Final

Remedial Action Report for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds

> Ravenna Army Ammunition Plant Ravenna, Ohio

> > March 5, 2010

GSA Contract No. GS-10F-0076J Delivery Order No. W912QR-05-F-0033

Prepared for:



US Army Corps of Engineers.

United States Army Corps of Engineers Louisville District

Prepared by:



SAIC Engineering of Ohio, Inc. 8866 Commons Boulevard, Suite 201 Twinsburg, Ohio 44087

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188			
The public reporting burden for this collection gathering and maintaining the data needed, and of information, including auggestions for red (0704-0138), 1215 Jefferson Davis Highway, subject to any penality for failing to comply will PLEASE DO NOT RETURN YOUR FO	of information completing an ucing the bure Suite 1204, Ar a collection of ORM TO TH	is estimated to average 1 hour d reviewing the collection of infi den, to Department of Defens lington, VA 22202-4302. Res f Information if it does not displa IE ABOVE ADDRESS.	per response, incli ormation. Send con e, Washington He pondents should be by a currently valid (uding the tin nments rega adquarters \$ aware that DMB control	he for reviewing instructions, searching existing data sources, rding this burden estimate or any other aspect of this collection services, Directorate for Information Operations and Reports notwithstanding any other provision of law, no person shall be number.	
1. REPORT DATE (DD-MM-YYYY)	2. REPO	DRT TYPE			3. DATES COVERED (From - To)	
05-03-2010		Technica	1		October 2009 to December 2009	
4. TITLE AND SUBTITLE				5a. CO	NTRACT NUMBER	
Final					GSA Contract No. GS-10F-0076J	
for the DVAAD 16 Euro and Doo	etar Ouerr	I andfill/Danda		5b. GR/	ANT NUMBER	
Ravenna Army Ammunition Plan	t	y Landini/Ponds			NA	
Ravenna, Ohio				5c. PRC	OGRAM ELEMENT NUMBER	
					NΔ	
				E-1 000		
6. AUTHOR(S)				Su. Phu		
Jed Thomas, P.E.					Delivery Order W912QR-05-F-0033	
				5e. TAS	SK NUMBER	
					NA	
				5f. WO	RK UNIT NUMBER	
					NA	
7. PERFORMING ORGANIZATION	AME(S) AN	ND ADDRESS(ES)			8. PERFORMING ORGANIZATION	
SAIC Engineering of Obio Inc.					REPORT NUMBER	
8866 Commons Blvd.					1526.20100305.001	
Twinsburg, OH 44087						
-						
9. SPONSORING/MONITORING AG	ENCY NAM	E(S) AND ADDRESS(ES))		10. SPONSOR/MONITOR'S ACRONYM(S)	
USACE - Louisville District					CELRL-ED-EE	
U.S. Army Corps of Engineers, L	ouisville D	District				
600 Martin Luther King Jr. Place					11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
P.O. Box 50 Louisville, Kantuchy 40202,0059					NA	
12 DISTRIBUTION/AVAILABILITY	TATEMEN	r			NA .	
Pafaranaa Distribution Daga	TATEMEN	•				
Reference Distribution Page						
13. SUPPLEMENTARY NOTES						
None						
14. ABSTRACT						
This Remedial Action Report pro- accordance with the Remedial De Ammunition Plant. Additionally, approved, and implemented; and o	vides docu sign for the this report describes th	mentation that the rem e RVAAP-16 Fuze and summarizes the field he current condition of	edial action o l Booster Qua activities perfo the construct	bjectives rry Land ormed; p ion and r	and cleanup goals were achieved in fill/Ponds at the Ravenna Army resents field changes that were proposed, removal area.	
15. SUBJECT TERMS						
remedial action, remedial action of	bjective, c	leanup goals, confirma	tion sampling	, excava	tion, transport and disposal, site restoration	
16. SECURITY CLASSIFICATION OF	F;	17. LIMITATION OF	18. NUMBER	19a. NA	ME OF RESPONSIBLE PERSON	
a. REPORT b. ABSTRACT c. T	HIS PAGE	ABSTRACT	OF		NA	
NA NA	NA	NA	107	19b. TEL	EPHONE NUMBER (Include area code) NA	

Standard Form 298 (Rev. 8/98) Prescribed by ANSI Std. 239.18

CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Science Applications International Corporation (SAIC) has completed the Final Remedial Action Report for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds at the Ravenna Army Ammunition 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 the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be 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 law and existing United States Army Corps of Engineers policy.

