engine to find relevant online information regarding the CR sites. Searches included key words such as RVAAP Barn No. 5, RVAAP pipeline, RVAAP Post No. 6, RVAAP Building 1031 and RVAAP Building 1039. Due to the limited information available regarding the CR sites, searches only retrieved multiple files from rvaap.org, linking to REIMS and RVAAP Access. Searches for SOHIO pipeline and Buckeye pipeline yielded webpages for the respective companies from which contact information was collected to gather any available information regarding the pipeline parallel to the RVAAP property.

A.7 FINDINGS FROM PHONE CORRESPONDENCES

ECC made multiple phone calls to collect information specifically regarding the pipeline located at CC-RVAAP-71 Barn No. 5 Petroleum Release. ECC contacted the following companies and service providers:

- Buckeye Partners, LP;
- Federally-mandated national "Call Before You Dig" number; 811;
- BP Oil Pipeline Company; and
- Ohio Oil and Gas Producers Underground Protection Service.

A representative from Buckeye Partners, LP was contacted for information. As of the publishing of this HRR, Buckeye Partners, LP has yet to fulfill the request for pipeline information. After providing site location information, a representative from 811 (Call Before You Dig) stated that neither BP Oil Pipeline Company nor SOHIO Pipeline has registered utilities in the site area. The only registered utilities are MCI, AT&T (phone service providers), and Edison (electricity provider). A representative from the BP Oil Pipeline Company Northeast office was contacted for information. As of the publishing of this HRR, the BP Northeast office has yet to fulfill the request for pipeline information.

A.8 UNDERGROUND STORAGE TANK INFORMATION SEARCH

In addition to the RVAAP Administrative Record, REIMS, and historical records "cold storage" files described in Section A.4, records searches specific to USTs included those provided by the OSFM Central Office, Bureau of Underground Storage Tank Regulations (BUSTR) were completed. Upon ECC's request, the OSFM Central Office provided a CD containing approximately 1,300 files. ECC reviewed these files and found no documentation of USTs related to either CR site.

A.9 OTHER INFORMATION SOURCES

In addition to the RVAAP Administrative Record, REIMS, and historical records "cold storage" files described in Section A.4, records searches specific to the CR sites included the following information sources:

- Ohio EPA Central and Northeast District Offices;
- Ravenna City Fire Department; and
- Portage County Health Department.

ECC performed an in-person review of the files provided at the EPA Northeast District Office

located at 2110 East Aurora Road, Twinsburg, Ohio 44087 on November 4, 2011. No documentation regarding Barn No. 5 Petroleum Release was discovered. No documentation regarding former Building 1031 was discovered. However, several correspondences regarding former Building 1039 were discovered and are provided in Appendix E. Upon ECC's request, the EPA Central District Office forwarded one file which was unrelated to either CR site.

The Ravenna City Fire Department was contacted regarding any documentation of releases, first responses, etc. at RVAAP. Captain Mark Chapple stated that he had no records of any releases or first responses at RVAAP.

An information request was sent to the Portage County Health Department. A letter response was received stating that the department has no on-file information regarding the CR sites.

APPENDIX B

GLOSSARY

This appendix is not applicable per USACE direction.

APPENDIX C

PRELIMINARY ASSESSMENT FORM

This appendix is not applicable per USACE direction.
APPENDIX D

ORDNANCE TECHNICAL DATA SHEETS

This appendix is not applicable per USACE direction.

APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS

PORTAGE COUNTY COMBINED GENERAL HEALTH DISTRICT

Partage County Administration Building 449 Spalli Maridian, 3rd Flagm Revenue, Olio 44266

DuWayne O. Porter, M.P.H., R.S. Health Commissioner

Phone: Area Code 330.296.9919 Fas: Area Code 330.297.3597 E-mail: pshd@portagesc.ssm

Wob www.co.pontage.ph.us/slept/health



November 14, 2011

Catherine Guido ECC 33 Boston Post Road West, Ste 340 Marlborough, MA 01752

Re: Ravenna Army Ammunition Plant Building 1031 and 1039 and Barn No. 5 Petroleum Release

Dear Ms. Guido:

Regarding your request for on-file information pertaining to environmental issues at the above noted property, our involvement is limited to solid waste, animal waste, home water wells and sewage and, in some cases, commercial sewage. Requests for information pertaining to commercial sewage systems, spills, releases, storage or dumping of hazardous materials or chemicals, or soil or groundwater contamination should be directed to the Ohio E.P.A. Questions about underground storage tanks and related releases should be directed to the Ohio Department of Commerce, Bureau of Underground Storage Tank Regulation. Information regarding possible problems with petroleum pipelines, oil and gas wells and related storage facilities should be obtained from the Ohio Department of Natural Resources' Division of Oil and Gas. Air quality/air release related issues are addressed in Portage County by the Akron Regional Air Quality Management District. The Portage County Office of the USDA Soil and Water Conservation Service also investigates animal waste complaints. You should also check with them for possible problems. This department has no jurisdiction or information regarding fill material.

This department has no on-file information regarding the above noted property.

If you have any other questions, you can submit them to this office.

Sincerely,

loyd Droves

Loyd Groves, R.S. Environmental Health Director

LG/cp

The Agency is use liquid previden of connecer and an equal employment opportunity employer (Civil Richts, Act 1964 (CRA))

APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS CC-RVAAP-71 BARN NO. 5 PETROLEUM RELEASE

MAY 14 1964

H. M. KRENGEL

MAI 13, 1964

MR. H. M. KRENGEL (2)

BUCHTY PIPE LINE BREAK

At 3:00 p.m., May 12, 1964, Dan McMinemen reported that a yellow liquid was coming out of the ground inside of our south fence near Barn No. 5. Guard S. C. Casbourne called the Buckeye Pipe Line Co. and informed them of the conditions. Mr. Radeliff of Buckeye Pipe Line said he would send out Mr. Blunt to handle the repairs to their line.

Mr. Elunt arrived at the location at 9:20 p.n. and then called for his repair crew who arrived at 10:45 p.m. They began to excavate for the repair. This pipe line follows a portion of our west and south perimeter, just outside the fence, but does not come close to any buildings. The only damage was that an area of grass was killed.

Mr. Blunt informed the guard that the product was Sohio gasoline and he estimated that 30 berrals was lost. Twenty barrels of Boron represents a substantial loss to the stockholders of Standard Oil of Ohio.

C. 7. Craver C. F. CRAVER

C. F. CRAVER

CTC:mlb

cc: File

PIPA LISS INTOPANY

Y C LL BE MY THACK FRENCH IS that the UNITED STATES FAL'ICA, mereinafter referred to as the "Grantor", in pursuance of the terms of certain accelents dated April 14, 1941, and October 7, 1941, entered into between the Grantor and SOUIO PIPS LIN. COTPANY, a Delaware corporation. mereinafter referred to as the "Grantee". does hereby grant and convey unto said Grantee, its successors and assigns, a perpetual easement for the construction, naintenance, operation and removal from tire to time of a pipe line or pipe lines, with the necessary equipment, fixtures and appurtenances, over and upon four (A) connecting strips of land, one of which is twelve and one-half (12-1/2) feet in width and the others of which are twent, -five (25) feet in width, extending around the outer edge of a portion of the premises known as the Pavenna Ordnance Flant ilitary Feservation, in Charlestown Township, Paris Township, and indham Township, Portage County, Ohio, and in Braceville Township, Trumbull County, Ohio, said strips of land being respectively described as follows:

feet in width, situated partly in Charlestown Township and partly in Paris Township, along or near the full full for the southerly boundary line of said Eavenna Ordnance Plant (111-18-15-96) tary Peservation, the southerly line of said strip of land being parallel .ith and twenty-five (25) feet southwardly from the following described line:

A strip of land twelve and one-half (12-1/2)

1.

:

Beginning in Charlestown Township, at the intersection of the exterior chain link fences on said Ordnance Plant property with the pipe line easement or right-of-way formerly occupied by the Grantee across said Ordnance Plant property, said point being one hundred fifty (150) feet, more or less, north, as measured at right angles, from the center line of the state highway known as Ohio Route No. 5, said point being at the easterly end of a right-of-way twenty-five (25) feet in width, conveyed by the Grantor to Buckeye Pipe Line Company; thence along said fence south eighty-nine (89) degrees forty-two (42) minutes and no (0) seconds east a distance of one hundred thirty-nine and seventy-nine one hundredths (139.79) feet; thence continuing along said fence south eighty-nine (89) degrees fifty (50) minutes and forty-seven (47) seconds east a distance of two thousand and fifty-three and sixty-five one hundredths (2053.65) feet; thence continuing along said fence north eighty-nine (89) degrees fifty-seven (57) minutes and thirteen (13) seconds east a distance of thirty-four hundred and eighty-three and fifty-eight one-hundredths (3483.58) feet; thence leaving said fence at a jog therein and continuing south eightynine (89) degrees forty-two (42) minutes and fortynine (49) seconds east a distance of five hundred and eighty-four (584) feet to meet said fence at another jog therein; thence continuing along said fence south eighty-nine (89) degrees forty-two (42) minutes and forty-nine (49) seconds east a distance of sixteen hundred and twenty-eight (1628) feet; thence continuing along said fence north seventy eight (78) degrees forty-one (41) minutes and fiftyfive (55) seconds east a distance of fourteen hundred and seventy-seven and one one-hundredths (1477.01) feet to a point located three hundred (360) feet distant in a northwesterly direction and at right angles from the property line between the Youngstown, Ravenna Railroad, otherwise known as Pennsylvania Railroad, and the Baltimore and Ohio Railroad rightsof way; thence continuing along said fence line parallel with said railroad property line north sixtytwo (62) degrees and two (02) minutes and forty-five (45) seconds east a distance of forty-six hundred and ninety-one and two one-hundredths (4691.02) feet; thence continuing along said fence line north sixtythree (63) degrees and one (01) minute fifty (50) seconds east a distance of six hundred and one and three one-hundredths (601.03) feet to a point of intersection with the right-of-way of said the Buckeye Pipe Line Company as originally located through said Ravenna Ordnance property near the southerly line thereof, and there terminating in Lot No. Six-teen (16) of said "aris Township.

- 2 -

Said twelve and one-half (12-1/2) foot strip of land covered by the easement hereby granted is contiguous with and adjoins on the south a pipe line easement twelve and one-half (12-1/2) feet in width, conveyed by the Grantor to Buckeye Pipe Line Company.

1.

2. A strip of land twenty-five (25) feet in width located partly within said Township of Paris, Portage County, and partly within said Township of Braceville, Trumbull County, the southerly boundary of said twentyfive (25) foot strip being described as follows:

Beginning at the easterly end of the southerly line of the twelve and one-half (12-1/2) foot strip of land hereinabove described, said point of beginning being in the northerly line of a right-of-way for public highway and road purposes conveyed by the Grantor to the State of Ohio, by indenture dated March 31, 1941, said point of beginning being two hundred ninety-five and five tenths (295.5) feet northwestwardly by rectangular measurement from the center line between the main tracks of the Baltimore and Ohio Railroad Company; thence eastwardly along the northerly line of said right-of-way conveyed by the Grantor to the State of Ohio to the easterly line of said Paris Township.

Said twenty-five (25) foot strip of land adjoins on the north and is parallel with said right-of-way for public highway purposes heretofore acquired by the State of Ohio for the widening and relocation of State Route No. 5, along the southerly boundary of said Ravenna Ordnance Plant Military Reservation and extends from the easterly end of the twenty-five (25) foot strip of land, the northerly twelve and one-half (12-1/2) feet of which is covered by pipe line easement conveyed by the Grantor to The Buckeye Pipe Line Company and the southerly twelve and one-half (12-1/2) feet of which is the strip of land twelve and one-

- 3 -

half (12-1/2) feet in width described in 1 above, to the
boundary line between Portage County and Trumbull County.
A strip of land twenty-five (25) feet in width
located partly in Paris Township and partly in

Windham Township, Portage County, slong the easterly side of said Ravenna Ordnance Plant property, the easterly line of said twenty-five (25) foot strip of land being described as follows:

> Beginning at the intersection of the northerly line of said right-of-way for public highway and road purposes conveyed by the Grantor to the State of Ohio by indenture dated March 31, 1941, with the boundary line between Portage County and Trumbull County; thence northwardly along said boundary line a distance of approximately three thousand three hundred fifty (3,350) feet to a point twenty-five (25) feet distant northwardly from the northerly line of the public highway known as the Butts-Kistler Road, which highway is located along the boundary line between Windham Township and Paris Township.

4.

· · ·

^A strip of land twenty-five (25) feet in width, located entirely in Braceville Township,

Trumbull County, Ohio, along the southerly and easterly boundaries of that portion of said Ravenna Ordnance Plant property which lies in said township, the southerly line of that portion of said strip which lies along the southerly side of said property, and the easterly line of that portion of said strip which extends along the easterly boundary of said property being described as follows:

Beginning a the intersection of the northerly line of the public highway known as the Butts-Kistler Road with the boundary line between Portage County and Trumbull County; thence eastwardly along the northerly line of said Butts-Kistler Road and a prolongation thereof, a distance of approximately five thousand five hundred (5,500) feet to a point of

- 4 -

intersection with the northerly line of a rightof-way for public highway and road purposes, heretofore acquired by the State of Ohio for the relocation of State Route No. 5, and known and desig-nated on the maps of the ⁿighway Department of the State of Ohio as S. H. 322, State Route 5, Section U part D, I part, Portage and Trumbull County; thence in a northeasterly direction along the northerly line of said right-of-way acquired for the relocation of State Route No. 5 a distance of approximately one thousand six hundred (1,600) feet to the westerly line of a right-of-way for public highway and road purposes heretofore acquired by the State of Ohio for the relocation of the public highway known as State Highway No. 534, said westerly line being the easterly line of said Ravenna Ordnance Plant property in Trumbull County; thence northwardly, along the westerly line of said rightof-way heretofore acquired by the State of Ohio for the relocation of State "ighway No. 534, to the intersection of said westerly line with the westerly line of said highway as now located, and continuing along the westerly line of said highway as now located, a total distance of approximately five thousand seven hundred (5,700) feet to a point twelve and one-half (12-1/2) feet north of the pipe line of the Grantee as now installed in Section Nineteen (19), Braceville Township, Trumbull County.

The Grantor further grants and conveys unto said Grantee, its successors and assigns, a perpetual easement for the construction, maintenance, operation and removal from time to time of a telegraph and/or telephone line consisting of a single line of poles, together with necessary anchors, guy wires, cross-arms, and other fixtures and appurtenances thereto, over and upon the outer edge of a portion of said Ravenna Ordnance Plant Military Reservation in Charlestown Township, Portage County, Ohio, said line of poles to be located along the westerly boundary and along a portion of the southerly boundary of said property, between said boundaries and a pipe line right-66-way twenty-five (25) feet in width, conveyed by the Grantor

- 5 -

to the "ackeys right Line Company, and extending from the southerly line of the right-of-way of the trie Sailroad Company, at the northwest conter of cell avoint Orlance right property, thence southwardly to the southwest corner thereof, and thence eastwardly to a point in the southerly line of said property, where said southerly line is intersected by the telegraph line of the Grantee as heretofore located, said point of intersection being approximately two thousand (2,000) feet eastwardly along said southerly line from the southwesterly corner of said Ordnance Plant property.

SUBJECT, HOWEVER, to the following public and private rights and interests:

a. Easement conveyed to the Ohio Edison Company by W. A. Boettner and Ethel Boettner, by an instrument dated October 21, 1937, and recorded in volume 1, at page 322, of the land records of Portage County. Ohio.

b. Easement conveyed to the Ohio Edison Company by R. C. Burr and Lida L. Burr, by an instrument dated February 3, 1932, and recorded in volume 334, at page 3, of the land records of Fortage County, Ohio.

c. Easement conveyed to the Suburban Power Company by Adam Mladyka and Agnes Mladyka, his wife, by an instrument dated August 20, 1923, and recorded in volume 314, at page 232, of the land records of Portage County, Ohio.

d. Easement conveyed to the Ohio Edison Company by F. C. Hunt and Mrs. Tyrle E. Munt, by an instrument dated February 23, 1930, and recorded in volume 4, at page 43, of the land records of Portage County, Ohio.

e. Easement conveyed to the Ohio Edison Company by Ralph W. Jones and Della Jones, by an instrument dated September 21, 1937, and recorded in volume 4, at page 192, of the land records of Portage County, Ohio.

<u>f.</u> All existing rights-of-way for public roads, highways and utilities excepted from the title vested in the United States, by the decree of the District Court of the United States for the Northern District of Ohio, Dastern Division, dated September 19, 1941, in the cause entitled United States of America v. <u>1,601.27 acres of land, more or less, in Trumbull</u> <u>County, State of Ohio, and Arno Hickkila, et al.</u> (Civil Action No. 20917).

.

AND PROVIDED, that the easements hereby granted are

subject to the following provisions and conditions:

1. That all work incident to the construction, maintenance, operation and removal of said pipe lines, telegraph and/or telephone line and appurtenances, shall be accomplished without cost or expense to the United States except as provided in certain contracts numbered W-6934 qm-6, dated April 14, 1941 and W-6934 qm-7, dated October 7, 1941, entered into between the Grantor and the Grantee, and said work shall be performed under the general supervision and subject to the approval of the Commanding Officer, havenna Ordnance Plant, or other competent military authority.

2. That the Grantee shall inspect said pipe lines, telegraph and/or telephone line and appurtenences regularly, shall at all times maintain the same in good condition, and shall immediately repair any leaks found in said pipe lines. Upon the completion of the installation of the said pipe lines, telegraph and/or telephone line and appurtenances and the making of any repairs thereto, the premises shall be restored immediately by the Grantee insofar as possible to the condition in which they existed prior to the commencement of such work.

3. That the United States shall not be liable for any damages to property or injuries to persons resulting from the exercise by the Grantee of the privileges contained in this grant, and the Grantee shall hold the United States harmless from any and all such claims.

TO HAVE AND TO HOLD the easements hereby conveyed unto

said Grantee, its successors and as igns forever.

IN WITNESS WHELEOF, the said United States of America has caused this instrument to be duly executed by its proper officer thereunto culy authorized this $2x^{-1}$ day of

- 7 -

· vaulu _, 1942.

By direction of the Under Secretary of War:

MARION RUSHTON Lt. Colonel, J.

Assistant Executive

Signed, Sealed and Ie-livered in the Presence of:

Cligabeth M. queres_ Margery H. Stekke ____

DISTRICT OF)) SS. CCLUEBIA ;

BEFORE I.E., a Notary Public in and for said Eistrict, personally appeared <u>11 Ling</u> <u>future</u> on behalf of the United States of America, who acknowledged that he did sign and seal said instrument as such officer on behalf of the United States of America under and pursuant to the direction of the Under Secretary of War, and that the foregoing instrument is the free act and deed of the United States of America.

- 9 -

Motary Public.



BP Pipelines (North America) Inc. 150 W. Warrenville, Road Building 600 – 3N Naperville, IL 60563 630-536-2163

February 23, 2012

RE: Request for BP Pipeline Information

To whom it may concern,

The following is in response to your request for information pertaining to BP pipeline systems.

BP takes pride in its relationship with the people and their land throughout our system. Our efforts to maintain the pipeline routes and facilities include continuous monitoring of the system through a combination of systems and safety programs.

The pipeline industry is regulated by the U.S. Department of Transportation's Office of Pipeline Safety and is one of the most highly regulated industries. The Office of Pipeline Safety, <u>http://ops.dot.gov</u>, can provide information regarding procedures the pipeline industry is required to follow, and to which BP strictly adheres, regarding the maintenance and inspection of its pipelines and easements. BP adheres to the highest standards of safety and has taken comprehensive steps to meet and exceed current state and federal pipeline safety and environmental regulations. More information can be found at <u>www.bppipelines.com</u>.

You can obtain information BP is required to provide to regulatory authorities regarding unintended releases at <u>www.nrc.uscg.mil/nrchp.html</u>.

Thank you again. Please feel free to contact me at (630) 536-2163 with any questions or concerns.

Sincerely,

Tim Patchett Right of Way Specialist TKP/tkp

APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS

CC-RVAAP-71 BARN NO. 5 PETROLEUM RELEASE

The following pages were extracted from the following reference:

RVAAP. 2011. FY 2011 Ravenna Army Ammunition Plant Installation Action Plan. Ravenna, Ohio. June.

FY2011

RAVENNA ARMY AMMUNITION PLANT

Installation Action Plan

Printed 28 June 2011

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Site ID: CC RVAAP-71 Site Name: BARN NO. 5 PETROLEUM RELEASE



Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

SITE DESCRIPTION

Phases	Start	End
PA	200909	200910
SI	200911	201012
RI/FS	201101	201309
RIP Date:	N/A	
RC Date:	201309	

Barn No. 5 was formerly located on the south central portion of the Ravenna Army Ammunition Plant (RVAAP) close to the Post No. 6 gate. A letter dated May 13, 1964, documents the release of approximately 20 barrels of gasoline to the ground surface inside of the south fence near former Barn No. 5. Reportedly, the release occurred from a buried SOHIO pipeline that runs parallel to the RVAAP fence line at this location. The pipeline is located within a 12-foot easement on RVAAP property at the release location. This release is addressed by CC RVAAP-71.

It is possible the historical petroleum release at this location may continue to impact the soil and/or groundwater quality on the installation property. The area of potential impact consists of approximately 85,000 square ft, which includes the footprint of the former barn area and the land between the former barn and the fence line, which lies roughly 60 ft within the RVAAP property in this area. Potential COCs consist of VOCs, SVOCs, and lead.

CLEANUP/EXIT STRATEGY

CTC assumptions for the RI/FS include a stage 1 remedial investigation (site inspection).

APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS CC-RVAAP-83 FORMER BUILDINGS 1031 AND 1039

BUILDING #1067 - TRANSPORTATION & ROADS AND GROUNDS:

Auto, Truck & Heavy Equipment Area - mechanically vented with discharge into atmosphere.

Battery Charging - mechanically vented with discharge into atmosphere.

BUILDING #1026 - TELEPHONE:

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Battery Area - mechanical ventilation with discharge into atmosphere.

BUILDING #1030 - HEADQUARTERS:

Blueprint & Printing Areas - mechanically vented with discharge into atmosphere.

BUILDING #1039 - LABORATORY:

Photo & Chemical Laboratories - mechanical ventilation systems with discharge into atmosphere.

BUILDING #47-40 - RAILROAD ROUNDHOUSE:

Battery Charging - mechanically vented with discharge into atmosphere.

Locomotive Repair Area - No mechanical exhaust system. Before mobilization, system will be installed.

BUILDING #813 - DIPEC MACHINERY REPAIR:

Spray Booth - mechanically vented with discharge into atmosphere.

BUILDING #848 - DUNNAGE:

Dunnage Cutting Area - No exhaust system at present, system will be needed at mobilization level.

BUILDING #1031 - HOSPITAL:

X-Ray Dark Room - mechanically ventilated with discharge going into atmosphere.

Water Lab - mechanically ventilated with discharge going into atmosphere.

WATER WORKS:

Chlorinator - mechanically exhausted with discharge going into atmosphere.

POWERHOUSES:

Powerhouse No. 6 is the only active unit and consists of two (2) oil-fired units burning No. 6 fuel oil. These units have automatic controls and a densiometer in the breeching for monitoring purposes. These units meet present requirements.

APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS

CC-RVAAP-83 FORMER BUILDINGS 1031 AND 1039

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Site ID: CC RVAAP-83 Site Name: FORMER BUILDINGS 1031 AND 1039



Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Asbestos, Explosives, Metals, Other (Propellants), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	200904	.200906
	200907	
RI/FS	201010	.201709
RD	201710	.201809
RA(C)	201810	.201909
LTM	201910	.202709
RIP Date:	N/A	
RC Date:	201909	

SITE DESCRIPTION

Former Buildings 1031 and 1039 (CC RVAAP-83) consist of the former Hospital Building and former Laboratory Building, respectively. Both buildings were located within the Administration Area of the former RVAAP facility.

Building 1031 - Former Hospital Building

The west end of the Hospital Building included a gauge lab. The gauge lab was used for the development of large scale photos for a period of about 1.5 years in the early-1970s after the laboratory at Building 1039 was closed.

Site-related constituents (SRCs) of concern are related to the former generation of x-ray acid/silver mix solutions, and common hospital wastes. The composition of x-ray acids is unknown; however they likely contain lead and radioactive materials. The hospital wastes typically consist of infectious materials containing pathogens, sharps, pathological tissues, and pharmaceuticals.

The potential historical disposal of these materials through the sanitary waste system is of environmental concern. The historical sanitary lines were constructed of clay pipe, and failure of clay pipe is common. Potential SRCs for the sanitary system at the former Hospital Building are VOCs, SVOCs, Target Analyte List (TAL) metals.

A stage 1 and stage 2 RI are planned for FY11.

Building 1039 - Former Laboratory Building

The former Laboratory Building measured approximately 16,500 square ft. The structure contained three powder test rooms for the routine analyses of lead azide, mercury fulminate, and percussion element mixes. The laboratory was used for the testing of Load Line materials. During operations, the building contained and operated a photography laboratory, a chemistry laboratory, and a medical x-ray facility. The photo laboratory was historically used for all large scale photo development activities until its closure in the early-1970s.

Waste x-ray acid/silver mix solutions were reported treated as described above. The DPDO/DRMO termed the waste as a reclaimed precious metal resource.

The laboratory building was demolished by Lakeshore Engineering Services, Inc. (LES) during the time period of May 2006 through July 2007. Following demolition, all unpainted and uncontaminated brick and concrete was crushed and recycled off-site. The basement of Building 1039 was filled with clean soil and was then seeded with grass seed. There was no regulatory review of the

Site ID: CC RVAAP-83 Site Name: FORMER BUILDINGS 1031 AND 1039

work conducted.

Site-related constituents (SRCs) of concern are related to the former generation of x-ray acid/silver mix solutions, and the laboratory analysis of powder test room materials (lead azide, mercury fulminate), percussion element mixes, paints, shellac, metals, fuels, and tapes or adhesives.

The potential historical disposal of these materials through the sanitary waste system is of environmental concern. The historical sanitary lines were constructed of clay pipe, and failure of clay pipe is common. Potential SRCs for the sanitary system at the former Laboratory Building are VOCs, SVOCs, TAL metals, explosives and propellants.

A stage 1 and stage 2 RI are planned for FY11.

CLEANUP/EXIT STRATEGY

CTC assumptions for the RI/FS include a stage 3 and stage 4 RI and an FS. The RA(C) includes excavation and off-site disposal of 296 cubic yards of soil (expanded volume). LTM includes annual monitoring of eight wells for eight years and abandonment of the wells.

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APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS

CC-RVAAP-83 FORMER BUILDINGS 1031 AND 1039

The following pages were extracted from the following reference:

McDowell, Lorraine Lepere. 1943. Building the Ravenna Ordnance Plant: A Job History.

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BUILDING THE RAVENNA ORDNANCE PLANT

 \sim

A JOB HISTORY



977,137 MIH

Edited by LORRAINE LEPERE McDOWELL

CHAPTER XI

THE ADMINISTRATION AREA



BIG construction job all by itself, the Administration Area is the Ravenna headquarters of Atlas Powder Co. It consists of an administration building, employment building, hospital, guard office, garage, fire station, laundry, auto repair shop, laboratory, outside labor headquarters building, telephone exchange, maintenance building, cafeteria, print shop, powerhouse and fifteen staff houses.

All buildings have been tastefully designed and an Early American type of architecture

predominates throughout. The general layout of the area, as may be seen by the accompanying aerial view, has been well thought out and executed. Most buildings are white siding with green roofs.

The administration building is the largest frame building on the entire reservation, covering an area of 24,600 square feet. It is two stories high and contains office for Atlas personnel as well as the Army Ordnance Department. The foundation is of concrete block and brick, laid upon concrete footings. Two brick walls, extended through the sides and roof, make it possible to divide the building into three separate units in case of fire.

The employment building covers about 9,500 square feet and is one story frame construction.

The hospital is as complete as many located in large cities, with operating room, x-ray room with leaded wall and floor construction, kitchen, wards and private rooms, and so forth. The structure is frame, covers about 19,000 square feet and will be so equipped as to be able to handle nearly any type of illness or injury.

A modern laundry constructed of brick and steel is equipped to launder the numerous uniforms worn by the munitions workers. The fire house is so oriented that equipment may quickly be dispatched to any part of the reservation. The equipment room is located just six inches above road grade and on a level about two feet above are located living quarters for the firemen.

The garage and auto repair shop is a one story steel and brick structure 182 by 121 feet, and can comfortably accommodate 40 pickup trucks under repair.



The outside labor building is also steel and brick construction, and will be used as a time clock station and headquarters for all outside labor and materials.

Communication service for the entire reservation will be centralized in the telephone building, a brick structure which houses a complete telephone exchange.

The largest structural steel building in the Administration Area is the maintenance building which is 302 feet long and 60 feet wide. A loading platform runs the entire length of both sides of the building. A railroad spur runs parallel to the building on one side, and roadway parallel to a concrete ramp on the other. This building contains work shops for carpenters, tinners, machinists and other tradesmen.

The cafeteria, a frame building, 177 feet long and 130 feet wide, with wooden trusses, will feed thousands of persons daily and will probably be open on a 24-hour basis. The inside dimensions of the dining room are 60 by 136 feet, and it is believed that no dining room or cafeteria in the state of Ohio has this much floor space in a single room.



Trencher making drainage ditch; Administration Building under construction in background.

A powerhouse of brick, structural steel and reinforced concrete construction has dual boilers which will generate steam to heat all the buildings in the area.

The residences have different type entrances and alternating colored shutters, white siding and dull slate roofs. Some have seven rooms and some eight. All are provided with steam from the central heating plant.

Ernie Connerth, superintendent of this area, has had a real carpenter's paradise. The best housebuilders that could be obtained were used in constructing the staff residences and workmanship there speaks for itself. Close coordination of activities in the Administration Area accounts for the speed with which work has gone forward. Little rock was encountered, the hospital building having been the only structure located entirely on rock. Here powder men did such a good job of blasting that the two foot trench walls were not even cracked, and very little form work was required for pouring concrete footings.

The staff houses were erected in record time. Two clam shells moved around the circle, each digging two basements per day. Then carpenters set forms for footings, concrete was poured, drains laid around footings, and bricklayers moved in to lay structural tile walls. Carpenters, plasterers and utilities men, working at top speed, made short work of the superstructures of these houses.

Although Atlas is occupying several of the buildings in the Administration Area including all the staff houses, at this writing, some finishing-up work remains, and the entire Area is scheduled to be completed on January 1, 1942.



ADMINISTRATION AREA PERSONNEL

Front row, left to right: N. Barnes, C. Gotshall, G. Haught, P. Hughes, J. Riddle, J. Santulla Second row, left to right: L. Azzai, E. Hawkins, J. Gilbert, J. Moody, G. Shillingburg, G. Nelson, C. Ralston, E. Connerth (superintendent).
Third row, left to right: G. Tanpany, A. Weigand, F. Supple, A. Miles, C. Clark, H. Fear. Fourth row, left to right: A. Fabbro, F. Nikkari, W. Hughes, C. Fenner.
Fifth row, left to right: A. Campana, A. Bowman. G. Hagan, E. Goldthwaite.
Sixth row, left to right: A. Wayranen, A. DiBaso, G. Wilson, J. Rosella, F. Dietz, A. Spotts Seventh row, left to right: W. Harguardt, F. Stahlmaker.

CHAPTER IV GETTING WORKWAYS



ACK in September, 1940, we had so many things on our combined minds we scarcely knew which to attend first. A quick glance around the property showed that at this stage of the game the exodus of residents was at peak; the respective owners were detouring around the property two oil pipe lines which had formerly run through it; the old Johnson farmhouse was teeming with activity, its rooms hastily improvised into offices; at Windham, a little village about three miles away, the Watson organization had taken some rooms in the schoolhouse, from which their surveyors were operating.

We knew we were going to construct some 200 buildings, about 35 miles of railroad and an unknown quantity of roadways. The buildings broke down into 11 groups: three shell and bomb loading lines, an ammonium nitrate plant, a fuze and booster manufacturing and assembly plant, an administrative area for Atlas Powder Co., the operating agency, and certain groups of above and below ground ammunition storage magazines. As Mr. Hunkin observed:

"To put this tremendous operation into gear and accelerate its speed to completion by the late summer of 1941 created many difficulties, all of which had to be solved quickly and with little time for intensive study."

Almost constant conferences were taking place in which architectural problems, as well as job policies, procedure and scope of work were discussed. Attending these early conferences were C. A. Nau and Major L. B. Roberts of Wilbur Watson and Associates; S. E. Hunkin and B. J. Bartholomew of Hunkin-Conkey; W. J. Penniman, president, and J. W. Hansen, chief engineer, of the Atlas Powder Co.; Major J. D. Hillyer of the War Department; and after his arrival, I. K. O'Brien, who served throughout the construction period as resident engineer for Atlas. Later these conferences were held in Col. Chavin's office every Monday morning, and became headquarters for questions relative to construction.

Our first real worry was the great need for a central camp complete with buildings for ourselves, the architect-engineer, the operating agency, War Department, commissary, firehouse, hospital, central time office and allied buildings. Fortunately we belong to the syndicate building Shasta Dam in northeastern California, and we guessed their camp layout could almost be duplicated here. A little more than 48 hours after we wired them for plans, our draftsmen were adapting these plans



to this locality, while excavation for the buildings was going on simultaneously! It was simply a case of taking dimensions as needed and hoping actual construction and plans would somehow jibe later on. As a matter of fact, the plans for camp buildings really only served as records, for the buildings were nearly 60% completed before drawings even got to the blueprint stage.



One of twenty-five existing bridges strengthened.

Cliff Brainard, our chief engineer, was on the spot with more worries than any one man deserves. Often he was getting himself in wrong with the farmers who hadn't evacuated yet, because he was running lines through their cowpastures, and while the cows enjoyed getting out, the farmers objected. In addition, he was very concerned about what was going to happen to the poor roads and 5-ton load limit bridges throughout the reservation when our heavy trucks and traffic of all kinds started to roll. He felt better when Cuyahoga Asphalt Co., our first sub-contractor, began to resurface 17 miles of roadway.

From past experience, we estimated roughly how much equipment of various kinds we would need to do this job — certainly it was more than we owned. Our purchasing agent, C. W. Eberhardt, arrived and began to buy equipment, materials and supplies with both hands. He fondly remembers how comparatively easy shipments were then — and cannot help wishing he had known at that time how Ravenna was to expand — so that he might have bought or at least placed orders for all the equipment we would ultimately need. But already he had investigated the sources of supply for blast furnace slag — this material having been selected as the principal aggregate for the project because of its satisfactory quality and

availability. An almost inestimable amount of aggregate was bound to be used for temporary roads and large parking areas, as well as in the permanent construction which involved bituminous pavements of several types, such as roadmix, penetration macadam, hotmix and surface treatments; while aggregate for macadam bases, french drains, calcium chloride stabilization, tile underdrain, porous backfill, sewage disposal plant trickling filter media, roofing material and revetment slope stabilization was required in huge amounts.

Eberhardt found that near Youngstown, not more than thirty miles from Ravenna, there are eight modern crushing and screening plants for processing blast furnace slag from about twenty-five blast furnaces. These crushing plants have facilities for shipping by rail or truck and are equipped to produce various sizes of aggregate throughout the entire year. It helps to realize the tremendous quantities of slag used at Ravenna to see the picture as Mr. Eberhardt visualizes it:

"The slag shipped to the Ravenna plant would provide a 5'' macadam base course and a 2" bituminous surface course for more than 30,000 residence driveways — and these homes would make up a city of about 170,000 population."

For the Ravenna job, the F. W. Pease Engineering Co. of Cleveland became a part of the Watson organization for the purpose of making surveys and topo maps. Mr. Pease, a direct descendant of Seth Pease, the Western Reserve map maker, put 100 men into the field almost at once, and their cars with tripods strapped on top became a familiar sight. The surveying parties, accomplishing in six months work for which normal private construction would allow at least a year, had little to go on —in fact all they had was the USGS maps, made long ago with aneroid barometer, distances having been measured by use of a wagon wheel. These maps



---- STREAMS

were surprisingly accurate and gave much useful information, but the scale being so small, they were hardly practical for the architect-engineer's purposes. As shown in the accompanying contour map, the topography of the site showed gently rolling land with several blind stream channels serving as the only existing drainage. The subsoil varied from solid rock, outcropping on the surface to the east, to deep quicksand deposits found in the central and northerly areas.

Meanwhile, camp buildings were quickly being finished and equipped and office workers of all kinds began to pour in. Soon the tradesmen followed, and every day saw the arrival of increasing quantities of materials, tools, busses and heavy equipment, as well as all kinds of trucks.

Getting kitchen equipment for the commissary had become a problem; deliveries on electrical equipment, the only kind we could use, were exceedingly slow. An admirable solution was found when A. M. Lucha, commissary chief and Captain Walter Hall made a flying trip to New York where the World's Fair had drawn to a close, buying equipment and furniture which once accommodated tourists visiting the Turkish Pavilion, Ruby Foo's and the Mayfair Restaurant as well as Billy Rose's Aquacade. This equipment now comfortably and economically serves construction workers from every walk of life.

Getting other materials and equipment to the job was our next problem. Both the Erie and B. & O. Railroads had tracks in close proximity. A "Y", connecting these two roads and serving as ingress to the property was the obvious solution;



Classifications yard at easterly end of reservation, accommodates approximately 800 freight cars.

this being located at the easterly end of the reservation was the deciding factor in placing the railroad classifications yard at this point.

C. E. Mencken, superintendent of railroad construction, and "Red" Logue, superintendent of excavation, had a thousand worries in getting underway with the aforementioned "Y" as well as the procedure they were to follow in getting the entire railroad system for the reservation under control. On a project such as this the railroad plan is the nerve network around which everything else revolves, many buildings being serviced entirely by rail. Ordinarily, the work would follow in orderly sequence: the engineers making stakeouts; Logue's crews excavating and clearing woodlands, making fills, trestles and grading; then Menkin's gangs following in the tracklaying work. However, the time factor being so important, these operations had to go on almost simultaneously. Logue recalls the situation in these words:

"My first trip through the property, taking topography as the eye could see it, knowing little as to location and profile of railroads, convinced me that this was an ideal job for scoops. We made an 18-foot fill on the east leg of the "Y" with only three scoop outfits, all we had at the time, but as equipment increased and grading got lighter, we made the engineers step to keep out of our way. Soon we were working three shifts, and from then on it was an around the clock proposition. But woodsclearing was necessary almost at once too. An initial crew of 50 woodsmen soon became 400, and they have been at it ever since."



Frank and Bob, National Champion log pulling team.

Mr. Mencken, on the other hand, had personnel troubles. Railroad building of this magnitude has not taken place in this part of the country since the last war, so that experienced men were at a premium. Once hired, therefore, men had to be taught and skilled in the handling of tools and learning the fundamentals of railroad construction. Apprehensively considering the bad weather at hand, Mencken realized that railroad building materials would have to be snaked ahead of the gangs with tractors, mudboats and teams. But the "Y" was about the easiest job, laid in open country, and in almost no time engines were hauling carload after carload of contractor's equipment to the site of the classifications yard. Forty cars of materials and equipment were en route to Ravenna at the time this "Y" was under construction — yet we were equipped to handle them on arrival, and no demurrage was paid. Creosoted ties, of course, were needed in great quantities so orders were placed for them from every available source. Hundred-pound rail were purchased from the B. & O. Railroad which were torn up from their trackage in Maryland and shipped here as fast as replacement rail could be delivered to the B. & O.

The central parking lot had been staked out and at once, it seemed, filled with cars bearing license tags representing the 48 states, together with pickup trucks used by the area and travelling superintendents and their chief subordinates. All this traffic, plus the fact that this is a government reservation, necessitated a





The Ohio Bell Magazine

Cable splicers installing a terminal to be used in emergencies so that circuits can be cut through from the Ravenna telephone exchange to the Ravenna Plant without going through Wayland.

Paul Swisshelm, switchboard maintenance man, works on the extensive relay rack.

guard force to close the entire area and direct traffic. By mid-October Chief C. Ruben had guards working on three shifts, but as they had little or no equipment, patrolling had to be done in private cars at first. After guardhouses at the entrance gates had been established all workers were given licenses to bring their cars into the property, and guards checked these car passes together with badges before anyone was allowed to enter or leave the reservation. Later the guard force, numbering over 100 men, was completely equipped, uniforms and all, but a target range was set up and all men were instructed and practiced before pistols were distributed. It is a fine tribute to Chief Ruben and his men that with all the heavy traffic the reservation has seen there has been no serious or fatal accident; relationship between our guards and workingmen has been exceptionally good.

Several miles of wire strung on poles only large or strong enough to support one crossarm were what we had to start with in making a communications system. Telephone linesmen did a phenomenal job in building up an exchange at nearby Wayland in the space of ten days. In the words of Jay Gang, electrical maintenance superintendent:

"The communications system alone has been a major project. Most of our problems are not encountered in the installation of the permanent electrical work, and we never have the advantage of blueprints on which to go, so constant has been the pressure on us to continually expand the system. Frequently we have had to use equipment not suited to the task at hand, but with lots of ingenuity we manage to get telephone service to the growing giant almost as quickly as there is need for it."

Today we have 27 telephone operators on the reservation, 26 outgoing trunk lines, and 427,000 feet of telephone cable have been laid. Five installation and maintenance men devote their entire time to telephone work, while 150 men working in 24-hour crews could on short notice be enlisted. Akron is our toll center, and we have 6 direct lines to this point.

A five-position switchboard is located in our office, and there are three others in the main camp area. None of the operators has ever been employed on a con-





Earl Moore, Alma Shaffer and Bob Miller, left to right handling telegraph messages.

Main Area Telephone Personnel. At desk: Maxine Bunn and Alice Cook, chief telephone operator. At boards, left to right: Pauline Tucker, Carol Pelton, Harriett DeYoung, Sara Boosinger, Marian Chattin.

struction job before, yet these women have taken in stride the demands of an employment which once swelled to 18,000; rendering a 24-hour service, they have made themselves indispensible to us.

The telegraph department has, up to this writing, handled over 20,000 messages. These have been transmitted over both major telegraph system wires, and a TWX machine handles Government messages exclusively.

Getting sufficient power into the project was also one of Mr. Gang's early concerns. Starting with a small 30 KVA plant, 7 poles and 2500 feet of wire, Gang and his men nevertheless kept astride the ever increasing demands for additional power as the job expanded. Working outdoors in all kinds of weather, the maintenance electricians saw to it that all electricity-consuming equipment was adequately fed.

Signs were an almost immediate necessity and with the establishment of the Sign Shop, identification signs for buildings as constructed in the camp area, as well as for all roads throughout the property were produced and erected. Under the direction of G. E. Norton, this department has done a vast amount of work, most of which will be covered in succeeding chapters.



Seated, left to right: R. J. Knapp; P. Loveless; H. G. Neihart. Second row, left to right: C. J. Casey; R. Moser; T. H. Hermanson; G. H. Norton (foreman); R. H. Bradley. Third row, left to right: A. Bilchak; C. Hagerty; R. H. Knapp; D. Koehler; E. H. Sipes.

When the Watson organization had decided on approximate locations for the various groups of buildings, their engineers made test borings to determine soil conditions. There was a great scarcity of water, so we drilled some 14 test wells,

resulting in the decision to use wells throughout the reservation. On the whole these wells turned out to be good suppliers, so that today, our 80 wells could adequately supply a town the size of Canton.

Likewise with the location of groups of buildings, Watson engineers began staking out railroad locations leading to these groups. This was an immediately important job as getting concrete to these groups of buildings would have to be done by rail — the idea of building temporary roads into the groups having been discarded as a waste of time and money.



Each mixer on the train holds 3 cu. yds. of concrete.

The superintendent of concrete construction, Earl Sternberg, could foresee from the beginning of operations that: "distribution of concrete was going to be a difficult but interesting problem due to the vast area of the project and the great numbers of small pours contemplated. One of our earliest sub-contract awards was to the Cleveland Builders Supply Co., who contracted to furnish concrete tipples, mixers, chassis, aggregates (sand, slag, cement) and heating equipment used at the batching plants. We furnished water by drilling wells adjacent to each concrete batching plant. All mixers were mounted on flat cars, for we saw no need for trucks in the beginning and thought all concrete would be placed by rail delivery."

This matter of winter concreting with its allied problems of adequate heat at placement sites, as well as temporary sewer systems and sewage disposal, wells, and plumbing for temporary requirements were all placed in the hands of Fred Shorter, maintenance plumbing and heating superintendent. He at once set about locating temporary steam boilers wherever concrete was being poured, which was just about everywhere, and saw that temporary sewer and water lines were laid. A temporary sewage disposal system was discarded as another waste of time and money and the Imhoff tank which would ultimately serve the eastern portion of the finished project was rushed to completion.



Trickling filters under construction at the site of one of the Imhoff tank plants.

Once the flow of information and drawings from the architect-engineer had been established, the work of the various trades could be organized and set in motion. Group superintendents were hired in quick succession and placed in charge of certain areas. Then we needed a co-ordinator of activities and M. E. Hawk began to realize the immense work his office was to perform. All superintendents from the beginning have gone to coordinator Hawk with their complaints so to adequately meet all demands, this office has had to operate on a 24-hour basis. Proof that the coordinator and his assistants are handling their jobs well and constantly is found in the fact that they are known as "Hawks" and "Night-Hawks".

Carpenters, of course, were the first tradesmen to be used in numbers at Ravenna, and O. E. Norris, assistant general superintendent, has had his hands full from start to finish in directing their activities. A few dozen carpenters ultimately grew into nearly 2,000. The story of how this army was fed with materials and work will become apparent as the story unfolds.

A personnel break-down shows that more than 50% of the men employed at Ravenna are laborers. Directing and placing laborers, the job of Frank Fogg as Labor Assignment superintendent, required first that a flexible system be devised to cooperate with the Timekeeping Department in keeping accurate account of this personnel classification. Fogg's department, also operating on a 24-hour, seven-day week basis, has supervised the placement in the field of as many as 7,503 laborers.

Walter Hardley, superintendent of masonry construction, had an idea from the start that large numbers of bricklayers were to be used. Starting them off on the camp buildings, Hardley soon found that there were hungry cries for masons from every group superintendent on the reservation. Building up his organization to a peak of 190 bricklayers helped by 180 laborers, Hardley then turned his attention to the coordination of their activities.

Reinforcing steel was destined to play a tremendous part in the construction of the Ravenna Ordnance Plant. Jim Riha, superintending the activities of the reinforcing ironworkers, turned his immediate attention to the unloading of contractor's equipment. Then, as the first shipments of reinforcing iron were received, they ironically enough had to be unloaded by hand at the site of placement. Ultimate developments showed that no building on the reservation is complete until rods or mesh or both have been placed.

Machinery and equipment, together with an army of operating engineers were being marshalled into position by Sam Hackworth, master mechanic, and from the beginning this department has been nearly driven crazy by all superintendents—this despite the fact that our purchasing agent was buying and renting equipment in ever increasing numbers. Max Besse was dispatching trucks right and left, yet the demand for many months was greater, far greater, than the supply.

The first action of J. L. Erwin, secretary of Hunkin-Conkey, in organizing the financial and accounting arm of the organization was the selection of J. C. Doran as chief accountant. The amount of paper work done by this department has been almost beyond conception, and stenographic services have had to be handled by means of a stenographic pool. Under Doran, C. L. Howorth as paymaster heads up a department which has written enough checks to paper 500 average $8 \times 10 \times 12$ rooms, while John Dawson as chief timekeeper keeps timekeepers going on three shifts.

The early arrival of Dr. Harris Wendorf was the first step toward the establishment of the camp hospital. His first case was handled in the old Johnson farmhouse two days later. With the completion of the Hunkin-Conkey camp building, Dr. Wendorf moved in, handling cases in the telephone room for more than two months until the completion of the field hospital. Dr. Wendorf recalls:

"In October of 1940 we cared for 115 injured persons in that telephone room, and in November the number tripled. Early in December we moved into our own quarters, and I doubt that any construction camp in America ever had a more completely equipped hospital. We had no orders other than that a hospital was needed to adequately care for some 15,000 workers, nor were we bound to operate the hospital within certain financial confines.

"E. K. Dusseau, office manager, and I requisitioned such equipment as we deemed necessary, including an x-ray machine with complete fracture equipment, and diathermy machines for relief of bumps and sprains. We have a medicine store that would be the envy of any major hospital, a five-bed ward, a large treatment room and any and all instruments we need. Three ambulances are at our constant disposal.



The Field Hospital functions like any other hospital ... Upper left: D. E. Mimms, and assistant size up an injury ... Upper right: Dr. Wendorf, assisted by Nurse Kay Reed, sews up a scalp cut ... Center left: John Gembar administers first aid ... Center right, Chief Inspector Funk of the Watson Organization enjoys a slight indisposition ... Inset: E. K. Dusseau, office manager, dictates to stenographer Doris Lawrence ... Bottom left: an eye injury receives prompt treatment ... Bottom right: Gembar and Mimms treat a sprain by use of a diathermy machine,

"From the start it was agreed between Hunkin-Conkey officials and myself that our policy would be one of preventive medicine. We all realized that thousands of man hours of work could be saved by a prevention of illness program. To this end, every effort was made to treat colds immediately, to prevent their spread and to anticipate other troubles such as major epidemics. We have to date dispensed almost 8,000,000 salt and glucose tablets, 300,000 cold tablets, 150,000 throat lozenges, 100 gallons of cough syrup and used miles upon miles of adhesive tape. During the winter of 1940-41 when Ohio suffered from a widespread epidemic of "flu", colds and grippe, it was found by health authorities that Ravenna workers sustained these ills in far less numbers than workers in cities and factories this in spite of the fact that our men were working during a bad winter with plenty of rain, snow and cold.

"We also make regular examinations of the commissary staff, including Wasserman tests, and have kept a very close check on sanitary conditions within the reservation."

In the beginning, general superintendent Bartholomew got around the everexpanding job twice daily, and twice daily, noon and afternoon, held meetings in which all superintendents gave a full accounting as to why they weren't further along — or else.

With the establishment of all departments and a preliminary survey of their operations we have our sleeves rolled up — ready to devote the remaining chapters to the great story of how the Ravenna Ordnance Plant and Depot came to be built in less than 18 months.

APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS

CC-RVAAP-83 FORMER BUILDING 1031

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Final Environmental Work Plan

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for the

Demolition of Various Building

at the

Ravenna Training Logistics Site 1438 State Route 534 SW Newton Falls, Ohio 44444

SUBMITTED BY: QBS., INC.

CONTRACT # W91364-05-D-0012

PROJECT# 0007

January 11, 2008

ENVIRONMENTAL WORK PLAN FOR THE DEMOLITION OF VARIOUS BUILDINGS AT THE RAVENNA TRAINING AND LOGISTICS SITE, PORTAGE COUNTY, OHIO

Project Description

The Ohio Army National Guard (OHARNG) has contracted Q.B.S. Inc. to demolish 13 building structures and one smokestack at the Ravenna Training and Logistics Site located in Portage County, Ohio. This document addresses the procedures to be followed to address environmental hazards within the proposed buildings to be demolished. Environmental hazards may include lead-based paint, poly-chlorinated biphenyls (PCBs), asbestos, mercury-containing thermostats, switches and light bulbs, basement water, and PCB-containing light ballasts. Basement water and PCB paint samples were collected on 4 December 2007 and sent to Summit Environmental laboratory for analysis. PCB paint (PCB levels of 50 parts per million (ppm) or greater) was identified in Building 1101 (light green paint, center bay). Results for the basement water sampling and analysis (TCLP metals) were below reporting limits. However, asbestos was not analyzed for by the laboratory based on consensus that the water would be run through an asbestos micron filter prior to discharge. Now that the analysis has been completed, the general work to be accomplished is as follows: submit agency asbestos notifications, conduct abatement/removal of asbestos as necessary to allow for demolition, remove basement water from buildings passing it through an asbestos micron filter before discharge, remove other environmental hazards such as PCB ballasts and fluorescent light bulbs and mercury-containing items, receive approval from OHARNG that demolition can commence, demolish buildings, properly characterize waste streams as needed, properly dispose of wastes in accordance with applicable local, state, and federal regulations, approve material to be used for fill, regrade and restore sites.

Currently, demolition activities for this project are being scheduled, based on a Notice to Proceed dated October 22, 2007, issued by the OHARNG. Project completion is planned for February 28, 2008.

The following buildings will be demolished as part of this contract:

Building 44-16 Boiler House & Smokestack Building 950D Guard House	
Building F-1 Fire Station Building 1031 Infirmary	
Building 1103 Fire Station Building 950C Guard House	
Building 950E Guard House Building F-5 Guard Station	
Building 47-42 Power House Building 47-59 Sand Drying I	uilding
Building 47-60 Tool Storage Building 1101 Fire Station	
Building 1048, 1048A Fire Station & Security Office	

Project Points of Contact:

Q.B.S. Inc.	John Meyer	Project Manager	330-821-8801
Q.B.S. Inc.	Ron Norman	Site Superintendent	330-806-1789
OHARNG	Katie Elgin	Environmental Rep.	614-336-6136
OHARNG	CSM Doug Garloch	Project Manager	614-336-6795
Butcher & son	Glenn Butcher	Demolition	330-745-9483
Cardinal Environ.	Terry Collins	Abatement	330-848-8651

Environmental Work Plan

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Asbestos Activities and Procedures

Asbestos-containing materials (ACM) in each of the buildings to be demolished were previously surveyed and identified by the Army in 1991. ACM identified in the buildings included the following materials: transite siding, gaskets, boiler insulation, floor tile, linoleum, drywall/joint compound, window glazing, plaster, breeching, and transite wall board. All regulated asbestos-containing materials (RACM) will be properly removed in accordance with all applicable regulations prior to demolition. An approved, licensed abatement contractor will conduct the asbestos abatement activities. All work will be performed in strict accordance with all OSHA, EPA, and the following State of Ohio regulations. (1) All personnel working on the project are licensed or certified by law, and (2) project clearance levels and sampling are in accordance with the Public Health Council rules and (3) certified air monitoring technicians, asbestos hazard evaluation specialists or third-party consultant hired by owner to conduct the clearance air monitoring when applicable. Additionally, notifications to the appropriate agencies (Ohio Environmental Protection Agency and Ohio Department of Health) will be submitted prior to any demolition or abatement activities. All waste manifests will be signed by the OHARNG prior to the waste being transported off the facility. All asbestos waste will be properly transported and disposed of at an approved landfill according to applicable regulations. Basement water in buildings 1048 (fire station), F-1 (fire station), and 1031 (infirmary) will be pumped out prior to demolition through an asbestos micron filter. This method will collect any potential asbestos fibers that may exist prior to discharge. The micron filters will be properly disposed of as an asbestos waste. The following is a description of asbestos removal activities for each of the contracted buildings:

Landfills

Non-hazardous wastes will be disposed of at: Butcher & Sons C & D Landfill Inc. Glenn Butcher County Rd. 215 Barberton, Ohio 44203

Asbestos wastes will be disposed of at: Minerva Enterprises Steve Chandler 9000 Minerva Rd. Waynesburg, Ohio 44688 Phn: 330-866-3435

Hazardous wastes (if necessary) will be disposed of at: Wayne Disposal, Inc. 49350 North I-94 Service Drive Belleville, Michigan 48111 Phone: (800) 592-5489 Fax: (800) 592-5329 EPA ID #: MID 048 090 633
Building 44-16 Boiler House and Smokestack

The top of the boilers will be framed and sealed with plastic and duct tape. Negative air machines will be installed and the removal activities will be performed with water and hand tools. A glovebag will be sealed around each fitting to allow for the removal of thermal insulation after wetting. The window glazing will either be encapsulated or covered with duct tape prior to removal as a component. All materials will be put in a double lined roll off container and transported to an approved landfill for proper disposal. Asbestos-containing materials in this building are: boiler insulation, boiler gasket, boiler breeching, and window glazing.

Building 950D Guard House

Windows will be covered with plastic and removed as a component. The transite will be encapsulated on both sides if they are exposed and the bolts will be cut or removed and panels taken down as a component. All materials will be put in a double lined roll off container and transported to an approved landfill for proper disposal. Asbestos-containing materials in this building are: transite board and window glazing.

Building 950C Guard House

Windows will be covered with plastic and removed as a component. The transite will be encapsulated on both sides if they are exposed and the bolts will be cut or removed and panels taken down as a component. The walls will be put under full containment with negative air and removed using water and hand tools. A decontamination unit will be attached to the work area. All materials will be put in a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing materials in this building are: transite board, drywall/joint compound, and window glazing.

Building 950E Guard House

Windows will be covered with plastic and removed as a component. The transite will be encapsulated on both sides if they are exposed and the bolts will be cut or removed and panels taken down as a component. The walls and ceilings will be put under full containment with negative air and removed using water and hand tools. A decontamination unit will be attached to the work area. All materials will be put in a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing materials in this building are: transite board, drywall/joint compound, and window glazing.

Building 47-42 Power House

Windows will be encapsulated or have glazing covered with duct tape prior to component removal. The top of the boilers will be framed and sealed with plastic and duct tape. Negative air machines will be installed and the removal activities will be performed with water and hand tools. A glovebag will be sealed around each fitting to allow for the removal of thermal insulation after wetting. All materials will be put into a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos containing-materials in this building are boiler insulation, boiler gasket, boiler breeching, and window glazing.

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Building 47-59 Sand Drying and Fuel Pump Station

Windows will be encapsulated or have glazing covered with duct tape prior to component removal. Windows will be put into a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing material in this building is window glazing.

Building 47-60 Tool and Part Storage

Windows will be encapsulated or have glazing covered with duct tape prior to component removal. Transite will be encapsulated, bolts will be cut or removed, and panels will be taken down as component. All materials will be placed into a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing materials in this building are: corrugated transite siding, transite partitions, transite roofing materials, and window glazing.

Building F-1 Fire Station

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Wood windows will be covered with plastic and removed as a component. Steel windows will be either be encapsulated or have glazing covered with duct tape and removed as a component. The walls and ceilings will be put under full containment with negative air and removed using water and hand tools. A decontamination unit will be attached to the work area. All materials will be placed in a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing materials in this building are: drywall/joint compound and window glazing.

Basement water will to be pumped out and discharged through an asbestos micron filter to collect any potential asbestos fibers. The asbestos micron filter will be disposed of properly as an asbestos waste.

Building 1103 Fire Station

Windows will be covered with plastic and removed as a component. Walls will be put under full containment. Negative air machines will be installed and the walls will be removed using water and hand tools. A decontamination unit will be attached to the work area. Transite will be encapsulated, bolts will be cut or removed, and panels will be taken down as component. All materials will be placed in a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing materials in this building are: exterior transite board, interior transite board, drywall/joint compound and window glazing.

Building F-5 Guard House

Windows will be covered with plastic and removed as a component. These materials will be placed in a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing material in this building is window glazing.

Building 1031 Infirmary

Windows will be covered with plastic and removed as a component. Transite will be encapsulated, with a drop cloth under the exterior walls, and removed using hand tools. The walls will be under full containment with negative air machines installed and removed using water and hand tools. Linoleum flooring will be wetted and scraped up with floor scrapers. Work areas will have a decontamination unit attached. All materials will be placed in a double lined roll off container and taken to an approved landfill for

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Demolition of Buildings - RTLS

proper disposal. Asbestos-containing materials in this building are: transite siding, transite board, linoleum flooring (if necessary), drywall/joint compound, and window glazing.

Basement water will be pumped out and discharged through an asbestos micron filter to collect any potential asbestos fibers. The asbestos micron filter will be properly disposed of as an asbestos waste.

Building 1048 & 1048A Fire Station & Security Office

Windows will be covered with plastic and removed as a component. Transite siding will be encapsulated and a drop cloth will be placed underneath. The material will be removed using hand tools. Transite walls will be encapsulated, with negative air machines installed, and the material will be removed with hand tools. Walls will be put under full containment. Negative air machines will be installed and the walls will be removed using water and hand tools. A decontamination unit will be attached to the work area. All materials will be placed in a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing materials in this building are: transite siding, transite board, drywall/joint compound, and window glazing

Basement water will be pumped out and discharged through an asbestos micron filter to collect any potential asbestos fibers. The asbestos micron filter will be properly disposed of as an asbestos waste.

Building 1101 Fire Station

Wood windows will be covered with plastic and removed as a component. Steel windows will have glazing covered with duct tape or be encapsulated before component removal. Walls and ceilings will be put under full containment with negative air machines installed. The material will be wetted and removed with hand tools. A decontamination unit will be attached to these areas. All material will be placed in a double lined roll off container and taken to an approved landfill for proper disposal. Asbestos-containing materials in this building are: drywall/joint compound and window glazing

Fluorescent Light Bulbs and Ballasts

All fluorescent light bulbs and ballasts will be removed from the buildings prior to demolition.

Fluorescent light bulbs may contain mercury. All fluorescent light bulbs will be removed and placed in closed, properly labeled boxes provided by Luminaire Recyclers. The light bulbs will be picked up, transported, and disposed of properly by Luminaire Recyclers.

Fluorescent light ballasts may contain PCBs. The ballasts in these buildings have not been previously sampled for PCBs. However, due to the age of the ballasts and the small quantity identified, it will be assumed that all ballasts contain PCBs. The ballasts will be removed and placed in a HD drum with a lid and locking ring, by workers wearing latex gloves, and disposed of properly by Luminaire Recyclers.

Mercury-containing Switches and Thermostats

Mercury-containing switches and thermostats may be found in the buildings. Any mercury switches that are discovered will be removed by employees wearing latex gloves and placed in a jar with a tightly sealed lid for proper disposal by Luminaire Recyclers.

Basement Water

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Samples of the basement water were collected on 4 December 2007. Samples were analyzed for TCLP metals by Summit Environmental laboratory. Sample results were below reporting limits for all samples. As noted in the asbestos section of this Work Plan, basement water will be discharged through an asbestos micron filter to collect any potential asbestos fibers. The asbestos filter will be disposed of properly as an asbestos waste after water discharge is complete. Basement water will be pumped out prior to demolition activities.

PCB Paint

Paint samples from each building were collected on 4 December 2007. Samples were analyzed for PCBs by Summit Environmental laboratory. One paint sample revealed PCB levels of 50 ppm or greater. This light green paint is located in the center bay of Building 1101. Due to these regulated levels of PCBs, special procedures will be required for disposal of the building components covered in the light green paint at Building 1101. Building components with this light green paint will be segregated into a separate pile and area for proper disposal. These building components containing paint with 50 ppm or greater of PCBs will be handled, transported, and disposed of in accordance with 40 CFR 761 and applicable Federal and State regulations.

Waste Sampling and Disposition

All building demolition debris to be removed from the facility will be properly characterized prior to disposal. At least one composite sample from each debris pile will be collected and analyzed for TCLP metals. If analytical results reveal levels that classify the material as a hazardous waste, the waste will be properly transported and disposed of at a hazardous waste landfill in accordance with applicable regulations. All waste will be handled, transported, and disposed of in accordance with applicable regulations. Additionally, prior to reuse brick and block for fill, it must meet the definition of clean hard fill, and be sampled and analyzed for TCLP metals. At least one composite sample of the reuse material will be collected for analysis prior to reuse.

Site Grading

Building concrete and brick to be reused on-site as fill must meet the definition of clean hard fill. Clean hard fill consists only of reinforced or non-reinforced concrete, brick, block, tile, and/or stone. "Clean" in clean hard fill means that the clean hard fill material is not contaminated by solid wastes, infectious wastes, hazardous wastes, or construction and demolition debris (C&DD). If these types of waste are commingled with clean hard fill, all of the materials must be handled and disposed of as solid waste, infectious waste, hazardous waste, or C&DD. Fill material must be free of debris, wood, metal etc. It must also be free of paint. No painted material will be reused as fill material. All fill material to be reused must be approved by the OHARNG prior to reuse as fill material. Infill of the basements will be with approved demolished material (brick and block) choked and topped with fill dirt and topsoil on site. Final grade will be done to conduct positive drainage. Any necessary seeding will be conducted by the OHARNG. Total area to be

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disturbed will be less than one acre and therefore, this project will not require a storm water pollution prevention plan.

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	Summit Environmental Technologies, Inc.	• •
	Cooler Receipt Form	
	Client: <u>Caroling</u> 446 Order Number: 01/14	
	Date Received: $12-5-01$ Time Received: 1050	$\overline{}$
	Number of Coolers/Poxes:	
	Shipper: FED EX UPS DHL Airborne US Postal (Walk-in Pickup Other	العاري. ماريخ رواييني بين المراجع
	Packaging: Peariuts Bubble Wrap Paper Foam None Other	
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	Tape on cooler/box:	5
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	C-O-C in plastic Y	
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	C-O-C filled out property N N/A	
· · · · · · · · · · · · · · · · · · ·	Samples in separate bage N N/A	•
	Sample-containers intect	· .
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	*if no, list broken sample(s):	
1. A.	Sampie label(s) complete (ID, date, etc.)	
Star Concerned		
	Label(e) agree with C-O-C N N/A	
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	Correct containers used (X) N N/A Sufficient sample received (X) N N/A	en ander ander ander som en ander ander 1996 - State Anders ander a
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2007/DEC/19/WED 06:18 PM SUMMIT ENVIRONMENT FAX No. 330 253 4489 P. 003/005 ENVIRONMENTAL TECHNOLOGIES, INC. Analytical Laboratories LABORATORY REPORT December 19, 2007 Client: Cardinal Environmental Address: 142 S. Van Buren Avenue Barberton, OH 44203 Date Collected: See Below Date Received: 12/5/2007 Project #: Ravenna Client ID #: See Below See Below Laboratory ID #: Matrix: Solid Method: 8082 Units: mg/kg Analyst: AKE Reporting Limit: See Below Date of Analysis: See Below 0714284-01 0714284-02 0714284-03 0714284-04 Lab Sample ID: RV#29 RV#30 Client Sample ID: RV#27 RV#28 0.20 0,20 0.20 Reporting Limit (mg/kg) 0.20 Date Collected: 12/4/2007 12/4/2007 12/4/2007 12/4/2007 12/15/2007 12/15/2007 12/15/2007 12/15/2007 Date Analyzed: 0.47 0.60 0.63 0.47 PCBs Laboratory Manager: "Analytical Integrity" · A2LA Accreditation #0724.01 · NELAP Certified 595 East Tallmadge Avenue · Akron, Ohio 44310 · Phone: 330-253-8211 · Fax: 330-253-4489 Web Site: www.settek.com

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	Matrix:	Solid					· · ·
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t de ferre	Reporting Limit:	See Below					
	Date of Analysis:	See Below		· · ·	·. ·		
		Lab Sample ID:	0714284-05		714284-07	0714284-08	•
	D.	Client Sample ID: eporting Limit (mg/kg)	RV#31	RV#32	RV#33	RV#34	
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!		Project #: Client ID #:	Ravenna See Below			en en la companya de la companya de La companya de la comp
1	,	Laboratory ID #:	See Below			
	1.1	Matrix: Method:	Solid 8082			
!		Units:	mg/kg			
		Analyst: Reporting Limit:	AKE See Below		•	
Ì		Date of Analysis:	See Below			e - The second energy of the second secon
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ĺ			Lab Sample ID:	0714284-09	0714284-10	
į			Client Sample ID:	RV#35	RV#36	
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LABORATORY REPORT

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December 1	2,2007

Client:	Cardinal Environmental
Address:	142 S. Van Buren Avenue
	Barberton, OH 44203

Date Collected:	12/4/2007
Date Received:	12/5/2007
Project #:	Ravenna
Client ID #:	RU #61 Basement Area W
Laboratory ID #.	0714268-01
Matrix:	Liquid
Extraction Method:	1311 .
Date of Analysis:	12/7/2007

TCLP Metals

<u>Parameter</u>	<u>Reporting Limit</u> (<u>mg/L)</u>	<u>Results</u> (mg/L)	<u>Regulatory Level</u> (<u>mg/L)</u>
Areenic	0.50	<0.5	5.0
Barium	5.0	<5.0	100.0
Cadmium	• 0.10	<0.1	1.0
Chromium	0.20	<0.2	5.0
Lead	0.50	<0,5	5.0
Mercury	0.0020	< 0.002	0.20
Selenium	0.50	<0.5	1.0
Silver	0,50	<0.5	5.0



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"Analytical Integrity" · A2LA Accreditation #0724.01 · NELAP Certified 595 East Tailmadge Avenue · Akron, Ohio 44310 • Phone: 330-253-8211 · Fax: 330-253-4489 Web Site: www.settek.com

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	Project #: Client ID #:	Ravenna RU #61 Basement A	trea W					
	Laboratory ID #: Matrix:							
	Analyst:	KCMG		н н 1				
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1 i i i	<u>Parameter</u>	Date of Ana	lysis Results	<u>Units</u>	Reportin	1 <u>g Limit</u>	Method	
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CERTTIFICATE NUMBER NUMBER Straight ≤4' Straight ≥4' 47 Compact HID 0 Shatter-Shield 0 Rapid Start 0 Rapid Start 0 U-Bent 0 Broken 0 Dther 0 Other 0	aire Recyclers, which have been 7 100% of the raw materials of 9 receive the Luminaire Recyclers n successfully converted from a th intensity discharge lamps now shown below should be used amps. 06/05/2008 Date Processed Manifest #
Findence of the service of the servi	ss or high intensity discharge lamps with Luminaire e reverse manufacturing process where virtually 100 ed in other products and/or services, you hereby rec as transported by Luminaire Recyclers have been su commodities. These former fluorescent and high in liquid mercury form. The Order Entry Number show ith the proper handling and recycling of these lamp $\mathcal{O}(A, \mathcal{D}, \mathcal{P}) \mathcal{P}(A, \mathcal{D})$ in \mathcal{D} Millet, President.
	For recycling your fluorescent lamp successfully recycled using a uniqu standard fluorescents can be re-use Certificate of Conversion. The lamp hazardous non-hazardous waste to reside in glass, metal, powder and when inquiring about any issues w

LUMINAIRE RECYCLERS INCORPORATED

This is to certify that the light ballasts were received by Luminaire Recyclers, Inc. The light ballasts steel and copper were sent to a smelter and recycled for industrial use.

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Generator:	Ohio National Guard
Address:	1438 State Route 534 SW
City:	Newton Falls
State:	ОН
Zip Code:	44444
Invoice #:	28477
Contractor:	Cardinal Environmental
Weight:	1,441 Pounds

Luminaire Recyclers, Inc. 2161 University Ave. West, #206 St. Paul, MN 55114 (651) 649-0079

EPA ID# MNR000000588 Hazardous Waste Trans. # 160107

John D. Miller President/Luminaire Recyclers, Inc.

D.

REGULATED ASBESTOS MATERIAL WASTE SHIPMENT RECORD

184814

	1. Work site name and mailing address	Owner's name	Owacr's telephone number
	HARENAG PARSONAL	Other National Groups	
		1435 STAC ITE * <	
	Schuce Rd		
	NewTow Falls Office	Neutrus Ells of	
	2. Operator's name and address		Operator's telephone number
G	Cardinal Environmental Services Com	ipany, Inc.	(330) 848-8651
E N E	142 S. Van Buren Avenue Barberton, Ohio 44203		
R A	3. Waste disposal site (WDS) name, mailing address, a	and physical site location	WDS phone number
T O	Minerva Enterprises		(330) 866-3435
R	900 Minerva Road Waynesburg, Ohio 44688		
		nyy na gana mang na maa anali dee daaadaa is daana madaana daalii daliida kana daliina maa madaa ka ka daamaa	
	4. Name, and address of responsible agency (Local, D		0
	Akron Air Quality, 146 S. High Street,	······································	
	5. Desemption of materials	6. Containers Number Type	7. Total quantity cubic meters or cubic yard
	Drywall Glassing street Rock	Acm Rallat	F. 20 cubic yar
		See	1
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	8. Special handling instructions and additional informs	tion .	a duar hun an ann an ann an ann ann ann ann ann
	 OPERATOR'S CERTIFICATION: I hereby declare shipping name and arc classified, packed, marked and 	that the contents of this consignment are fully at d labeled, and are in all respects in proper cond	ad accurately described above by proper ition for transport by highway according
	 OPERATOR'S CERTIFICATION: I hereby declare shipping name and arc classified, packed, marked an applicable international and government regulations. 	that the contents of this consignment are fully at a labeled, and are in all respects in proper cond	ition for transport by highway according
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na mana na sa	 OPERATOR'S CERTIFICATION: I hereby declare shipping name and arc classified, packed, marked an applicable international and government regulations. <u>STANLey Bayer</u> Super Sup	that the contents of this consignment are fully and labeled, and are in all respects in proper cond	ition for transport by highway according $\frac{3}{2000} - \frac{4}{1000} - \frac{14}{1000} - 14$
the event of the theorem is the two constraints are t	 OPERATOR'S CERTIFICATION: I hereby declare shipping name and arc classified, packed, marked an applicable international and government regulations. <u>STANIEY BCYCK</u> Suffer Title Transporter I (Acknowledgement of receipt of mater Address and telephone number: 1225. You Robert Wise MMMM Driver 	that the contents of this consignment are fully and are in all respects in proper cond wisson <u>Stanley</u> 1. Signature Buren WessBarbertun, Ohio 44209 - David W.L.J.	ition for transport by highway according $\frac{3 - 4 - 14 - 0.8}{\text{Date} (M/DD/YY)}$ $\frac{3 - 4 - 14 - 0.8}{\text{Date} (M/DD/YY)}$ $\frac{3 - 4 - 14 - 0.8}{(M/DD/YY)}$
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	 Operator's nome and address Cardinal Environmental Services Comp 142 S. Van Buren Avenue Barberton, Ohio 44203 		Operator's telephone number (330) 848-8651
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Ohio EPA Waste Shipment Record Revised 12/1/90 in accordance with 40 CFR 61.149(c)

HOSPITAL

In October 1940, Dr. Harris Wendorf arrived to begin organizing the Hospital. For the first two months he treated patients in the telephone room of the Hunkin-Conkey construction office building. In October, 115 injured persons were treated, and in November the number tripled. By December the Construction Camp Field Hospital was completed (figure 9-20b). There were no orders or financial limitations placed on the hospital staff other than to care for 15,000 workers. This building lasted until the more permanent facility was completed in the Administration Area.

Figure 9-20a. The caption on the photo says "Chief Inspector Funk of the Watson organization enjoys a slight indisposition". An apple on the table "keeps the doctor away" but, smoking in bed, in a hospital--what were they thinking! Hunkin-Conkey collection



Figure 9-20b. The construction camp hospital opened in December 1940. Cleveland Press Collection Cleveland State University.

The permanent hospital opened in 1943. It was located about 200 yards from the Administration Building and Employment Office and was centrally located for all load lines. It was a one story, fireproof, frame bulding of 40 rooms, and was reasonably free of noise, smoke, dust and crowding. It was elaborately equipped for all ordinary medical and surgical purposes. The equipment included a bacteriological and serologic laboratory, X-ray equipment, and operating rooms. The hospital contained 26 beds, including four private rooms, four bedrooms for males and two private rooms for females. Stretchers were available in every operating building. About 150 cots were stored complete with mattresses and blankets so that the facilities could be increased in case of need. Ambulances were available and were stratigically placed. The ambulances were U.S. Army issue and were completely equipped with stretchers and other necessary equipment. (Think about that....,"completely equipped with a stretcher"... and compare that to today's ambulance which is a mobile hospital costing probably a \$100,000)

The hospital and its staff were able to take care of all ordinary injuries and illnesses within the plant, as well as a reasonable number of injury cases in the event of a disaster. Hospitals in the nearby communities were operating at over capacity, and the Akron City Hospital was 28 miles away.

The staff was composed of five full-time physicians. The medical director and assistant lived on the Post and were on call 24 hours a day. Two doctors were assigned to pre-employment examinations, and one doctor was detailed to the hospital for night duty. There were 48 registered nurses on duty, including four in the hospital on the day shift, four on evenings and two or three on the night shift. Eleven of the load lines had first-aid rooms with a nurse in constant attendance. There were three laboratory technicians, one X-ray technician, one orderly, three compensation employees, and seven clerks.

Annual exams were made on all workers. A plan was put in place to treat occupational diseases at the plant such as those exposed to TNT and tetryl. Those workers were examined every three weeks. There were continuing educational programs on nutrition, hygiene, and accident prevention. The staff was also responsible for preparing and implementing a disaster plan.



Figure 9-21a. The new hospital opened in 1943. Hunkin-Conkey photo



Figure 9-21b. Operating room for minor surgery. Hunkin-Conkey photo

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C. O. Form No. 5972-A

otal cost, \$Arn Iaterial: Walls Mood Stude Roof Asphalt Shi r	nual depreciation <u>Concrets Masonry Uni</u> Foundation <u>Concrets Masonry Uni</u>	REPAIRS Vequ reviously expended \$
otal floor area above basement (so	(ft) 15.339 *	τeviously expended ξ
$269^{\circ} \times 41^{\circ}6^{\circ}$	ft.) 15,339 Date completed March 18, 1942	4 . <u> </u>
		Year ending June 30, 1940 \$
PROVIDED WITH	ARRANGEMENT OF ROOMS BY FLOORS	" " June 30, 1941
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leating		" " June 30, 1943
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ater connections	· · · ·	" " June 30, 1946
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aundry tubs, number None	· · · · · · · · · · · · · · · · · · ·	" June 30, 1952
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10-14574

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DV-479-47



1031 (Hospital)

W W & A Dwge, and Specs, used!

Dwgst

Spect

1A, 2A, 3A, 4A, 5A, 6A, 1M, 2M, 3M, 1E -31; 102, 104, 106, 107 B 70, 64, 106 Stud Partitions, Coment Plaster on Metal Lath Fire Walls, Lath, Plaster and Plaster Board Cellings Ventilation: Gravity and Mechanical Exhaust in various rocas Exterior Walls-Wood Sheathing & Asbestos Shingles Interior Walls & Cellings - Plaster Board and Lath and Plaster 2" Insulation on Ceiling and in Exterior Walls

••••

3

Allowable Live Load 70# per Sq. Ft.

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APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS

CC-RVAAP-83 FORMER BUILDING 1039

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Q. O. Form No. 5972-A

nistorical Record		Drdnance Buildings at Designation			ive name of Arsenal or Depot)	dministration Are
<u> </u>	•			a		
Total cost, \$		Annual depreciation			REPAIR	s
Material: Walls	Studie	Foundation Concr	ete Masonry Units			
Roof	alt Shi	ngles Floors Rubbe	r on Wood	Previou	usly expended	\$
Total floor area above ba	asement ((sq. ft.) (5209)	*:			
Dimensions 121 9" x	51	Date completed	18, 1942			
					nding June 30, 1940	
PROVIDED WITH		ARRANGEMENT OF ROOM	AS BY FLOORS	"		
	-			· · ·		
Heating	Steam					
(sq. f	t. rad.)			- "	June 30, 1944	
24g10116	Direct	-	* ,		June 30, 1945	
Water connections		، ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲		- "	June 30, 1946	
Sewer connections					June 30, 1947	
Water closets, number			<u> </u>	- "		
Urinals, number				-		
Wash sinks, number	<u>- 029</u>			- "	June 30, 1930	
Washbasins, number	Two			- "	June 30, 1951	
Laundry tubs, number			`	- "	June 30, 1952	
Shower baths, number				- "		
Bathtubs, number				- "	June 50, 1954	
Screens, number					June 30, 1955	
Storm sash, number Storm doors, number					June 30, 1996	
Window shades, number			r		Total	æ
window shades, number	L				LOtal	φ

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ADDITIONS AND INSTALLATIONS

Here enter chronologically all modifications, additions, introduction of water, sewer, lights, etc.

DV-479-47

12



(Laboratory) 1039

W W & A Dwgs. and Specs. used:

Dwgat"

14, 24, 34, 1M, 2M, 1E - 39; 102, 104, 106, 107B: 53E-39 70, 97, 133, 90 Wood Columns, Brick Stud Partitions Spect Wood Joist Cellings Ventilation: Mechanical Exhaust Exterior Walls - Wood Sheathing and Asbestos Shingles Interior Walls & Ceiling - Plaster Board 2" Insulation in Exterior Walls and on Ceiling Allowable Live Load 100# per Sq. Ft.

· · •

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APPENDIX E

TEXTUAL REFERENCES OF SOURCE DOCUMENTS

CC-RVAAP-83 FORMER BUILDING 1039

The following pages were extracted from the following reference:

Lakeshore Engineering Services, Inc. (LES). 2007. Final Completion Report Munitions Response for the Demolition of Load Lines 5, 7, Building 1039, Transite Removal at Building T-1604 Removal of Remaining Concrete and Miscellaneous Debris at Load Lines 6, 9, and 11. Ravenna, Ohio. December. This Page Intentionally Left Blank



FINAL PROJECT COMPLETION REPORT

Final Project Completion Report

Munitions Response for the Demolition of Load Lines 5, 7, Building 1039, Transite Removal at Building T-1604 Removal of Remaining Concrete and Miscellaneous Debris at Load Lines 6, 9 and 11

December 2007

At Ravenna Army Ammunition Plant, Ravenna, Ohio

Contract: No. W52H09-06-C-5009

Prepared for:



U.S. TACOM 1 Rock Island Arsenal Rock Island, IL 61299

Prepared by:



Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Fifth Floor Detroit, MI 48202



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Maj Ed Meade / Ms. Kathryn Elgin	Ohio National Guard, RTLS	1	1
Mark E. Krivansky	Army Environmental Center	1	-



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LIST OF ACROYMS

ACM	Asbestos Containing Material
AP	Artillery Primer
bgs	below ground surface
BRAC	Base Realignment and Closure
CAS	Chemical Abstract Service
CFR	Code of Federal Regulations
DA	Department of the Army
ESI	Ecological Services, Inc.
ESS	Explosive Safety Submission
GOCO	Government Owned Contractor Operated
HE	High Explosives
IOCP	Industrial Operations Command
IRP	Installation Restoration Program
LES	Lakeshore Engineering Services, Inc.
LL	Load Line
MKM	MKM Engineers, Inc.
NGB	National Guard Bureau
ODH	Ohio Department of Health
OEPA	Ohio Environmental Protection Agency
OHARNG	Ohio Army National Guard
PCB	Poly Chlorinated Biphenyl
PPE	Personal Protective Equipment
RDX	Cyclotrimethylenetrinitramine
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
SOW	Scope of Work
SSHP	Site-Specific Safety and Health Plan
SUXOS	Senior UXO Supervisor
TACOM	Tank Automotive and Armament Command
TCLP	Toxic Characteristic Leaching Procedure
TNT	Trinitrotoluene
	United States Army Toxic and Hazardous Materials Agency
USEPA	U.S. Environmental Protection Agency
UXO	Unexploded Ordnance
WWII	World War II


EXECUTIVE SUMMARY

Lakeshore Engineering Services, Inc. (LES) was awarded Contract W52H09-06-C-5009 by the US Army Tank Automotive and Armaments Command (TACOM), Rock Island, Illinois. The project is to demolish and dispose of all buildings and their contents within Load Lines 5 and 7 and demolition and disposal of Buildings 1039 and T-1604. In addition the project calls for removal and disposal of all remaining building footings/foundations, steam stanchions, telephone poles, concrete and miscellaneous surface debris at Load Lines 5, 7, 6, 9, & 11. Site work started in May 2006 and concluded in July 2007. Activities included the removal of all hazardous and non-hazardous materials from the buildings, such as floor sweepings, fluorescent light fixtures, and asbestos containing materials (ACM). Explosive decontamination techniques were used to desensitize any residual explosives within the drains and process pipes at Load Lines 5 and 7 and the Chemical Laboratory, Building 1039. Demolition of all buildings at Load Lines 5 and 7 and Buildings 1039 and T-1604 and the work at Load Lines 6, 9, and 11 involved complete removal of the above ground structures and removal of floor slabs and footers to a minimum of four (4) feet below ground surface.

Following demolition and 5X certification, all PCB contaminated brick and structural steel from the buildings at Load Line 5 and 7 were disposed of off-site at an approved facility. All unpainted or uncontaminated brick and concrete was crushed and recycled off-site. Following completion of the demolition and cleanup, the sites were regraded, seeded, and mulched.



1.0 INTRODUCTION

This report describes the activities performed to complete the Demolition/Decontamination of Load Lines (LL) 5 and 7, Buildings 1039 and T-1604 and miscellaneous work on Load Line 6, 9, & 11 at Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio. The objective of this project was to certify the components of the buildings to a 5X designation as per Industrial Operations Command Publication 385-1, Classification and Remediation of Explosive Contamination (IOCP 385-1), demolish and remove buildings to a minimum depth of 4 feet below ground surface (bgs) on LL 5, 6, 7, 9, & 11, plus Buildings 1039 and T-1604, as well as any remaining telephone poles or other materials deemed necessary within the fence boundary of each LL. A copy of the Scope of Work (SOW) for this project is provided in **Appendix A**.