Jed Thomas, P.E. Study/Design Team Leader

od se

3/3/10

Mar 10

Tia Rutledge / Independent Technical Review Team Leader

Significant concerns and the explanation of the resolution are as follows:

Internal SAIC Independent Technical Review comments are recorded on a Document Review Record per SAIC quality assurance procedure QAAP 3.1. This Document Review Record is maintained in the project file. Changes to the report addressing the comments have been verified by the Study/Design Team Leader. As noted above, all concerns resulting from independent technical review of the project have been considered.

Scort Armstrong

Principal w/ A-E firm

March 4 2010 Date

Final

Remedial Action Report for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds

Volume One - Main Report Version 1.0

Ravenna Army Ammunition Plant Ravenna, Ohio

GSA Contract No. GS-10F-0076J Delivery Order No. W912QR-05-F-0033

Prepared for:

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

Prepared by:

Science Applications International Corporation 8866 Commons Boulevard, Suite 201 Twinsburg, Ohio 44087

March 5, 2010

DOCUMENT DISTRIBUTION for the Final Remedial Action Report for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds Ravenna Army Ammunition Plant Ravenna, Ohio

	Number of	Number of
Name/Organization	Printed Copies	Electronic Copies
Mark Krivansky, USAEC	0	1
Katie Elgin, OHARNG	1	1
J. Kimberly Harriz, NGB	0	1
Mark Patterson, RVAAP Facility Manager	2	2
Nathaniel Peters II, USACE – Louisville District	1	1
Thomas Chanda, USACE – Louisville District	1	1
Todd Fisher, Ohio EPA-NEDO	1	1
Kevin Jago, SAIC	1	1
Jed Thomas, SAIC	1	1
REIMS	0	1
SAIC Project File W912QR-05-F-0033	1	1
SAIC Central Records Facility	0	1

NGB = National Guard Bureau

OHARNG = Ohio Army National Guard

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

REIMS = Ravenna Environmental Information Management System

RVAAP = Ravenna Army Ammunition Plant

SAIC = Science Applications International Corporation

USACE = United States Army Corps of Engineers

USAEC = United States Army Environmental Command

TABLE OF CONTENTS

LIST OF TABLES	iii
LIST OF FIGURES	iii
LIST OF PHOTOGRAPHS	iii
LIST OF APPENDICES	iii
ACRONYMS AND ABBREVIATIONS	v
1.0 INTRODUCTION	1-1
1.1 PURPOSE	1-1
1.2 REPORT ORGANIZATION	1-1
2.0 BACKGROUND INFORMATION	2-1
2.1 GENERAL FACILITY DESCRIPTION	2-1
2.2 FUZE AND BOOSTER QUARRY LANDFILL/PONDS DESCRIPTION	
AND HISTORY	2-1
2.3 PREVIOUS INVESTIGATIONS AND ACTIVITIES	2-2
2.3.1 Relative Risk Site Evaluation	2-2
2.3.2 Phase I/Phase II Remedial Investigation	2-2
2.3.3 Supplemental Phase II Remedial Investigation	2-3
2.3.4 Feasibility Study	2-3
2.3.5 Community Involvement and Regulatory Approval	2-4
2.3.6 Remedial Action Objective and Remedial Action Cleanup Goal	2-4
2.3.7 Remedial Design for the Fuze and Booster Quarry Landfill/Ponds	2-5
3.0 PROJECT ORGANIZATION	3-1
4.0 CONSTRUCTION MOBILIZATION	4-1
4.1 PERMIT AND NOTIFICATION REQUIREMENTS	4-1
4.2 CHARACTERIZATION SAMPLING	4-1
4.3 MOBILIZATION AND SITE PREPARATION	4-2
4.3.1 Utility Clearance	4-2
4.3.2 Site Preparation	
4.3.2.1 Implementing Site Controls	
4.3.2.2 Rock Construction Entrance	4-3
4.3.2.3 Vegetation Clearing	
4.3.2.4 Storm Water Controls	4-4
4.3.2.5 Dust and Wind Controls	4-5
4.3.2.6 Good Housekeeping Practices	4-5
5.0 EXCAVATION AND SAMPLING ACTIVITIES	5-1
5.1 SEDIMENT REMOVAL ACTIVITIES	5-1
5.1.1 Application of a Absorbent Material	5-1
5.1.2 Truck Loading and Transportation	
5.1.3 Equipment Decontamination	