1.1 RVAAP Site History

When the RVAAP Installation Restoration Program (IRP) began in 1989, RVAAP was identified as a 21,419-acre installation. The property boundary was resurveyed by the OHARNG over a two-year period (2002 and 2003) and the actual total acreage of the property was found to be 21, 683 acres. As of February 2006, a total of 20,403 acres of the former 21,683 acre RVAAP have been transferred to the National Guard Bureau (NGB) and subsequently licensed to the OHARNG for use as a military training site. The current RVAAP consists of 1,280 acres scattered throughout the Ravenna Training and Logistics Site (RTLS). The RTLS is in northeastern Ohio within Portage and Trumbull Counties, approximately 4.8 kilometers (3 miles) east northeast of the city of Ravenna and approximately 1.6 kilometers (1 mile) northwest of the city of Newton Falls. The RVAAP portions of the property are The RTLS/RVAAP is a parcel of property solely located within Portage County. approximately 17.7 kilometers (11 miles) long and 5.6 kilometers (3.5 miles) wide bounded by State Route 5, the Michael J. Kirwin Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east. The RTLS is surrounded by several communities: Windham on the north; Garrettsville 9.6 kilometers (6 miles) to the northwest; Newton Falls 1.6 kilometers (1 mile) to the south east; Charlestown to the southwest; and Wayland 4.8 kilometers (3 miles) to the south. When RVAAP was operational the RTLS did not exist and the entire 21,683-acre parcel was a government-owned contractor operated (GOCO) industrial facility. The RVAAP IRP encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP and therefore references to the RVAAP in this document are considered to be inclusive of the historical extent of the RVAAP, which is inclusive of the combined acreages of the current RTLS and RVAAP, unless otherwise specifically stated. A regional map indicating the location of the RVAAP is presented in Appendix B as Figure 1. A site map showing the location of LL5, 6, 7, 9 and 11 within the RVAAP is presented in **Appendix B as Figure 2**.



Production at the facility began in December 1941 with the primary missions of depot storage and ammunition loading. To accomplish these two missions, the installation was divided into two separate units, the Portage Ordnance Depot and the Ravenna Ordnance Plant. The Portage Ordnance Depot's primary mission was depot storage of munitions and components, while the Ravenna Ordnance Plant's mission was loading and packing major caliber artillery ammunition and the assembly of munitions initiating components that included fuses, boosters and percussion elements. In August 1943, the installation was redesignated the Ravenna Ordnance Center and again in November 1945 as the Ravenna Arsenal.

The plant was placed in standby status in 1950 and operations were limited to renovation, demilitarization and normal maintenance of equipment, along with storage of ammunition and components. The plant was reactivated during the Korean Conflict for the loading and packing of major caliber shells and components. All production ended in August 1957, and in October 1957 the installation was again placed in a standby condition. Rehabilitation work started in October 1960 to establish facilities in the ammonium nitrate line for the processing and explosive melt-out of bombs. These operations commenced in January 1961. In July 1961 the plant was again deactivated. In November 1961 the installation was divided into the Ravenna Ordnance Plant and an industrial section, with the entire installation then being designated as the RVAAP. In May 1968, RVAAP began loading, assembling, and packing munitions on three LLs and two component lines in support of the Southeast Asia Conflict. These facilities were deactivated in August 1972. The demilitarization of the M71A1 90MM projectile extended from June 1973 until March 1974. Demilitarization of various munitions was conducted from October 1982 through 1992.

Up until 1999, the RVAAP was a 21,683-acre installation. A total of 19,938 acres of the former 21,683 acre RVAAP was transferred to the United States Property and Fiscal Officer (USP&FO) for Ohio in 1996 and 1999 for use by OHARNG as a military training site. The current RVAAP consists of 1,280 acres in several distinct parcels scattered throughout the confines of OHARNG RTLS. The RVAAP and RTLS are co-located on contiguous parcels of property and the RTLS perimeter fence encloses both installations. Since the IRP encompasses past activities over the entire 21,419 acres of the former RVAAP, the site description of the RVAAP includes the combined RTLS and RVAAP properties.

1.2 Load Line 5

Load Line 5 is located in an area known as the Fuze and Booster Hill, which consists of Load Lines 5, 6, 7, 8, 9, 10 and 11 (**Appendix B as Figure 3**). Fuse and Booster Hill is located in the south central part of the RVAAP facility. Load Line 5 is located south of Fuze and Booster Road, east of Load Line 6 and west of Load Lone 10.

Load Line 5, also designated as Fuze Line #1, was a finished product assembly line, which was operated from 1941 to 1945 to produce fuzes for artillery projectiles. LL5 consisted of



18 process buildings ranging in size between 120 sq ft and 32,910 sq ft. Operations were discontinued at the end of WWII and the process equipment was removed in 1945. LL5 has been inactivated for more than 50 years.

There is no historical evidence that bulk handling of primary explosives lead azide or lead styphnate took place within the boundaries of this load line as reported by USATHEMA (1978). This also applies to the reported use of TNT, Composition B, propellants and explosives other than black powder that was used in the delay component manufactured at this line and LL6. With the exception of the mercury fulminate primer that was loaded and assembled within the line, all other primary explosive products were delivered as sealed, finished sub-assemblies. There is no evidence that the booster component was included in the assembly processes conducted at this line. Below is a summary of the building utilization:

- Buildings 1F-1, 1F-3, 1F-4, 1F-9 and 1F-18 primer manufacturing
- Buildings 1F-6, 1F-7, 1F-8, 1F-19 and 1F-20 delay component manufacturing
- Building 1F-10 detonator service magazine
- Building 1F-11 and 1F-12 assembly testing

The detonator components were manufactured at LL9 and were containerized when they arrived at LL5. The detonating components were stored in 1F-10 until utilization in the assembly process conducted in 1F-11. Unless spillage occurred at the storage magazine, there is no reason to expect wholesale primary explosive contamination.

This information was reported by MKM Engineers, inc. in their report Dated August 2005.

1.3 Load Line 7

Load Line 7 is located in the Fuze and Booster Hill area that consists of Load Lines 5,6,7,8,9,10, and 11 collectively (**Appendix B as Figure 5**). Fuze and booster Hill located in the south central part of the RVAAP facility. Load Line 7 is located on Fuze and Booster Spur Road north of Load Line 6 and south of Load Line 11.

LL7, also known as Booster Line No. 1 was a booster loading and assembly line for artillery projectiles. Operations began in 1941 and were discontinued at the end of WWII. The booster process equipment was removed in 1945. In 1968, the line was modified for the production of M-406 High Explosive (HE) and M-407A1 practice 40mm rounds. Sixteen million 40mm projectiles were assembled at Load Line 7 between 1969 and 1970, after which the line was deactivated and the equipment removed. From 1989 through 1993, pink water associated with the TNT process was treated. The line was reactivated for the Research and Development of high explosive shape charges until 1993. LL7, which has been inactive for more than a decade, is not maintained, and is overgrown with young trees, bushes and weeds.



There is no evidence that bulk handling of primary explosives lead azide or lead styphnate took place within the boundaries of this load line reported by USATHAMA. For the 1940 to 1945 production era, LL7 was identical to LL8 in its production scheme. Detonators used in the assembly of the finished product would have been received as a sealed unit. If any spillage occurred, it would be very localized and it the vicinity of the detonator assembling area. This would also hold true for the 40mm production conducted form 1969 to 1970.

The M-42 primer and the M551 would have been received as sealed finished sub assembly. Dusting from the M-42 primer would have occurred in Bay B Building 1B-13 during the primer insertion process and most likely would have been isolated to the Centran feeder. Since the fuze is a sealed system, no spillage would be expected from the fuze assembly process. Fuze assembly would have occurred in the A Bay of Building 1B-6. Again, if any spillage did occur, it would be localized.

In addition to the explosive components associated with M406 and M407 A1 rounds, the following solvents would have been used: isobutyl acetate, isobutyl alcohol, toluene, xylenes, and isopropyl alcohol. There were no indications of chlorinated solvent being used in this process.

The M407A1 round was a practice round and incorporated a dye (i.e. smoke pellet). The specific dye used was N, N-diethyl-4 (phenylazo)-benzenamine, CAS No. 2481-94-9.

A summary of building utilization is provided below:

1941-1945 Production Era

Buildings 1B-1, 1B-2 and 1B-3 – Explosive Processing
Expected Secondary Explosive: Tetryl Only
Buildings 1B-4, 1B-17, 1B-12 and 1B-13 – Pellet Mfg and Processing
Expected Secondary Explosive – Tetryl
Buildings 1B-7 and 1B-18 – Testing
Expected Secondary Explosive – Tetryl
Building 1B-5 – Detonator Storage
Expected Secondary Explosive – Mercury Fulminate and Lead Azide

The Detonator components were manufactured at LL9 and arrived containerized at LL7 and were stored in 1B-5 until used in the assembly process conducted in 1B-6. Unless spillage occurred at the storage magazine, there is no reason to expect primary explosive contamination.

Building 1B-22 – Solvent Storage

Building 1B-6 – Assembly and Shipping

- Expected Explosives: Those specified for all the other afore specified buildings.



<u> 1969 – 1970 40mm Production Era</u>

Buildings 1B-1 and 1B-18 - Booster Storage (A-5), Pellet Magazine
Expected Explosive and Other Compounds: RDX and Stearic Acid
Buildings 1B-2, 18-4 and 1B-6A – Main Charge Storage, Melt Pour and Curing
Expected Explosive: Unknown
Buildings 1B-17 – MSSI Fuze Storage
Expected Explosive: Unknown
Buildings 1B-22 – M-9 Propellant Storage
Expected Explosive and Other Compounds: Nitrocellulose, Nitroglycerin, Potassium Nitrate, Diphenylamine
Building 1B-6 – Assembly and Shipping
Expected Explosive and Other Compounds: All of the previously specified

- Expected Explosive: TNT

This information was reported by MKM Engineers, inc. in their report Dated August 2005.

1.4 Load Line 6

Load Line 6 is located at the intersection of Fuze and Booster Road and Fuze and Booster Spur Road in the south central region of the RVAAP (Appendix B as Figure 4). The site is approximately 51 acres in size. During the 1941 to 1945 time frame, LL 6 operated primarily as a fuze assembly line with the exception of fulminate mixing at Building 2F-4. In 1945, the load line was deactivated and the equipment was removed. In 1950, LL6 was used by Firestone Defense Research, a subsidiary of Firestone Tire and Rubber Company, for defense work under contract to Picatinny Arsenal. Firestone Defense Research used the load line for research and development of various kinds of charges (e.g. shaped, fragmenting disc, etc.) for armor penetration. Frequency of firing was approximately 1-2 charges per week. The most recent activity at LL6 occurred during the late 1970's when it again was used for applied research and development (by Firestone Defense Corporation) on shaped charges for the Department of Defense. The amount of explosives involved during the operation was minimal, not more than 900 kilograms per year. By eliminating pathways into the process, testing can be minimized for azide. There are no indications that any type of bulk azide handling took place on LL6. LL6 was a fuze assembly line with the exception of the Fulminate Mixing at 2F-4. Any contamination would be due to handling, spillage and should be minimal.

Foundation/Footings of demolished buildings 2F-1, 2F-2, 2F-3, 2F-4, 2F-6, 2F-7, 2F-8, 2F-9, 2F-10, 2F-11, 2F-12, 2F-13, 2F-14, 2F-15, 2F-18, 2F-19, 2F-20, 2F-21, 2F-22, 2F-31, 2F-32,



2F-33, 2F-34, 2F-35, 2F-36, and 6-51 on LL6 were removed down to minimum of 4 feet depth bgs. All unused telephone poles and all steam stanchions were removed from the Load Line and disposed of accordingly.

1.5 Load Line 9

Load Line 9 (LL9) is located in the south central region of the RVAAP at the intersection of Fuze and Booster Road and George Road (**Appendix B as Figure 6**). The site is approximately 69 acres in size. During the 1941 to 1945 time frame LL9 was used to produce fuze component parts and detonators. In 1945 the load line was deactivated and its equipment removed. There are not any documented activities at LL9 since closure in 1945. There were a total of 22 foundations/footings removed to a minimum depth of 4 feet bgs located at LL9. Foundations / Footings are for the demolished building (DT-2, DT-5, DT-13, DT-14, DT-16, DT-18, DT-18A, DT-20, DT-22, DT-24, DT28, DT-29, DT-32, DT-41, DT-42, DT-45, DT-46, DT-47, DT-52, DT-55, DT-56 and DT-57). All unused telephone poles and all steam stanchions were removed from the Load Line and disposed of accordingly.

1.6 Load Line 11

Industrial operations at LL11 took place during the 1941 to 1945, 1951 to 1957 and 1969 to 1971 time frames for production of artillery primers and fuzes **(Appendix B as Figure 7)**. According to the installation Assessment of Ravenna Army Ammunition Plant, Report No. 132 dated November 1978, from 1941 to 1945 load lines 5 through 11 combined, and produced 19,257,297 Misc. Fuzes, 44,297,485 Misc. Boosters, 50,660,725 Misc. Primers, 79,580,576 Detonators and 226,387,306 Percussion elements. From 1951 to 1957 LL11 alone produced 9,927,118 MK2A4 Percussion Primers, 24,482,465 MK2A4 Primers and 1,504,935 Repack Primers. During the period of 1969 to 1971 LL11 produced approximately 7,000,000 MR ZA4 fuzes. A total of nineteen (19) Artillery Primer (AP) Buildings were used at the load line to carry out the specific industrial operations. Foundations / Footings of demolished buildings AP-6, AP-7, AP-10, AP-13, AP-14, AP-17 and AP-19 on LL11 were removed down to a minimum depth of 4 feet depth bgs. As a part of this project, all unused telephone poles and all steam stanchions were removed from the Load Line and disposed of accordingly.

1.7 LABORATORY BUILDING 1039

Building 1039 consisted of three powder test rooms for the routine analyses of lead azide, mercury fulminate, and percussion element mixes, which contained explosive-proof fixtures and barricaded ovens (**Appendix B as Figure 8**). A separate ammonium nitrate room was needed in view of the expected large production of this material. A general laboratory for



paints, metals, water, sewage, tapes, and other non-explosive materials was placed across one end of the building. The rest of the space on the first floor was allotted to a nitrometer room, sample room, stockroom, balance room, photographic dark-room, a library, two washrooms and two offices.

One part of the basement was set up as a fuel laboratory, while the other part contained the physical test equipment for metals and adhesive backed tapes. The three rooms in the north section had been made into an auxiliary stockroom, a constant temperature humidity room, and a fireproof shellac preparation room.

Demolition of Building 1039 included the certification of a 5X designate by UXO technicians; removal of all chemical laboratory equipment, removal of all asbestos containing panels and (transite) and removal of all brick and concrete to a minimum depth of 4-foot bgs. The basement area was filled in with approved clean soil and re-seeded to the RVAAP standard of grass seed.

1.8 BUILDING T-1604

Building T-1604 was used as a material storage shed. (**Appendix B as Figure 9**)The task at building T-1604 included the removal of transite, demolition of that building and removal of the concrete slab and foundation to a minimum depth of 4 feet bgs.



2.0 5X CERTIFICATION AND DEMOLITION ACTIVITIES

The approved September 2006 Decontamination/Demolition of Load Lines 5,6,7,9, and 11 and Buildings 1039 and T-1604 Work Plan, Site Safety and Health Plan were prepared for implementation of all Demolition/Decontamination activities. However, paint samples collected by MKM Engineers, Inc. (MKM) prior to demolition operations revealed that the applied dry paint on the interior walls and ceilings of some buildings contained PCBs in excess of 50 pp, which precluded them from being subjected to thermal decomposition. LES utilized the approved September 24, 2004 and amendment 1 – Revision 1 (June 2005) Explosive Safety Submission (ESS) from MKM to address alternative explosive decontamination and demolition techniques specific to demolition and 5X certification for the buildings at RVAAP where thermal decontamination operations can not be conducted.

The following is the general operational sequence conducted for execution of the Demolition/Decontamination project.

- Building Hazard Analysis and Engineering Survey
- Test paint chips for TCLP
- Floor sweeping to remove organic materials, loose paint chips, and contaminated debris
- Removal of hazardous items of environmental concern to enhance safety including mercury switches, PCB light ballasts and fluorescent light bulbs
- Asbestos Abatement
- Removal of unused telephone poles and buried steam stanchions
- Demolition and removal of walls and structural steel
- Demolition of basements
- Site Restoration

Field operations were conducted from May 2006 through March 2007. Photo documentation of the 5X certification and demolition activities for LL 5, 7, and buildings 1039 and T-1604 are provided in the Weekly Reports in **Appendix C**. Specific details of the 5X certification and demolition activities are described in the following sections.

2.1 Building Hazard Analysis and Engineering Survey

A detailed analysis for explosive hazards was conducted for every building at LLs 5 and 7, Building 1039 and Building T-1604. Prior to initiating any building demolition activities, the UXO personnel conducted building walkthroughs to confirm existing conditions, and inspected wall, floor slab, and structural steel surfaces for explosives contamination and other potential explosive hazards. As needed, building surfaces were screened using Exspray Test Kits to determine if explosive residue was present. Wall and floor penetrations,



openings/cavities and large cracks were inspected to determine if accumulated explosives were present. A hazard analysis building inspection form was used to document inspection at each building.

In addition, a Certified Structural Engineer, Mr. Frank Lee, Cleveland, Ohio, performed a structural survey as part of the hazard analysis to evaluate and report the structural integrity and condition of buildings prior to the removal of transite roofing and subsequent demolition operations. The building surveys were initiated in July 2006 and carried out as needed throughout the project. Copies of the hazard analysis building inspection forms and engineering survey reports are provided in **Appendix D**.

2.2 Paint Sampling

Dry paint analysis was done by MKM Engineering in the Dec 2005 report "Final Construction Completion Report for Load Lines 6 & 9 and Wet Storage" on Contract DAAA09-02-C-0029, in Appendix E of that report. The appropriate disposal method was based upon the paint color which reflected the PCB concentration levels. The disposal method(s) for the paint found in Load Lines 5 and 7 were based on these MKM Engineers, Inc. samples/test results, and the paint sweepings were disposed of in approved off site landfills.

2.3 Floor Sweeping

The floors of each building were swept in order to remove potentially contaminated debris, including a mixture of the loose paint chips and other miscellaneous debris that could migrate outside the buildings before demolition operations were initiated. Sweeping was conducted in Modified Level C PPE as prescribed in the SSHP. All paint chips were accumulated and a TCLP metals and PCB test was conducted by Cardinal Laboratories in, Youngstown, OH prior to being shipped from the RVAAP. A total of 7,420 pounds of material was removed, containerized, sampled and disposed of from LLs 5 and 7 as well as Buildings 1039 and T-1604. Copies of the waste characterization sample results and disposal manifests are provided in **Appendix G**.

2.4 Removal of Hazardous Items

Hazardous items of environmental concern including PCB light ballasts and mercury containing fluorescent lights were removed from all buildings prior to demolition and recycled. Removal of these items was performed prior to the asbestos removal operations described in section 2.5. LES removed all light fixtures with the ballasts and asbestos gaskets still in tact. A total of nine fixtures were palletized on each pallet and stretch-wrapping was then applied to protect from any possible leakages. Mr. Gregg Orr, OEPA representative, was contacted and visited the site to approve this method prior to the



palletized fixtures leaving the Ravenna site. All the hazardous items were shipped to a licensed facility, Environmental Recycling, Bowling Green, Ohio. Copies of the Bill of Ladings and certificated of recycling for light ballasts and fluorescent bulbs are provided in **Appendix G**.

2.5 Asbestos Abatement

The asbestos containing material (ACM) was removed from all buildings prior to initiating building demolition and removal operations. ACM removal operations took place from June 2006 to November 2006. An approved asbestos contractor from the State of Ohio, Ecological Services, Inc. (ESI), removed the asbestos containing materials (ACM) with the assistance of LES personnel.

Prior to initiating the asbestos removal operations, LES submitted the Ohio EPA and Ohio Department of Health (ODH) 10 day notification of asbestos removal and demolition operations. Personal air monitoring was conducted throughout the asbestos removal operations. All ACM was disposed of off-site in accordance with federal, state, and local rules, laws, and regulations. The ACM was shipped to Minerva Enterprises, Ohio which is a certified landfill facility in the State of Ohio. Copies of the OEPA and Ohio Department of Health (ODH) notification of demolition and asbestos abatement operations are provided in **Appendix H**. Copies of the asbestos disposal manifests are provided in **Appendix I**.

2.6 Removal of Footings/Foundations, Stanchions and Poles

Once the surface debris was removed and after explosive decontamination, field personnel initiated removal of the concrete floor slabs and foundations. All surface concrete, subsurface concrete foundations (along with steam stanchions) of overhead exterior steam lines, telephone poles and surface debris within the LLs 5,6,7,9,and 11 were removed. The poles were recycled whenever possible and disposed of offsite in accordance with federal, state and local laws and regulations. Foundations were removed using a hardened excavator fitted with a bucket or hammer attachment to a minimum of 4 feet below grade surface or totally removed. Upon removal, concrete was visually inspected and documented on the Demolition Material Inspection Form **(See Appendix F)** to ensure no explosive hazards existed prior to final disposition. All concrete floor slabs and foundations from Load Lines 6, 9 and 11 placed in an approved onsite clean hard fill area located at Load line 1. The floor slabs and foundations from Load line 5 and 7 were crushed and removed from the RVAAP site.

2.7 Building Decontamination



UXO personnel visually inspected the buildings as part of the Building Hazard Analysis Survey described in Section 2.1. Exspray Testing was conducted in all buildings in Load Line 5, 7 and Building 1039 to check for explosive contamination and is documented in **Appendix D**. During building demolition, an Exspray test was conducted on steel, wood and/or concrete/brick materials in roll off boxes and/or dump trucks prior to these loads leaving RVAAP and documented in the Weekly Reports **(Appendix C)**.

2.8 Explosive Demolition

Explosive decontamination or desensitizing operations were used to eliminate explosive hazards within the drains and process lines on Load Lines 5 and 7 and Building 1039. At Load Line 5, a total of three explosive shots were initiated. LES used .50 grain detonating cord and non-electric (Non-El) shock tube initiation systems on all the drains.

On Load Line 7, the drains in the Change Houses and the Melt Pour Building required explosive desensitizing or decontaminating. A total of three drains in Building 1B-9 and 12 drains in Building 1B-10 were successfully cleared. The outside process pipes from Building 1B-4 to the 1B-4VP1 vacuum pump house building were cleared using .32 grain perforator charges on the flanges and 100 grain detonating cord running through the pipes. Inside the Melt Pour Building, 1B-4, perforators were set up on each flange and detonating cord was run through all the pipes and the two Roto-Clones which were located above the melt pour pots. There were numerous high order explosions inside building 1-B-4 that resulted from a build-up of high explosives inside the process pipes. LES ran 100-grain detonating cord through all pipes a second time to ensure all explosives were successfully cleared.

In Building 1039, Chemical laboratory, three separate shots were conducted using .50 grain detonating cord on pipes, sink traps and troughs located in the laboratory rooms and .32 grain perforator charges on all the sink traps. After all detonations, an Explosive Quality Control evaluation was conducted to ensure all shots were successful. The Quality Control data is included in **Appendix M**. The demolition shot activities and quantities follow:

Activity	Location	Building	Explosives	Quantity
Demo Shot #1	Drains	1-B-9/1-B-	50 grain detonating cord	300 ft.
		10		
Demo Shot #2	Drain	1-F-11	50 grain detonating cord	5 ft.
Demo Shot #3	Drains	1-F-14	50 grain detonating cord	245 ft.
Demo Shot #4	Drains	1-F-14	50 grain detonating cord	150 ft.
Demo Shot #5	Process Pipes	1-B-4-VP1	100 grain detonating cord	250 ft.
Demo Shot #6	Process Pipes	1-B-4-VP1	100 grain detonating cord	450 ft.
Demo Shot #7	Sink Traps/drains	1039	50 grain detonating cord	225 ft.
			32 grain perforators	8 ea.

Demo Shot #8	Sink Traps/drains	1039	50 grain detonating cord 32 grain perforators	275 ft. 5 ea.
Demo Shot #9	Flanges Pre-selected pipes Sink Basin Set-up of trunk line	1039	32 grain perforators 100 grain detonating cord 100 grain detonating cord 50 grain detonating cord	13 ea. 100 ft. 100 ft. 800 ft.
Demo Shot #10	Melt pour pipes (outside) Melt pour pipes (outside) Flanges (inside) Process Pipes Ductwork and Rotor till units	1-B-4	32 grain perforators 100 grain detonating cord 32 grain perforators 100 grain detonating cord 50 grain detonating cord	48 ea. 250 ft. 28 ea. 250 ft. 1400 ft.
Demo Shot #11	Melt Pour Building interior	1-B-4	32 grain perforators	20 ea.
Demo Shot #12	Flash smaller diameter pipes	1-B-4	100 grain detonating cord	150 ft.
Demo Shot #13	Drain	1-F-14	32 grain perforator	1 ea.

2.9 Demolition of Walls, Steel Removal and Surface Debris

Demolition Operations were initiated by LES by removing all non-hazardous materials and hazardous materials which consisted of light fixtures, ballasts and mercury switches from all Buildings in Load Line 5 and 7 with approval from the Ohio EPA. Once all these materials were removed, floor sweepings were collected and removed in accordance with EPA regulations. At the same time these activities were being performed, the LES Heavy Equipment sub contractor removed all footings/foundations, steam stanchions and unused telephone poles from Load Lines 6, 9, and 11. Prior to removing these footings, a licensed surveyor surveyed all corners of each building, which will be required for points of reference by later studies **Appendix K.** Buildings at Load Lines 5 and 7 were demolished onto their slabs using long boomed, hardened excavators equipped with grappler and shear attachments. Contaminated steel from these operations was cut up and tested for explosives using Expray kits and manifested out to approved landfills as documented in **Appendix E**. Hardened loaders and excavators with bucket attachments were used to load PCB contaminated debris and crushed concrete into dump trucks and this material was manifested off site to an approved landfill as documented in **Appendix F**. Once the contaminated steel and construction debris was manifested off site the remaining material was inspected and shipped for recycling using a locally devised control form. Once surface debris was cleared off building slabs, the sidewalks and footers were removed and any basements were demolished in place to four feet below ground surface. Then the cavity was backfilled to grade using approved fill (test results provided in Appendix O). Throughout demolition, surface debris, (wood, brick, tile and block) was visually inspected, sampled, and documented by the SUXOS to ensure no explosive hazard exist prior to final disposition.

All painted brick and structural steel was loaded for offsite disposal as PCB Bulk Product Waste to an approved facility, Minerva Enterprises, Ohio. All unpainted concrete from floor



slabs and footers and steam stanchions from Load Line 6, 9 and 11, was deposited in the approved OHARNG clean hard fill area at RVAAP LL1.

A copy of the letter sent to Ohio EPA regarding Disposal of Demolition Debris with Applied Dried Paint Containing Polychlorinated Biphenyl Concentrations Greater than 50 Part per Million is provided in **Appendix H**. Copies of all the LLs and Buildings construction debris visual inspection forms Bill of Ladings and 5X certification letters are provided in **Appendix L**. Copies of 5X certification letters for the unpainted scrap steel recovered are also included in **Appendix L**. A total of 1,258,750 pounds (629.38 Tons) of unpainted Plate and Structural Steel and Scrap/Sheet Metal was removed from Load Line 5 and 7. A total of 3,320 pounds (1.67 Tons) of Lead was removed from both Load Lines and a total of 6,240 pounds (3.21 Tons) of Sheet Copper were removed. As required by the Scope of Work **(Appendix A)** DA-337 Forms (Request for Approval of Disposal of Buildings and Improvements) were completed on all buildings **Appendix N**.

2.10 Sump Removal

Prior to removal activities, LES placed stakes and obtained GIS coordinates for the proper location of the corners of the sumps. Water contained in the 3 sumps at LL 5 and 7 were removed to facilitate sump demolition operations. A total of 19,700 gallons of water was removed from LL 5 and 25,000 gallons was removed from LL 7 and disposed of off site. Negative test results of the water samples taken from each sump are provided in **Appendix J**.

Once empty the sumps were visually inspected and screened for explosives using Exspray Test kits as needed. Prior to being removed, the integrity of the sump was checked and documented for future environmental restoration efforts. Once removed, the concrete debris from the sumps was visually inspected and tested for explosive contamination. Lead liners were removed and recycled. Asbestos liners were removed; double bagged and disposal of as asbestos containing materials. The sump cavities were backfilled to grade using local soil.

2.11 Site Restoration

Upon completion of the demolition activities, all disturbed areas were re-graded to ensure positive drainage, and seeded. Re-grading was performed in a manner to ensure positive drainage and allow for unimpeded mowing and ground maintenance. A site walkthrough was completed with the Facility Manager to identify and remove any miscellaneous debris. Final site restoration operations were completed at the sites in July 2007.



Munitions Response for Demolition of Load Lines 5, 7 and Building 1039, Transite Removal at Building T-1604, Removal of Most Remaining Concrete and Miscellaneous Debris at Load Line 6, 9 and 11

Appendix C

LL 5, 6, 7, 9 and 11 and Buildings 1039 and T-1604 Weekly Reports & Photo Documentation

Project Weekly Report # 1 from May 22 to May 28, 2006

For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

At

Ravenna Army Ammunition Plant, Ravenna, Ohio Contract Number – W52H09-06-C-5009

LES Project No. 4191-001

Report No. 001 *Report Period* – May 22 to May 28, 2006

Project Overview: The objectives of this project are to decontaminate and certify 5X all buildings, remove all asbestos containing materials from all the buildings of Load Lines 5, Load Line 7 and building T-1604 prior to demolition these buildings. Remove and dispose of all remaining foundations to the depth of 4 feet below grade, steam pipe foundations, concrete, unused telephone poles, and surface debris at Load Lines 6, 9 and 11. Demolish building 1039 and dispose off the same.

Project Activities:

May 22nd through May 28th, 2006:

- Lakeshore Engineering Services, (LES) mobilized at the project facility on May 22, 2006. Office space is provided to LES by RVAAP Facility Manager in the Building 1038 of the Plant.
- UXOs and labors are given detailed orientation and site walkthrough of the work they are supposed to do.
- 40 hours OSHA HAZWOPER Training was conducted from May 23 to May 27, 2006 for nine LES labors and all of them passed the training successfully.
- LES UXO tech's Conducted EXSPRAY testing in all buildings at load lines 5 & 7 and Building 1039 (Chemical Laboratory). Results of these testing are:
 - > Various Positive results for TNT and RDX were found
 - > At load line 5, positive results were found in the building 1F-9
 - At load line 7, positive results were found in building 1B-4-VP1, 1B-12, 1B-18, 1B-6, 1B-4 and the boiler house
 - At building 1039, there were 5 separate positive results.

Project pictures are attached with this weekly report.

Health and Safety:

- Health and safety meetings and task order meetings were conducted every morning prior to commencement of daily activities.
- Weekly vehicle and equipment inspection and maintenance were carried out.
- There were no accidents or any incidents during this period of work.

Time Lost Due to Accident: No Yes



Waste Disposal Offsite: None

Work Activities for Next Week:

Brush Cutting activities around all the buildings of Load Lines 5 & 7. Commence sweeping non hazardous materials and pint chips of the walls.

Remarks (include directions received from client's representative or regulators, visitors, compliance notices received' pertinent information):

Regulators on-site: Mr. Irvin Venger – RVAAP Industrial Specialist. Mr. Venger advised that no Asbestos Abatement will commence until abatement plan has been reviewed and approved by him.

Site Supervisor:

Brian Andrea

Brian Andrea

UXO Safety Officer: Brian Andrea

SUXOS/SSHO:

Page 2 of 6







Negative EXPRAY test result at Building 1039 (Chemical Laboratory) Basement



Positive EXPRAY test result at Building 1039 (Chemical Laboratory) Basement



Lakeshore Engineering Services, Inc.



Positive EXPRAY test result at Building 1039 (Chemical Laboratory) First Floor



Positive EXPRAY test result at Building 1F-9 of Load Line 5

Page 4 of 6

Lakeshore Engineering Services, Inc.





Negative EXPRAY test result at Building 1F-11 of Load Line 5



Negative EXPRAY test result at Building 1B-5 of Load Line 7







Positive EXPRAY test result at Building 1B-18 of Load Line 7



OSHA 40 Hour HAZWOPER Training for Lakeshore Employees

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Project Weekly Report # 9 from July 17 to July 23, 2006

For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009		Report No.:	009			
LES Project #:	4191-001		Date:	07-17-06 to 07-23-06			
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio						
Summary of Activi	ties:						
 Completed removing large items from the floor area of the Load Line 7 buildings. Attempted to re-grade the disturbed area of Load Line 6 but the moisture contents stopped us. Will attempt to do it again when the ground is dry enough. Continued digging footings/foundations of the previously demolished buildings at Load Line 9. The rebar were placed in a roll-off container for recycling and the concrete (57 truck loads) and 595 steam stanchions were taken to LL1 clean, hard fill site. Continued applying lockdown coatings on all the exposed transite surfaces from LL 5 buildings with a lacquer base spray to make them ready for tear down. Started removing transite panels from building 1F-11 of Load Line 5. Completed removing waste and other large materials from each room of Building 1039. Swept the debris and waste on the floors from all corners of the building. All brush and trees around the building have been cut and removed. 							
Others:							
Conducted daily safety briefings and site specific training.							
Remarks (include directions received from client's representative or regulators, visitors, compliance notices received, pertinent information)							
Visitors & Regulators on site:							
visitors & Regulate			Irving Venger, COR – RVAAP				
-	, COR – RVAAP						
Irving Venger Irv requested	r, COR – RVAAP I of using Blue color for pa /e will follow his suggestio		ving instead of v	white for ease in			



Health and Safety:

- Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities.
- Weekly vehicle and equipment inspection and maintenance performed.

Were there any lost time accidents this week? No \boxtimes Yes \square

If "yes", refer attached summary of incident or OSHA report

Quality Control					
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA		
None					
Major Problems a	nd Resolutions: Weat	her Delay			
Re-grading if the disturbed area is delayed because of wet and muddy ground conditions at Load Line 6.					
Schedule for Next	Week:				
 Dig up and transport all steam stanchions and concrete footings/foundations from LL 11 to LL 1 clean, hard fill site. Complete the removal of steam stanchion, telephone poles and concrete footings/foundations from LL 9. 					

 Continue applying lockdown coatings to all the exposed transite from LL 5 buildings with a lacquer base spray. Continue removing the transite panels from these buildings.

Site Supervisor:	Brian Andrea	UXO Safety Officer:	Brian Andrea
SUXOS:	Brian Andrea	Project Manager:	Bruce Childress





Demolition/Decontamination of Load Lines 5, 6, 7, 9 and 11

Asbestos roof removed from the building of Load Line 5



Non hazardous waste material bagged properly for disposal





Plastic laid down for the asbestos abatement at building 1F-11



Steam Stanchions loaded in dump truck from Load Line 9





Transite panels loaded in lined roll off box at Load Line 5



Abatement in operation of building 1F-11 at Load Line 5









Contents of Chemical Lab Building 1039 needs to be cleaned





Re-grading the disturbed area of Load Line 6



Brush clearing around the building 1039







Non Asbestos countertop in the building 1039

Project Weekly Report # 10 from July 24 to July 30, 2006

For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



Submitted To: Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009		Report No.:	010	
LES Project #: 4191-001 Date: 07-24-06 to 07			07-24-06 to 07-30-06		
Project:	roject: Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna Ohio				
Summary of Activ	ities:				
 Completed removing large items from the floor area of the building 1039. Completed sweeping Building T-1604 and made it ready for the abatement and demolition. 					
 Started brush cutting again around the buildings of LL 7 because of their fast growth. We have encountered approximately 200 telephone poles (2' above ground in elevation) hidden in the thick woods along the perimeter of LL 5 and 7. These poles were left over by the previous contractor. 					
	e taken from the sumps o f buildings in 1F-13 and 1F		0		
 Samples of p 	Samples of paint chips and steel from building 1F-11 were taken for TLCP				
 Completed digging and disposing of footings/foundations of the previously demolished buildings at Load Line 9. The concrete (3 truck loads) and 50 steam stanchions were taken to LL1 clean, hard fill site from LL 9. 					
 Started digging footings/foundations of the previously demolished buildings at Load Line 11. The rebar were placed in a roll-off container for recycling and the concrete (22 truck loads) and 165 steam stanchions were taken to LL1 clean, hard fill site from LL 11. 					
• Facility Manager questioned about the method of bolt cutting and requested Akron Air to verify the method. Chris Williams from Akron Air inspected and approved the method of cutting the bolts by using angle grinders.					
• Continued applying lockdown coatings on all the exposed transite surfaces from LL 5 buildings with a lacquer base spray to make them ready for tear down. Continued removing transite panels from buildings of Load Line 5.					
Others:					
Conducted daily safety briefings and site specific training.					
Remarks (include directions received from client's representative or regulators, visitors, compliance notices received, pertinent information)					

Visitors & Regulators on site:



- Irving Venger, COR RVAAP
- Chris Williams Akron Air
 To inspect ESI's procedure of cutting panel bolts
- Chuck Trimbur Director of Better Management Corporation
- Wendy Hanna Cardinal Laboratory
 Visiting the site to take the sump samples.

Health and Safety:

- Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities.
- Weekly vehicle and equipment inspection and maintenance performed.

Were there any lost time accidents this week? No \boxtimes Yes \square

If "yes", refer attached summary of incident or OSHA report

Quality Control							
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA				
None							
Major Problems a	Major Problems and Resolutions: Delay						
	Our subcontractor was not able to work for 5 hours each on Monday and Tuesday due to the inspection of panel bolt cutting methods.						
Schedule for Next Week:							
 Start dig up and transport steam stanchions and left over telephone poles (by previous contractor) from LL 7. Planning to finish the asbestos abatement of all the buildings at LL 5. 							
Site Supervisor: Brian Andrea UXO Safety Officer: Brian Andrea							
SUXOS:	Brian Andrea	Project Manager:	Bruce Childress				





Lockdown with Blue tint on Building 1F-11 on Load Line 5



The removal of bolts from transite on Building 1F – 11 at Load Line 5





Walkway roofing sprayed with Blue tint Lockdown



Preparing to sample water in sump at Building 1B – 4 on LL 7




Demolition/Decontamination of Load Lines 5, 6, 7, 9 and 11

Testing water in sump located at 1F – 3 on Load Line 5



The bolts cut off by using the angle grinder (no abrasions in the transite)





Team taking down transite panels from Building 1F -11 at Load Line 5



Load of Steam Stanchions from Load Line 11 going to Load Line 1





Transite removed from Southwest side of highest roof peak on Building 1F -11



Steam Stanchions and Footings/foundations from Load Line 11





Three steel drums with light fixture ballasts



Southwest side of Building 1F -11 abated





Steam Stanchions being loaded at Load Line 9 for disposal to Load Line 1



Spraying Lockdown on walkway walls at Load Line 7





View of the Cleaned area in Building 1039



Another view of the Cleaned area in Building 1039

Project Weekly Report # 12 from August 7 to August 13, 2006

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009		Report No.:	012	
LES Project #:	4191-001		Date:	08-07-06 to 08-13-06	
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio				
 Bee hive at book that book that book Completed dispoles shipped Completed a 	 Completed digging and disposing of telephone poles from LL 5. Total of 52 telephone poles shipped to the Atlas Yard. Completed applying lockdown coatings on all the exposed transite surfaces from LL 7 				
 buildings and building 1039 with a lacquer base spray to make them ready for tear down. Continued removing transite panels from buildings of Load Line 5. Discovered lead flashing in the building 1F-11 at LL 5 and made significant efforts to remove the same. Our subcontractor ended up damaging the road leading to the Atlas Yard while demobilizing from the jobsite. Total of 10 spots were found damaged and we will make all required efforts to fix the damage area next week. 					
Others: • Conducted daily safety briefings and site specific training.					
 Remarks (include directions received from client's representative or regulators, visitors, compliance notices received, pertinent information) Visitors & Regulators on site: Irving Venger, COR – RVAAP Gaurav Trivedi – Lakeshore Engineering To discuss the comments on the Work Plan and SSHP with Irv Venger Kevin Dahman – Bee Keeper 					



Health and Safety:

- Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities.
- Weekly vehicle and equipment inspection and maintenance performed.

Were there any lost time accidents this week? No \boxtimes Yes \square

If "yes", refer attached summary of incident or OSHA report

Quality Control							
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA				
None							
Major Problems and Resolutions: Delay							
Schedule for Next Week:							
 Address and fix the damaged road leading to Atlas Yard. Planning to finish the asbestos abatement of all the buildings at LL 5. Start asbestos abatement at the buildings of LL 7. 							
Site Supervisor:	Brian Andrea	UXO Safety Officer:	Brian Andrea				
SUXOS:	Brian Andrea	Project Manager:	Bruce Childress				





Removing asbestos panels from the walkways of the buildings at LL 5



Steam Stanchions pulled out of the ground from LL 7





Removing Lead Flashing from the Building 1F-11 at LL 5



Some of the Lead Flashing Removed





Applying Lockdown Coating to the exposed surfaces of the buildings at LL 7



Dump Truck loaded with telephone poles removed from LL 7





Completed applying Lockdown Coatings to the Buildings of LL 7



Damage Spots on the road during demobilization of our subcontractor





Another view of damaged road



Loading the roll-off boxes with asbestos panels





Bee Keeper taking care of the Damaged Bee Hive Box





Asbestos crew in operation at the buildings of LL 5



Asbestos abatement almost finished at one of the buildings at LL 5





Finishing abatement at the walkway of buildings at LL 5

Project Weekly Report # 13 from August 14 to August 20, 2006

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009		Report No.:	013
LES Project #:	4191-001		Date:	08-14-06 to 08-20-06
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio			
 Summary of Activities: Bee hive was removed from the buildings of Load Line 5. Continued abating asbestos from the buildings of Load Line 5. Our subcontractor and SUXOS had discussed the road damage issue with the RVAAP facility manager. It is decided that we will repair the road with vibrator and replace the asphalt as necessary on one hot and sunny day in near future. DA-337s are approved for the buildings of Load Lines 5 and 7 from BRAC Field Office. Completed asbestos abatement at the T-1604 building. Started cutting bolts from the buildings of Load Line 7. 				
Remarks (include compliance notices r Visitors & Regulat	aily safety briefings and sit directions received from cl received, pertinent informa cors on site: r, COR – RVAAP	lient's re		regulators, visitors,
 Gaurav Trivedi – Lakeshore Engineering To discuss the comments on the Work Plan and SSHP with Irv Venger Kevin Dahman – Bee Keeper 				
 Health and Safety: Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities. 				

• Weekly vehicle and equipment inspection and maintenance performed.



Were there any lost time accidents this week? No 🛛 Yes 🗌	
If "yes", refer attached summary of incident or OSHA report	

Quality Control					
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA		
None					
Major Problems and Resolutions: None					
Schedule for Next Week:					
 Demolish Building T-1604. Planning to finish the asbestos abatement of all the buildings at LL 5 and T-1604. Start asbestos abatement at the building 1039. 					
Site Supervisor:	Brian Andrea	UXO Safety Officer:	Brian Andrea		
SUXOS:	Brian Andrea	Project Manager:	Bruce Childress		





Building T-1604 complete with Asbestos Abatement and ready for Demolition







Building 1-B-2 abated on Load Line 7

Bees in the wall of Building 1B-9 at Load Line 7







Pile of lead flashing torn off Building 1F -11 on Load Line 5

Lockdown Coating applied on the Building 1039

Project Weekly Report # 14 from August 21 to August 27, 2006

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009		Report No.:	014	
LES Project #:	4191-001		Date:	08-21-06 to 08-27-06	
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio				
Summary of Activ	ities:				
 Bee keeper came on the site at Load Line 7 to remove the remaining bees. He had problems with the bees flying and not going to the beehives. Asbestos abatement is completed at all the buildings of Load Line 5 and Building T-1604. Inspection of the asbestos work was conducted with Chris Williams of Akron Air and Irving Venger. Chris and Irv were very pleased with the job well done. Started abating asbestos from the Chemical Laboratory building (1039). Cut the metals off the telephone poles and stacked them in piles at the Atlas Yard. Demolished building T-1604 and removed all the wood and scrap off the site. 					
Others:					
Conducted da	aily safety briefings and sit	te specif	ic training.		
-	directions received from cl eceived, pertinent informa		presentative or	regulators, visitors,	
Visitors & Regulat	ors on site:				
Irving Venge	Irving Venger, COR – RVAAP				
Chris William	Chris Williams – Akron Air				
	Asbestos Abatement at Lo	oad Line	5 and Building	T-1604	
Kevin Dahman – Bee Keeper					
Health and Safety	:				
commencem	 Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities. Weekly vehicle and equipment inspection and maintenance performed 				

• Weekly vehicle and equipment inspection and maintenance performed.



Were there any lost time accidents this week? No 🛛 Yes \Box	
If "yes", refer attached summary of incident or OSHA report	

Quality Control						
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA			
None						
Major Problems and Resolutions: Delay						
Schedule for Next Week:						
Start abating	e asbestos abatement at asbestos at the building ne beehives from the Loa	is of Load Line 7.				
Site Supervisor:	Brian Andrea	UXO Safety Officer:	Brian Andrea			
SUXOS:	Brian Andrea	Project Manager:	Bruce Childress			





Completed asbestos abatement in building 1-F-13 on Load Line 5



Arranging telephone poles at the Atlas Yard





Building 5-51 Completed with Asbestos Abatement



Bee hive in exterior wall of Building 1-B-9 at Load line 7





Massive Beehive removed from Building 1-B-9



Ground Zero at the Former Building T-1604 site





Asbestos Abatement started at Building 1039



Removing Transite Panels from Building 1039

Project Weekly Report # 15 from August 28 to September 3, 2006 For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009		Report No.:	015	
LES Project #:	4191-001		Date:	08-28-06 to 09-03-06	
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio				
Summary of Activ	ities:				
 Completed abating asbestos from the Chemical Laboratory building (1039). Started and making good progress in asbestos abatement from the buildings of Load Line 7. 					
Others: • Conducted daily safety briefings and site specific training. Remarks (include directions received from client's representative or regulators, visitors, compliance notices received, pertinent information) Visitors & Regulators on site:					
Irving Venger, COR – RVAAP					
 Health and Safety: Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities. Weekly vehicle and equipment inspection and maintenance performed. 					
Were there any lost time accidents this week? No 🛛 Yes 🗌 If "yes", refer attached summary of incident or OSHA report					



Quality Control						
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA			
None						
<u> </u>						
Major Problems and Resolutions: None						
Schedule for Next	Week:					
	ing the ATF Investigator ating asbestos at the bui	for the processing of the Ex Idings of Load Line 7.	plosive Permit.			
Site Supervisor:	Brian Andrea	UXO Safety Officer:	Brian Andrea			
SUXOS:	Brian Andrea	Project Manager:	Bruce Childress			





Last side panels removed from Building 1039



Equipment set up in the LL 7 building for asbestos abatement





Equipment set up outside of the LL 7 building



Encountered panels with foam insulation at LL 7 buildings





Removal of roof panels with foam backing at LL 7



Side panels are removed from the walkway at LL 7




View of the heavy foam insulation at LL 7 buildings



Walkway with the sides removed at LL 7





Pushed the walkway over to gain access to the roof without working on the roof as recommended in the structural engineers report

Project Weekly Report # 20 from October 2 to October 8, 2006

For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Combra et No.			Damant N.	020
Contract No:	W52H09-06-C-5009		Report No.:	020
LES Project #:	4191-001		Date:	10-02-06 to 10-08-06
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio			
Summary of Activ	ities:			
 Although Ecological Services, Inc., subcontractor performing Asbestos Abatement had performed the work in professional manner, LES has decided to use its own asbestos certified employees for the reminder of the asbestos abatement at Load Line 7 buildings. Lakeshore abatement group decided to self perform the abatement work from October 9, 2006. LES coordinated the explosive flashing work, which will start on October 9, 2006, with the City of Ravenna Fire Department, Ravenna AAP Post 1, other contractors working at Ravenna AAP, the Ohio Guard Commander, stationed at RVAAP, Maj Meade, the FAA, and Mr. Jim McGee, operating contractor at Ravenna. Others: Conducted daily safety briefings and site specific training. 				
Remarks (include directions received from client's representative or regulators, visitors, compliance notices received, pertinent information)				
Visitors & Regulators on site:				
 Parag Parikh, Antonio Bell and Gaurav Trivedi, LES Chuck Trimbur, BMC 				
Health and Safety:				
 Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities. Weekly vehicle and equipment inspection and maintenance performed. 				



SUXOS:	Brian Andrea	Project Manager:	Bruce Childress		
Site Supervisor:	Brian Andrea	UXO Safety Officer:	Brian Andrea		
 Self performing the asbestos abatement at the buildings of Load Line 7. Explosive flashings at the buildings of Load Line 5 and 7 and Building 1039. 					
Schedule for Next Week:					
Major Problems and Resolutions: None					
None					
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA		
Quality Control					
If "yes", refer attached summary of incident or OSHA report					
Were there any lost time accidents this week? No $igtimes$ Yes $igsimes$					

Project Weekly Report # 21 from October 9 to October 15, 2006

For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009		Report No.:	021
LES Project #:	4191-001		Date:	10-09-06 to 10-15-06
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio			
Summary of Activ	ities:			
 Start conducting explosive work in the buildings of Load Lines 5 and 7. Three drains in building 1B-9 and twelve drains in building 1B-10 are successfully exploded and cleared for further work at Load Line 7. Three drains in building 1F-13, twelve drains in building 1F-14 were exploded and cleared at Load Line 5. One shot in sump room of building 1F-11 and two shots in sink pipes in building 1F-14 were conducted at load line 5. Started self performing the asbestos abatement and completed abating building 1B-4 and moved to Building 1B-13 at Load Line 7. Three shot were conducted in the melt pour building and cleared the building for demolition. Building 1039 was flashed with complete safety and in presence of Fire Department. All the explosive flashing is completed during this week according to the contract requirement and left over explosives were detonated. 				
Others:				
Conducted daily safety briefings and site specific training.				
Remarks (include directions received from client's representative or regulators, visitors, compliance notices received, pertinent information)				
Visitors & Regulators on site:				
RVAAP Fire DepartmentChuck Trimbur, BMC				
Health and Safety:				



 Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities. Weekly vehicle and equipment inspection and maintenance performed. 				
Were there any lost time accidents this week? No \boxtimes Yes \square If "yes", refer attached summary of incident or OSHA report				
Quality Control				
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA	
None				
Major Problems and Resolutions: Severe thunderstorm delay day and half of production.				
Schedule for Next Week:				
Continue the asbestos abatement at the buildings of Load Line 7.Pumping the water from the basements and sumps.				
Site Supervisor:	Brian Andrea	UXO Safety Officer:	Brian Andrea	
SUXOS:	Brian Andrea	Project Manager:	Bruce Childress	





Austin Powder delivering explosives to the Bunker 7C3



100 grain detonating cord







32 grain perforator that will be used for the flanges



Shape charge end of perforator







Boxes of shock tubes that will be used for nonel firing



Drains to be shot in Building 1B-10 at Load Line 7





Demolition/Decontamination of Load Lines 5, 6, 7, 9 and 11

Drains ready for flashing in Building 1F-14 at Load Line 5



Detonating Cord in Bathroom Drain at Building 1B – 10





Taping in trunk lines to ensure proper detonation wave is correct



Ensuring that detonation wave will be correct





Drains in shower room loaded with detonating cord



Detonating cord running from sink traps in Building 1F-14





Running detonating cord to washroom drains



Non-El Detonator





Smoke from drain detonations at Building 1F-14





Building 1B-4 at Load Line 7 abated



Preparing to abate Building 1B-13 on Load Line 7





Fragmentation from process pipes into steel door



Flanges that have been separated from high order detonation







Roof has been separated from structure that indicates a high order detonation occurred resulting from explosives still in the processing pipes



32-grain perforators and 100 grain detonating cord attached to a flange





Loading detonating cord through ductwork pipes to ensure no explosive residue within these pipes



The result of a perforator shape charge slug going through the flange from the top, no explosive residue found after this shot







A result of the flanges separated from explosive means



Part of a process pipe that had contained explosives, hence the pipe split before the flanges





Damage inflicted by flashing in one of the laboratory rooms in Building 1039



The damage that can be associated with the concussion of explosives





Sink Trap that was exploded with perforator to ensure no explosives caught in trap.



Air handling unit ductwork exploded





A view of the sink trap that has been penetrated by the perforator shape charge



A perforator with running detonating cord attached to a steel sink trap





Setting up two methods of exploding sewer pipes in Building 1039; 100 grain detonating cord and a perforator



Pipes in basement of chem. Lab set up for breaking open and flashing routine





Sewer line destroyed from explosives. No explosives found in any sewer line pipes.



Perforators and detonating cord set up on outside process pipe





Setting up perforators on flanges of pipes that were previously blown to ensure no connections are still in place



50 grain detonating cord running through process pipes previous broken loose from flanges and 100 grain detonating cord wrapped around smaller diameter pipes





Detonating cord running through process pipe inside the sump room of Building 1B-4



50-grain detonating cord running through the duct work from the outside of the building to the inside ensuring that every angle is flashed.





Due to the smaller pipes being harder steel than the larger pipes, perforators are set up at the flanges and the pipes wrapped with 100 grain detonating cord. This was necessary in order to gain access to the inside of these pipes.



The two rotoclones were set up from the inside and from both the bottom and top to ensure any explosive residue remaining would detonate





Another view of setting up perforators on flanges so a proper separation can be obtained



Building 1039 taped off with caution tape all around the building to let all personnel to stay clear of this unsound structure. All other contractors have been informed to keep their people out of this restricted area.





UXO Tech running detonating cord down through the air handling duct work which then runs through all ducts throughout the building. These ducts will be flashed in accordance with the ESS procedures.



East wall and roof collapsed after explosive shot detonated. This result is a proof of high explosives that remained in the process pipes even after the flushing of the pipes after closing out the melt pour building.

Project Weekly Report # 42 from March 05 to March 11, 2007

For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009	R	eport No.:	042
LES Project #:	4191-001	Da	ate:	03-05-07 to 03-11-07
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio.			
Summary of Activ	ities:			
 Continued to dismantle the reinforced concrete walls at 1B-4 in Load Line 7. Continued removing the slabs in the outlying areas of Load Line 7 and moved the material to the large slab at 1B-6 where crushing operation will take place. Continued preparing the footers/foundations for the crushing operations and placing them on the pad (of building 1B-6) for eventual shipment off site. A Total of 33 truck loads were shipped off site in semi-dump trucks. Continued pulling out the foundations of buildings from the Load Line 7. Five roll-offs were shipped out today with the PCB contaminated concrete from Building 1B-4 at Load Line 7. Disposed of one truck loads of scrap steel. 				
 Conducted daily safety briefings and site specific training. 				
 Remarks (include directions received from client's representative or regulators, visitors, compliance notices received, pertinent information) Visitors & Regulators on site: Irving Venger, RVAAP Facility Manager Chuck Trimbur, Better Management Corporation 				
 Health and Safety: Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities. Weekly vehicle and equipment inspection and maintenance performed. 				
Were there	any lost time accidents th	nis week?	No 🛛 Yes	



SUXOS:	Bruce Childress	Project Manager:	Bruce Childress		
Site Supervisor:	Bruce Childress	UXO Safety Officer:	Bruce Childress		
 Schedule for Next Week: Continued pulling out the footers/foundations and preparing them for the crushing (at the disposal facility) at Load Line 7. Appropriate disposal of the debris. Consolidating the brick and tile on the large pad (1B-6) for the crushing operation. Demolition activity at Building 1039 Chemical Laboratory. 					
Major Problems and Resolutions:					
None					
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA		
Quality Control					
If "yes", refer attached summary of incident or OSHA report					







Continued loading trucks with concrete for disposal from Load Line 7



Jack Hammer is preparing the concrete for shipment





Removing slab of the largest building 1B-4




The rebar steel is carefully removed from the concrete



The jack hammer and crusher attachments make the work of preparing the concrete possible





Hunting for steam stanchions buried under the snow



Removing one of the steam stanchions





The pipes out of the steam stanchions are ready for the scrap metal roll-off.



Some of the other steel scrap that will be sent off-site for disposal







The concrete in the slabs continues to be incredibly thick



Here are some of the last remaining piles of concrete left over from Building 1B-4





The head for the jack hammer was down this afternoon and had to be sent off-site for repairs



The pile of processed concrete continues to buildup on the pad for Building 1B-6





Trying to show the thickness of the concrete footers under Building 1B-4



The crew is picking up the last remnants of the boiler house at Load Line 7





The head on the jack hammer has been fixed and was back in operation on Saturday



The crusher continued to break up the large chunks into material like shown on the right





View of Building 1039 Chemical Laboratory before demolition



This is the corner of Building 10039 where the crew will start demolition.

Project Weekly Report # 43 from March 12 to March 18, 2007

For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009	Report No.:	043		
LES Project #:	4191-001	Date:	03-12-07 to 03-18-07		
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio.				
Summary of Activ	ities:				
 Completed the dismantling of the reinforced concrete walls at 1B-4 in Load Line 7. Completed removing and disposal of slabs of 1B-4 and continued preparing the concrete footers/foundations at 1B-6 for disposal off-site. A total of five trucks of concrete were shipped off-site in semi-dump trucks. Completed pulling out the foundations of the remaining buildings at Load Line 7. The last five roll-offs were shipped out this week with the PCB contaminated concrete from Building 1B-4 at Load Line 7. Two roll-offs of scrap steel and twenty-one truck loads of scrap wood were shipped off-site this week from the Chemical Laboratory. Started demolition of Building 1039 (Chemical Laboratory). Removed and disposed of the scrap steel, and wood from the building. Brought in 14 loads of backfill material from Load Line 9 to fill the basement to within two foot of grade. 					
of the scrap material from Others:	steel, and wood from t n Load Line 9 to fill the bas	he building. Brought sement to within two fo	in 14 loads of backfill		
of the scrap material from Others: • Conducted d Remarks (include	steel, and wood from t n Load Line 9 to fill the bas	he building. Brought sement to within two fo te specific training. ient's representative or	in 14 loads of backfill ot of grade.		
of the scrap material from Others: • Conducted d Remarks (include	o steel, and wood from t n Load Line 9 to fill the bas aily safety briefings and sit directions received from cl received, pertinent informa	he building. Brought sement to within two fo te specific training. ient's representative or	in 14 loads of backfill ot of grade.		
of the scrap material from Others: • Conducted d Remarks (include compliance notices r Visitors & Regular • Irving Venge	aily safety briefings and sit directions received from cl received, pertinent informa tors on site:	te specific training.	in 14 loads of backfill ot of grade.		
of the scrap material from Others: • Conducted d Remarks (include compliance notices of Visitors & Regulat • Irving Venge • Chuck Trimb	aily safety briefings and sit directions received from cl received, pertinent informa tors on site: ar, RVAAP Facility Manager ur, Better Management Co	te specific training. te specific training. ient's representative or ation)	in 14 loads of backfill ot of grade.		
of the scrap material from Others: • Conducted d Remarks (include compliance notices of Visitors & Regulat • Irving Venge • Chuck Trimb	aily safety briefings and sit directions received from cl received, pertinent informa tors on site:	te specific training. te specific training. ient's representative or ation)	in 14 loads of backfill ot of grade.		
of the scrap material from Others: • Conducted d Remarks (include compliance notices of Visitors & Regulat • Irving Venge • Chuck Trimb	aily safety briefings and sit directions received from cl received, pertinent informators on site: ur, RVAAP Facility Manager ur, Better Management Co di, Lakeshore Engineering	te specific training. te specific training. ient's representative or ation)	in 14 loads of backfill ot of grade.		
of the scrap material from Others: • Conducted d Remarks (include compliance notices of Visitors & Regulat • Irving Venge • Chuck Trimb • Gaurav Trive Health and Safety • Conducted h	aily safety briefings and sit directions received from cl received, pertinent informators on site: ur, RVAAP Facility Manager ur, Better Management Co di, Lakeshore Engineering	te specific training. ient's representative or ation)	in 14 loads of backfill ot of grade. regulators, visitors,		



Were there any lost time accidents this week? No $\begin{tabular}{ c c c c } Yes \end{tabular}$						
If "yes", re	If "yes", refer attached summary of incident or OSHA report					
Quality Control						
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA			
None						
Major Problems and Resolutions:						
Schedule for Next Week:						
 Completion of the demolition activities at Load Line 7. Completion of Demolition activity at Building 1039 Chemical Laboratory. 						
Site Supervisor:	Bruce Childress	UXO Safety Officer:	Bruce Childress			
SUXOS:	Bruce Childress	Project Manager:	Bruce Childress			





Work continued at Load Line 7 to prepare the concrete for shipment.



The first cut was made on the Chemical Laboratory





View of the Building 1039 with one corner demolished



The last part of the roof slowly yields to the excavator





At the end of the day there was little left that resembled the building 1039



Another view of the demolished Chemical Laboratory





The metal cabinets and other metal pieces were removed from the rubble at the Chemical Lab



Scrap wood removed from the Chemical Laboratory





The excavator operator spent the day crushing and sorting the material at the Chemical Lab



Jack Hammer is breaking the foundation of 1B-4 at Load Line 7







Remnants of a metal tank at 1B-4





The operator is loading out the wood from Building 1039 (Chemical Lab)



One of the five steam stanchion at the Chemical Laboratory is used to break up the floor of the basement to make the required drain holes.





Another view of cleaned Load Line 7. Area of 1B-6 is still under clean-up



Location of formerly existed building 1B-4





Demolition continued at building 1039 in snowy condition



Work continued at Load Line 7, with more slabs and steam stanchions to be processed





The jack hammer in operation breaking the slab at Load Line 7



The basement for Building 1039 is beginning to fill up with bricks and concrete. Some of the sidewalks surrounding the building were taken up and added to the rubble.





View of the basement of Building 1039



The thick concrete has a lot of rebar in it which slows the breaking up schedule





Loading fill material from Load Line 9 for the Basement backfilling of Building 1039

Project Weekly Report # 44 from March 19 to March 25, 2007

For

Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11

> Contract: W52H09-06-C-5009 LES Project#: 4191-001



<u>Submitted To:</u> Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266



Submitted By: Lakeshore Engineering Services, Inc. 7310 Woodward Avenue, Suite 500, Detroit, MI 48202



WEEKLY REPORT

Contract No:	W52H09-06-C-5009		Report No.:	044	
LES Project #:	4191-001		Date:	03-19-07 to 03-25-07	
Project:	Demolition of Load Lines 5 and 7, Building 1039, Transite Removal at Building T-1604 and the Removal of Remaining Concrete and Debris at Load Lines 6, 9 and 11 at Ravenna Army Ammunition Plant, Ravenna, Ohio.				
Summary of Activ	ities:				
 Summary of Activities: Shipped all the rubble out to the disposal facility from Load Line 7. A total of one hundred thirty trucks of concrete were shipped off-site in semi-dump trucks. Removed ten telephone poles and shipped off site. Completed pulling out the foundations of the remaining buildings at Load Line 7. Two roll-offs of scrap steel were shipped off-site this week. 33 loads of top soil we brought from off-site in to finish filling in the basement for the Chemical Laboratory. Completed demolition of Building 1039 (Chemical Laboratory). Removed and disposed of the scrap steel, and wood from the building. Brought in 19 loads of backfill material from Load Line 9 to fill the basement to within two foot of grade. Tested topsoil was used to backfill the basement up to two feet. Demolition activities at Load Line 7 and Building 1039 are complete now. Re-grading and seeding will be done in the spring weather conditions. Final Inspection and walkthrough was conducted with RVAAP Facility Manager and he is satisfied with the quality of work of demolition phase. Demobilized all the equipment from the site. 					
Remarks (include directions received from client's representative or regulators, visitors,					
compliance notices received, pertinent information)					
Visitors & Regulators on site:					
 Irving Venger, RVAAP Facility Manager Chuck Trimbur, Botter Management Corporation 					
	 Chuck Trimbur, Better Management Corporation Gaurav Trivedi, Lakeshore Engineering Services, Inc. 				
	n, Yochman Construction, I		5, 110.		



Health and Safety:

- Conducted health and safety meetings and task order meetings each morning prior to commencement of daily activities.
- Weekly vehicle and equipment inspection and maintenance performed.

Were there any lost time accidents this week? No $\hfill X$ Yes $\hfill \Box$

If "yes", refer attached summary of incident or OSHA report

Quality Control						
Inspection Forms	Non-Conformances	Corrective Actions (CA)	Follow-up on CA			
None						
Major Problems and Resolutions:						
Schedule for Next Week:						
• We will wait for warm dry weather in Ravenna for the seeding and re-grading.						
Site Supervisor:	Bruce Childress	UXO Safety Officer:	Bruce Childress			
SUXOS:	Bruce Childress	Project Manager:	Bruce Childress			







The footer for this portion of the building is over four feet thick





The concrete just keeps coming and it is as thick and dense as always been on Load Line 7



The scrap steel continues to pile up as the concrete is crushed





The spot where the Chemical Laboratory was is now being backfilled with tested top soil



The site of the Chemical Laboratory (Building 1039)





Loading out the concrete from Load Line 7



Demolitions and disposal activities are completed at Building 1039







Work at Building 1B-6 continued



Part of the crew was picking up the last remnants of wood and other trash from Load Line 5





The fields at Load Line 5 are very clean and ready for seeding later this spring



Another view of Load Line 5





Continued to load out the trucks at Load Line 7



The foundations from Building 1B-6 continue to be thick and difficult to remove





Clean up work at the site of the change houses in Load line 7



Removing the thick footers of Building 1B-6





Demolition/Decontamination of Load Lines 5, 6, 7, 9 and 11

The last of the concrete is being removed from Building 1B-6



A small electrical substation is removed as one of the last operations at Load Line 7





The crew borrowed dirt from another part of the site at Load Line 7 to fill in and contour the site



Completely finished and contoured site at Load Line 7
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Lakeshore Engineering Services

March 13, 2007

Mr. Irving Venger Ravenna Armv Ammunition Plant 8451 State Route 5 Ravenna. OH 44266

Subject: Laboratory Test for Top Soil, provided from Off-Site

Dear Mr. Venger.

Attached please find the test results from Cardinal Laboratories, for the top soil that our subcontractor intends to use as the top two feet of fill in the basement area of Building 1039 (The Chemical Laboratory). All results were below detectable limits (BDL) except for the metals and all of those results were below the Ohio EPA Generic Direct-Contact Soil Standard Summary for soil testing. (See Attached)

We intend to use this material as the final cover unless there is top soil on site that can be used for part of the fill. As per your request we will provide two feet of top soil over the brick and concrete backfill

Allen B. Childress, Jr. Project Manager Lakeshore Engineering Services 8451 State Route 5 Ravenna, Ohio, 44266 (313) 595-7637

Cc: Ohio Army National Guard (Tim Morgan) Gary Trivedi (LES)

Attachments:

Cardinal Laboratory Test Results Ohio EPA Generic Direct-Contact Soil Standard Summary

2870 Salt Springs Road • Youngstown, Ohio 44509 Ph: (330) 797-8844 • Fax: (330) 797-3264 • 1-800-523-0347 E: Mail: cel@cardinalenvirolabs.net

Laboratory Analysis Report

Client:	LAKESHORE GROUP Attn: BRIAN ANDREA 7310 WOODWARD AVENUE FIFTH FLOOR DETROIT, MI 48202	Lab Number: Sample 1D:	27022714 TOP SOIL
Date San Time Sar Date Rec Report D Commen	npled: eived: 2/27/2007 Date: 3/10/2007	Sample Description: Sampler Name: Sample Matrix: PO#:	Solid

Analyte	Result	linit	Detection Limit	Method	Analysis Date	Analyst
EXPLOSIVES	SEE ATTACHED			SW8330	3/9/2007	MCB *
Aluminum	6830	mg/kg	4.42	6010B	3/1/2007	ZH
Antimony	BD1.	mg/kg	2.21	6010B	3/1/2007	Z[]
Arsenic	7.77	mg/kg	2.21	6010B	3/1/2007	ZH
Barium	36.3	mg/kg	0.44	601013	3/1/2007	Z.1-1
Beryllium	0.27	mg/kg	0.13	6010B	3/1/2007	2.11
Cadmium	1.53	mg/kg	0.44	6010B	3/1/2007	Z11
Calcium	535	mg/kg	4.42	601013	3/1/2007	214
Chromium)	8.17	mg/kg	0.44	601013	3/1/2007	Z11
Cobait	5.51	mg/kg	0.44	6010B	3/1/2007	Z11
Copper	11.06	mg/kg	0.88	6010B	3/1/2007	Ž.H
lrou	10300	ng/kg	4.42	601013	3/1/2007	ZH
Lead	10.8	mg/kg	1.33	6010B	3/1/2007	ZH
Manganese	396	mg/kg	0.44	6010B	3/1/2007	ZH
Mercury	0.10	mg/kg	0.06	7470A	3/1/2007	7.H
Nickel	9.38	mg/kg	0.88	6010B	3/1/2007	ZH
Potassium	548	mg/kg	17.7	6010B	3/1/2007	ZH
Selenium	BDI.	mg/kg	2.21	6010B	3/1/2007	7.11
Silver	BDL	mg/kg	0.44	6010B	3/1/2007	ZH
Sodium	192	mg/kg	4.42	6010B	3/1/2007	ZH
Thallium	BDI.	mg/kg	1.77	6010B	3/1/2007	211
Vanadium	10.9	mg/kg	0.44	601013	3/1/2007	Z11
Zinc	38.9	mg/kg	0.88	6010B	3/1/2007	ZH
Posticides		mg/kg		8081		
Aldrin	BDL.	mg/kg	0.004	8081	3/5/2007	16
Alpha-BHC	BDL.	mg/kg	0.004	8081	3/5/2007	JP
Beta-BHC	13151.	mg/kg	0.004	8081	3/5/2007	,II>
Delta-BHC	13101.	mg/kg	0.004	8081	3/5/2007	JP
Gamma-BIIC	BDL	nig/kg	0.004	8081	3/5/2007	JP
Chlordane	BDL	my kg	0.02	8081	3/5/2007	વા
4,4-'1)1)'1'	BDL	mg/kg	0.004	8081	3/5/2007	
4,4'-DDE	BDI.	mg/kg	0.004	8081	3/5/2007	
4.4'-DDD	BDI.	mg/kg	0.004	8081	3/5/2007	JP

	BDL	mg/kg	0.004	8081	3/5/2007	JP
Dieldrin	BDL.	mg/kg	0.008	8081	3/5/2007	Jb
Alpha-Endosulfan		ing/kg	0.008	8081	3/5/2007	Jb
Beta-Endosulfan	BDL	mg/kg	0.004	8081	3/5/2007	JP
Indosulfan Sulfate	BDL.	mg/kg	0.004	8081	3/5/2007	512
Endrin	BDI.		0.004	8081	3/5/2007	qt
Endrin Aldehyde	BDL.	ing/kg	0.008	8081	3/5/2007	1P
Endrin Ketone	BDL.	mg/kg	0.004	8081	3/5/2007	JP
Heptachlor	BDL	mg/kg		8081	3/5/2007	JP
Teptachlor Epoxide	BDL.	mg/kg	0.004	8081	3/5/2007	JP
Methoxychlor	BDI,	mg/kg	0.004	8081	3/5/2007	JP
Toxaphene	BDL.	mg/kg	0.2		31512001	
SURROGATES				8081	2/5/2007	JF
TCMX	74		23-123%	8081	3/5/2007	
DCBP	65		30-107%	8081	3/5/2007	36
Debi-						
Polychlorinated Biphenyls (PCBs)	BDL			8082	3/2/2007	IL IL
PCB-1016	BDL	mg/kg	0.2	8082	3/2/2007	1
PCB-1221	BDL	mg/kg	0.4	8082	3/2/2007	
PCB-1232	BDL	mg/kg	0.2	8082	3/2/2007	J
PCB-1232	BDL.	mg/kg	0.2	8082	3/2/2007	1
PCB-1248	BDL	mg/kg	0.2	8082	3/2/2007	J
	BDL.	mg/kg	0.2	8082	3/2/2007	1
PCB-1254	BDI,	ing/kg	0.2	8082	3/2/2007	J
PCB-1260	Divit			8082		
SURROGATES	45		23-123	8082	3/2/2007	1
TCMX	43		30-107	8082	3/2/2007	1
DCBP	09					
Volatile Organic Compounds (VOC)				8260/5035		
	BD1.	ug/kg	50	8260/5035	3/9/2007	4
Acetone	BDL	ug/kg	5	8260/5035	3/9/2007	j,
Benzone	BDL.	ug/kg	5	8260/5035	3/9/2007	
Bromobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	
Bromochloromethane	BDL.	ug/kg	5	8260/5035	3/9/2007	
Bromodichloromethane	BDI.	ug/kg	5	8260/5035	3/9/2007	
Bromoform	BDI.	ug/kg	10	8260/5035	3/9/2007	
Bromomethane	BDI.	ug/kg	50	8260/5035	3/9/2007	
2-Butanonc		ug/kg	5	8260/5035	3/9/2007	
n-Butylbenzene	BDL		5	8260/5035	3/9/2007	
sec-Butylbenzene	BDI.	ug/kg	5	8260/5035	3/9/2007	
tert-Butylbenzene	BDL	ug/kg			3/9/2007	
Carbon Tetrachloride	BDI.	ug/kg	5	8260/5035		
Chlorobenzene	BDL.	ug/kg	5	8260/5035	3/9/2007	
Chloroethane	BDL	ug_kg	10	8260/5035	3/9/2007	
Chloroform	BDL.	ng/kg	5	8260/5035	3/9/2007	
Chloromethane	BDL.	ug/kg	10	8260/5035	3/9/2007	
2-Chlorotoluene	BDI.	ng/kg	5	8260/5035	3/9/2007	
4-Chlorotoluenc	BDL	ut/kt	5	8260/5035	3/9/2007	
1,2-Dibromo-3-chloropropane	BDL	ug/kg	5	8260/5035	3/9/2007	
Dibromochloromethane	BDL	ug/kg	5	8260/5035	3/9/2007	
1,2-Dibromoethane	BDL	ug/kg	5	8260/5035	3/9/2007	
Dibromomethane	BDL	ug/kg	5	8260/5035	3/9/2007	
1.2-Dichlorobenzene	BDL.	ng/kg	5	8260/5035	3/9/2007	
	BDL	ng/kg	5	8260/5035	3/9/2007	
1.3-Dichlorobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	
1,4-Dichlorobenzene	BDL	ug/kg	10	8260/5035	3/9/2007	
Dichlorobromomethane	BDL.	ug/kg	5	8260/5035	3/9/2007	
1,1-Dichloroethane	BDL	ug/kg	5	8260/5035	3/9/2007	
1,2-Dichlorocthane	BUL	LL NL	~			

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CEL Cardinal Laboratories, LLC.

	BDL	ug/kg	5	8260/5035	3/9/2007	JP
I-Dichloroethene	BDL .	ug/kg	5	8260/5035	3/9/2007	Jb
s-1,2-Dichloroethene	BDI.	ug/kg	5	8260/5035	3/9/2007	JP
ans-1,2-Dichloroethene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
2-Dichloropropane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
3-Dichloropropene	BDL.	ug/kg	5	8260/5035	3/9/2007	JP
2-Dichloropropane		ug/kg	5	8260/5035	3/9/2007	JP
1-Dichloropropene	BDL,	ug/kg	5	8260/5035	3/9/2007	JP
thyl Benzene	BDL	ug/kg	5	\$260/5035	3/9/2007	JP
lexachlorobutadiene	BDL		50	8260/5035	3/9/2007	JP
-Hexanone	BD1.	ug/kg	5	8260/5035	3/9/2007	JP
sopropylbenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JF
-Isopropylloluene	BDL	ug/kg	5	8260/5035	3/9/2007	JI
Aethylene Chloride	BDL	ug/kg	50	8260/5035	3/9/2007	11
Aethyl Isobutyl Ketone	BDL.	ug/kg		8260/5035	3/9/2007	JF
Naphthalene	BDI.	ug/kg	5 5	8260/5035	3/9/2007	JI
-Propylbenzene	BDL	ug/kg			3/9/2007	11
Styrene	BDL	ug/kg	5	8260/5035	3/9/2007	J
1,1,1,2-Tetrachloroethane	BDL.	ug/kg	5	8260/5035	3/9/2007	1
1,2,2-Tetrachloroethane	BDL	ug/kg	5	8260/5035	3/9/2007	j
Tetrachloroethene	BDI,	ug/kg	5	8260/5035	3/9/2007	J
Foluene	BDI.	ug/kg	5	8260/5035	3/9/2007	J
1,2,3-Trichlorobenzene	BDL	ng/kg	5	8260/5035		J
1.2.4-Trichlorobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	
1,1,1-Trichloroethane	BDI.	ug/kg	5	8260/5035	3/9/2007	J
1,1,2-Trichloroethane	BDL	ug/kg	5	8260/5035	3/9/2007	1
Frichloroethene	BDI.	ug/kg	5	8260/5035	3/9/2007	
Trichlorofluoromethane	BDL	ug/kg	10	8260/5035	3/9/2007	-
I richlorolluololleulaite	BDL	ug/kg	5	8260/5035	3/9/2007	
1,2,3-Trichloropropane	BDI.	ug/kg	5	8260/5035	3/9/2007	4
1,2,4-Trimethylbenzene	BDL	ug/kg	5	8260/5035	3/9/2007	
1,3,5-Trimethylbenzene	BDI.	ug/kg	10	8260/5035	3/9/2007	1
Vinyl Chloride	BDL	ug/kg	5	8260/5035	3/9/2007	1
m,p-Xylene	BDL	ug/kg	5	8260/5035	3/9/2007	
o-Xylene	DDL	-13 · 13		8260/5035		
SURROGATES	81		80-124%	8260/5035	3/9/2007	
Dibromofluorobenzene	90		69-118%	8260/5035	3/9/2007	
Toluene-d8	66		56-116%	8260/5035	3/9/2007	
Bromofluorobenzene	BDL	ug/kg	10	8260/5035	3/9/2007	
MTBE	BDL	0 <u>4</u> 772				
Semi-Volatile Organic Compounds				8270	3/2/2007	
Acenaphtene	BDI.	ug/kg	330	8270 8270	3/2/2007	
Acenaphthylene	BDL	ug/kg	330		3/2/2007	
Anthracene	BDL	nä∖yä	330	8270 8270	3/2/2007	
Benzidine	BDL	ug/kg	3300	8270	3/2/2007	
Benzo [a] anthracene	BDL	ug/kg	330	8270	3/2/2007	
Benzo [a] pyrene	BDL	ug/kµ	330	8270	3/2/2007	
3,4-Benzofluoranthene	BDL	ug/kg	330		3/2/2007	
Benzo (g,h,i) perylene	BDL	ug/kg	330	- 8270		
Benzo (b) Auoranthene	BDL	ug/kg	330	8270	3/2/2007	
Benzo (k) fluoranthene	BDL	ug/kg	330	8270	3/2/2007	
Bis (2-chloroethoxy) methane	BDL.	ug/kg	330	8270	3/2/2007	
Bis (2-chloroethyl) ether	BDL	ug/kg	330	8270	3/2/2007	
Bis (2-chloroisopropyl) ether	BDI,	ug/kg	330	8270	3/2/2007	
Bis (2-ethylhexyl) phthalate	BDL	ug/kg	330	8270	3/2/2007	
4-Bromophenyl phenyl ether	BDI.	uµ/kg	330	8270	3/2/2007	
		ug/kg	330	8270	3/2/2007	

	BDL	ug/kg	330	8270	3/2/2007	Jb
2-Chloronaphthalene	BDL	ug/kg	330	8270	3/2/2007	JP
-Chlorophenyl phenyl ether	BDL	ug/kg	330	8270	3/2/2007	JP
Chrysene	BDL	ug/kg	330	8270	3/2/2007	JP
Dibenzo [a,h] anthracene	BDL	ug/kg	330	8270	3/2/2007	JP
1,2-Dichlorobenzene	BDL	ug/kg	330	8270	3/2/2007	JP
1,3-Dichlorobenzene		ug/kg	330	8270	3/2/2007	IP
1,4-Dichlorobenzene	BDL	ug/kg	3300	8270	3/2/2007	JP
3,3'-Dichlorobenzidine	BDL		330	8270	3/2/2007	JP
Diethyl phthalate	BDI.	ug/kg	330	8270	3/2/2007	JP
Dimethyl phthalate	BDL	ug/kg	330	8270	3/2/2007	JP
Di-n-butyl phthalate	BDI.	ug/kg		8270	3/2/2007	JP
2,4-Dinitrotoluene	BDL	ug/kg	330	8270	3/2/2007	JP
2,6-Dinitrotoluene	BDL	ug/kg	330			JP
Di-n-octyl phthalate	BDL	ug/kg	330	8270	3/2/2007	JP
1,2-Diphenylhydrazine (as azobenzen	BDL	ug/kg	330	8270	3/2/2007	JP
Fluoranthene	BDL	ug/kg	330	8270	3/2/2007	JP
Fluorene	BDL	ug/kg	330	8270	3/2/2007	
Hexachlorobenzene	BDL	ug/kg	330	8270	3/2/2007	JP
Hexachlorobutadiene	BDL	ug/kg	330	8270	3/2/2007	JP
Hexachlorocyclopentadiene	BDL	ug/kg	330	8270	3/2/2007	JP
Hexachloroethane	BDL,	ug/kg	330	8270	3/2/2007	JP
Indeno (1,2,3-cd) pyrene	BDL	ug/kg	330	8270	3/2/2007	JP
Isophorone	BDL	ug/kg	330	8270	3/2/2007	JP
Naphthalene	BDL	ug/kg	330	8270	3/2/2007	JP
Nitrobenzene	BDL,	ue/kg	330	8270	3/2/2007	JÞ
N-Nitrosodimethylamine (as diphenyl	BDL	ug/kg	330	8270	3/2/2007	JP
N-Nitrosodi-n-propylamine	BDL	ug/kg	330	8270	3/2/2007	JP
N-Nitrosodiphenylamine	BDL	ug/kg	330	8270	3/2/2007	JP
Phenanthrene	BDL	ug/kg	330	8270	3/2/2007	JP
	BDL	ug/kg	330	8270	3/2/2007	Jb
Pyrene	BDL	ug/kg	330	8270	3/2/2007	JP
1,2,4-Trichlorobenzene	BDL	ug/kg	660	8270	3/2/2007	JP
2-Chlorophenol	BDL	ug/kg	660	8270	3/2/2007	JF
2,4-Dichlorophenol	BDL	ng/kg	660	8270	3/2/2007	JF
2,4-Dimethylphenol	BDL	ug/kg	660	8270	3/2/2007	JF
4,6-Dinitro-o-cresol	BDL BD1.	ug/kg	660	8270	3/2/2007	JF
2,4-Dinitrophenol	BDL	ug/kg	660	\$270	3/2/2007	JI
2-Methylphenol	BDL	ugAg	660	8270	3/2/2007	JI
3&4-Methylphenol	BDL	ug/kg	660	8270	3/2/2007	JI
2-Nitrophenol	BDL	ug/kg	660	8270	3/2/2007	JF
4-Nitrophenol			660	8270	3/2/2007	JI
Pentachlorophenol	BDL	ug/kg	660	8270	3/2/2007	JI
Phenol	BDL	ug/kg	660	8270	3/2/2007	11
2,4,5-Trichlorophenol	BDL	ug/kg	660	8270	3/2/2007	1
2,4,6-Trichlorophenol	BDL	ug/kg	bou	8270	51212001	
SURROGATES	25		22 1000		200007	
Nitrobenzene-d5	37		23-120%	8270	3/2/2007	31
2-Fluorobiphenyl	62		30-107%	8270	3/2/2007	IL IL
p-Terphenyl	60		18-129%	8270	3/2/2007 3/2/2007	IL IL
2-Fluorohenol	37		27-112%	8270		IL IL
Phenol-d6	27		25-113%	8270	3/2/2007	
2,4,6-Tribromophenol	26		19-116%	8270	3/2/2007	1

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CEL Cardinal Laboratories, LLC.

BDL = Below Detection Limit

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Results approved by:	
John Pflugh, Lab Manager	
Roberta Petitt, Senior Chemis	······································

Wendy Hanna, Customer Relations

Ohio EPA Drinking Water Certification: 1549, 898 Pennsylvania Laboratory Registration: 68-948



ANALYTICAL RESULTS

Date:

Friday, March 09, 2007

ALADITION							1.2		
Client: Client Project: Client Sample ID :	Cardinal En Explosives 27022714	vironmenta Analysis	l Labs			Coll	Order / ID: ection Date:	: 02/27/07 00:00	
Sample Description:	0.114					Da	te Received:		03/02/07 11:30
Sample Matrix:	Solid			Sec. 4			Units	DE	Analyzed
Analyses			ST	Result	RL	Qual	Units	DE	Analy 200
									Analyst: AS
EXPLOSIVES		Method:	SW8330			·	e/Time: 03/07/	07 00:0	03/09/07 12:04
1,3,5-Trinitrobenzene			А	NE		400	μg/Kg		03/09/07 12:04
1,3-Dinitrobenzene	- 8425	**	A	NE		400	µg/Kg	1.	03/09/07 12:04
2,4,6-Trinitrotoluene			A	NI		400	µg/Kg	7 4	03/09/07 12:04
2,4-Dinitrotoluene			A	NI	A	400	µg/Kg	5.4	03/09/07 12:04
2,6-Dinitrololuene			A	NI		400	µg/Kg	4.4	03/09/07 12:04
2-Amino 4.6-dinitrotol		· · ·	A	N	,	400	µg/Kg	·	03/09/07 12:04
			А	N	7	400	µg/Kg		
2-Nitrotoluene			А	N	0	400	'µg/Kg	. 1	03/09/07 12:04
3-Nitrotoluene		÷.	A	N	D	400	hð\Kð	. 1	03/09/07 12:04
4 Amino-2,6-dinitrotol	uene	46.84	A	N	D	400	µg/Кg	1	03/09/07 12:04
4-Nitrotoluene		43 Aris .	A	N	D	400	·µg/Кg	1	03/09/07 12:04
HMX			A	N	D	400	µg/Kg	1	03/09/07 12:04
Nitrobenzene		+ +	А	N	D	400	'µg/Kg	1	03/09/07 12:04
RDX	a		A	Λ	D	400	µg/Kg	1	03/09/07 12:04
Tetryl Surr: 1,2-Dinitrobe	nzene		S	93.5		-121	%REC	i.f	03/09/07 12:04

250 West 84th Drive, Merrillville, IN 46410 (TEL.800.536.8379) TEL.219.769.8378 FAX.219.769.1664 Page 2 of 5

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FLAGS, FOOTNOTES AND ABBREVIATIONS (as needed)

NA mg/L mg/Kg	= = =	Not Analyzed Milligrams per Liter (ppm) Milligrams per Kilogram (ppm)	N/A = ug/l. = ug/Kg =	M	or Applicable licrograms per Liter (ppb) licrograms per Kilogram (ppb)	ctu ng/L	и и			ning Unit per Liter (ppt)
L)	=	Undercored								
3	=	Analyte concentration detected be	twice RL, and	MDI	(Metals / Organics)					÷
в	=	Detected in the associated Method	I Blank ut a ci	ancerti	ration above the routine PQDRT	- 	buth	us thus t	the citi	time POL/RL
b		Detected in the associated Method Detected in the associated Method	I Blank at a C	mcall	ration above the Method Delect	an 1.2000	i istit it	205 111111	the rate	
D	=	Surregate recoveries are not valen	lated the to s	ample	dilution					
ND	=	Not Detected at the Reporting Lir	nit (or the Me	iland l	Auction Linux, il listeo)					
E	=	Value above quantitation range		-	and a second second data					
н	=	Analytic was propured und/or anal	yzed outside	of the	analytical memor norming mar-					
1	=	Matrix Interference								
R	=	RPD exitside accepted recovery li								
S	=	Spike recovery outside recovery i	limits							
Sur	=	Surrogato			6 1 T	MDI,	= 1	Anthrol I	Detecti	ion Limit
DF	=	Dilution Factor RL = F	Reporting Lim	ii	ST = Sample Type	INICO,		TECHNIA I		
SAM	PLE	TYPES								
٨	-	Contraction of the second s			(1)					
1		Internal Standard								
S	-	Surrogate								
т	-	- Tentatively Identified Company	nd (TIC, conce	entrati	on estimated))÷	
ocs	AMP	LE IDENTIFICATIONS								
MBL		(a. I. Amt. A	ICSA	=	Interference Check Standard			OPR	=	Ongoing Precision a Recovery Standard
DUP	=		KSAB	=	Interference Check Standard "					Recovery standing
LCS		the second Primate	I.CSD	-	Laboratory Control Sample D	uplicate				
MS	-		MSD	=	Matrix Spike Duplicate					
141-3	-		CON	-	Continuine Calibration Blank					

-CERTIFICATIONS

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ICB

ICY

PDS

Initial Calibration Blank

Post Digestion Spike

Initial Calibration Verification

Below is a list of certifications maintained by the Microbuc Merrillville Laboratory. All data included in this report lats been reviewed for and meets all project specific and quality control requirements of the applicable accreditation, unless otherwise noted. Complete lists of individual analytes pursuant to each verification below are available upon request.

Serial Dilution

Continuing Calibration Blank

Continuing Calibration Verification

- Illinois EPA for the analysis wastewater and solid waste in accordance with the requirements of the National Environmental Laboratory Accreditation Program [NELAP] (accreditation #100435)
- Illinois Department of Public Health for the microbiological analysis of drinking water (registry #175458)

CCB

CUV

SD

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- Indiana DEM approved support laboratory for solid waste and wastewater analyses
- Indiana SDH for the chemical analysis of drinking water (lab #C-45-02)
- Indiana SDH for the microbiological analysis of drinking water (lah #M-45-08)
- Kennucky EPPC for the analysis of samples applicable to the Underground Storage 'Fank program (Iab #0061)
- North Carolina DENR for the environmental analysis for NPDES effects, surface water, groundwater, and pretreatment regulations (certificate #597)
- Wisconsin DNR for the chemical analysis of wastewater and solid waste (lab #998036710)

MICROBAC LOCATIONS

	- Wexford, PA	Camp Hill Division	1	Cump Hill, PA
Curporate	- Warradale, PA	Kapaville Dirision	-	Maryville, TN
Piusburgh Division		Venice Division		Verice, HL / Fort Myers, 19.
Eric Division	- Erie, PA / Wilkes-Barre, PA	Soulh Carulina Division	1211	New Elemon, SC
New Castle Division	- New Castle, PA			l'indeville, NC
Kentucky Testing Division	 Lanisville, KY / Evansville, IN 	Fugetteville Divisius		
Massachusetts Division	- Mirthont, MA	Southern Testing Division		Witam NC
	- Bahinure, MD	Hauser Division		Budder, CO
Gascoyne Division		Friend Laburatory		Waverly, NY
Corona Division				
South Jersey Division	 Tumersville, NJ 			

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Type of Sample (Raw, Distribution, Plant, etc.)	PWS ID Number	Copy sent to EPA? Yes No If Yes, Which Branch?	FOR PUBLIC WATER SUPPLY (PWS) ONLY	Collector's Signature	Collector's Name			1:05 GOL AI 62.406%	CEL # Castomer Sample ID Co	Contact Person Phone 520 253, 2900 Fix_	Address	Constany Name (che shote	CUSTOMER INFORMATION	PHONE: (330) 797-8844 FAX: (330) 797-3264	CHAIN OF CUSTODY CARDINAL ENVIRONMENTAL LABORATORIES
	Method of Shipment	Received for Laboratory By	Y Retinquished By	Relinquished By	Relinguished By				Dare Time Grab Matrix No. Remarks Collected Collected Comp. Cont.	20102.55.085			RMATION	S4 CITERI METRA	
PINK - CUSTOMER COPY		Date/Time	Date/Time	DateTime	1-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2				and in second	, suce, , per,)://na/5/ +4 (,)	 m ct. 15		City/State	ormation (If differen
MER COPY	Coold Temperature	Remarks	Received By	Rectived By	A RECEIVE STORE					· · · · · · · · · · · · · · · · · · ·			ANALYSIS REQUIRED	ZipPhone	Billing Information (If different from Customer Information)
			Date/1 stra		2./36/07	There is a	-						- - -		

Mar 13 07 05:40p Brian A

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3303582902

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Source: OAC 3745-300-08 (B) and (C).

Ohio EPA - VAP - Generic Direct-Contact Soil Standards Summary (Effective 10/21/02)									
Chemical	Residential Single Chemical Soll (mg/kg)	Comm / Ind Single Chemical Soil (mg/kg)	Construction Single Chemical Soil (mg/kg)						
and the state of the state		1							
lafile Organic Compounds	7,300	100,000	100,000						
etone	9.8	100	310						
nzene	350	720	720						
arbon Disulfide	1.7	16	63						
arbon Tetrachloride	150	690	690						
lorobenzene	8,800	100,000	92,000						
nloroethane	7.3	32	410						
bromochloromethane	130	1,300	1,300						
chlorodifluoromethane	120	850	850						
chloroethane, 1,1 -	580	2,300	2,300						
chloroethane, 1,2 -	10	49	560						
ichloroethene, 1,1 -	1.6	7.5	87.0						
ichloroethene, <i>cis</i> - 1,2	760	1.200	1,200						
ichloroethene, frans - 1,2 -	1,500	2,500	2,500						
ichloropropane, 1,2 -	6.4	95	19						
ichloropropene, 1,3 -	13	19,000	54,000						
ioxane, 1,4 -	980	580,000	1,000,000						
thyl Ether	15,000	230	230						
thylbenzene	15.000	580,000	120,000						
ormaldehyde	150,000	1.000.000	1,000,000						
ormic acid	71	180	180						
lexane, n -	22,000	25,000	25,000						
sobutyl Alcohol	38,000	1,000,000	1,000,000						
Aethanol	6,700	71,600	80.000						
Nethyl Ethyl Ketone	700	7,400	16,000						
Methyl Isobutyl Ketone Methyl ferf- Butyl Ether (MTBE)	5,300	7,200	7,200						
Methylene Chloride	250	1,300	2,300						
Styrene	1,700	1,700	1,700						
Tetrachloroethane , 1,1,1,2 -	95	490	2.800						
Fetrachloroethane. 1,1,2,2 -	11	55	580						
Tetrachloroethene	130	370	370						
Toluene	520	520	520						
Trichloroethane, 1,1,1 -	990	1,400	1,300						
Trichloroethane, 1,1,2 -	24	120	800						
Trichloroethene	80	380	2,000						
Trichlorofluoromethane	490	2,000	85						
Trichloropropane, 1,2,3 -	1.5	2,700	2,700						
Vinyl Acetate	410	2,700	16						
Vinyl Chloride	3.7	160	160						
Xylenes, Total	100	100							
Semi-Volatile Organic Compounds	4 500	180,000	530,000						
Acenaphthene	4,600	290,000	870,000						
Acetophenone	3.7	18	48						
Acrylonitrile	5.8	56	570						
Aniline	23.000	880,000	1,000,000						
Anthracene	0.05	0.88	2.6						
Benzidine	11	63	810						
Benzo(a)anthracene	1.1	6.3	81						
Benzo(a)pyrene	11	63	810						
Benzo(b)fluoranthene Benzo(k)fluoranthene	110	630	8,100						
Benzo(k)huoranthene Bis (2-ethylhexyl) Phthalate	230	230	230						
Bis (2-enyinexyi) Philalate	220	220	220						
Carbazole	530	10,000	31,000						
Chlordane	28	300	400						
Chibidane	1,100	6,700	41,000						
Dibenz(a,h)anthracene	1.1	6.7	41						
Dichlorobenzene, 1,2 -	150	370	370						
Dichlorobenzene, 1,3 -	68	240	240						
Dichlorobenzene, 1,4 -	95	470	5,300						
Dichlorobenzidine, 3,3 -	24	450	1,400						

NOTE: The standards listed are either risk derived or based on soil saturations.

3303582902

Source: OAC 3745-300-08 (B) and (C).

Chemical	Residential Single Chemical Soil (mg/kg)	Comm / Ind Single Chemical Soil (mg/kg)	Construction Single Chemical Soil (mg/kg)
hlorodiphenyldichloroethane (DDD)	41	500	2,100
hlorodiphenyldichloroethene (DDE)	29	350	1,500
hlorodiphenyllrichloroethane (DDT)	29	350	360
hlorophenoxyacetic acid, 2,4 -	760	29,000	8,700
athyl Phthalate	640	640	640
nethylphenol, 2,4 -	1,500	59,000	180,000
n-butyl Phthalate	100	100	100
n-bulyi Phinasae	7.6	290	870
hitrobenzene, ortho -	31	1,200	3,400
nitrotoluene, 2,4 -	150	5,800	1,700
nitrotoluene, 2,6 -	76	2,900	8,800
ndrin	23	870	260
hylene Glycol	120,000	120,000	120,000
uoranthene	2,300	33,000	170,000
uorene	3,100	120,000	340,000
eptachlor	2.5	44	130
eptachlor Epoxide	1	22	11
exachloro- 1,3 - Butadiene	15	580	370
exachlorobenzene	6.9	120	8,600
exachloroethane	77	2,900	410
deno(1,2,3-c,d)pyrene	11	67	4,600
ophorone	4,600	4,600	860
opropylbenzene (Cumene)	860	860	350
indane	7.6	150,000	430,000
n-cresol	3,900		4,300
lethoxychlor	390	15,000	120
lethylnaphthalene, 1 -	120	120	1,900
laphthalene	54	530	1,700
litrobenzene	23	370	120,000
litrosodiphenylamine, n -	2.200	41.000	4,300
-cresol	390	10,000	10,000
Octyl Phthalate, di(n) -	1,500	8,500	4,300
o-cresol	390	240	1.700
Pentachlorophenol	51 46,000	1,000,000	510,000
Phenol		1,000,000	25
Polychlorinated Biphenyls (PCB)	1.1	25,000	130.000
Pyrene	1,700	2,900	8,600
Pyridine	620	23,000	6,900
Silvex (2,4,5 TP)	10	180	540
Toxaphene	7,700	290.000	860,000
Trichlorophenol, 2,4,5 -	1,000	18,000	54,000
Trichlorophenol, 2,4,6 -	22	210	230
Trimethylbenzene, 1.2,4	19	180	200
Trimethylbenzene, 1,3,5	2,300	87,000	26,000
Trinitrobenzene, 1,3.5 -	et al a second		Here I
Inorganic Analytes	50 75,000	1,000,000	140,000
	112 04	1200	340
Antimony 73 Arsenic, Inorganic	$\begin{array}{c c} DL & 31 \\ \hline 0.7 & 6.8 \end{array}$	80	210
Barium and Compounds	28,4 5,400	200,000	45,000
Bervilium and Compounds	150	5,700	600
Cadmium	53 35	770	420
	120,000	1,000,000	850,000
Chromium (VI)	230	8,900	2,000
Cobalt 4	5.51 1,400	40,000	660
Cyanide, Free	1,600	60,000	17,000
Fluorides, Soluble	4,700	180,000	51,000
Lead	0.0 400	1,800	1,600
Mercury	7.8	300	84
Nickel (Soluble Salts)	1,500	57,000	5,000
Selenium and Compounds	SPL 390	15,000	4,300
Silver	30L 390	15,000	4,300
Thallium	8.01 6.2	240	680
Vanadium	10:11 700	27,000	7,700 260,000
Zinc and Compounds 3	8.4 23.000	900,000	260.000

NOTE: The standards listed are either risk derived or based on soil saturations.



2870 Salt Springs Road • Youngstown, Ohio 44509 Ph: (330) 797-8844 • Fax: (330) 797-3264 • 1-800-523-0347 E:Mail: cel@cardinalenvirolabs.net

Laboratory Analysis Report

Client:	LAKESHORE GROUP Attn: BRIAN ANDREA 7310 WOODWARD AVENUE FIFTH FLOOR DETROIT, MI 48202	Lab Number: Sample ID:	27022714 TOP SOIL
Date Sar Time Sar Date Rec Report I	mpled: ceived: 2/27/2007	Sample Description: Sampler Name: Sample Matrix: PO#:	Solid
Commen	nts:		

Analyte	Result	Unit	Detection Limit	Method	Analysis Date	Analyst	
EXPLOSIVES	SEE ATTACHED			SW8330	3/9/2007	MCB *	
Aluminum	6830	mg/kg	4.42	6010B	3/1/2007	ZH	
Antimony	BDL	mg/kg	2.21	6010B	3/1/2007	ZH	
Arsenic	7.77	mg/kg	2.21	6010B	3/1/2007	ZH	
Barium	36.3	mg/kg	0.44	6010B	3/1/2007	ZH	
Beryllium	0.27	mg/kg	0.13	6010B	3/1/2007	ZH	
Cadmium	1.53	mg/kg	0.44	6010B	3/1/2007	ZH	
Calcium	535	mg/kg	4.42	6010B	3/1/2007	ZH	
Chromium	8.17	mg/kg	0.44	6010B	3/1/2007	ZH	
Cobalt	5.51	mg/kg	0.44	6010B	3/1/2007	ZH	
Copper	11.06	mg/kg	0.88	6010B	3/1/2007	ZH	
Iron	10300	mg/kg	4.42	6010B	3/1/2007	ZH	
Lead	10.8	mg/kg	1.33	6010B	3/1/2007	ZH	
Manganese	396	mg/kg	0.44	6010B	3/1/2007	ZH	
Mercury	0.10	mg/kg	0.06	7470A	3/1/2007	ZH	
Nickel	9.38	mg/kg	0.88	6010B	3/1/2007	ZH	
Potassium	548	mg/kg	17.7	6010B	3/1/2007	ZH	
Selenium	BDL	mg/kg	2.21	6010B	3/1/2007	ZH	
Silver	BDL	mg/kg	0.44	6010B	3/1/2007	ZH	
Sodium	192	mg/kg	4.42	6010B	3/1/2007	ZH	
Thallium	BDL	mg/kg	1.77	6010B	3/1/2007	ZH	
Vanadium	10.9	mg/kg	0.44	6010B	3/1/2007	ZH	
Zinc	38.9	mg/kg	0.88	6010B	3/1/2007	ZH	
Pesticides		mg/kg		8081			
Aldrin	BDL	mg/kg	0.004	8081	3/5/2007	JP	
Alpha-BHC	BDL	mg/kg	0.004	8081	3/5/2007	JP	
Beta-BHC	BDL	mg/kg	0.004	8081	3/5/2007	JP	
Delta-BHC	BDL	mg/kg	0.004	8081	3/5/2007	JP	
Gamma-BHC	BDL	mg/kg	0.004	8081	3/5/2007	JP	
Chlordane	BDL	mg/kg	0.02	8081	3/5/2007		
4,4-'DDT	BDL	mg/kg	0.004	8081	3/5/2007	JP	
4,4'-DDE	BDL	mg/kg	0.004	8081	3/5/2007		
4,4'-DDD	BDL	mg/kg	0.004	8081	3/5/2007	JP	

Dieldrin	BDL	mg/kg	0.004	8081	3/5/2007	JP
Alpha-Endosulfan	BDL	mg/kg	0.008	8081	3/5/2007	JP
Beta-Endosulfan	BDL	mg/kg	0.008	8081	3/5/2007	JP
Endosulfan Sulfate	BDL	mg/kg	0.004	8081	3/5/2007	JP
Endrin	BDL	mg/kg	0.004	8081	3/5/2007	JP
Endrin Aldehyde	BDL	mg/kg	0.004	8081	3/5/2007	JP
Endrin Ketone	BDL	mg/kg	0.008	8081	3/5/2007	JP
Heptachlor	BDL	mg/kg	0.004	8081	3/5/2007	JP
Heptachlor Epoxide	BDL	mg/kg	0.004	8081	3/5/2007	JP
	BDL	mg/kg	0.004	8081	3/5/2007	JP
Methoxychlor	BDL	mg/kg	0.2	8081	3/5/2007	JP
Toxaphene	DDL	ING/NG		8081	et character of	
SURROGATES	74		23-123%	8081	3/5/2007	JP
TCMX			30-107%	8081	3/5/2007	JP
DCBP	65		30-10770	0001	51512001	
Polychlorinated Biphenyls (PCBs)	BDL			8082	3/2/2007	JP
PCB-1016	BDL	mg/kg	0.2	8082	3/2/2007	JP
PCB-1221	BDL	mg/kg	0.4	8082	3/2/2007	JP
PCB-1232	BDL	mg/kg	0.2	8082	3/2/2007	JP
PCB-1242	BDL	mg/kg	0.2	8082	3/2/2007	JP
PCB-1248	BDL	mg/kg	0.2	8082	3/2/2007	JP
PCB-1254	BDL	mg/kg	0.2	8082	3/2/2007	JP
PCB-1254 PCB-1260	BDL	mg/kg	0.2	8082	3/2/2007	JP
	DDL	mB mB	0.12	8082		
SURROGATES	45		23-123	8082	3/2/2007	JP
TCMX	69		30-107	8082	3/2/2007	JP
PCBP	69		30-107	8082	57272007	21
Volatile Organic Compounds (VOC)				8260/5035		
Acetone	BDL	ug/kg	50	8260/5035	3/9/2007	JP
Benzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Bromobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Bromochloromethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Bromodichloromethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Bromoform	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Bromomethane	BDL	ug/kg	10	8260/5035	3/9/2007	JP
	BDL	ug/kg	50	8260/5035	3/9/2007	JP
2-Butanone	BDL	ug/kg		8260/5035	3/9/2007	JP-
n-Butylbenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
sec-Butylbenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
tert-Butylbenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Carbon Tetrachloride		ug/kg	5	8260/5035	3/9/2007	JP
Chlorobenzene	BDL		10	8260/5035	3/9/2007	JP
Chloroethane	BDL	ug.kg		8260/5035	3/9/2007	JP
Chloroform	BDL	ug/kg	5		3/9/2007	JP
Chloromethane	BDL	ug/kg	10	8260/5035		
2-Chlorotoluene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
4-Chlorotoluene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,2-Dibromo-3-chloropropane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Dibromochloromethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,2-Dibromoethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Dibromomethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,2-Dichlorobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1.3-Dichlorobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1.4-Dichlorobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Dichlorobromomethane	BDL	ug/kg	10	8260/5035	3/9/2007	JP
	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,1-Dichloroethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,2-Dichloroethane	DDL	uging	2	010010000		1.1

			10.00		0101000	ID
1-Dichloroethene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
cis-1,2-Dichloroethene	BDL	ug/kg	5 5	8260/5035	3/9/2007	JP JP
trans-1,2-Dichloroethene	BDL	ug/kg		8260/5035	3/9/2007	JP
1,2-Dichloropropane	BDL	ug/kg	5	8260/5035	3/9/2007 3/9/2007	JP
1,3-Dichloropropene	BDL	ug/kg	5	8260/5035		JP
2,2-Dichloropropane	BDL	ug/kg	5	8260/5035	3/9/2007	
1,1-Dichloropropene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Ethyl Benzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Hexachlorobutadiene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
2-Hexanone	BDL	ug/kg	50	8260/5035	3/9/2007	JP
Isopropylbenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
p-lsopropyltoluene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Methylene Chloride	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Methyl Isobutyl Ketone	BDL	ug/kg	50	8260/5035	3/9/2007	JP
Naphthalene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
n-Propylbenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Styrene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,1,1,2-Tetrachloroethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,1,2,2-Tetrachloroethane	BDL	ug/kg	5 5 5	8260/5035	3/9/2007	JP
Tetrachloroethene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Toluene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,2,3-Trichlorobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1.2.4-Trichlorobenzene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,1,1-Trichloroethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,1,2-Trichloroethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
Trichloroethene	BDL	ug/kg	5	8260/5035	3/9/2007	JP
	BDL	ug/kg	10	8260/5035	3/9/2007	JP
Frichlorofluoromethane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,2,3-Trichloropropane	BDL	ug/kg	5	8260/5035	3/9/2007	JP
1,2,4-Trimethylbenzene			5	8260/5035	3/9/2007	JP
1,3,5-Trimethylbenzene	BDL	ug/kg	10	8260/5035	3/9/2007	JP
Vinyl Chloride	BDL	ug/kg		8260/5035	3/9/2007	JP
m,p-Xylene	BDL	ug/kg	5		3/9/2007	JP
o-Xylene	BDL	ug/kg	5	8260/5035	51912001	11
SURROGATES			00 10/0/	8260/5035	3/9/2007	JP
Dibromofluorobenzene	81		80-124%	8260/5035		
Toluene-d8	90		69-118%	8260/5035	3/9/2007	JP
Bromofluorobenzene	66		56-116%	8260/5035	3/9/2007	JP
MTBE	BDL	ug/kg	10	8260/5035	3/9/2007	JP
Semi-Volatile Organic Compounds				8270		
Acenaphtene	BDL	ug/kg	330	8270	3/2/2007	JP
Acenaphthylene	BDL	ug/kg	330	8270	3/2/2007	JP
Anthracene	BDL	ug/kg	330	8270	3/2/2007	JP
Benzidine	BDL	ug/kg	3300	8270	3/2/2007	JP
Benzo [a] anthracene	BDL	ug/kg	330	8270	3/2/2007	JP
Benzo [a] pyrene	BDL	ug/kg	330	8270	3/2/2007	JP
3,4-Benzofluoranthene	BDL	ug/kg	330	8270	3/2/2007	JP
Benzo (g,h,i) perylene	BDL	ug/kg	330	- 8270	3/2/2007	JP
Benzo (b) fluoranthene	BDL	ug/kg	330	8270	3/2/2007	JP
Benzo (k) fluoranthene	BDL	ug/kg	330	8270	3/2/2007	JP
	BDL	ug/kg	330	8270	3/2/2007	JP
Bis (2-chloroethoxy) methane	BDL	ug/kg	330	8270	3/2/2007	JP
Bis (2-chloroethyl) ether	BDL	ug/kg	330	8270	3/2/2007	JP
Bis (2-chloroisopropyl) ether		ug/kg	330	8270	3/2/2007	JP
Bis (2-ethylhexyl) phthalate	BDL		330	- 8270	3/2/2007	JP
4-Bromophenyl phenyl ether	BDL	ug/kg	330	8270	3/2/2007	JP
Butyl benzyl phthalate	BDL	ug/kg	550	0210	5/2/2007	

)-Chloronaphthalene	BDL	ug/kg	330	8270	3/2/2007	JP
4-Chlorophenyl phenyl ether	BDL	ug/kg	330	8270	3/2/2007	JP
Chrysene	BDL	ug/kg	330	8270	3/2/2007	JP
Dibenzo [a,h] anthracene	BDL	ug/kg	330	8270	3/2/2007	JP
1,2-Dichlorobenzene	BDL	ug/kg	330	8270	3/2/2007	JP
1,3-Dichlorobenzene	BDL	ug/kg	330	8270	3/2/2007	JP
1,4-Dichlorobenzene	BDL	ug/kg	330	8270	3/2/2007	JP
3,3'-Dichlorobenzidine	BDL	ug/kg	3300	8270	3/2/2007	JP
Diethyl phthalate	BDL	ug/kg	330	8270	3/2/2007	JP
Dimethyl phthalate	BDL	ug/kg	330	8270	3/2/2007	JP
Di-n-butyl phthalate	BDL	ug/kg	330	8270	3/2/2007	JP
2,4-Dinitrotoluene	BDL	ug/kg	330	8270	3/2/2007	JP
2,6-Dinitrotoluene	BDL	ug/kg	330	8270	3/2/2007	JP
Di-n-octyl phthalate	BDL	ug/kg	330	8270	3/2/2007	JP
1,2-Diphenylhydrazine (as azobenzen	BDL	ug/kg	330	8270	3/2/2007	JP
Fluoranthene	BDL	ug/kg	330	8270	3/2/2007	JP
Fluorene	BDL	ug/kg	330	8270	3/2/2007	JP
Hexachlorobenzene	BDL	ug/kg	330	8270	3/2/2007	JP
Hexachlorobutadiene	BDL	ug/kg	330	8270	3/2/2007	JP
Hexachlorocyclopentadiene	BDL	ug/kg	330	8270	3/2/2007	JP
Hexachloroethane	BDL	ug/kg	330	8270	3/2/2007	JP
Indeno (1,2,3-cd) pyrene	BDL	ug/kg	330	8270	3/2/2007	JP
Isophorone	BDL	ug/kg	330	8270	3/2/2007	JP
Naphthalene	BDL	ug/kg	330	8270	3/2/2007	JP
Nitrobenzene	BDL	ug/kg	330	8270	3/2/2007	JP
N-Nitrosodimethylamine (as diphenyl	BDL	ug/kg	330	8270	3/2/2007	JP
	BDL	ug/kg	330	8270	3/2/2007	JP
N-Nitrosodi-n-propylamine	BDL	ug/kg	330	8270	3/2/2007	JP
N-Nitrosodiphenylamine	BDL	ug/kg	330	8270	3/2/2007	JP
Phenanthrene	BDL	ug/kg	330	8270	3/2/2007	JP
Pyrene	BDL	ug/kg	330	8270	3/2/2007	JP
1,2,4-Trichlorobenzene	BDL	ug/kg	660	8270	3/2/2007	JP
2-Chlorophenol		ug/kg	660	8270	3/2/2007	JP
2,4-Dichlorophenol	BDL		660	8270	3/2/2007	JP
2,4-Dimethylphenol	BDL	ug/kg	660	8270	3/2/2007	JP
4,6-Dinitro-o-cresol	BDL	ug/kg	660	8270	3/2/2007	JP
2,4-Dinitrophenol	BDL	ug/kg		8270	3/2/2007	JP
2-Methylphenol	BDL	ug/kg	660		3/2/2007	JP
3&4-Methylphenol	BDL	ug/kg	660	8270	3/2/2007	JP
2-Nitrophenol	BDL	ug/kg	660	8270		JP
4-Nitrophenol	BDL	ug/kg	660	8270	3/2/2007	
Pentachlorophenol	BDL	ug/kg	660	8270	3/2/2007	JP
Phenol	BDL	ug/kg	660	8270	3/2/2007	JP
2,4,5-Trichlorophenol	BDL	ug/kg	660	8270	3/2/2007	JP
2,4,6-Trichlorophenol	BDL	ug/kg	660	8270	3/2/2007	JP
SURROGATES				8270		34
Nitrobenzene-d5	37		23-120%	8270	3/2/2007	JP
2-Fluorobiphenyl	62		30-107%	8270	3/2/2007	JP
p-Terphenyl	60		18-129%	8270	3/2/2007	JP
2-Fluorohenol	37		27-112%	8270	3/2/2007	JP
Phenol-d6	27		25-113%	8270	3/2/2007	JP
Flichol-uo	26		19-116%	8270	3/2/2007	JP

BDL = Below Detection Limit

Results approved by:

John Pflugh, Lab Manager Roberta Petitt, Senior Chemist

Wendy Hanna, Customer Relations

Ohio EPA Drinking Water Certification: 1549, 898 Pennsylvania Laboratory Registration: 68-948



ANALYTICAL RESULTS

Date:

Friday, March 09, 2007

Client: Client Project:	Cardinal En Explosives		ıl Labs							
Client Sample ID:	27022714	Sec.5					Work C	Order / ID:	M	E0703051-01A
Sample Description:							Colle	ction Date:		02/27/07 00:00
Sample Matrix:	Solid						Date	e Received:	1	03/02/07 11:30
Analyses			ST	Res	sult	RL	Qual	Units	DF	Analyzed
					14					
EXPLOSIVES		Method:	SW8330			Pr	ep Date/	Time: 03/07/0	7 00:0	0 Analyst: AS
1,3,5-Trinitrobenzene			А		ND	400		µg/Kg	1	03/09/07 12:04
1,3-Dinitrobenzene			A		ND	400		µg/Kg	1	03/09/07 12:04
2,4,6-Trinitrotoluene			А		ND	400		µg/Kg	1	03/09/07 12:04
2,4-Dinitrotoluene			A		ND	400		µg/Kg	1	03/09/07 12:04
2,6-Dinitrotoluene			A		ND	400		µg/Kg	1	03/09/07 12:04
2-Amino-4,6-dinitroto	luene		А		ND	400		µg/Kg	1	03/09/07 12:04
2-Nitrotoluene			A		ND	400	E.	µg/Kg	1	03/09/07 12:04
3-Nitrotoluene			A		ND	400	i i	µg/Kg	1	03/09/07 12:04
4-Amino-2,6-dinitroto	luene		A		ND	400)	µg/Kg	1	03/09/07 12:04
4-Nitrotoluene	100-10		A		ND	400)	µg/Kg	1	03/09/07 12:04
HMX			A		ND	400)	µg/Kg	1	03/09/07 12:04
Nitrobenzene			А		ND	400)	µg/Kg	1	03/09/07 12:04
RDX			А		ND	400)	µg/Kg	1	03/09/07 12:04
Tetryl			А		ND	400)	µg/Kg	1	03/09/07 12:04
Surr: 1,2-Dinitrobe	enzene		S	93.5		58-121	Û-	%REC	1	03/09/07 12:04

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FLAGS, FOOTNOTES AND ABBREVIATIONS (as needed)

NA	-	Not Analyzed	N/A	=	Not Applicable				
mg/L	-	Milligrams per Liter (ppm)	ug/L	=	Micrograms per Liter (ppb)) cfu	۰		Forming Unit
mg/Kg	=	Milligrams per Kilogram (ppm)	ug/Kg	=	Micrograms per Kilogram	(ppb) ng/L	=	Nanogra	ms per Liter (ppt)
υ	=	Undetected							
J	=	Analyte concentration detected be	tween RL	and N	IDL (Metals / Organics)				
в		Detected in the associated Method							
b	=	Detected in the associated Method				Detection Limi	t but le	ss than the	routine PQL/RL
D	=	Surrogate recoveries are not calcu							
ND	=	Not Detected at the Reporting Lir	nit (or the	Meth	nd Detection Limit, if listed)				
E	=	Value above quantitation range							
Н	=	Analyte was prepared and/or anal	yzed outsi	de of	the analytical method holding	g time			
1	=	Matrix Interference							
R	-	RPD outside accepted recovery li	mits						
S	=	Spike recovery outside recovery l	imits						
Surt	=	Surrogate							19.91.4
DF	=	Dilution Factor RL = R	leporting L	Limit	ST = Sample Type	MDL	= N	lethod Det	ection Limit
SAM	PLET	TYPES							
A	=	Analyte							
τ	=	Internal Standard							
S	=	Surrogate							
τ	Ŧ	Tentatively Identified Compoun	d (TIC, co	ncent	ration estimated)				
OC SA	AMPL	E IDENTIFICATIONS							
MBLK	=	Method Blank	ICS/	4	= Interference Check Stan	dard "A"		OPR =	
DUP	-	Method Duplicate	ICS/	AB	 Interference Check Stan 	dard "AB"			Recovery Standard
LCS	=	Laboratory Control Sample	LCS	D	 Laboratory Control Sam 	ple Duplicate			
MS	=	Matrix Spike	MSI)	 Matrix Spike Duplicate 				
ICB	=	Initial Calibration Blank	CCE	3	 Continuing Calibration 	Blank			

-CERTIFICATIONS

ICV

PDS

Below is a list of certifications maintained by the Microbac Merrillville Laboratory. All data included in this report has been reviewed for and meets all project specific and quality control requirements of the applicable accreditation, unless otherwise noted. Complete lists of individual analytes pursuant to each certification below are available upon request.

Serial Dilution

Continuing Calibration Verification

- Illinois EPA for the analysis wastewater and solid waste in accordance with the requirements of the National Environmental Laboratory Accreditation Program [NELAP] (accreditation #100435)
- Illinois Department of Public Health for the microbiological analysis of drinking water (registry #175458) -

CCV

SD

-

- Indiana DEM approved support laboratory for solid waste and wastewater analyses
- Indiana SDH for the chemical analysis of drinking water (lab #C-45-02)

Initial Calibration Verification

Post Digestion Spike

- Indiana SDH for the microbiological analysis of drinking water (lab #M-45-08)
- Kentucky EPPC for the analysis of samples applicable to the Underground Storage Tank program (lab #0061)
- North Carolina DENR for the environmental analysis for NPDES effluent, surface water, groundwater, and pretreatment regulations (certificate #597)
- Wisconsin DNR for the chemical analysis of wastewater and solid waste (lab #998036710)

MICROBAC LOCATIONS

Corporate	-	Wexford, PA	Camp Hill Division		Camp Hill, PA
Pittsburgh Division	-	Warrendale, PA	Knoxville Division		Maryville, TN
Erie Division		Erie, PA / Wilkes-Bane, PA	Venice Division		Venice, FL / Fort Myers, FL
New Castle Division	-	New Castle, PA	South Carolina Division	-	New Ellenton, SC
Kentucky Testing Division		Louisville, KY / Evansville, IN	Fayetteville Division	-	Fayetteville, NC
Massachusetts Division	-	Mariboro, MA	Southern Testing Division	+	Wilson, NC
Gascoyne Division	1	Bultimore, MD	Hauser Division		Boulder, CO
Corona Division	-	Corona, CA	Friend Laboratory	+	Waverly, NY
South Jersey Division	-	Tumersville, NJ			

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WILLLE - LVR COLA	CountyCounty	Copy sent to EPA? Yes No If Yes, Which Branch?	FOR PUBLIC WATER SUPPLY (PWS) ONLY	Collector's Signature	Collector's Name			27022714 Top Sail	Customer	Contact Person		CUSTOMER INFORMATION		2870 SALT SPRINGS KOAP, 1001000000000000000000000000000000000	CHAIN OF CUSTODY CARDINAL ENVIRONMENTAL LABORATORIES	S
YELLOW - RE T COPY	Method of Shipment celpichup	Received for Laboratory By	Relinquished By	Relinquished By	Relinquished By				Comp. Natrix No. Remarks Comp. Cont.	2002			Vamess	Client Name	Billing Inform	
PINK - CUSTOMER COPY		DateTime	Date/Time	Date/Time	Date/Time 5 day				Er ve P.s		periods Hel Arr	-13		City/State	ation (If differen	
ER COPY	Cooler Tempersture	Remarks	Received By	Received By									ANALYSIS REQUIRED	ZipPhone	Billing Information (If different from Customer Information)	
0			DateTime		2/26/67	DestTime										

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Droporty Owner	Department of the Army BRAC Technical Support Office	Site: RVAAP
Property Owner:	Rock Island Arsenal, Rock Island, IL	Building Number: 1039
Facility Address	Ravenna Army Ammunition Plant	Function: Chemical Laboratory
Facility Address:	8451 St. Route 5 Ravenna, OH 44266	09-18-06
Building Inspection		
Do inspection results for ⊠ Yes □ No	this section concur with previous D&D con	ntractor findings
If no, explain discrepancy	y in space provided below along with pictur	re file as need
Building Exterior		
and a state of the	L	T
	ALL STATE STATES AND	
	A STATE OF THE REAL PROPERTY O	A A A A A A A A A A A A A A A A A A A
Do inspection results for	this section concur with previous D&D cont	tractor findings
Do inspection results for	this section concur with previous Dab com	
🛛 Yes		
L No		
If no, explain discrepancy	y in space provided below along with pictur	re file as need
Historical Archive Search	Results and Preliminary Visual Inspection	1
Transite panels over wood	den construction used as a Chemical Labora	atory
Do inspection results for Xes	this section concur with previous D&D cont No	tractor findings
If no, explain discrepancy	y in space provided below along with pictur	e file as need
Area of Building Footp	orint (sq. ft): 16,500 (approx)	



Wall Inspection Informa	tion						
Do inspection results for Yes	this section	concur with p	previous D&D c	ontractor findir	ngs		
🗆 No							
If no, denote changes in	the approp	riate subsectio	n(s) below alo	ng with picture	file as need		
Wall Material	Concrete	Cinder Block	Brick	Metal	Wood Frame	Steel Frame	
Interior Walls							
Exterior Walls							
Are Surfaces Painted :	Yes	🛛 No		ling of Paint Obs		🛛 No	
Observations/Comments:	Interior w construct	• 1	ock panels whi	le the exterior	walls are transit	e panels over v	wood
Visible Explosives Present:	Yes	🛛 No	If Yes identify	location below.			
Location:							
Thickness of Material/Wall/S	lab > 1/8"	Yes	No If	Yes answer belo	W:		
Are Cracks, Crevices, Openir	ngs bigger th	an a hairline:	🗌 Yes 🛛 🗵	No			
Entrapment of Explosive Res	sidues in Cra	cks, Crevices, or	Openings obser	ved: 🗌 Yes	🛛 No		
Other suspect surfaces pres	ent that are i	not accessible fo	or Visual Inspecti	on: 🗌 Yes	No No		
For hollow wall construction	(i.e. tile), is	internal examina	ation needed aro	und wall penetra	tions or suspect a	reas? 🗌 Yes	🗆 No 🛛 NA
If yes, identify location and	report finding	gs below:					
Observations/Notes:		* 					



Roof Inspection Information
Do inspection results for this section concur with previous D&D contractor findings
⊠ Yes
□ No
If no, denote changes in the appropriate subsection(s) below along with picture file as need
Roof Type: X Transite Shingled Tar Concrete Other
Roof Frame: X Wood Steel
Roof Condition: Intact Holes or Openings Observed Collapsed and Unsafe
Visible Explosives Present: Yes X No If Yes, identify location below.
Location:
Thickness of wall material > 1/8" Yes No X NA If Yes answer below:
Are Cracks, Crevices, Openings bigger than a hairline: 🛛 Yes 🛛 No
Entrapment of Explosive Residues in Cracks, Crevices, or Openings observed: Yes No
Suspect surfaces present that are not accessible for Visual Inspection: Yes X No
Other Observations/Notes:
10 10
And the second se
Picture of 3-ply Roof Structure

Picture of 3-ply Roof Structure



Floor Inspection Inform	nation				
Do inspection results for	or this section con	cur with previous D&I	D contractor findings		
🛛 Yes					
🗆 No					
If no, denote changes i	in the appropriate	subsection(s) below	along with picture file	as need	
Floor Type	Concrete	🛛 Wood	□ Steel		□ Other
Floor Liner	Lead	🛛 Rubber		site	□ None
Visible Explosives Present:	: 🗆 Yes 🛛 No	If yes identify location			
Location:					
Thickness of Slab > 1/8"	Yes No	Thickness of liner > 1/	/8″ 🗌 Yes 🔲 No 🛛	X NA If Yes to	either answer below:
Are Slab Cracks, Crevices,	Openings bigger the	an a hairline:	🗆 Yes 🛛 No		
Are floor liner Cracks, Crev	vices, Openings bigg	jer than a hairline:	Yes No	X NA	
Entrapment of Explosive R	Residues in Cracks, C	revices, or Openings ob	oserved in floor slab.	Yes 🛛 No	
Entrapment of Explosive R	Residues in Cracks, C	revices, or Openings ob	served in floor liner.	Yes 🗆 No	🖾 NA
Suspect surfaces present t	that are not accessib	le for Visual Inspection.	Yes 🛛 No		
Other Observations/Notes	:				
Exs	spray testing has	s revealed explosive	e contamination in v	arious rooms/	



Process Equipment and Piping Inspection Information									
Do inspection results for this section concur with previous D&D contractor findings									
X Yes									
□ No									
If no, denote changes in the appropriate subsection(s) below along with picture file as need									
Process Piping Process Equipment Sump(s) Sump Water None									
Has Sump Water been Analyzed by Lab: Yes No No									
** Attach sump water sample results to Inspection form as applicable									
Visible Explosives Present on Process Equipment/Piping: 🗌 Yes 🛛 No									
Visible Explosives Present in Sumps: 🗌 Yes 🗌 No 🛛 NA									
Observations/Notes:									



			
Non-process Equipment ar	nd Piping Inspectio	n Information	
Do inspection results for the	nis section concur w	/ith previous D&D contractor fir	ndings
🛛 Yes			
_			
🗆 No			
If no, donoto changes in th	o appropriato cubo	ection(s) below along with pict	uro filo os pood
In no, denote changes in ti	le appropriate subs	ection(s) below along with pict	
🛛 Steam	🛛 Water	I Floor Drain	□ Other
Other Fixtures:			
Underground Sump:			
Visible Explosives Present	🗆 Yes 🛛 N	0	
Observations/Notes:			
Drains and sink trap	s will be investigat	ed and detonating cord will be	used for desensitizing.



Non Explosive Hazards of Concern
o inspection results for this section concur with previous D&D contractor findings
X Yes
□ No
no, denote changes in the appropriate subsection(s) below along with picture file as need
Residual Peeling Paint Chips on the Walls, Equipment and Piping, and Structural Members
Observation of animal droppings and miscellaneous debris on floor of buildings
Asbestos Containing Material (Transite, Utility Pipe Insulation, lighting fixtures, etc.)
Overhead Conveyors and Belt Systems, and Elevators
Mercury Switches
PCB Light Ballast
Physical Safety Hazard from Removed or Damaged Building Structural Members
Other (please explain)

Type of Demo Required Based on above Observations (please explain):

Thermal Decomposition	Demo with En	gineering Controls	🛛 Conventional Demo
Conclusions:			
Peeling Paint		<i>F</i>	Animal Droppings
Comments			
Project Manager	Childress	suxo	Brian Andrea

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Chemical Laboratory First Floor EXPRAY (Building 1039) Testing Results on Building Surfaces For Explosives

Test Number	Results	Remarks
1-52406	Negative	Room 1
2-52406	Negative	" "
3-52406	Positive	Room 1, Group 2
4-52406	Negative	Room 2
5-52406	Negative	" "
6-52406	Negative	٠.
7-52406	Negative	Room 3
8-52406	Negative	" "
9-52406	Positive	Poom 4 Group 1
10-52406	Positive	Room 4, Group 1
11-52406	Negative	Hollwoy
12-52406	Negative	Hallway
13-52406	U	Room 5
13-52406	Negative	K00III 5 "
15-52406	Negative	Room 6
	Negative	
16-52406 17-52406	Negative	Ladias Destroom
	Negative	Ladies Restroom
18-52406	Negative	Storage Deem
19-52406	Negative	Storage Room
20-52406	Negative	Lab Daam, Crown 2
21-52406	Positive	Lab Room, Group 2
22-52406	Negative	66
23-52406	Negative	۲۲
24-52406	Negative	Deere 7
25-52406	Negative	Room 7
26-52406	Negative	D 9
27-52406	Negative	Room 8
28-52406	Negative	
29-52406	Negative	Room 9
30-52406	Negative	"
31-52406	Positive	"
32-52406	Negative	
33-52406	Negative	Room 10
34-52406	Negative	
35-52406	Negative	Mens Restroom
36-52406	Negative	

Group 1, TNT Group 2, HMS/RDX Group 3, Black Powder

Chemical Laboratory Basement EXPRAY Testing Results on Building Surfaces For Explosives

Test Number	Results	Remarks
1-52306	Negative	Main Room West Side
2-52306	Negative	Main Room Pipes
3-52306	Negative	Northwest Room
4-52306	Negative	North Left Central Room
5-52306	Negative	North Left Central Room Pipes
6-52306	Negative	North Right Central Room Air Ducts
7-52306	Negative	North Right Central Room Floor
8-52306	Negative	Northeast Room Down Pipe
9-52306	Negative	North Right Central Room Wall
10-52306	Negative	Main Room East

Group 1, TNT Group 2, HMS/RDX Group 3, Black Powder



Munitions Response for Demolition of Load Lines 5, 7 and Building 1039, Transite Removal at Building T-1604, Removal of Most Remaining Concrete and Miscellaneous Debris at Load Line 6, 9 and 11

Appendix G

Floor Sweeping Waste Characterization Sample Report and Disposal Manifests

0183871

Driginal

Ticket# 23775



Recrican Landfil) 7916 Chapel St 8E Waynesburg, OH, 44688 Ph: (330) 866-3265

Customer Name BetterManagemen Better Management Corporation Ticket Date 08/16/2006 Carrier WOLFDRDSREFUSER WOLFORDS REFUSE & RE Payment Type Credit Account Vehicle# 56 Volume Manua) Tokta Container Hauling Tekt# Driver Route Check# State Wat Cd Billing # 9004450 Manifest i Gen EPA 1D Destination PID Profile 37318 (bird droppings and floor sweepings) Generator 119-RAVENNBARMY RAVENNA ARMY AMMUNITION PLANT

Time	Scale	Operator	Inbound	Grace	41180	115
In 08/16/2006 08:21:59 Out 08/16/2006 08:43:45	the second second second	BRUEGG		Terre	33760	16
Out 08/16/2006 08:43:45	Scale 2	BRUEBG		Net . Tans	7420	1b 3.71

1.	.".	12	37	-	T	-	S
4	12	11	1 F	-	11	2	2

Prod	uet	LD%	Qty	UCH	Rate	Fea	Amount	Origin
1 22 23	3001 - bulk solid- EVL-Env Fee Lg. FUEL-Fuel Surcharg	រលាល		Tons Logd %				OH-PORTAGE OH-PORTAGE OH-PORTAGE

Driver Signature 8

Total Fees Total Ticket

404WM-N

Relitined for use on efite 112-piton) typewriter.)								
Non-HAZARDOUS	1. Generator's US EPA ID N	No.	Manifest Document No.	2. Page of	01			
8	avenna Army Amun: 451 State Rt. 5 avenna, Ohio 4426	ICATION PI	ant .					
5. Transporter 1 Company Name	6. I	US EPA ID NU N / A		A. Tron 330	sporter's Ph 530–3	none 200		
7. Transporter 2 Company Name	8.	US EPA ID Nu	mber		sporter's Ph	none		
 Designated Facility Name and Site Address MM American Landfill 7916 Chapel Street, SE Waynesburg, Ohio 44688 	10.	US EPA ID Nu	umber	C. Facil	lity's Phone 866-3			
11. Waste Shipping Name and Description		<u></u>	<u> </u>	_	12. Conte		13. Total	
Non Regulated bird droppi	ngs and floor sw	eepings			 0 0 1	туре С М	Quantity 0 0 0 2 0))
ь.								
c.					·			
d.								
D. Additional Descriptions for Materials Listed A				E. Har	dling Code	es for W	astes Listed Above	3
D. Additional Descriptions for Materials Listed / 15. Special Handling Instructions and Addition a. APPROVAL NUMBER: 3731	al Information			E. Hor	dling Code	es for W	astes Listed Above	3
15. Special Handling Instructions and Addition	al Information 18	his manifest are not	subject to federal					
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 Special Handling Instructions and Additiona APPROVAL NUMBER: 3731 GENERATOR'S CERTIFICATION: 1 certify the second sec	al Information 18 he materials described above on th G BVENBEN	11	subject to federal				disposal of Hazardou	US W // 2
 Special Handling Instructions and Additiona a. APPROVAL INUMBER: 3731 GENERATOR'S CERTIFICATION: 1 certify th Printed/Typed Name B. ADDREA Transporter 1 Acknowledgement of Receipt Printed/Typed Name Radby Delly Transporter 2 Acknowledgement of Receipt 	al Information 18 he materials described above on th GBVENBEN of Materials of Materials	Signature Signature	subject to federal Tink m				disposal of Hazardou Manth Day Manth Day Manth Day	us W 2 6
 Special Handling Instructions and Additiona a. APPROVAL INUMBER: 3731 16. GENERATOR'S CERTIFICATION: 1 certify the Printed/Typed Name FRV INCLUSS. 17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name Radion Deciting 	al Information 18 he materials described above on th GBVENBEN of Materials of Materials	Signature	subject to federal				disposal of Hazardou	us W 2 6
 15. Special Handling Instructions and Additiona a. APPROVAL NUMBER: 3731 16. GENERATOR'S CERTIFICATION: 1 certify the Printed/Typed Name Printed/Typed Name Printed/Typed Name Printed/Typed Name Printed/Typed Name Printed/Typed Name Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt Printed/Typed Name 19. Discrepancy Indication Space 	al Information 18 he materials described above on th GBVENBEN of Materials of Materials	Signature Signature	subject to federal				disposal of Hazardou Manth Day Manth Day Manth Day	us W 2 6
 15. Special Handling Instructions and Additiona a. APPROVAL NUMBER: 3731 16. GENERATOR'S CERTIFICATION: 1 certify the Printed/Typed Name Drinted/Typed Name Radby Della 18. Transporter 2 Acknowledgement of Receipt Printed/Typed Name 	al Information 18 he materials described above on th GBVENBEN of Materials of Materials	Signature Signature Signature	Juan Del	regulations	for reporting		disposal of Hazardou Manth Day Manth Day Manth Day	us W % 6

	Environmenta Recycling ^{**}	DOLV	ER ONE 10 C DRUM - P/U		Ship	per : PO :		6572	
527 Ea Bowlin Ph: Ph: Fx: Deliverie	P.O. Box 167 st Woodland Circle g Green, OH 43402 (419) 354-6110 (800) 284-9107 (419) 354-5110 s to site _gaylord w/liner _metal drums _4' fiber drums _8' fiber drums _4' boxes _8' boxes	BILL TO: _ Street: City: Contact: Phone: EMERGENC Transporte	7310 WOOD DETROIT JOHN HARE (313) 535-78 Y RESPONSE NUI	E ENGINEER ING WARD AVE., SU MI 48202 IMAN 82 (BER (800) 284-910	Street: City: Contac Phone: Arriva	845 RA t: CH	1 STA VENN/ (412) (330)		H 44266
НМ	Batteries Wet Filled with Ac Universal Waste Batteries, I Batteries Wet Filled with Al	Descript id, 8, UN 2794 .ead -Acid kali, 8, UN 279	ion , PG III ERG f 5, PG III	:: 154		o. of tainers	T _{ype}	Weigh Est.	t (lb.) Act.
	Universal Waste Batteries, 1 Lithium Battery, 9, UN 309 Universal Waste Batteries, 1 Mercury Contained in Man Universal Waste Electrical Universal Waste Batteries, 2	0, PG II Lithium ufactured Artic Devices	ERG- les, 8, UN 2809, ERG	+: 154 +: 138 PG III #: 172	*				
	Universal Waste Batteries, Universal Waste Batteries, Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle	Mercury	Per 40 CFR 763	60 (b)(2)(ii) D	**		DF	30	
_	Electronic Devices / Comp Universal Waste Electric L _i4' Fluorescent U-Shaped/Circula	outer Monitors amps,		imated quantities Oth	1	ł	(F	20	

Dr.

20 0....

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to applicable international and national governmental regulations. _____Date: _ 06

Shipper:

Carrier:

_____Date: _____D_//1/06 _____Date: _____

Received By:_

White - Recycling Facility / Yellow - Certificate / Pink - Processing / Gold - Shipper

rice Agreement on File? XYES NO		Profile Number: WMI Renewal Date:	<u> </u>	
		Requested Disposal Site:	American	
Waste Generator Information				
Generator Name: Lakeshore (Facility Street Address: 8451	State Rt. 5	_ 2. SIC Code: 4. Phone: (601) 299-2201		
Facility City: Ravenna		6. State/Province: Ohio 8. Generator USEPA/Federal ID	₽ N/A	
Zip/Postal Code: 44265 County: Portage		10 State/Province ID #		
Customer Name: Better Mana		12. Customer Phone: (330)44 14. Customer Fax: 330-482-94	32-9073, ext 121	
Customer Contact: Chuck Tri Waste Stream Information		14. Cusiomer Fax 330-462-54	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
Name of Marto: Bird droppin	and floor sweepings	2. State Waste Code:		
Name of Waste: Bird droppin Process Generating Waste: T	he cleaning out of old abando	oned buildings		
State of Origin: OH		Tons Yards Galions		
Anticipated Volume: 50	Day Week	DrumsOther (specify) MonthYear	Other	
Frequency: X One-Time Personal Protective Equipment F				
onditions:: None				
Is this a U.S. Department of Trai	sportation (USDOT) Hazardo	Dus Material? (If no, skip 8, 9, & 10)	YES NO	
Dependente Quantity (the ' tras)		10. Hazard Class/ID #.		
I. USDOT Shipping Name: Nor				
Is this waste a result of an indust	rial process? I.e. Filter Cake,	Sludge, dust, Waste wasters, Tank bot eed to section D.	toms. LYES XNO	
the answer is yes, proceed to section				
the answer is yes, proceed to sect	back if additional information	is attached. Indicate the number of at	tached pages:	
the answer is yes, proceed to sect 	Check if additional information	is attached. Indicate the number of at	tached pages: g. Free liquids?	
the answer is yes, proceed to sect	odor e. Physical st	ate @ 70°F f. Layers Liquid 🛛 Single Layer		
the answer is yes, proceed to secu Waste stream diaracteristics C. Color d. Strong	check if additional information odor e. Physical st ibe); ⊠Solid □Gas	is attached. Indicate the number of at ate @ 70°F f. Layers	g. Free liquids?	
the answer is yes, proceed to secure Waste stream characteristics. c. Color d. Strong (descr	check if additional information odor e. Physical st ibe): 🛛 Solid	is attached. Indicate the number of at late @ 70°F f. Layers Liquid	g. Free liquids?	
the answer is yes, proceed to sect Waste stream characteristics c. Color Mixed None i. Liquid Flash Point 73°	Check if additional information odor e. Physical st ibe): Solid Gas Other F [73-99°F [100-13	is attached. Indicate the number of al ate @ 70°F f. Layers □Liquid ⊠Single Layer □Sludge ⊡Multi-layer 39°F □140-199°F ⊠≥ 200°F	g. Free liquids? Yes X No	
the answer is yes, proceed to sect Vasto stream characteristics c. Color d. Strong (descr Mixed None i. Liquid Flash Point []<73° j. pH []<2] 2-4	check if additional information odor e. Physical st ibe): ⊠Solid □Gas □Other F □73-99°F □100-13 J 4 - 7 ⊠ 7-10 □11	ate @ 70°F f. Layers □Liquid □Sludge 39°F □140-199°F ⊠≥ 200°F 0-< 12.5 □ > 12.5 Example	g. Free liquids? Yes X No	
the answer is yes, proceed to sech Waste Stream characteristics. c. Color d. Strong (descr Mixed None i. Liquid Flash Point 473° j. pH 42 42-4	check if additional information odor ibe): Bodid Cas Other F T3-99°F 100-13 4 - 7 7 - 10 10 ther	is attached. Indicate the number of al ate @ 70°F f. Layers □Liquid ⊠Single Layer □Sludge ⊡Multi-layer 39°F □140-199°F ⊠≥ 200°F	g. Free liquids? Yes X No	
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the answer is yes, proceed to sech Waste stream characteristics c. Color d. Strong (descr Mixed None i. Liquid Flash Point 473° j. pH 42 224 1 Waste Composition 415 tallet rep	check if additional information odor e. Physical st ibe): Solid Gas Other F 73-99°F 100-13 J 4 - 7 7 - 10 14 ontents of tbe wastle stream, sentative analysis): Concentration Range 70 70	is attached. Indicate the number of at ate @ 70°F f. Layers □Liquid Sludge 39°F □140-199°F ⊠≥ 200°F 0 - < 12.5 □ > 12.5 Examples	g. Free liquids? Yes X No	
the answer is yes, proceed to sect Waste Stream characteristics. c. Color d. Strong (descr Mixed None i. Liquid Flash Point 473° j. pH 42 224 4 Waste Composition (List allice rep Components Bird Droppings Dust	Check if additional information odor e. Physical st Solid Gas Other F 73-99°F 1100-11 A - 7 X 7-10 11 Intents of the waste stream) resentative analysis: Concentration Range 70 25	is attached. Indicate the number of at ate @ 70°F f. Layers □Liquid Sludge 39°F □140-199°F ⊠≥ 200°F 0 - < 12.5 □ > 12.5 Examples	g. Free liquids? Yes X No	
the answer is yes, proceed to sech Vaste stream characteristics. c. Color d. Strong (descr Mixed None i. Liquid Flash Point 473° j. pH 42 224 Waste Composition 4(1)static rep Components Bird Droppings Dust Distin hore	Check if additional information odor ibe): F [73-99°F [100-1:] 4 - 7 [7 - 10] 10 intents of the waste stream) esentative analysis): Concentration Range 70 25	is attached. Indicate the number of at ate @ 70°F f. Layers □Liquid Sludge 39°F □140-199°F ⊠≥ 200°F 0 - < 12.5 □ > 12.5 Examples	g. Free liquids? Yes X No	

Form WMI-4152 (03/37)
GENERATOR'S WASTE PROFILE PLEASE PRINT IN INK OR TYPE	Ē	E	E.	1



Senerator's Certification (Please check appropriate responses, sign, and date below.)
Is the waste represented by this waste profile sheet a "Hazardous Waste," as defined by USEPA, Canadian, Mexican and/or state/province regulation, in the location where generated or ultimately managed?
Does the waste represented by the profile contain asbestos?
Does the waste represented by this waste profile sheet contain regulated radioactive material or regulated concentrations of Polychlorinated Biphenyls (PCBs)?
Does this waste profile sheet and all attachments contain true and accurate descriptions of the waste
Has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor?
Is the analytical data attached hereto derived from testing a representative sample in accordance with 40 CFR 261.20 (c) or equivalent rules?
Will all changes that occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor?
is application and its attachments contain true, correct and accurate description of the waste. boratory data used to support the validity of the data shown on this application has been obtained from a volumetrically representative sample of cally the same waste that I will deliver to Waste Management for either hauling or disposal and analyzed according to 40 CFR part 261 and all her applicable statutes, regulations, ordinances orders or guidefines. ertification Signature: Title: Management for either hauling or disposal and analyzed according to 40 CFR part 261 and all the applicable statutes, regulations, ordinances orders or guidefines. Title: Management for either hauling or disposal and analyzed according to 40 CFR part 261 and all the applicable statutes, regulations, ordinances orders or guidefines. Title: Management for either hauling or disposal and analyzed according to 40 CFR part 261 and all the applicable statutes, regulations, ordinances orders or guidefines. Title: Management for either hauling or disposal and analyzed according to 40 CFR part 261 and all the applicable statutes, regulations, ordinances orders or guidefines. Title: Management for either hauling or disposal and analyzed according to 40 CFR part 261 and all the applicable statutes, regulations, ordinances orders or guidefines. Title: Management for either hauling or disposal and analyzed according to 40 CFR part 261 and all the applicable statutes, regulations, ordinances orders or guidefines. Title: Management for either hauling or disposal and analyzed according to 40 CFR part 261 and all the applicable statutes, regulations, and the applicable statutes, and the according to 40 CFR part
ame (Type or Print): <u>Braun Hadren</u> Company Name: <u>LES</u> Date: <u>2530</u> FORWMUSE ONLY
WM Management's Decision
Proposed Ultimate Management Facility:3. Hours of acceptance:NA

.....

₹ - -| Form WMH4152 (03/97)

Special Waste Decision..... Salesperson's Signature: Division Approval Signature (Optional): Special Waste Approvals Person Signature:

- Deleted: 6

Approved
 Disapproved
 Date:

Date: Date:

Deleted:



OTHER PCB

NTHFR

ACKNOWLEDGEMENT OF RECEIPT

RAVENNA ARMY AMMUNITIONS PLANT (DEMO SITE)

FAX #

ID: CHUCK TRIMBUR/BRIAN STOCK

ERTIFICATE NUMBER	19630	MAN	IFEST NUMBER		583
ATE ID #	4281				
SUSTOMER ID #	697	DATE	RECEIVED	3/26/2007	
	PCB MATE	RIAL REPORTED	I IN POUNDS		
PCB BALLASTS - RECY	'GLE		17		
NON PCB BALLASTS - F	RECYCLE		0		
PCB BALLASTS - LAND	FILL	0	TRANSFORM	WERS <50-RECYCLE:	0
TRANSFORMERS -50-6	500 LANDFILL	0	TRANSFORM	WERS >500-RECYCLE:	0
CAPACITORS-INCINERA	TION:	0	01L<50:		0
PCB SOLIDS-LANDFEL:		0	PCB SOLIDS	-INCINERATION:	0
TRANSFORMERS <50-1	ANDFILL:	0	TRANSFORM	NERS -50-500 RECYCLE	0
TRANSFORMERS >500	-LANDFILL	0	PCB CAPAC	TORS -RECYCLE:	0
			NON PCB CA	PACITORS - RECYCLE:	0
PCB SOLIDS -BULK:		0			

IF¢	Environmen Recycling	Acts	Ship	per PO		5837	4
527 Ea Bowlin Ph Ph Fx eliverie	P.O. Box 167 ast Woodland Circle ing Green, OH 43402 : (419) 354-6110 : (800) 284-9107 : (419) 354-5110 es to site _gaylord w/liner _metal drums _4' fiber drums _8' fiber drums _4' boxes 8' boxes	Straight Bill of Lading BILL TO: LAKESHORE ENGINEERING Street: 7310 WOODWARD AVE. City: DETROIT MI 48202 Contact: JOHN HARDIMAN Phone: (313) 535-7882 EMERGENCY RESPONSE NUMBER (800) 284-9 Transporter: Ph:	SUIStreet: 2 City: _ Contac Phone: ¹⁰⁷ Arrival	845 RA t: <u>CH</u>	1 STAT VENNA UCK TI (412) 7 (330) 3	ARMY E ROUT O RIMBUR 759-6178 358-2900	H 4426 BRIAN BRIAN
HM		Description	No	o. of ainers	T.,		nt (lb.) Act.
	Batteries Wet Filled with A Universal Waste Batteries, Batteries Wet Filled with A Universal Waste Batteries Lithium Battery, 9, UN 30 Universal Waste Batteries Mercury Contained in Ma Universal Waste Electrica	Lead -AcidERG#: 154Alkali, 8, UN 2795, PG III, Nickel-CadmiumB00, PG II, LithiumERG#: 138nufactured Articles, 8, UN 2809, PG III	*				
	Universal Waste Batteries	, Alkaline, (Mixed Batteries)					
	Universal Waste Batteries Non-RCRA, Non-DOT Re	s, Mercury	**	- 1			
		pputer Monitors Lamps, (estimated quantitie		/	CF		

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to pplicable international and national governmental regulations. Sand and

Shipper: /	Date:
Carrier: Aguan high	Date: 3/26/0.
Received By:	Date: 3/26/07
White - Recycling Facility / Yellow - Cer	tificate / Pink - Processing / Gold - Shipper

/	1.
3/261	107
2/2/1	52

3/26/07 DELIVERY



P.O. Box 167 527 East Woodland Circle

Shipper # 58374 PO

Straight Bill of Lading

	ng Green, OH 43402 n: (419) 354-6110	BILL TO:	LAKESHORE ENGINEERIN	G SHIPPI	ERRAN	ENNA	ARMY	
Ph: (800) 284-9107 Fx: (419) 354-5110 Deliveries to site		Street:	7310 WOODWARD AVE, S	UI Street:	845	1 574	TE ROUT	<u>E5</u>
		City:	DETROIT MI 48202	City: _	RA	VENNA	A OF	44266
gaylord w/liner		Contact:		Contact	:	LIOUT		BRIAN
			(313) 535-7882) S
	_metal drums 4' fiber drums		(313) 333-1332				358-2900	
	8' fiber drums					10001	. <u></u>	
	4' boxes	EMERGENC	Y RESPONSE NUMBER (800) 284-91	07 Arrival	time:			
	8' boxes							
							and the second	
HM	a la sa	Descript	tion		. of ainers	Type	Est.	nt (lb.) Act.
	Batteries Wet Filled with A							
	Universal Waste Batteries, Batteries Wet Filled with A		ERG#: 154			1		
	Universal Waste Batteries,							
1	Lithium Battery, 9, UN 30							
	Universal Waste Batteries,		ERG#: 138		1			
	Mercury Contained in Ma Universal Waste Electrical		cles, 8, UN 2809, PG III ERG#: 172	*				
	Universal Waste Batteries,	Alkaline, (Mixe	d Batteries)				525	
	Universal Waste Batteries	, Nickel-Cadmiu	im					
	Universal Waste Batteries	, Mercury						
	Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle		Per 40 CFR 761.60 (b)(2)(ii) SFDD_ <u>3/22/07</u>	**	1	CF		17
	Electronic Devices / Com	puter Monitors						
	Universal Waste Electric 4' Fluorescent U-Shaped/Circul	· · · · ·	(estimated quantities _8' FluorescentOth _HID					
	The second							
	THE PERSON OF		States and a set				-	

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to opplicable international and national governmental regulations.

Shipper:		Date:
Carrier:	the second s	Date:
Received By:	M. A.Sh	Date: <u>3/20/03</u>

White - Recycling Facility / Yellow - Certificate / Pink - Processing / Gold - Shipper



ACKNOWLEDGEMENT OF RECEIPT

	CERTIFICATE NUMBER 175 SITE ID # 42		FEST NUMBER		250972 / OH00009
			RECEIVED	7/31/2006	
	PCB	MATERIAL REPORTED	IN POUNDS		
	PCB BALLASTS - RECYCLE Non PCB Ballasts - Recycle		0		
	PCB BALLASTS - LANDFILL Transformers -50-500 Landfill Capacitors-incineration: PCB Solids-Landfill:	1493 0 0 0	TRANSFORM DIL<50:	ERS <50-RECYCLE: ERS >500-RECYCLE: Incineration:	0 0 0 0
	TRANSFORMERS <50-LANDFILL: TRANSFORMERS >500-LANDFILL:		PCB CAPACIT	RS -50-500 RECYCLE ORS -RECYCLE: Acitors - Recycle:	0 0 0
	PCB SOLIDS -BULK:	0			
OTHER PCB	15 PCB LIGHT FIXTURES	= 1237 POUNDS			
OTHER					

CERTIFICATE OF RECYCLING RAVENNA ARMY AMMUNITIONS PLANT (DEMO SITE) TO: CHUCK TRIMBUR/BRIAN STOCK FAX # 250972 / OH00009 17568 CERTIFICATE MIMBER MANIFEST NUMBER 4281 SITE D # 7/31/2006 697 CUSTONER D # DATE RECEIVED 8/3/2006 DATE PROCESSED **RECYCLED LAMPS RECYCLED BATTERIES [Ib]** 246 0 4' COUNT **ALKALINE AAA-D WEIGHT** 0 0 8' COUNT ALKALINE LANTERN WGT. 0 0 **U-SHAPE COUNT** NICO WEIGHT 0 0 HID COUNT LITHIUM WEIGHT 0 0 SHIELDED COUNT LEAD ACID WEIGHT - DRY 0 0 SHAT-R-SHIELD COUNT LEAD ACID WEIGHT - WET 0 0 CRUSHED LBS MERCURY WEIGHT 0 0 INCANDESCENT COUNT SILVER-OXIDE WEIGHT OTHER LAMPS **OTHER BATTERIES** MONITORS MERCIRY 4 0 MERCURY (LBS) MONITOR/COMP EQUIPMENT (LBS) **OTHER**

This document is to certify that ENVIRONMENTAL RECYCLING has completed the recycling of your materials. The undersigned certifies on the behalf of ENVIRONMENTAL RECYCLING that the materials listed above have been recycled/processed in accordance with EPA and State Regulations. Slight variations in weight is due to processing/packaging.

Erik Thaver

Environmen Recycling™	LAMP	DM. BALLASTS, 2 SKIDS CASTINGS, 6 BOXES S, 1 PAIL MER.	Mana Shipper PO	#25 #25	0972	*
P.O. Box 167	Straigh	t Bill of Lading			4	٩.
527 East Woodland Circle Bowling Green, OH 43402	Derengen		FROM			1. 1. A.
Ph: (419) 354-6110	BILL TO: _	LAKESHORE ENGINEERING				
Ph: (800) 284-9107 Fx: (419)/354-5110	Street:	19215 W. 8 MILE RD.	Street: <u>84</u>	51 STA	TE ROUTE	<u></u>
/	City:	DETROIT , MI 48219	City:R	VENN	A OH	44266
liveries to site	Contact:	JOHN HARDIMAN	Contact:	ILICK T		RIAN
gaylord w/liner		(313) 535-7882	Phone:		759-6178	
metal drums	Phone:	1910/0001002	11101101		358-2900	-
4' fiber drums		The Arts	1	(330)	330-2900	
8' fiber drums		Y RESPONSE NUMBER (800) 284-9107	Arrival time:	0	AM	
4' boxes	Transporte	ENVIRONMENTAL RECYC	CLING		1100	
8' boxes	Ph:	(800) 284-9107	Departure tin	ne: _/	MO()	
			No. of	Type	Weight	(lb.)
	Description		Containers	JD.	Est.	Act.
HM	Descript	110n	Containers	16	List	1 ACL.
Batteries Wet Filled with	h Acid, 8, UN 2794	, PG III	Containers	16	156	TECC.
Batteries Wet Filled with Universal Waste Batterie	h Acid, 8, UN 2794 es, Lead -Acid	, PG III ERG#: 154		16	LSt.	TRCL.
Batteries Wet Filled with Universal Waste Batterie Batteries Wet Filled with	h Acid, 8, UN 2794 es, Lead -Acid h Alkali, 8, UN 279	, PG III ERG#: 154 95, PG III		10	Est.	2
Batteries Wet Filled with Universal Waste Batterie Batteries Wet Filled with Universal Waste Batterie	h Acid, 8, UN 2794 es, Lead -Acid h Alkali, 8, UN 279 es, Nickel-Cadmiu	, PG III ERG#: 154 95, PG III			Est.	2
Batteries Wet Filled with Universal Waste Batterie Batteries Wet Filled with Universal Waste Batterie Lithium Battery, 9, UN Universal Waste Batterie	h Acid, 8, UN 2794 es, Lead -Acid h Alkali, 8, UN 279 es, Nickel-Cadmiu 3090, PG II es, Lithium	, PG III ERG#: 154 95, PG III m ERG#: 154 ERG#: 138		12		
Batteries Wet Filled with Universal Waste Batterie Batteries Wet Filled with Universal Waste Batterie Lithium Battery, 9, UN Universal Waste Batterie Mercury Contained in M	h Acid, 8, UN 2794 es, Lead -Acid h Alkali, 8, UN 279 es, Nickel-Cadmiu 3090, PG II es, Lithium Manufactured Artic	, PG III ERG#: 154 95, PG III m ERG#: 154 ERG#: 138 cles, 8, UN 2809, PG III *			-	2
Batteries Wet Filled with Universal Waste Batterie Batteries Wet Filled with Universal Waste Batterie Lithium Battery, 9, UN Universal Waste Batterie Mercury Contained in M Universal Waste Electrie	h Acid, 8, UN 2794 es, Lead -Acid h Alkali, 8, UN 279 es, Nickel-Cadmiu 3090, PG II es, Lithium Manufactured Artic ical Devices	, PG III ERG#: 154 95, PG III m ERG#: 154 ERG#: 138 cles, 8, UN 2809, PG III * ERG#: 172		DF	5	
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Batteries Wet Filled with Universal Waste Batterie Batteries Wet Filled with Universal Waste Batterie Lithium Battery, 9, UN Universal Waste Batterie Mercury Contained in M Universal Waste Electric Universal Waste Electric Universal Waste Batterie Universal Waste Batterie	h Acid, 8, UN 2794 es, Lead -Acid h Alkali, 8, UN 279 es, Nickel-Cadmiu 3090, PG II es, Lithium Manufactured Artic cal Devices ies, Alkaline, (Mixe ies, Nickel-Cadmiu ies, Mercury Regulated Materia cle omputer Monitors ric Lamps, at	, PG III ERG#: 154 5, PG III m ERG#: 154 ERG#: 138 cles, 8, UN 2809, PG III ERG#: 172 ed Batteries) III IPer 40 CFR 761.60 (b)(2)(ii) SFDD 7-/7	** 3		5-	- 4

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to applicable international and national governmental regulations.

Shipper: 32 Carrier: Date: Received By:

Date: 7-31-01Date: 7-31-06Date: 8/3/06

White - Recycling Facility / Yellow - Certificate / Pink - Processing / Gold - Shipper

	Ø	Emergenc	y Contact Telephone	Number	E.	Lakeshor	e Gro	ир
			84-9107	Rumber				
	UNIFORM HAZARDOUS	1. Generator's U	S EPA ID No.	Manifest	2. Pa	ge 1', ' Informati	on in the s	shaded areas is
-	3. Generator's Name and Mailing Address		.1.0.0.2.0.3.6	Document No.	of	1 not requi	red by Fea	deral law.
14	of Constants a Name and Maning Address	Ravenna	Army Amonicatio	n Plant	A St	ate Manifest Docur	nent Num	ber with the ber we
			te Rt. 5		DT	A State	951E) 58	
	4. Generator's Phone (330) 358-30	ins kavenna,	Ohio 44266		D. State	ale Generator's ID	0172-0	DH 00009
	5. Transporter 1 Company Name		6. US EPA ID N	umber	C. SI	ate Transporter's II)	STOLARS
	7. Transporter 2 Company Name		Го.н.в. о. о. о. о.		D: Tr	ansporter's Phone	410 3	FA PSIA
			8. US EPAID NI	umber	East	ate Transporter's II	Dragel Str	And STER
	9. Designated Facility Name and Site Address		10. US EPA ID N	umber		ansporter's Phone tate Eacility's ID		の目的を行う
	Environmental Recycling	;					inan a bi Tanan a	
	527 E. Woodland Circle		1000000000		H. Fa	acility's Phone	2,14/34/3	578-0m, star 1-30
	Bowling Green, Ohio 434(11. US DOT Description (Including Proper Shippin)2 Name Hazard Cla	$0 \cdot H \cdot R \cdot 0 \cdot 0 \cdot 0 \cdot 0$			419-354-61	10	ant anna fail anna an
	нм	ig Hame, Hazard Ola	ss, and to Number)	12. Cor	1	Total	14. Unit	1. 不能的意
	a. DO Dolychlaningted	Diana N		No.	Тура	Quantity	Wt/Vol	Waste No.
	RQ, Polychlorinated 9, UN3432, PGIII	Binpnenyls,	solid mixture	8	DU	1.1.1		
and a second	b.			103	DM	ANL'NT	KG	PCB
GE	Universal Waste, ele	ectric lamps	. Dalletized			1		anget stage and
NED			, ,	n. M	104	D. S. C.		
RAT	c.			1133	4 CM	D.D. 2	1 P	
-08	Murcury contained in	n manufactur	red articles					
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	Universal Waste, ele	ectric lamps	, boxes		CW			willing the state
				MAL		1.V.J.V.	P	
	J. Additional Descriptions for Materials Listed Abc	ve	Yan turi	600	K.Ha	analing Codes for W		ted Above
	Pyr and a problem and a second	· · · · · · · · · · · · · · · · · · ·	1998 . H. 40	ા કાર્યનુદ નાર્ટ્સ		(N 2) A A 2 A A A A A A A A A A A A A A A	e i referen Frankrig	್ವಾಗವನ್ನು ಸಿನ್ನೇಷ್ ಸ್ ಮಾಡುಗ್ರಹ ಕ್ರಿ
113	b. Intact light fixtures	containing	PCB Ballest	ಾಜ ನರ್ಶಗಳು ಕ್ರ	14473	ि २	d star da sa st	Andre Starter Starter Starter
	15. Special Handling Instructions and Additional I	nformation	8-2 (***) <u>8</u> 7		1.00			5 5 A
O' Trite								
	a. Emergency Response Nur	nder 1/1						
1. 1	a.b. C. Hazardous Wast	a Manifest	being lised for	tracting	זמוות	occ only	***	· 11
	16. GENERATOR'S CERTIFICATION: I hereby de packed, marked, and labeled, and are in all respe							ne and are classified,
	If I am a large quantity generator I certify that I	have a program in pla	as to and use the	ung to applicable if	itemation	nal and national gov	emmental	regulations.
	practicable and that I have selected the practical and the environment; OR, if I am a small quantit available to me and that I can afford.	ble method of treatmen by generator, I have ma	t, storage, or disposal currently de a good faith effort to minim	v available to me wh	nich mini	mizes the present a	nd future th	nreat to human health
	available to me and that I can afford. Printed/Typed Name		1			u select the dest wa	ste manag	ement method that is
Ý	LAYING VENERA		Signature	1/2		1	1	Month Day Year
TR	17. Iransporter 1 Acknowledgement of Respirit a	f Materials	- in	- A	AU.	+	;	17 31 66
RANSPORTER	Printed/Typed Name		Signature /	010	11			Month Day Year
PO	18.1 Transporter & Acknow Edgement-of Receipt o	i Materiate		1,	1			57-1-1-1
H T	Printed/Typed Name	i wateriais	Signature	n. m			3	13106
R			loignature				1	Month Day Year
	19. Discrepancy Indication Space							
FA			*-			2		
C I								
L	20. Facility Owner or Operator: Certification of re	eceipt of hazardous m	aterials covered by this man	ifest except as not	ed in Ite	em 19		
T					Sa in ite			
and a second	Printed/Typed Name		Signature					Month Day Year
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13 2	and the state of the second state where	07	NERATOR'S COPY		-Caracian -		States and states	CARL DOUGLE DATE OF THE PARTY OF

A	- Environment	ALAM	P CASTINGS, 6 BOXES	il.		cn s	- t-
N N	Environment	BUL	BS, 1 PAIL MER.	Shipper	#75	0070	
ie/	Recycling	1		Simpler	που	0912	
		4		PO	#	and the second	
527 F	P.O. Box 167 ast Woodland Circle	Straig	nt Bill of Lading			t	(- ,
	ng Green, OH 43402	į		FROM	Suma .	A.	
Ph	: (419) 354-6110	BILL TO:	LAKESHORE ENGINEERING	SHIPPER:RA	VEN	A ARMY	4
	1: (800) 284-9107 1: (419) 354-5110	Street:	19215 W. 8 MILE RD.	4 (ATE ROUT	FS
÷ •		City:	DETROIT MI 48219	City:R		5 . Mt /	
	es to site		1 8 2 3 1 3 3		(3.		1.66/5
	gaylord w/liner	Contact:	UOHN HARDIMAN		NCK.	RIMBUR	BRIAN
	-metal drums	Phone:	(313) 535-7882	Phone:!	(412)	759-6178	
	4' fiber drums	<u></u>	* *		(330)	358-2900	1
4	8' fiber drums	EMERGEN	TY RESPONSE NUMBER (800) 284-9107	i deret i			······································
	4' boxes	. Transport	er: 1	Arrival time.	ť g	AM	
	_8' boxes	Ph:	ENVIRONMENTAL RECY (800) 284 9107	Departure tin	· 1	100	
	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			Departure im	/		
HM		Descrip	tion	No. of	Type	Weight	t (lb.)
11 1.1	Batteries Wet Filled with A	-		Containers	"Pe	Est.	Act.
	Universal Waste Batteries,	Lead -Acid	ERG#: 154				2
	Batteries Wet Filled with A						
	Universal Waste Batteries,		im ERG#: 154	· ·		10	3
	Lithium Battery, 9, UN 309						
	Universal Waste Batteries,		ERG#: 138	<u> </u>			.et
4 .	Mercury Contained in Mar Universal Waste Electrical	Devices	ERG#: 172		n-		54.5
	Universal Waste Batteries,				DF	5	
	oniversal traste batteries,	manne, (mixe			1		
	Universal Waste Batteries,	Nickel-Cadmin		a la ser a			1
			1m				1
	Universal Waste Batteries,	Mercury			-		
	Universal Waste Batteries, Non-RCRA, Non-DOT Reg	Mercury gulated Materia	l Per 40 CFR 761.60 (b)(2)(ii) *	**			
	Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle	Mercury gulated Materia	l Per 40 CFR 761.60 (b)(2)(ii)	**	- Dru	1200	
	Universal Waste Batteries, Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle Electronic Devices / Com	Mercury gulated Materia puter Monitors	l Per 40 CFR 761.60 (b)(2)(ii)		Dru	1200	
	 Universal Waste Batteries, Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle Electronic Devices / Comp Universal Waste Electric I 	Mercury gulated Materia puter Monitors Lamps,	l Per 40 CFR 761.60 (b)(2)(ii) 	· · · · · · · · ·	Dru	1200	
	Universal Waste Batteries, Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle Electronic Devices / Com Universal Waste Electric I (Mercury gulated Materia puter Monitors Lamps,	l Per 40 CFR 761.60 (b)(2)(ii) 	· · · · · · · · ·	Om	1200	
	Universal Waste Batteries, Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle Electronic Devices / Com Universal Waste Electric I (254 4' Fluorescent	Mercury gulated Materia puter Monitors Lamps,	l Per 40 CFR 761.60 (b)(2)(ii) 	· · · · · · · · ·	Om	200	
	Universal Waste Batteries, Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle Electronic Devices / Com Universal Waste Electric I (4' FluorescentU-Shaped/Circul	Mercury gulated Materia puter Monitors Lamps, ar	l Per 40 CFR 761.60 (b)(2)(ii) 	· · · · · · · · ·	om	200	
	Universal Waste Batteries, Non-RCRA, Non-DOT Reg (PCB Ballast) for recycle Electronic Devices / Com Universal Waste Electric I (4' FluorescentU-Shaped/Circul	Mercury gulated Materia puter Monitors Lamps,	l Per 40 CFR 761.60 (b)(2)(ii) 	· · · · · · · · ·	om CF Cu	1200 200 1 500	

are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to applicable international and national governmental regulations.

-

erster Date: 7-31-06 BI Shipper: ven 1 7-31-06 Carriér: Date: Received By: Date:

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TTT ..



ACKNOWLEDGEMENT OF RECEIPT

	CERTIFICATE NUMBER 175 SITE 10 # 42	58 81	MANIFEST NUMBER		55030 / 071006
	CUSTOWER ID # 6	97	DATE RECEIVED	7/10/2006	
	PCB	MATERIAL REPOR	TED IN POUNDS		
	PCB BALLASTS - RECYCLE		0		
	NON PCB BALLASTS - RECYCLE		0		
	PCB BALLASTS - LANDFILL	0	TRANSFORM	NERS <50-RECYCLE:	0
	TRANSFORMERS -50-500 LANDFILL	0	TRANSFORM	NERS >500-RECYCLE	0
	CAPACITORS-INCINERATION:	0	01L<50:		0
	PCB SOLIDS-LANDFEL:	0	PCB SOLIDS	-INCINERATION:	0
	TRANSFORMERS <50-LANDFILL:	0	TRANSFORM	ERS -50-500 RECYCLE	0
	TRANSFORMERS >500-LANDFILL:	0	PCB CAPACI	TORS -RECYCLE:	0
			NON PCB CA	PACITORS - RECYCLE:	0
	PCB SOLIDS -BULK:	0			
OTHER PCB	189 FLOURESCENT LIGH POUNDS	T FIXTURES V	//PCB BALLAST	S ATTACHED = 16,61	1
OTHER					

CERTIFICATE OF RECYCLING

RAVENNA ARMY AMMUNITIONS PLANT (DEMO SITE)

TO: CHUCK TRIM	BUR/BRIAN STOC	CK FAX#	55030 / 0710
CERTFICATE NUMBER		MANIFEST MENIBER	0000070710
SITE ID #	4281		7/10/2006
CUSTOWER ID #	697	DATE RECEIVED DATE PROCESSED	7/13/2006
RECYCLED	LAMPS		ATTERIES (Ib)
L' COUNT	67	ALKALINE AAA-D WEIGHT	0
B' COUNT	0	ALKALINE LANTERN WGT.	0
I-SHAPE COUNT	0	NICD WEIGHT	0
HD COUNT	0	LITHUM WEIGHT	0
SHELDED COUNT	0	LEAD ACID WEIGHT - DRY	0
SHAT-R-SHIELD COUNT	0	LEAD ACID WEIGHT - WET	0
CRUSHED LBS	0	MERCURY WEIGHT	0
NCANDESCENT COUNT	0	SILVER-OXIDE WEIGHT	0
DTHER LAMPS		OTHER BATTERES	
MERC	URY	MONITOR	RS
MERCURY (LBS)	0	MONITOR/COMP EQUIPMENT (L	B\$] 0
ITHER			
IIILIG			

This document is to certify that ENVIRONMENTAL RECYCLING has completed the recycling of your materials. The undersigned certifies on the behalf of ENVIRONMENTAL RECYCLING that the materials listed above have been recycled/processed in accordance with EPA and State Regulations. Slight variations in weight is due to processing/packaging.

Erik Thaver

Environmen Recycling™	tal	Shipper PO		5030	
P.O. Box 167 527 East Woodland Circle Bowling Green, OH 43402 Ph: (419) 354-6110 Ph: (800) 284-9107 Fx: (419) 354-5110 Deliveries to site gaylord w/liner gaylord w/liner d' fiber drums 8' fiber drums 8' boxes 8' boxes	BILL TO: LAKESHORE ENGINEERING S Street: 19215 W 8 MILE RD S City: DETROIT MI 48219 S Contact: 1040 MARDIMAN S Phone: (313) 535-7882 H EMERGENCY RESPONSE NUMBER (800) 284-9107 Transporter: A	Street: <u>845</u> City: <u>RA</u> Contact: <u>CH</u> Phone:	51 STA VENN/ UCK T (412) (330)	TE ROUTE A OH RIMBUR/E 759-6178 358-2900	44266 BRIAN
Universal Waste Batteries	Description Acid, 8, UN 2794, PG III 5, Lead -Acid ERG#: 154 Alkali, 8, UN 2795, PG III 5, Nickel-Cadmium ERG#: 154	No. of Containers	T _{ype}	Weight Est.	t (lb.) Act.
Universal Waste Electrica	s, Alkaline, (Mixed Batteries) s, Nickel-Cadmium			the sec	
Non-RCRA, Non-DOT Re (PCB Ballast) for recycle Electronic Devices / Con	er el frighter en la				

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to applicable international and national governmental regulations.

Shipper: In Tru Verga Ully	e f	_Date: _7-10-06
Carrier: Bient Noblit		Date: 7-10-06
Received By:		Date:

White - Recycling Facility / Yellow - Certificate / Pink - Processing / Gold - Shinner

	t or type. (Form designed for use on elite (14	orm Approved. OM		
ι	JNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifes Docume	ent No.	2. Pag			the shaded areas by Federal law.
3. Ge	nerator's Name and Mailing Address	OHD521002036 , , , ,	7,100	0	_	e Manifest Doc	ument	Number
	NNA ARMY AMMUNITIONS PLA							i i i i i i i i i i i i i i i i i i i
	STATE ROUTE 5			i÷	B. Stat	e Generator's I	D	
	Elephiar's Phone ('OH) 44266		Call Contract					
5. Tra	ansporter 1 Company N(212) 759-61	178 CHUCK TRIMBUSE	RIANNSTAC			e Transporter's		
ENVI	AND THE STAL BECYCLING		AREALEBer	-dore lo-	D. Trai	nsporter's Phor	ne (80	0) 284-9107
7. 11	ansporter 2 Company Name	.8. OHIS 使再	ANDINUMBer			e Transporter's		
9 Dr	signated Facility Name and Site Add	ress 10. USEP	A ID Number			nsporter's Phor	ie	
		10. 03 LT	A ID Mulliber		G. Old	te Facility's ID		
	RONMENTAL RECYCLING				H. Fac	ility's Phone		
	AST WOODLAND CIRCLE		0.024.035			and of mono	(80	0) 284-910
	LING GREEN, OH 43402 S DOT Description (Including Proper S	Grinter	000101011	12. Conta	iners	_13.	14.	l
		shipping Name, Hazaro Class and ID	Number)	No.	Type	Total Quantity	Unit Wt/Vol	Waste No.
а.								
	UN3432, PG III	PHENYLS, SOLID, MIXTURE, 9,			~	Fare	K	PCB
-	0110402,1 G III		<u> </u>	1.5.0	LW	5.000		
b.								
	1102000 1 12 at	EL INIA LANG	1	1.0.0	105	80	P	
c.	Universal Waster	Electric Lamps,		201	C.FI		P	
			1					
d.						-ter-leader-tra-		
1								1 e
J. Ac	dditional Descriptions for Materials Lis				, K. Han	dling Codes fo	Waste	s Listed Above
11a). (11). (11).	WHOLE LIGHT FIXTURES INCLUE INTACT PCB BALLASTS 116) 4' Fluorescent	ppm PCB S DING > 50 07	SFDD ER -10-0 6 17	G# 1	K. Han	dling Codes fo	r Waste	s Listed Above
11a). (11). (11). (15)?)((11) ca (16) G	WHOLE LIGHT FIXTURES INCLUE INTACT PCB BALLASTS IIb) 4' Ficorescent Special Handling Instructions and Add use of emergency call (800) 284-9 ENERATOR'S CERTIFICATION: I hereby devi	ppm PCB S DING > 50 07 ditional Information 0107	- 10-0 6 17	ately desc	ibed aboy	e by	r Waste	s Listed Above
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Style CF 17 LABEL ASTER (\$ (300) 621-5308 www.labelmaster.com



ACKNOWLEDGEMENT OF RECEIPT

TO:	CHUCK TRIMBUR/BRIAN S CERTIFICATE NEMBER 1759 SITE ID # 420 CLISTOMER ID # 61	93 MAN 81	RECEIVED 7/7/2006	55014 / 070706
	PCB	MATERIAL REPORTED	IN POUNDS	
	PCB BALLASTS - RECYCLE Non PCB Ballasts - Recycle PCB Ballasts - Landfill	0	0 0 Transformers <50-recycle: Transformers >500-recycle:	0
	TRANSFORMERS -50-500 LANDFIL Capacitors-incineration: PCB solids-landfill:		DIL<50: PCB SOLIDS-INCINERATION:	
	TRANSFORMERS <50-LANDFILL: Transformers >500-Landfill:	0	TRANSFORMERS -50-500 RECYCLE PCB CAPACITORS -RECYCLE: Non PCB CAPACITORS - RECYCLE:	0 0 0
	PCB SOLIDS -BULK:	0		
OTHER PCB	198 PCB FLOURESCENT	LIGHT FIXTURES	= 17,793 POUNDS	
OTHER				

	Recycling	313-59	5-7673	Shij	pper PO		5014	
Bowli Pł Pł Fy Peliveri	P.O. Box 167 Cast Woodland Circle ng Green, OH 43402 n: (419) 354-6110 n: (800) 284-9107 x: (419) 354-5110 es to site gaylord w/liner metal drums 4' fiber drums 8' fiber drums 4' boxes 8' boxes	BILL TO:	t Bill of Lading LAKESHORE ENGINEERIN 19215 W. 8 MILE RD. DETROIT , MI 48219 LOHN HARDIMAN (313) 535-7882 RESPONSE NUMBER (800) 284-91 ENVIRONMENTAL REC (800) 284-9107	Street: City: Contac Phone	ER: <u>AV</u> 845: RAV t: <u>CHI</u>	1 STAT /ENNA JCK TF (412) 7 (330) 3	ARMY TE ROUTE OH RIMBUR/BI 759-6178 358-2900	
H M	Batteries Wet Filled with	Descripti			o. of tainers	Ţ _{ype}	Weight Est.	(lb.) Act.
	Universal Waste Batteries Batteries Wet Filled with Universal Waste Batteries Lithium Battery, 9, UN 3 Universal Waste Batteries Mercury Contained in M Universal Waste Electric	s, Lead -Acid Alkali, 8, UN 2795 s, Nickel-Cadmiun 090, PG II s, Lithium anufactured Articl	ERG#: 154 6, PG III n ERG#: 154 ERG#: 138	*				-
1.			D 11 - 1 - 1	1				
	Universal Waste Batterie	s, Alkaline, (Mixed	Batteries)			-		
	Universal Waste Batterie Universal Waste Batterie	s, Nickel-Cadmiur s, Mercury	n	**				
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	Universal Waste Batterie Universal Waste Batterie Non-RCRA, Non-DOT Re (PCB Ballast) for recycle Electronic Devices / Cor Universal Waste Electric 4' Fluorescent 4' Fluorescent 4' Shaped/Circu	s, Nickel-Cadmiur s, Mercury egulated Material 1 2 nputer Monitors : Lamps,	n Per 40 CFR 761.60 (b)(2)(ii) SFDD (estimated quantitie 8' FluorescentOt	es)				

are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to applicable international and national governmental regulations. -06 106

Shipper Awin/Blefger	Date: 7-7-
Carrier Jen Merth	Date: 7 - 7-
Received By:	Date: 7/11/

White - Recurling Facility / Vellow - Cortificate / Pink - Processing Cold - Shinner 1

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

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e print or type. (Form designed for use on eli		Manifes		Form Approved. C		
UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. , OHD521002036	Docume	ent No. 2.	of is not	required t	he shaded area: by Federal law.
. Generator's Name and Mailing Addre RAVENNA ARMY AMMUNITIONS 1451 STATE ROUTE 5	ss PLANT (DEMO SITE)	5		State Manifest D Sate Centeration		Number
Reviewings Phone (' OH) 44	266-		19 1 9			
. Transporter 1 Company Name2) 755	-6178 CHUCK TRIMB	drar han stor	Ċ.	State Lansporte	s ID.	
NURONIMENTAL RECYCLING			D. 1	Transporter's Ph	one 180	0) 284-9107
NVIRONMENTAL RECYCLING Transporter 2 Company Name	8	SEPAIB Nulliber		State Transporte		
1				Fransporter's Ph		
. Designated Facility Name and Site A	ddress 10. U	S EPA ID Number	G.	State Facility's II		
NVIRONMENTAL RECYCLING			L.	Facility's Phone	<u>.</u>	1
27 EAST WOODLAND CIRCLE		R 000 034 025 .		r acinty's Frione	(80	0) 284-910
SOWLING GREEN, OH 43402		1	2. Containers	13.	14. Unit	l.
1. US DOT Description (Including Prop	er Shipping Name, Hazard Class ar	nd ID Number)	No. Type	e Total Quantity	Wt/Vol	Waste No.
POLYCHLORINATED BIP UN3432, PG III	HENYLS, SOLID, MIXTURE, S	Э,	022/04	0.5,250	ĸ	PCB
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		1				
A SEMICE TELMO EN CON	pom PCB	5FDD EF 7-506 ¹⁷	RGE	Handling Codes	for Waste	us set
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TRANSPORTER #1



ACKNOWLEDGEMENT OF RECEIPT

RAVENNA ARMY AMMUNITIONS PLANT (DEMO SITE)

TO:	CHUCK TRIMBUR/BRIAN S		X 华	55040 / 07070CD
	CERTIFICATE NUMBER 175		FEST NEWBER	55013 / 070706B
			RECEIVED 7/7/2006	
	PCB	MATERIAL REPORTED	IN POUNDS	
	PCB BALLASTS - RECYCLE		0	
	NON PCB BALLASTS - RECYCLE		0	
	PCB BALLASTS - LANDFILL	0	TRANSFORMERS <50-RECYCLE:	0
	TRANSFORMERS -50-500 LANDFILL	0	TRANSFORMERS >500-RECYCLE:	0
	CAPACITORS-INGINERATION:	0	OLL<50:	0
	PCB SOLIDS-LANDFILL:	0	PCB SOLIDS-INCINERATION:	0
	TRANSFORMERS <50-LANDFILL:	0	TRANSFORMERS -50-500 RECYCLE	0
	TRANSFORMERS >500-LANDFILL:	0	PCB CAPACITORS -RECYCLE:	0
			NON PCB CAPACITORS - RECYCLE:	0
	PCB SOLIDS -BULK:	0		
OTHER PCB	188 PCB FLOURESCENT	LIGHT FIXTURES	= 17,036 POUNDS	
OTHER				

	P 697 Environmenta Recycling™	P/U FULL LOAD OF LIGHT FIXTURES CONTACT: BRUCE 313-595-7673			# 5!	5013	
Bowli Pł Pł Deliveri	P.O. Box 167 Cast Woodland Circle ng Green, OH 43402 a: (419) 354-6110 a: (800) 284-9107 k: (419) 354-5110 es to site _gaylord w/liner _metal drums _4' fiber drums _4' fiber drums _4' boxes _8' boxes	Straight Bill of Lading BILL TO: LAKESHORE ENGINEERING Street: 19215 W. 8 MILE RD. City: DETROIT , MI 48219 Contact: JOHN HARDIMAN Phone: (313) 535-7882 EMERGENCY RESPONSE NUMBER (800) 284-9107 Transporter: ENVIRONMENTAL RECYC Ph: (800) 284-9107	City: Contact Phone: Arrival	8451 RAVI : <u>CHU</u> ((time: _	STATI ENNA CK TR 412) 7 330) 3 S A	E ROUTE OH IMBUR/BI 59-6178 58-2900	44266 RIAN
HM	Universal Waste Electrical D Universal Waste Batteries, A Universal Waste Batteries, N Universal Waste Batteries, N	ad -Acid ERG#: 154 ali, 8, UN 2795, PG III ckel-Cadmium ERG#: 154 PG II thium ERG#: 138 factured Articles, 8, UN 2809, PG III * evices ERG#: 172 kaline, (Mixed Batteries) fickel-Cadmium ercury	Cont	of ainers		Weight Est.	(lb.) Act.
	(PCB Ballast) for recycle Electronic Devices / Compu Universal Waste Electric La 4' Fluorescent 4' Fluorescent 4' Shaped/Circular RQ Polychistinsted 137 PG111 SFDD 7-6 88 Light Fixture	SFDD ter Monitors nps, (estimated quantities) 8' FluorescentOther HID phenyls, Sslid, Mixture, 9, UN 3432 -OG	2,	21			17.036

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to upplicable international and national governmental regulations.

Shipper: _ Anny BRengu	Date: 7-7-06	
Carrier: BIMEN	Date: 7-7-06	
Received By:	Date: 2/12/06	

White-Recycling Facility / Yellow - Certificate / Pink - Processing / Cold - Shinner

U	NIFORM HAZARDOUS	1. Generator's US EA	A ID NY	Manifest Document	No. 2.	Page			e shaded ar	
	WASTE MANIFEST	, OHD52100203	6,	. 707.06B		of			y Federal law	
	nerator's Name and Mailing Address				A.	State N	Aanifest Doc	cument N	lumber	
	NNA ARMY AMMUNITIONS PLAI	NT (DEMO SITE)				Stata (070706 Generators	B		
	STATE ROUTE 5 SNAA's Phone ('OH) 44266				Б.	State	aenerator s i	D		
	nsporter 1 Company Natil 759-61		RIMBURERIAN	ISTRE	C.	State	Transporter'	s ID		
		1) 284-9107	
NYIR 7. Tra	NONMENTAL RECYCLING	8.	OHIS EPA 13	Ther			Transporter'		14010101	
							porter's Phor	ne		
9. Des	signated Facility Name and Site Addre	ss 10.	US EPA ID	Number	G.	State	Facility's ID			
INVIE	RONMENTAL RECYCLING				<u> </u>		1. 01			
527 E	AST WOODLAND CIRCLE					H. Facility's Phone (800) 284-910				
30WI	LING GREEN, OH 43402		, OHR.000.03		Container	s	13.	14.	l.	
11. US	S DOT Description (Including Proper Sl	hipping Name, Hazard	Class and ID Num	ber)	o. Typ		Total Quantity	Unit Wt/Vol	Waste No	
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	RQ POLYCHLORINATED BIP	HENYLS, SOLID, M	AIXTURE, 9,				-	K	PCB	
	UN3432, PG III			0.8	2.1 C.	U.	5.0.0.0			
o.										
c.								1 1		
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		ppm PCB			C	Handi	ing Codes fo	or Waste	s Listed Abo	
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ORIGINAL-RETURN TO GENERATOR



ACKNOWLEDGEMENT OF RECEIPT

	CERTIFICATE NUMBER 17589 SITE 10 # 4281	MAN	IFEST NUMBER	54960 / 00006
	CUSTOMER ID # 697] DATE	RECEIVED 7/5/2006	
	PCB MA	TERIAL REPORTED	IN POUNDS	
	PCB BALLASTS - RECYCLE		0	
	NON PCB BALLASTS - RECYCLE		0	
	PCB BALLASTS - LANDFILL	0	TRANSFORMERS <50-RECYCLE:	0
	TRANSFORMERS -50-500 LANDFILL	0	TRANSFORMERS >500-RECYCLE:	0
	CAPACITORS-INCINERATION:	0	OUL<50:	0
	PCB SOLIDS-LANDFILL	0	PCB SOLIDS-INCINERATION:	0
	TRANSFORMERS <50-LANDFIL:	0	TRANSFORMERS -50-500 RECYCLE	0
13	TRANSFORMERS >500-LANDFILL	0	PCB CAPACITORS -RECYCLE:	0
			NON PCB CAPACITORS - RECYCLE:	0
	PCB SOLIDS -BULK:	0		
DTHER PCB	198 PCB LIGHT FIXTURES =	17,413 POUNE	DS	
OTHER				

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

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Form	ADDroved.	OWR	INO.	2050-0039.

	WAGTE HANDEROT	ator's US EPA ID No.		ment No.	2. Page			ne shaded y Federal	
3	Ravenna Army Ammunition Plan		<u>1.0.0.0</u>	2.0.0.0	A. State	Manifest Do	cument N	lumber	E.
	8451 State Route 5 Ravenna (-4 4474					ID		
4	. Generator's Phone (330) 358-731		(2,220			donorator o			
5	. Transporter 1 Company Name	6. US	EPA ID Numbe	ər	C. State	Transporter	sID		
	Environmental Recycling O.H.R.O.O.O.3.4.0.2.5 D. Transporter's Phone 200-2 7. Transporter 2 Company Name 8. US EPA ID Number E. State Transporter's ID 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID 9. Designated Facility State Facility's ID H. Facility's Phone H. Facility's Phone 9. Description Green, OH. 43402 O.H.R.O.O.O.O.3.4.0.3.5 800-284-9107 11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) 12. Containers 13. 14. Total Unit Maint RQ, Polychbrinated Biphenyls, Solid, Mixture, 9, 5238 8u Su Su Su				-294-9	Tar			
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					F. Trans	porter's Pho	ne	and the last	
	Environmental Recycling	10. US	EPA ID Numbe	er	G. State	Facility's ID			
0	527 East Wood land Circle				H. Facili	ty's Phone		-	
	Bowling Green, OH. 43402 11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) a. RQ, Polychbrinated Biphenyls, Solid, Mixture, 9, 5238 UN 3432, PG 111 b. No. Type Quantity WitVol No. Type Qu								
	11. US DOT Description (Including Proper Shipping Na	me, Hazard Class and	d ID Number)	12. Conta	ainers	13. Total	14. Unit	· .	No.
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F	UN 3432, PG111			\$2.2	C.W P.	1.5.5.C	RED	PCB	
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	ERG 171 15. Special Handling Instructions and Additional Info	rmation							
	IN CASE of Emergency Call 16. GENERATOR'S CERTIFICATION: Whereby declare that the or proper shipping name and are classified, packed, marked, ar according to applicable international and national governmen If I am a large quantity generator, I certify that I have a economically practicable and that I have selected the pr future threat to human health and the environment; OR, the best waste management method that is available to me	to labeled, and are in all r I regulations. program in place to redi acticable method of trea if I am a small quantity	espects in proper (uce the volume ar tment, storage, or	nd toxicity of disposal cu	waste gener rrently availa	rated to the di ble to me wh	ich minimi	zes the ore	sent and
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	Printed/Typed Name	Sig	nature	11	V			Month D	I I I
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÷	19. Discrepancy Indication Space								
	20. Facility Owner or Operator: Certification of recei	pt of hazardous mate	erials covered b	y this mani	fest except	t as noted in	Item 19.		
	Printed/Typed Name		gnature					Month D	ay Yea
St	yie CF 17 LABELL ASTER (800) 621-5808 www.labelmaster.com				EPA Fo	rm 3700-22 (Re)	9-281 Pres	vious editions	are obsole

4 4281	Environmen Recycling™	- OFLIC	D MAIN GATE- FULL LOA GHT FIXTURES - HAVE DS PAGE BRIAN		hipper PO	# 5	pail ry 50 4960	JU170
527 Ea Bowlir Ph Ph Fx eliverie 3	P.O. Box 167 ast Woodland Circle ng Green, OH 43402 : (419) 354-6110 : (800) 284-9107 : (419) 354-5110 es to site _gaylord w/liner _metal drums _4' fiber drums _8' fiber drums _4' boxes _8' boxes	BILL TO: Street: City: Contact: Phone: EMERGENC Transport	AKESHORE ENGINEERI 19215 W. 8 MILE RD. DETROIT , MI 4821 JOHN HARDIMAN (313) 535-7882 Y RESPONSE NUMBER (800) 284- er: ENVIRONMENTAL RE (800) 284 9107	PFF NG SH St CC CC PI S107 A: CYCLIN	ROM IIPPERMKM reet: <u>845</u> ty: <u>RA</u> ontact: <u>CH</u> none:	A RAVE 1 STAT VENNA UCK TF (412) 7 (330) 3 8 4	E ROUTE OH MBUR/B 59-6178 358-2900	5 44266 RIAN
НМ				1	No. of Containers	Type	Weight Est.	(lb.) Act.
	Batteries Wet Filled with Universal Waste Batteries Batteries Wet Filled with Universal Waste Batteries Lithium Battery, 9, UN 3 Universal Waste Batterie Mercury Contained in M Universal Waste Electric Universal Waste Batterie	s, Lead -Acid Alkali, 8, UN 279 s, Nickel-Cadmiu 090, PG II s, Lithium anufactured Artial al Devices	ERG#: 154 95, PG III im ERG#: 154 ERG#: 138 cles, 8, UN 2809, PG III ERG#: 172	*				
	Universal Waste Batterie Universal Waste Batterie Non-RCRA, Non-DOT R	**						
	(PCB Ballast) for recycl		SFDD					
	Electronic Devices / Con Universal Waste Electric 4' Fluorescent U-Shaped/Circ	c Lamps,		ties) Other				

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects proper condition for transport according to applicable interpational and national governmental regulations.

Shipper: Carrier:

Date: <u>7-5-2006</u> Date: <u>7-5-06</u>

Received By:

_Date:

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APPENDIX F

STILL PHOTOGRAPHY REFERENCES

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APPENDIX F

STILL PHOTOGRAPHY REFERENCES

CC-RVAAP-71 BARN NO. 5 PETROLUEM RELEASE

No still photography references were discovered.

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APPENDIX F

STILL PHOTOGRAPHY REFERENCES

CC-RVAAP-83 FORMER BUILDING 1031

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RAVENNA ORDNANCE PLANT - APCO, OHIO

ADMINISTRATION AREA

HOSPITAL, NO. 1031

ATLAS POWDER CO.

242-13-18

CONFIDENTIAL

1241-31-9



The Field Hospital functions like any other hospital ... Upper left: D. E. Mimms, and assistant size up an injury ... Upper right: Dr. Wendorf, assisted by Nurse Kay Reed, sews up a scalp cut ... Center left: John Gembar administers first aid ... Center right, Chief Inspector Funk of the Watson Organization enjoys a slight indisposition ... Inset: E. K. Dusseau, office manager, dictates to stenographer Doris Lawrence ... Bottom left: an eye injury receives prompt treatment ... Bottom right: Gembar and Mimms treat a sprain by use of a diathermy machine,



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APPENDIX F

STILL PHOTOGRAPHY REFERENCES

CC-RVAAP-83 FORMER BUILDING 1039
















































































Place Ravenna Ordnance Plant, Ravenna, Ohio Administration Area								
Designation of building Laborat	ory		Capacity					
Total cost. \$ 93.104 -	Date com	pleted	March 18, 1942					
Material: Walls Wood Studs		Foundation	n Concrete Masonry Units					
Roof Asphalt Shingles		Floors	Rubber on Wood					
Total floor area above basement, so	uare feet 6209							
Size: Main building 121"9" x 51	Wings	None	Basement 58' x 51'					
a Cast Iron Radiators & Unit	a Cast Iron Radiators & Unit Heaters Steam from Height of first floor above							
	Boiler House		ground3					
b_Steam			How lighted Fluorescent & Direct					
(Type of heat)			Water connections Yes					
c Storage Tank with Steam Coils			Sewer connections Yes					
(Type of domestic hot w		Gas connections (Tank) Yes						
COOKING RANGES INSTALLED	REFRIGERATOR	RS INSTALLI	ED METERS INSTALLED					
(Give quantity and size)	(Give quanti		[(Give quantity and capacity)					
Coal None	GasNo:							
GasNone	Electric No.	ne	Electric None					
ElectricNone	Ice No.	ne	Oil None					
OilNone			Steam None					
Steam None			WaterNone					



Approval of Secretary of War as required by A. R. 30-1435 (Give date and File Number)

ADDITIONS AND INSTALLATIONS

(Below enter chronologically all modifications, additions, introductions of water, sewer, lights, heating, etc.)

DATE		COST	DATE		COST

				······································	
		+		4	
			1		

INSTRUCTIONS .--- "a" State whether heated from central heating or by individual heating plants, stoves, furnaces, or fireplaces.

"b" State whether steam, vapor, hot water, or hot air.

"c" State whether gas, coal, oil, or central heating plant.



If plans are not available make sketch plans and elevation in spaces above. The plans shown are typical of "quarters." Similar plans may be made for all types of buildings. There are 10 squares to the inclu Each square will represent 1', 2', 4', or 8', etc., as may be necessary to show entire building in the space allowed. Show inside dimensions and designation of each room. Indicate location of water and sewer connections. In space under heading "Details" show character of construction, story heights, etc. **APPENDIX G**

MAPS/DRAWINGS REFERENCES

APPENDIX G

MAPS/DRAWINGS REFERENCES

CC-RVAAP-71 BARN NO. 5 PETROLEUM RELEASE





ARA BALDWIN - 0.75 A.	LOT 43		VILLAGE OF WINDHAM	ERIE R.R.	
$\frac{10 \text{HAM FIRE DEPT.} - 1.27 \text{ A.}}{105 \text{ TAUSCHE}} = 0.45 \text{ A.}} = \frac{2076}{100} = \frac{2}{100}$	LOT 41 E.H. & MAXINE BELL 5790A. DEED RECORDED 24 SEPT.	X I RANDU. DELDEN UOPH	IEV.CROCK Z 10.00 A. EL OF C.B. CURTIS.		EANOR SNOW ARTHUR WEBBER JUDSON & LYDIA EMMA A. 50 PA. LAWRENCE WILLIN
YDE SMITH - 0. 95 A.	23.67 A. DED 28 JULY X X X X X X X X X X X X X X X X X X X	16. ¹¹ A. 15. ⁶⁰ A.	9.24 A. PEARLEA E. SMITH. 1737A	125 A.	SYLVIA BAKER-0.43 A. R.R.PETERSON-0.39 A 23 ¹⁵ A. 1100 ZAZISOA. JUDSON & WILLIAM DORNING 1850 A. 1850 A.
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	SETH SLOAN I 94.75A. TRUMBULL COUNTY COUL INC., BOY SCOUTS OF AMER 137.34A.		SEYMOUR HENRY & HELEN PAUL, ETAL. HENRY & HELEN PAUL, 138.19 A. 149.68 A.	ETAL. CLIFFORD & ANDREW E. GORDON LEE & FANNI LULU B. ANGELL 87.º A. 142. 62.ºº A.	E CHAFFEE 50.02 A. LEE & FANNIE 100 4 A
DRRIS J. ROTHSTEIN - 0. 12 A. """ - 0. 06A. DN BUNDY - 0. 50 A. NRY PAUL, ETAL 1.23 A.		47. ³⁴ A. 35. ^{ee} A.		62.99A.	RALPHH. GILLESPIE DORA ONG 70.25 A. 2500 A.
" " " - 0.69A. DRRIS J. ROTHSTEIN - 0.12A.	LIL SILAS OWEN,	MADS	SMALLEY IDA SHERMAN, ETAL. 0.54A. ROAD	0.5ºA.	2:0A. Z G. Z Z G.A. A.
	E.A. PARDEE, ETAL.			EANGELA BURTZ 2000A.	ALVAH J. EBBERT ZUZANA 57.24 A. ZELINA
	SILAS OWEN, UNVERNA E.A. PARDEE ETAL. 108.50A.		HOWLAND GORDON NARVIE & NAOMI MOSS 40.00 A. 53.16 A.	CLIFFORD ROY & LULU BISHOP ANGELL 40.ººA. KATHERINE 40.ººA. 15 78.ººA.	ENCE BRAUKER 56ººA. CRYSTAL SHERI
	TRANK MLCOVSKY	CLARENCE ERNEST D. EARL HENRY & WM GON EUCKER 1050A. KATHERINE ETAL 5250A. MERKLE 49.4 78.25A.	W F- CT II GEORGE E MURTIE COO		MARIAL. TOBIN, ETAL. 65°A.
	2.ººA: ZZ	78.25A.	43.ººA. 66.ººA.	RoAD	JENNIE SINN RAMSDELL ROAD
	SILAS OWEN, E.A. PARDEE ETAL. M.P. SLOAN	56.25 A. ELMER POR	With the Start and Start	ANDY & EVA HUBISH - NELLIE MYK I	A MARIA L. TOBIN, ETAL 35.00A.
	GA.SA. 150 A. ARTHUR D. WAITE 56° A	HELEN SIMERA. 56ºA.		м	MARY HAZELLUTZ RONDESKI 25.11A. 17.59A ANDY & EVA HUBISH 25.09A. 25.00A. 11612A.
	CARL J. SMITH	12. ² A.	7 2 2		E HAZEL LOTZ
	34.35 A. 47° A. 2355 A. N PARK A. KNAPP 106.º A	MARY B. TILITSKY 98.25 A	SLEY WILLIAM & ROSE JOHNSTON EDWARD & JULIA JOHNST 106. 4. 116. A.	TON 30.ººA. COLUMBUS MUTUAL LIFE INSURANCECO. 22.ººA.	50.53 A. LILLIAN E. MURPHY 50 A. AMBROSE & OLIVE WRIGHT 7887 A.
	18 ° A. 18.45 A. WINKLEPECK	ROAD	с. 1. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2.	MARGARET KARR	51.3ºA. TALIA ROAD
CHAP	RLES & ELIZABETH POWELL SIMON S. RUFNER 26.96 A. HAROLD W. KUNTZ VAN 592 A.	88.ººA.	NSLEY WILLIAM E. JOHNSTON JAGERS KIRK	I.C. MARGARET KARR	LLIAMS HARRY ROMANSIK 4. 4000A.
2149 A. N	69.5 A. CURTIS B. WALKER 44. A. HATTIE	MARCO & ROSA CIPPALINO 136.75 A.	NSLEY WILLIAM E. JOHNSTON 103. ¹¹ A. C C C C C C C C C C C C C C C C C C C	(PATRICK 112° ^B A. 24 ^{SO} A.	E.R. HUDSON 6. A. SCOTT FENSTERMAKER SCOTT FENS 105. A. 105
IO.ººA. A	DEAUDREY PHILLIPS HARRY & ELIZ. 2.57 POLEN Z ZAROLAND & GLADYS CLINE 22.15 A.		T.C. EDWARDS, ETAL.	E ILEAN	FRANK & FRANCES COZ 110.ººA.
J.T. LEWIS 103. 30 A.	60. [™] A.	VARD C. PHILLIPS OREN G. BREWER	77. ⁶³ A.	WILLIAM B. ST [3]. 62A	N N
OBA SJOHN ARNETT, ETAL.	T.W.KAYLOR 50.50 A. LIDDLE 85.38 A. RANDALL & ELMA WILLIAMS 58.00 A.	880 A. 118.02 A.	ANNA P. VIGKERS 0 673A.	- Vient I was -	VACOB & FRANCES O'KORN 544 A. 128,51 A. 128,51 A.
		NEWTON FALLS	S ROAD	RALPH & V.L. POLEN 0.97A7	TRED C. COVER, ETAL. 24.58A. PARIS TWP. TRUSTEES 0.50A. JC. # J.L.
T.W. KAYLOR 41° A. J.J. REESE BESS 120. A. LAND 35	114. 24 A. HENRY J. THORPE EDWARD CLAR 48 22 A. PHILLIPS	RENCE & MARGARET DIEZMAN	1500 A	AN HENRY JONATHAN LOUELLAE. ROLPH W. JON 75.ººA. WAREHAM 78 BA.	M MCLINTOCKSBURG
JOSEPH & ZUZANA BREZNAT	30° A.	90 °° A.	ARY J. DRGAN 53.12 A. 25% A.	46°°A.	PENN. R.R. RIGHT-OF-WAY RAVENNAE
60°°A.	6	Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	N - 7 20°°A	N. 2850A. A.J. YEAGLEY N. 556A. 1434A.	FRED C. COVER, ETAL. 93 TEA. BB 31 A. WEST BRAT
ALLEN J. YOUMPMAN JOSEPH & ZUZANA BREZNAI 6900A. 1000A.	J. F. ICKES 148 43 A. IZ ²⁰ A. IPErmin	TITIA JONES 109 ¹² A. FLORENCE KREIS 78°°A.	ANNAP. VICKERS BODEA. 1968A. 44.42A.	h h	CLARA MCKEE, ETAL
	R.B. KINSBURY 2735A.	GEORGE&ZELLA	ALEX ROSCOE C. HUNT BLEX 8540A. CEPRR 024	R. F bio Pipe Line Co.	
CURTIS PORTER 80°A. HOWARD JONES 50°A.	HOWARD JONES 24 55 A.	Z MINYOUNG ROLD	175°A. J.E.ANN 2384A.	t Granted to Son	
5100A CURTIS PORTER	HOWARD JONES 125 ⁸⁷ A. HOWARD JONES 125 ⁸⁷ A. GEORGE 55°A. HOLTER S. CHARLESE C.A. & SADIE HOUNDALIER S. CHARLESE C.A. & SADIE HOUNDALIER S. HOUNDALIER S. HO	ARTINE BARBARA BIGELOWE ELIZABETH BURT REIS 3929 A RICHARDS 1708 A. 1500 A. BURT 5000 A. 3938 A. 3938 A. BURT	RGO C.E.R.R.R. C.E.R.R.R. E HOMAS CLEVELAND & PITTSBURG RAILWAY COO.MA CLEVELAND & PITTSBURG RAILWAY COO.MA		
RRY W. & ANNA NICKERSON 8000 A.		ZZZ BeA. BALTI	MORE RAILWAY CO0.1ªA		
GEO. & ROSE W ^{M.} K.STRAUSSER DONNER 2066A. 2125A. 3688A.		I'GA, ROWLAND TIGA			
ZOOSA. ZBRYAN KROPE 5175		25' Easement			
D. & PEARL H.F. GEO. & ROSE WMR. STRAUSSER CHAS. E. GRIFFITH CHARDS WIL: DONNER 49 82.50 A. BUR 64.60 A. A. 3654 3744 8341 A. 7	27.84A 2643A. 2140A.				
1950 A. N. N.	Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z				
STATE ROUTE 5	ELIZABETH CARSON -0.19 Å				
121/2' Easement Granted to Sohio Pipe Line Co					

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APPENDIX G

MAPS/DRAWINGS REFERENCES

CC-RVAAP-83 FORMER BUILDINGS 1031 AND 1039






APPENDIX G

MAPS/DRAWINGS REFERENCES

CC-RVAAP-83 FORMER BUILDING 1031



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	CHEDULE	OF EQU	IPM	ENT	n an	
	DESCRIPTION	REMARKS	ITEM NO.	LOCATION	DESCRIPTION	REMARKS
LOCATION			U-1	UTILITY ROOM	UTILITY BENCH	
KITCHEN	RANGE		U-2	Po	BED PAN WASHER& STERILIZER.	
Do	RANGE (FUTURE)			рс	COMB. SINK & LAUNDRY TRAY	
00	CABINET		U-3		ICE CUBE FREEZER	
DARK ROOM	DEVELOPING TANK	2	U-A.	Do		
Do	TANK CONTROL	٤	IJ-5	Do	UTENSIL CABINET	
Do	DRYER	2	U-6	Do	UTILITY CABINET	
	KITCHEN SINK		P-1	PHARMACY	ALBERENE SINK	
(ITCHEN	INSTRUMENT STERILIZER		P.2	Pa	UTENSIL CABINET	æ
ST AID & GEN.EXAM RMS.			K-16	KITCHEN	LABINET	
FIRST AID	DISPOSAL SINK		K-10	ATT CHEN		
Do	SCRUB-UP SINK					
EN. EXAM. & TREATMAT	INSTRUMENT CASE		A	n an		;
Do	INSTRUMENT SINK		J-1	JANITOR	SERVICE SINK	
LABORATORY	AUTOCLAVE		K-24	KITCHEN	LAUNDRY SINK	
	LAB. BENCH & CABINETS		T- /	BATHS & TOILET ROOMS	LAVATORY	ALSO IN PUT. RHS, SURCEONS, DRS. & NIT
Do			T-2	Po	BATH TUB (5-6 LONG)	
Do	LAB. SINK 60" 1834"		<i>T-3</i>	Da	WATER CLOSET	
Do	CENTRIFUCE (ELECT. OUTLET ONLY))		Do	SHOWER (METAL)	
ENTRAL SUPPLY ROOM	SINK AND COUNTERS		T-4		URINAL	
KITCHEN	CABINET		<i>T-5</i>	Do		
ENTRAL SUPPLY RM.	CABINETS (11/2"SHELVES ABOVE 24"SPACE BELOW		T-6	MEDICALSUPPLIES	PLASTER SINK & TRAP	











		and the second
RADIATION 0-60 [#]	ALVE	TRAP
61-100# 101-UP#	14"	la "
ALL HORIZONTAL RUNOUTS THAN TAPPINGS.	SHALL BE ONE	SIZE LARC
THAN TAPPINGS.		





IN DRAWING Nº 1010 : 202



HOSPITAL



REV. BY. A. J. T



WILBUR WATSON AND ASSOCIATES ARCHITECTS AND ENGINEERS RALPH L. HARDING A.S.C.E. OHIO REG. ENG. 233 CARL A. NAU A. I. A. OHIO REG. ARCH. 813 CONSTRUCTION DIVISION SCALE OFFICE OF THE QUARTERMASTER GENERAL RAVENNA ORDNANCE PLANT REVISIONS Ser Passer 1/20 ADMINISTRATION AREA VICINITY OF HOSPITAL PLANTING PLAN DRAWN BY CHECKED BY APPROVED BY DIRECTION TRACED BY









- 2"x 4" STUDS -2"x 4"STUDS FLATUR LEAD SHEETS 5"PLASTERBOARD PLAN OF X-RAY ROOM FIRE WALL SCALE 3"=1:0" 4" 10" RIDGE 2-2"16" 1 4" + 4" POSTS 2-2-4 BRIDGING BRIDGING 12-2"16" STRUTS -2"x 10" @ 16" cc





4-2" * 4" HANGERS FOR LIGHTING FIXTURE 2" 4"'S SOLID 24" × 24" PANEL FOR ANCHORAGE OF OPERATING LIGHTING FIXTURE SAME TO BE PROVIDED IN CENTER OF EMERGENCY NO.1. 2" INSULATION 12 6 76"x 6 5/1 16"x 5% LAPPED 2" 4"STUDS

A 11 - 11 - anding A.S.C.E

Non AJA

LE					
NS					
- 4M.A.	ADMINISTRATION A				
WAL. 3-6-42	HOSPITAL				
a winds	SECTIONS & DET/ 269-0 X 107-0				
	BOWMAN WALL. 5-19-41	APPROYED BY DIRECTIC			
	TRACED BY	JOHN J. O'CONNOR			
	PAHL				
		LT. COL. Q.M.C. ACTING CONSTRUCTING QUARTERMA			
AWING	TRACED FROM OR	IGINAL PENCIL CONS			

FROM ORIGINAL PENCIL



MATERIEL LIST-

FOUNDT'NS. -1070-CONC. BLK. 8"x8"x16" 20- " " 8"x8"x16" FORCORNERS 90- " " 12"x16"x8". LUMBER 360-LIMFT. 2"x12" FOR LAMINATED BEAMS-12-0" TO 16'-0" LGTHS. 6-PCS. - 2"x12"x 12-0" ENTRANCE PLATFORM. 2* × 12" × 16'-0" " 6- " 2"x 8"-14'-0" END WALL PLATES 92 - " 2" x10"- 16"-0"-JOISTS-SIDE BAYS. 46 " 2"×10"-10'-0" " - CENTER BAYS 13 " 2"×10"-12'-0" " PORCH FLOOR. 3400 BD.FT. I"×4", TP FLOORING. 8 6"x 6" x 10'-O" PORCH POSTS. 700' 5/8" BEADED CEILING 64 Pes 2"×6" × 14" O" CEILING JOIST (PORCH) 190 LF 2"×8" LAMINATED PORCH BEAM. 190 LF 1" ×10" FACIA FOR BEAM. 190 LF 1" X 6" SOFFIT FOR BEAM. 92 2" X B" X 16'-0" CEILING JOIST 46 2"× 8"×10'-0" " 92 2"×4 × 9'0" STUDS 170 2"×4×9-0 " 1000 LF 2"x4 SILLS & PLATE 120" + 16'0" 130 2" × 6"- 24'0" RAFTERS 65 2" × 4 12'0" STRUTS SOOD BF. 1"X6" DEMYP ROOF SHEATHING 2900 BF 1'X6" DROP SIDING TIR 34 2" × 4" 10' 0" CUT 4 LOOE OUTS 430 BF 3/4"X4" BEADED CEILING UNDER EAVES. 180 LF. INX6 TACIA FOR BAVES. 44 SQ 210" ASPHALT SHINGLES 44 SQ IS" FELT. 27 JINGLE WINDOWS 12 LTS 10×12" 1 PR ENT. DOORS 40"x7"0"x21/4 W.P. IPANEL GLTS. 13 INTERIOR DOORS 40"X7 0"X134 2 PANELS 650 LF. 1'X6' ROUND CORNER BASE 34 SHOE. 4500 SETT ROCKWOOL BATTS. 5100 SAFT SHEETROCK





APPENDIX G

MAPS/DRAWINGS REFERENCES

CC-RVAAP-83 FORMER BUILDING 1039








4-



RAVENNA ARMY AMMUNITION PLANT, PORTAGE COUNTY, OHIO BUILDING 1039 LOCATION SURVEY SURVEYED IN SEPT.-OCTOBER 2006 BY DON TROCCHIO REG. SURVEYOR NO.6445 DATUM USED IS NAD 83 OHIO STATE PLANE RECTANGULAR GRID COORDINATES

PT. NO. NORTH EAST ELV. DESC.

- 6 551168.2 2357839.1 1028.4 BC1039 7 551219.2 2357838.5 1027.7 BC1039 1028.8 BC1039
- 8 551218.1 2357716.5



APPENDIX H INTERVIEWS



Interview Documentation

Gail Harris, Vista Sciences Corporation

CC-RVAAP-71 Barn No. 5 Petroleum Release And CC-RVAAP-83 Former Buildings 1031 and 1039

November 3, 2011, 7:30 AM

Current Address – RVAAP

Current Telephone – (330) 358-7304

Approximate Dates You Were at RVAAP – June 2004 to Present

RVAAP Positions – Archivist/Technical Librarian

RVAAP Employers - SpecPro, SpecPro Technologies, Vista Sciences Corporation

RVAAP Main Duties – Assess and catalog historical and current RVAAP documents, maintain two public repositories

Other Interview Attendees and Affiliations – Catherine Guido, ECC; Jeff Donovan, ECC

Purpose of Interview – ECC conducted an interview with Ms. Gail Harris of Vista Sciences Corporation to discuss the two Compliance Restoration (CR) sites; CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039.

Knowledge of CC-RVAAP-71 Barn No. 5 Petroleum Release

First-hand knowledge – Ms. Harris had no first hand knowledge of the petroleum release as she was not employed at RVAAP during the time of the petroleum release (1964).

Any other resources or people that might have information – Ms. Harris provided the historical record documenting the petroleum release. The letter dated May 1964 documented the

release of approximately 20 barrels of petroleum from a buried pipeline. Ms. Harris also provided multiple records including historical aerial photographs showing the area of Barn No. 5 as well as documents regarding the right-of-way access granted for the pipeline from which the petroleum release occurred.

Follow-up Email, January 26, 2012

Catherine Guido, of ECC, contacted Ms. Harris on January 26, 2012 by email to obtain additional information regarding Barn No. 5. Ms. Harris confirmed that there is no date documentation on the Barn No. 5 construction diagram (Accession No. WD-SK-261) presented in Appendix G Maps/Drawings References. Ms. Harris also confirmed that there is no other information (i.e. date, author, or verifiable location) associated with this particular historical archive record other than the title of the record which is "Barn of Old Rt #5".

Knowledge of CC-RVAAP-83 Former Buildings 1031 and 1039

First-hand knowledge – Ms. Harris recalled the location and demolition of the two buildings. The area of Building 1039 is visible from the front door of Building 1037 where Ms. Harris' office is located. She recalled that the building exterior was coated in a blue material as part of the demolition process. This blue coating was used to contain asbestos particles during the removal of asbestos siding. Ms. Harris recalled that the Ohio Army National Guard performed the demolition of Building 1031 while the demolition of Building 1039 was performed by RVAAP.

Any other resources or people that might have information – Ms. Harris provided historical records related to Building 1031 and Building 1039 including maps, design drawings, historical aerial photographs and a demolition completion report, among others. She named Jean White as a nurse who worked in the hospital building before it was closed. When asked if Jean White's contact information was available, Ms. Harris recalled that Ms. White passed away several years ago from cancer.



Interview Documentation

Gary Wolfgang, Retired

CC-RVAAP-71 Barn No. 5 Petroleum Release And CC-RVAAP-83 Former Buildings 1031 and 1039

November 4, 2011, 10:30 AM

Current Address – N/A

Current Telephone – (330) 923-0835

Approximate Dates You Were at RVAAP – June 1968 to 1993

RVAAP Employers – RAI / Firestone

RVAAP Positions – Safety Inspector/ Supervisor/ Engineer/ Manager, Director of Safety & Surveillance (Surveillance during that time at RVAAP meant Quality Control)

RVAAP Main Duties – Included magazine inspections, shipping and receiving inspections (incoming and outgoing materials), truck inspections, demilitarization duties, safety schools, audits, inspector training, plant inspections including load lines, maintenance areas, storage facilities, administration areas.

Other Interview Attendees and Affiliations - Catherine Guido, ECC

Purpose of Interview – ECC conducted an interview with Mr. Gary Wolfgang to discuss the two Compliance Restoration (CR) sites; CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039.

Knowledge of CC-RVAAP-71 Barn No. 5 Petroleum Release

First-hand knowledge – Mr. Wolfgang had no first hand knowledge of the petroleum release as he was not employed at RVAAP during the time of the petroleum release (1964). When he was

presented with the letter documenting the petroleum release, he identified the author as Clarence Craver who was employed at RVAAP as a Safety manager/Engineer. When asked if his contact information was available, Mr. Wolfgang recalled that Mr. Craver passed away in 1966 from stomach cancer.

Any other resources or people that might have information – Mr. Wolfgang recalled that a former employee, Ray McDaniel, was employed at RVAAP during 1964 and might have information regarding the site. Mr. Wolfgang also mentioned Mr. James McGee for the same reason.

Knowledge of CC-RVAAP-83 Former Buildings 1031 and 1039

First-hand knowledge – Mr. Wolfgang recalled visiting Buildings 1031 and 1039 as part of routine 'plant inspections' as part of the safety and surveillance program. Laboratory hood conditions, proper handling of chemicals/samples, and proper use of PPE (personal protection equipment) by employees were part of the inspections at Building 1039. The inspections followed the AMCR 385-100 (old ORD 224) manual for inspections. The reports went to the government. Mr. Wolfgang recalled that the laboratory had custom sinks for the disposal of samples/chemicals. The sinks had a box, or trap, where contaminated material or residue would settle out of the waste water. The water would then travel to a 6 foot square sump filled with sawdust. The sump was constructed of lead-lined concrete and was about 6 to 7 feet deep. Mr. Wolfgang recalled a sump at Building 1039 that was located outside, up against the middle of the south side of the building and covered with a wooden cover to keep rainwater out. He recalls that the contaminated saw dust was periodically removed from the sump and transported to one of the burning grounds for burning. Mr. Wolfgang did not recall the existence of an underground storage tank at Building 1031 or 1039 and noted that the buildings were heated with steam. Mr. Wolfgang mentioned that there might be decontamination certificates for the sink traps or sumps issued when the buildings were closed down. He mentioned that Webster's reagent is typically used to test for contaminants.

Any other resources or people that might have information – Mr. Wolfgang mentioned that Jim McGee and Ray McDaniel may provide information regarding the two buildings.



Interview Documentation

Jim McGee, Vista Sciences Corporation

CC-RVAAP-71 Barn No. 5 Petroleum Release And CC-RVAAP-83 Former Buildings 1031 and 1039

November 3, 2011, 8:30 AM

Current Address – RVAAP

Current Telephone – (330) 358-3005

Approximate Dates You Were at RVAAP – Brought up at RVAAP from 1946 to 1955. Worked at RVAAP from 1964 to 1979 and from 1981 to present date.

RVAAP Employers – Firestone, then Olin for 27 years; Mason & Hanger for 5 years; Toltest – MKM – Pika – Vista for 10 years.

RVAAP Positions – Olin – Maintenance and Security Manager; Firestone – Maintenance Supervisor; Toltest-MKM-Pika-Vista – Project Manager

RVAAP Main Duties – Firestone/Olin – Supervised maintenance, then security and maintenance; Mason & Hanger – Site Manager; Toltest-MKM-Pika-Vista – Project Manager with no one else to report to on site.

Other Interview Attendees and Affiliations – Catherine Guido, ECC; Jeff Donovan, ECC

Purpose of Interview – ECC conducted an interview with Mr. Jim McGee of Vista Sciences Corporation to discuss the two Compliance Restoration (CR) sites; CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039.

Knowledge of CC-RVAAP-71 Barn No. 5 Petroleum Release

First-hand knowledge - Mr. McGee recalled that Barn No. 5 was used for boarding horses in the early 1940's. The Barn was also known as the 'twin silo barn' as it had two silos at the east side of the barn. He recalls that there was about two years of horse patrol of the installation followed by about one year of patrol by motor scooters. After that, patrols were conducted via pick-up truck. Mr. McGee guessed that the barn was demolished around 1972 when he recalls multiple other demolitions occurring. Mr. McGee recalled that the Post No. 6 was only used on an as-needed basis and remained locked when not in use. He does not recall Post No. 6 ever being manned. When shown a document providing information about the right-of-way for the pipeline which released the petroleum, he identified the last name of a RVAAP employee referenced in a handwritten note on the document. The name was 'Vorac' and the note stated that verbal communication was received August 1986 that the pipeline was abandoned. Mr. McGee recalled that Tom Vorac works for the Federal government now, but worked for Olin as a Forester in the Land Management department when he was employed at RVAAP. When a topography map of the area was described as having pipelines extending north from the east west pipeline parallel to State Route 5, Mr. McGee stated that he did know of the existence of any such pipelines. When the pipeline easement was described as being outside the fence, he confirmed that this was the case to the best of his knowledge. He stated that the fence was never moved in this area.

Any other records or people that might have information – When asked if he knew any of the individuals mentioned in the letter dated May 13, 1964 documenting the petroleum release, he speculated that all are deceased noting that most individuals were in their 40's during the time of the release.

Follow-up Phone Call, 9:00 AM, January 26, 2012

Catherine Guido, of ECC, contacted Mr. McGee on January 26, 2012 by the telephone to obtain additional information regarding Barn No. 5. Mr. McGee confirmed that the barn existed on the property prior to the Army acquiring the property in 1940.

Knowledge of CC-RVAAP-83 Former Buildings 1031 and 1039

First-hand knowledge – Mr. McGee recalled that Building 1031 functioned as the hospital building. Mr. McGee explained how Seibert markers have been installed along the perimeter of the building footprints for both buildings which were demolished between 2006 and 2008. The markers indicate to those on site that individuals are to remain outside the perimeter of the markers due to potential environmental hazard. Mr. McGee recalled that the hospital had an extension that served as living quarters for the resident doctor. In later years, the hospital was only used to perform routine physicals, etc. and the building was closed in the 1990's. The sanitary system channeled waste water to the George Road water treatment plant. Gray water was channeled to the storm sewer system. The buildings were heated by steam from Power

House 6. No presence of underground storage tanks was recalled for either building. Mr. McGee recalled that Building 1039 functioned as the laboratory where quality control samples from load lines were analyzed. Mr. McGee recalled a sump at Building 1039 that was located outside, up against the south side of the building and covered with a Redwood wooden cover to keep rainwater out. He described how the inlet pipe from the sinks was lower on the sawdustfilled sump and an outlet pipe leading to the George Road water treatment plant was located higher in the sump. Contaminants would settle to the bottom and the 'clean' water would flow to the plant. Sawdust was taken to Winkelpeck burning grounds for drying and burning. He recalls generating the sawdust that was used to fill the sump when he worked as a carpenter.

Any other resources or people that might have information – Mr. McGee recalled that Kris Smith was the nurse employed at the hospital building after Jean White.

Follow-up Phone Call, 9:30 AM, December 8, 2011

Catherine Guido, of ECC, contacted Mr. McGee on December 8, 2011 by the telephone to obtain additional information regarding the former Building 1039 (Laboratory). ECC provided Mr. McGee with a site figure that displays the locations of historical utilities as obtained from record map files. ECC asked Mr. McGee if the manhole shown south of former Building 1039 was the location of the sump that was described during Mr. McGee's interview on November 3, 2011. Mr. McGee stated that the manhole was not where the sump was located as he recalled. He stated that the sump was located adjacent to the building foundation since he recalls working on the sump which was in contact with the side of the laboratory building. Mr. McGee stated that he recalls this clearly because at the time he worked as a RVAAP carpenter, he was tasked with replacing the wood cover of this sump. He described the cover construction as wood with roofing material (shingles) affixed to the top of the cover to prevent rain water from entering the sump. Mr. McGee did not recall observing any demolition activities of the sump area nor does he recall Lakeshore Environmental Services (LES) personnel requesting any information of him regarding the sump.



Interview Documentation

Ray McDaniel, Retired

CC-RVAAP-71 Barn No. 5 Petroleum Release And CC-RVAAP-83 Former Buildings 1031 and 1039

November 4, 2011, 1:00 PM

Current Address – N/A

Current Telephone – N/A

Approximate Dates You Were at RVAAP – 1942 to 1984

RVAAL Employer - Atlas Powder Co., Government, Firestone, Physic International, Olin

RVAAP Positions - Explosives Operator, Guard, Millwright, Mechanical Inspector, Foreman

RVAAP Main Duties – Position titles are self-explanatory

Other Interview Attendees and Affiliations – Catherine Guido, ECC; Charlene McDaniel, Wife of Interviewee

Purpose of Interview – ECC conducted an interview with Mr. Ray McDaniel to discuss the two Compliance Restoration (CR) sites; CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039.

Knowledge of CC-RVAAP-71 Barn No. 5 Petroleum Release

First-hand knowledge – Though Mr. McDaniel was employed at RVAAP during the time of the Barn No. 5 petroleum release, he did not have any knowledge of the event.

Any other resources or people that might have information – Mr. McDaniel did not know of any other resources or people that might have information regarding the Barn No. 5 petroleum release.

Knowledge of CC-RVAAP-83 Former Buildings 1031 and 1039

First-hand knowledge – Mr. McDaniel frequented the hospital for routine physicals. He recalled that the laboratory had tensile strength machines as part of the equipment inventory. He stated that he was employed at RVAAP the years before and after the laboratory was in use. Mr. McDaniel did not recall the existence of an underground storage tanks (UST) at the hospital, nor the laboratory. He also did not recall the existence of a sump located on the south side of the laboratory building.

Any other resources or people that might have information – Mr. McDaniel recalled that Dorothy Thomas was a nurse employed at the hospital in 1945. Mr. McDaniel provided a photocopy of a page from a book titled History of the Ravenna Arsenal, by Ralph A. Pfingsten, published in 2009. The page provided information about the hospital as well as four still photographs of the hospital exterior and interior.



Interview Documentation

Tim Morgan and Katie Tait, Ohio Army National Guard

CC-RVAAP-71 Barn No. 5 Petroleum Release And CC-RVAAP-83 Former Buildings 1031 and 1039

November 3, 2011, 1:00 PM

Current Address – Camp Ravenna, Joint Military Training Center

Current Telephone – Tim (614) 336-6568, Katie (614) 336-6136

Approximate Dates You Were at RVAAP/OHARNG – Tim – August 1988 – Present; Katie – December 2005 to Present

RVAAP/OHARNG Employers – Tim - Olin (1988 – 1993), DA (1994-2000), OHARNG (2000-Present); Katie – OHARNG (2005-Present)

RVAAP/OHARNG Positions – Tim – Olin Land Management Specialist, Army Forrester/Environmental Manager, OHARNG Environmental/Program Supervisor; Katie – OHARNG Environmental Scientist

RVAAP Main Duties – Tim – With Olin; land management, real property manager, cultural/natural resource manager, pest management coordinator, and with Army/OHARNG; oversight of environmental program. Katie – Restoration technical lead for OHARNG with main duties consisting of restoration and compliance.

Other Interview Attendees and Affiliations - Catherine Guido, ECC; Jeff Donovan, ECC

Purpose of Interview – ECC conducted an interview with Mr. Tim Morgan and Ms. Katie Tait to discuss the two Compliance Restoration (CR) sites; CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039.

Knowledge of CC-RVAAP-71 Barn No. 5 Petroleum Release

First-hand knowledge – Mr. Morgan and Ms. Tait did not have any knowledge of the Barn No. 5 petroleum release as they were not employed by RVAAP at the time of the release. Mr. Morgan commented that he did not think Barn No. 5 was relevant to any potential contamination at the site.

Any other resources or people that might have information – Mr. Morgan and Ms. Tait did not have any information regarding other people that might have information regarding the Barn No. 5 petroleum release. Mr. Morgan and Ms. Tait provided a copy of a topographic map which showed pipeline features in the vicinity of Post No. 6.

Knowledge of CC-RVAAP-83 Former Buildings 1031 and 1039

First-hand knowledge – Mr. Morgan recalled that Craig Getty was the last nurse to work at the hospital building. He also stated that he thought the use of the X-ray facility at the hospital was used in the early 1970's and was not used after 1988. Mr. Morgan stated that the hospital was demolished by the OHARNG in 2008. Ms. Tait noted that any hazardous material was removed prior to demolition. She also noted that any potentially hazardous material was assumed to be hazardous and sent off site for disposal. Mr. Morgan and Ms. Tait recalled the laboratory building being sprayed with a blue substance which was used to contain asbestos particles during the removal of the asbestos siding from the building exterior.

Any other resources or people that might have information – Mr. Morgan and Ms. Tait provided multiple maps and drawings related to Buildings 1031 and 1039. A work plan for the demolition of the hospital was provided as well as hazardous waste removal documentation and pre-demolition sampling results.

APPENDIX I

ABBREVIATED SITE SAFETY AND HEALTH PLAN

The Final Facility-Wide Safety and Health Plan for Environmental Investigations, dated February 24, 2011 may be found on the RVAAP Access public website (<u>www.rvaap.org</u>) or in the RVAAP Administrative Record located at the RVAAP Building 1037 Conference Room, 8451 St. Route 5, Ravenna, Ohio 44266-9244.

APPENDIX J

PROPERTY VISIT REPORT

CC-RVAAP-71 Barn No. 5 Petroleum Release

The property visit and perimeter survey for the Barn No. 5 Petroleum Release was conducted on the morning of November 3, 2011. The weather conditions were partly cloudy with temperatures in the mid 50's. Upon arrival at the site it was noted that Barn No. 5 is no longer in existence. The building footprint of Barn No. 5 was marked at the four corners by stakes with orange flags. The building footprint was oriented from east to west, parallel to South Patrol Road. South Patrol Road was observed as a dirt and gravel road running just several feet inside the chain link fence line in this area. Directly south of the Barn No. 5 building footprint is Post No. 6 which provides road access to Newton Falls Road (old State Route 5). It was observed that Post No. 6 is no longer an active post as was evident by the lock on the gate and the concrete barricade in front of the gate. Additionally, it was observed that the pathway to Newton Falls Road was covered by tall grass vegetation with dense brush and trees to either side of the former access road. The general area of the pipeline where the reported petroleum release occurred to the ground surface was located. The pipeline runs outside the fenced area; however, the release was documented to occur within the fence line. No visual evidence, such as staining, residue, odor, stressed vegetation, etc. was observed on either side of the fence. The majority of the property north of South Patrol Road, Post No. 6, and most of the Barn No. 5 building footprint, is cover with tall grass vegetation. The northeast and northwest corners of the Barn No. 5 footprint are located within dense brush vegetation. The topography of the site is relatively flat. The nearest water body noted was Hinkley Creek which runs in a northeast to southwest direction about 300 feet northwest of the site. No other surface water bodies (ponds, streams, ditches, vernal pools, etc.) were observed at the site. No jurisdictional wetlands or historical landmarks exist at the site. No utilities or other structures were observed at the site. No physical evidence of munitions or explosives of concern (MEC) was observed at the site and there is no record that past uses included munitions or explosives operations. No potable water wells exist within approximately 11,000 feet of the site.

CC-RVAAP-83 Former Buildings 1031 and 1039

Former Building 1031 Hospital

The property visit and perimeter survey for Former Building 1031 was conducted on the afternoon of November 3, 2011. The weather conditions were partly cloudy with temperatures in the mid 50's. Upon arrival at the site it was noted that Building 1031 is no longer in existence. The T-shaped building footprint of Former Building 1031 was marked along the perimeter of the building footprint with Seibert Markers. The site is considered to be the building footprint and a 30-foot buffer around the perimeter of the former building's foundation. The longest side of the former building ran from east to west with an extension

pointing north, to the east of the midpoint of the former building. This extension once served as the living quarters for the resident doctor. South Service Road is the nearest named road and runs to the east of the site. A paved area is present north of the former building and running parallel to the length of the former building. This area was once used as a parking lot. Utility poles and wires were observed running parallel to the parking lot. Additionally, a fenced in electrical area was observed directly north of the doctor's living quarters under the utility lines on the far side of the parking lot. The building footprint is covered mostly with grass. No visual evidence, such as staining, residue, odor, stressed vegetation, etc. was observed. Short grass immediately surrounds the former building perimeter and the extended surrounding area is occupied by several coniferous and deciduous trees. A dumpster filled with unknown debris was present at the site to the east of the doctor's living quarters on a patch of pavement. No surface water bodies, such as ponds, streams, ditches, or vernal pools were observed at the site. No jurisdictional wetlands or historical landmarks exist at the site. No physical evidence of MEC was observed at the site and there is no record that past uses included munitions or explosives operations.

Former Building 1039 Laboratory

The property visit and perimeter survey for Former Building 1039 was conducted on the afternoon of November 3, 2011. The weather conditions were partly cloudy with temperatures in the mid 50's. Upon arrival at the site it was noted that Building 1039 is no longer in existence. The rectangle-shaped building footprint of Former Building 1039 was marked along the building footprint perimeter with Seibert Markers. The site is considered to be the building footprint and a 30-foot buffer around the perimeter of the former building's foundation. The longest side of the building footprint runs from east to west, parallel to South Service Road in this area. The building footprint is located southwest of the intersection of South Service Road (running east west) and George Road (running north south). Utility poles were observed on either side of South Service Road but the utility pole nearest the building footprint did not have any existing lines connected to it. The building footprint is covered with grass which was planted as part of the site restoration efforts after the building was demolished. No evidence such as staining, residue, odor, stressed vegetation, etc. was observed. A field of grass was observed beyond the building footprint. No surface water bodies such as ponds, streams, ditches, or vernal pools were observed at the site. No jurisdictional wetlands or historical landmarks exist at the site. No physical evidence of MEC was observed at the site and there is no record that past uses included munitions or explosives operations.

APPENDIX K

PROPERTY VISIT PHOTOGRAPHS





CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 01
Date: 11/03/2011	Direction of View: West	Photographer: Jeff Donovan (ECC)

Description: Photograph of Post No. 6 along the bend of South Patrol Road. Post No. 6 is no longer an active post. South Patrol Road is a dirt and gravel road.



CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 02
Date: 11/03/2011	Direction of View: Southeast	Photographer: Jeff Donovan (ECC)

Description: Photograph of Post No. 6 and the surrounding area. Post No. 6 is no longer an active post. The vegetation beyond the fence consists mostly of small brush and tall grasses where there was once an access road to Charlestown Road. The petroleum pipeline and pipeline easement are located just outside the fence line.



CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 03
Date: 11/03/2011	Direction of View: Northwest	Photographer: Catherine Guido (ECC)
Description: Photograph of the Barn No. 5 building footprint and the Hinkley Creek spillway. This portion of Hinkley Creek runs northeast to southwest spills out through 2 concrete pipes, each approximately 5 feet in diameter. The red arrow points to a stake at the southwest corner of the Barn No. 5 footprint. South Patrol Road and a chain link fence runs along the left side of the photograph.		



CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 04
Date: 11/03/2011	Direction of View: Northwest	Photographer: Jeff Donovan (ECC)

Description: Photograph of Barn No. 5 footprint and the Hinkley Creek spillway. Shown by the red arrows are the stakes marking the southwest and southeast corners of the Barn No. 5 footprint.



CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 05
Date: 11/03/2011	Direction of View: South	Photographer: Catherine Guido (ECC)

Description: Photograph of the southern edge of the Barn No. 5 footprint to South Patrol Road/Post No. 6 and surroundings. Area between the footprint and road is covered with tall grass vegetation. Post No. 6 and chain link fence are in the rear of the photograph.


CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 06
Date: 11/03/2011	Direction of View: North	Photographer: Catherine Guido (ECC)

Description: Photograph of Barn No. 5 footprint and surrounding area taken from the edge of South Patrol Road near Post No. 6. The majority of the building footprint is covered in tall grass with the northern edge of the footprint in dense brush. Shown are red arrows pointing to stakes marking the four corners of the building footprint.



CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 07
Date: 11/03/2011	Direction of View: Northwest	Photographer: Catherine Guido (ECC)
Description: Photograph of the east edge of the Barn No. 5 building footprint. The majority of		
the barn footprint is covered in tall grass. The northern edge of the barn footprint is located in		
dense brush. Shown by the red arrows are the stakes marking the northeast and southeast corners		
of the barn footprint.		



CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 08
Date: 11/03/2011	Direction of View: Northeast	Photographer: Catherine Guido (ECC)
Description: Photograph of the western edge of the Barn No. 5 building footprint. The majority		

of the barn footprint is covered in tall grass. The northern edge of the barn footprint is in an area of dense brush. Shown are red arrows pointing to stakes marking the southwest and northwest corners of the barn footprint.



CC-RVAAP-71	Barn No. 5 Petroleum Release	Photograph Number: 09
Date: 11/03/2011	Direction of View: South	Photographer: Jeff Donovan (ECC)
Description: Photograph of Post No. 6 and Newton Falls Road in the rear of the photograph. A path through the vegetation from the chain link fence to the road was observed where the access road for Post No. 6 once existed.		





CC-RVAAP-83	Former Building 1031	Photograph Number: 10	
Date: 11/03/2011	Direction of View: Southwest	Photographer: Jeff Donavan (ECC)	

Description: Photograph of the Former Building 1031 footprint and the nearby housing structures. The extent of the building footprint is marked by Seibert Stakes (red arrows point to stakes). The stakes are positioned around the perimeter of the building footprint and function as warning signs to personnel that they are not to enter the area within the stakes. At the time this photo was taken, military training was taking place in the housing area.



CC-RVAAP-83	Former Building 1031	Photograph Number: 11	
Date: 11/03/2011	Direction of View: West	Photographer: Jeff Donovan (ECC)	
road and parking lot lo currently located at the	Description: Photograph of a portion of the Former Building 1031 footprint, the unnamed access road and parking lot located along the northern side of the former building. A dumpster is currently located at the site. Seibert Stakes around the northern residential portion of the footprint are shown. The stakes are pointing out the north side of Former Building 1031.		



CC-RVAAP-83	Former Building 1031	Photograph Number: 12
Date: 11/03/2011	Direction of View: Southeast	Photographer: Jeff Donovan (ECC)
Description: Photograph taken of the Seibert Stakes at the end of the residential portion of Former Building 1031 which extended from the north side of the building. Also shown is a		

dumpster located to the east of the residential portion of Former Building 1031 and Building 1033 is in the background of the photograph.



CC-RVAAP-83	Former Building 1031	Photograph Number: 13
Date: 11/03/2011	Direction of View: East	Photographer: Jeff Donovan (ECC)
footprint and the surro	uph of Seibert Stakes along the perime ounding area. Building 1033 is shown ss. Red arrows point to old pavement	in the background. Site vegetation



CC-RVAAP-83	Former Building 1031	Photograph Number: 14
Date: 11/03/2011	Direction of View: Southeast	Photographer: Jeff Donovan (ECC)

Description: Photograph taken to document Seibert Stakes along the perimeter of the Former Building 1031 footprint. Buildings 1033 and 1046 are in the background. Evidence of old pavement near the building footprint was observed by the photographer.



CC-RVAAP-83	Former Building 1031	Photograph Number: 15
Date: 11/03/2011	Direction of View: Southeast	Photographer: Jeff Donovan (ECC)
Description: Photograph of Seibert Stakes along the southern edge of the Former Building 1031 footprint and surrounding area. Buildings 1046 and 1030 are in the background of the photograph.		





CC-RVAAP-83	Former Building 1039	Photograph Number: 16
Date: 11/03/2011	Direction of View: South	Photographer: Jeff Donovan (ECC)
Description: Photograph of the footprint of Former Building 1039 and surrounding area. Footprint perimeter is marked by Seibert Stakes (red arrows point to stakes). Ground cover vegetation is grass. Buildings 1048 and 1038 are shown in the distant background.		



CC-RVAAP-83	Former Building 1039	Photograph Number: 17
Date: 11/03/2011	Direction of View: Southwest	Photographer: Jeff Donovan (ECC)
Description: Photograph of Former Building 1039 footprint marked by Seibert Stakes and surrounding area (red arrows point to stakes). The building footprint area consists of level ground surface covered with grass.		



CC-RVAAP-83	Former Building 1039	Photograph Number: 18			
Date: 11/03/2011	Direction of View: West	Photographer: Jeff Donovan (ECC)			
Description: Photograph taken from the intersection of George Road and South Service Road to document proximity of the Former Building 1039 footprint relative to the road. South Service Road is shown on the right side of photograph.					



CC-RVAAP-83	Former Building 1039	Photograph Number: 19			
Date: 11/03/2011	Direction of View: Northeast	Photographer: Jeff Donovan (ECC)			
Description: Photograph taken to show site conditions and surrounding areas. The Former Building 1039 footprint is level ground covered with grass. Buildings 1037 (left side of photograph) and 1034 Automotive Maintenance (right side of photograph) are shown in the background.					

APPENDIX L

MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL

This appendix is not applicable per USACE direction.

APPENDIX M

TECHNICAL ADVISORY GROUP REVIEW FACT SHEET

This appendix is not applicable per USACE direction.

APPENDIX N

RESPONSE TO COMMENTS

DRAFT HISTORICAL RECORDS REVIEW REPORT FOR CC-RVAAP-71 BARN NO. 5 PETROLEUM RELEASE AND CC-RVAAP-83 FORMER BUILDINGS 1031 AND 1039 RAVENNA ARMY AMMUNITION PLANT, RAVENNA, OHIO COMMENT RESPONSE TABLE Draft HRR Report – Submitted 17 February 2012 Ohio EPA Comments – Received 5 April 2012 ECC Response to Comments – Submitted 16 April 2012; Revised & Submitted – 23 April 2012

Page 1 of 6

Comment Number	Page No. / Line No.	New Page or Sheet	Comment	Recommendation	Response		
	Ohio EPA (K. Palombo)						
O-1	Table 2-1		Page Number for this Table was not included in the Table of Contents.	Provide a page number for this table, since it is included within the text.	A page number will be provided for Table 2-1 in the Table of Contents.		
0-2	Page 3, Lines 488- 489		This bullet references a documented release of gasoline of 20 barrels.	Since the original letter documenting the release from 1964 found in Appendix E uses the word "estimated," it is recommended that any reference to the amount released use the word, "estimated or approximate."	The text of the bulled will be revised as follows: " <i>One documented release of</i> <u>approximately</u> 20 barrels (840 gallons) of " For CC-RVAAP-71 section of the HRR Report, a global change will be made to the text to include "approximate" when describing the amount of the release.		
O-3	General		How was it determined to reference Buildings 1031 and 1039 as RVAAP-83, since they are nearly ¹ / ₂ mile apart?	Provide a brief description on how RVAAP 83 was determined.	The Army stakeholders during BRAC identified these Buildings, Nos. 1031 and 1039, as having similar waste streams (x- ray, photo lab chemicals, etc.) and proposed to group both buildings into one Compliance Restoration site and it was accepted by USAEC. The grouping of the buildings as a single CR site was not based on proximity.		
O-4	Page 4, Conclusions and Recommendations for RVAAP-71 Barn No. 5		This section states the pipeline was abandoned, but provides no date. Also, No Further Action is recommended. Ohio EPA does not concur.	Provide a date that the pipeline was abandoned. Since this area is projected Unrestricted Guard Use (page 14, line 877), Ohio EPA recommends an evaluation of soils in the area of the spill.	The exact date that the pipeline was abandoned is unknown. Buckeye Pipeline (the company who repaired the pipeline in 1964) and British Petroleum (BP) (the last known owners of the pipeline) were		

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Comment Number	Page No. / Line No.	New Page or Sheet	Comment	Recommendation	Response
					contacted for any available pipeline information. None was provided from either company. Please see attached for the letter received from BP regarding the requests for information. The only available information regarding abandonment of the pipeline is a hand- written note by Thomas Vorac dated August 15, 1986 which stated "Buckeye pipeline has been abandoned". The last two sentences in Section ES.3.2
					CC-RVAAP-71 Barn No. 5 Petroleum Release Conclusions and Recommendations will be replaced with the following text:
					"Documentation discovered supports the assumption that the pipeline was abandoned (Vorac, 1986), but the process of abandonment method is unknown (abandoned in place, grouted, or removal). Due to the unknown process of abandonment and the projected Unrestricted Guard Use of the area, further investigation of soils is recommended at this CR site."
O-5	Page 4, Line 536		This section describes Building 1039 (Laboratory) and presence of a sump, but does not provide the estimated dimensions or location of the sump.	Provide a description of the dimensions and location of the sump.	The text commented on is within the Executive Summary section of the HRR Report. The ES section provides a summary of the conclusions and recommendations. The location of the

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					Page 5 01 0
Comment Number	Page No. / Line No.	New Page or Sheet	Comment	Recommendation	Response
					sump is stated in this sentence "2011 reporting the presence of a sump, located adjacent to the south exterior wall of the building". A detailed description of the estimated sump dimensions, location, and construction materials are provided in Section 3.2.5.
O-6	Page 4, Line 528		This section states that Building 1031 (Hospital) was demolished in 2008 and the basement was backfilled with clean material. If available, more information is needed.	Some clarifying information such as how deep the basement is, what type of material was used to backfill, and information on whether ground water is filling this void would be useful. Also, the basement is not mentioned in Section 3.1.3 page 22, this information should also be included in that section.	This comment pertains to the text within the Executive Summary of the HRR Report. This section provides a broad overview of the conclusions and recommendations. The following text will be added to Section 3.1.3 following the second sentence of the first paragraph: "As part of the demolition activities, the 6- foot deep basement was left intact and backfilled. The material used for backfill was OHARNG-approved demolished material (brick and block) choked and topped with fill dirt and topsoil onsite (QBS 2008). Depth to groundwater at Former Building 1031 is approximately 12 feet bgs."
O-7	Page 9, Section 1.5.3.2		The Lavery Till and the Hiram Till are mentioned as overlying the bedrock on the facility, but no mention is made as to their characteristics.	Expand the section to provide some description of these tills based on soil borings that were installed on the facility.	A new paragraph will be inserted after the first paragraph in Section 1.5.3.2 as follows: <i>"Thin coverings of glacial material have</i>

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					been completely removed as a consequence of human activities at locations such as Ramsdell Quarry. Bedrock is present at or near the ground surface in locations such as at Load Line 1 and the Erie Burning Grounds (USACE 2001). Where this glacial material is still present, their distribution and character indicate their origin as ground moraine. These tills consist of laterally discontinuous assemblages of yellow-brown, brown, and gray silty clays to clayey silts, with sand and rock fragments. Lacustrine sediment from bodies of glacial-age standing water also has been encountered in the form of deposits of uniform light gray silt greater than 50-ft thick in some areas (USACE 2001)."
O-8	Page 9, Section 1.5.3.2		This section titled, Soil and Glacial Deposits contains a description of the bedrock geology. It really doesn't fit in this section.	Create a new sub section that describes the bedrock geology on site.	The last paragraph of Section 1.5.3.2 will become <i>"Section 1.5.3.3 Bedrock Geology"</i> .
O-9	Figure 2-3		The color symbol for the Pipeline Easement and Site Area cannot be distinguished on the legend.	The colors for the Pipeline Easement and the Site Area should be changed, so there is a definite contrast between the two.	The colors and symbols for the Pipeline Easement and Site Area will be modified so that there is a contrast between the two.
O-10	Page 13, Lines 854 thru 861		A description of the documentation of the 1964 gasoline release from the pipeline near Barn No. 5 is presented, but no reference is made to Appendix E where the copy of the original letter can be	Reference Appendix E.	The sentence beginning on line 855 will be revised as follows: <i>"The Buckeye pipeline break and</i> <i>associated release is documented in a letter</i>

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			found.		(Appendix E) prepared by C.F. Craver, RVAAP Security Manager"
O-11	Page 14, Section 2.2.1, Line 896 and 897		This section states that no documented evidence was found regarding specific years of use for Barn No.5 or Post No.6, or the demolition of Barn No. 5. However, Section 2.1.2 does include specific dates and uses and a general time of demolition.	Instead of saying, "No" documented evidence was found, Ohio EPA recommends that the sentence read, only "minimal" information was found, or provide some clarification.	The sentence on line 897 will be revised as follows: "No Minimal documented evidence was found regarding specific years"
O-12	Page 17, Section 2.7.1.1		This section states that groundwater flow in the unconfined aquifer is towards the northwest, towards Hinkley Creek.	Although, Ohio EPA agrees groundwater flow is likely towards Hinkley Creek, Figure 1-5 shows the general flow direction toward the south-southwest and towards Hinckley Creek. The section should be changed.	A sentence will be inserted after the first sentence in Section 2.7.1.1 as follows: "The generalized inferred groundwater flow direction of the unconfined aquifer is toward the south-southwest."
O-13	Page 17, Section 2.7.1.2, Section 2.7.1.3 and Page 14, Section 2.1.2		Regarding RVAAP-71 Barn No. 5, Section 2.7.1.2 states, " if groundwater was used for drinking or irrigation purposes in the future, there could be potential for human receptor exposure." Section 2.7.1.3 states, "No Further Action is required." Since Section 2.1.2 states, "Future OHARNG land use is projected as Unrestricted Guard Use." Ohio EPA recommends an evaluation of soils in this area.	Based on the information provided in these sections, Ohio EPA recommends evaluation of soils in the area of impact from the gasoline pipeline release that occurred near Barn No. 5.	The text in Section 2.7.1.3 Groundwater Conclusions will be replaced with the following text: "No groundwater samples were collected as part of this HRR. Leaching of potential soil contaminants to groundwater is a potential contaminant migration pathway for this CR site, which may require further evaluation." In Section 4.1.2 Conclusions and Recommendations, second paragraph, the last sentence will revised as follows: "Due to the relatively small volume of the

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					release in conjunction with the age (47 years ago), the volatile nature of gasoline constituents, <u>and potential soil contaminant</u> <u>that might migrate into groundwater</u> , lack of viable pathways for migration, no additional investigation <u>of the soils</u> is recommended at CC-RVAAP-71 Barn No. 5 Petroleum Release."
			END OF C	COMMENTS	



BP Pipelines (North America) Inc. 150 W. Warrenville, Road Building 600 – 3N Naperville, IL 60563 630-536-2163

February 23, 2012

RE: Request for BP Pipeline Information

To whom it may concern,

The following is in response to your request for information pertaining to BP pipeline systems.

BP takes pride in its relationship with the people and their land throughout our system. Our efforts to maintain the pipeline routes and facilities include continuous monitoring of the system through a combination of systems and safety programs.

The pipeline industry is regulated by the U.S. Department of Transportation's Office of Pipeline Safety and is one of the most highly regulated industries. The Office of Pipeline Safety, <u>http://ops.dot.gov</u>, can provide information regarding procedures the pipeline industry is required to follow, and to which BP strictly adheres, regarding the maintenance and inspection of its pipelines and easements. BP adheres to the highest standards of safety and has taken comprehensive steps to meet and exceed current state and federal pipeline safety and environmental regulations. More information can be found at <u>www.bppipelines.com</u>.

You can obtain information BP is required to provide to regulatory authorities regarding unintended releases at <u>www.nrc.uscg.mil/nrchp.html</u>.

Thank you again. Please feel free to contact me at (630) 536-2163 with any questions or concerns.

Sincerely,

Tim Patchett Right of Way Specialist TKP/tkp

May 22, 2012

RE: RVAAP-14 COMPLIANCE RESTORATION SITES, RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES, FINAL HISTORICAL RECORDS REVIEW REPORT, CC-RVAAP 71 AND 83 (PROJECT ID # 267-000859-162)

Mr. Mark Patterson Installation Manager Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, OH 44266

<u>CERTIFIED MAIL</u> 7010 1060 0000 0089 7025

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Final Historical Records Review Report for CC-RVAAP-71 and CC-RVAAP-83 Ravenna Army Ammunition Plant, Ravenna, Ohio." The final document was received at Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on May 10, 2012. The document was prepared for the U.S. Army Corps of Engineers (USACE) – Louisville District, by ECC, under Contract Number W912QR-04-D-0039, Delivery Order 0004.

Pursuant to the CERCLA process, the property owner usually can provide the expected land uses to assist in ensuring that the investigation addresses all receptors for both current and future land uses. Be advised that due to land use uncertainty, Ohio EPA may require additional work in the future, to address data gaps. It is incumbent upon the Army to finalize land use at Camp Ravenna as soon as possible, otherwise additional work and schedule slippage may result.

This document was reviewed by personnel from Ohio EPA's Division of Environmental Response and Revitalization (DERR). Ohio EPA has determined that all required text changes have been made to this document and considers it to be final and approved, providing there are no additional comments from the Army or Ohio Army National Guard.

If you have any questions, please call me at (330) 963-1292.

NOTE TO OHRANG: Please forward to NGB as needed/required.

Sincerely,

Kevin Palombo Project Coordinator Division of Environmental Response and Revitalization

KP/kss

- cc: Eileen Mohr, Ohio EPA, NEDO, DERR
- ec: Katie Tait, OHARNG RTLS LTC Ed Meade, OHARNG RTLS Glen Beckham, USACE Louisville Mark Nichter, USACE Louisville Nancy Zikmanis, Ohio EPA, NEDO, DERR Mark Eldridge, AEC Kim Harriz, NGB Al Easterday, ECC Todd Fisher, Ohio EPA, NEDO, DERR Christy Esler, VISTA Tom Chanda, USACE Louisville Eric Cheng, USACE Louisville Bob Guthrie, Management Solutions, LLC

APPENDIX O

REPORT PLATES
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RVAAP/CAMP RAVENNA RAVENNA, OHIO













Map Coordinates: WGS 84, UTM Zone 17N in Meters Base map data and Aerial Photographs from SAIC









U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS LOUISVILLE, KENTUCKY

Figure O-7 CC-RVAAP-71 Barn No.5 Petroleum Release 1979 Historical Aerial Photograph RVAAP/CAMP RAVENNA RAVENNA, OHIO













Figure O-10 CC-RVAAP-71 Barn No.5 Petroleum Release 1997 Historical Aerial Photograph RVAAP/CAMP RAVENNA RAVENNA, OHIO













RVAAP/CAMP RAVENNA RAVENNA, OHIO





NOTES & SOURCES

Site Location

Map Coordinates: WGS 84, UTM Zone 17N in Meters Base map data and Aerial Photographs from SAIC









U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS LOUISVILLE, KENTUCKY

Figure O-15 CC-RVAAP-71 Barn No.5 Petroleum Release 2009 Historical Aerial Photograph RVAAP/CAMP RAVENNA RAVENNA, OHIO





NOTES & SOURCES

Map Coordinates: WGS 84, UTM Zone 17N in Meters Base map data and Aerial Photographs from SAIC









U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS LOUISVILLE, KENTUCKY

Figure O-17 CC-RVAAP-83 Former Building 1031 and 1039 1940 Historical Aerial Photograph RVAAP/CAMP RAVENNA RAVENNA, OHIO

















Site Location Former Building









CC-RVAAP-83 Former Building 1031 and 1039 1997 Historical Aerial Photograph RVAAP/CAMP RAVENNA RAVENNA, OHIO





Site Location Former Building







CC-RVAAP-83 Former Building 1031 and 1039 2003 Historical Aerial Photograph RVAAP/CAMP RAVENNA RAVENNA, OHIO











Site Location Former Building









Former Building 1031 and 1039 2009 Historical Aerial Photograph RVAAP/CAMP RAVENNA RAVENNA, OHIO

APPENDIX P

UST SUMMARY SHEETS

This appendix is not applicable per USACE direction.

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