TABLE OF CONTENTS (continued)

5.2 CONFIRMATION SAMPLING	
6.0 SITE RESTORATION	6-1
6.1 BORROW SOURCE SAMPLING	6-1
6.2 BACKFILLING OF THE DRAINAGE DITCH	6-1
6.3 DISPOSITION OF PLACED STONE	
6.4 RE-VEGETATION	6-2
6.5 REMOVAL OF EROSION CONTROLS	
7.0 CONCLUSIONS	7-1
8.0 REFERENCES	8-1

LIST OF TABLES

Table 2-1.	Cleanup Goal for a National Guard Trainee for Dry Sediment at FBQ	2-4
Table 5-1.	Confirmation Sample Results	5-3
Table 7-1.	FBQ Drainage Ditch Removal Totals	7-1
Table 7-2.	Confirmation Soil Sample Results	7-1

LIST OF FIGURES

Figure 2-1.	General Location and Orientation of RVAAP/Camp Ravenna	2-6
Figure 2-2.	RVAAP/Camp Ravenna Installation Map	2-7
Figure 2-3.	Features of Fuze and Booster Quarry Landfill/Ponds	2-9
Figure 3-1.	Project Organizational Chart	3-1
Figure 5-1.	FBQ Final Excavation (Plan and Profile View)	5-5

LIST OF PHOTOGRAPHS

Photograph 4-1.	Construction Traffic Route Sign	4-3
Photograph 4-2.	Installation of Equipment Movement Area	4-3
Photograph 4-3.	Chipping of Cleared Vegetation	4-4
Photograph 4-4.	Cleared Trees Left at Project Site	4-4
Photograph 4-5.	Installation of Silt Fencing	4-5
Photograph 4-6.	Nightly Cover of Drainage Ditch	4-5
Photograph 5-1.	Saturated Sediment at Western Portion of Drainage Ditch	5-1
Photograph 5-2.	Mixing of Absorbent Material in Drainage Ditch	5-1
Photograph 5-3.	Loading Excavated Material into Haul Trucks	5-2
Photograph 5-4.	Final Removal of Contaminated Sediment and Shaping of the Ditch Line	5-2
Photograph 5-5.	Multi-Increment Sample Collection in FBQ-201M	5-3
Photograph 5-6.	Multi-Increment Sample Collection in FBQ-200M	5-3
Photograph 6-1.	Drainage Ditch After Backfilling	6-2
Photograph 6-2.	Current Restoration of the Drainage Ditch following Remedial Actions	6-2

LIST OF APPENDICES

Appendix A.	Permits, Notifications,	and Approvals
-------------	-------------------------	---------------

- Appendix B. Laboratory Analytical Results
- Appendix C. Data Quality Control Summary Report
- Appendix D. Field Change Request Forms
- Appendix E. Waste Manifests

THIS PAGE INTENTIONALLY LEFT BLANK.

ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AOC	Area of Concern
ARAR	Applicable and Relevant or Appropriate Requirements
BGS	Below Ground Surface
BRACD	Base Realignment and Closure Division
COC	Chemical of Concern
CUG	Cleanup Goals
DFFO	Director's Final Findings and Orders
DoD	Department of Defense
EPC	Exposure Point Concentrations
FBQ	Fuze and Booster Quarry Landfill/Ponds
FS	Feasibility Study
GSA	United States General Services Administration
IRP	Installation Restoration Program
MEC	Munitions and Explosives of Concern
MI	Multi-Increment
MMRP	Military Munitions Response Program
NGB	National Guard Bureau
NPDES	National Pollutant Discharge Elimination System
NWP	Nationwide Permit
O&M	Operations and Maintenance
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
PBA	Performance-Based Acquisition
PBC	Performance-Based Contract
PCB	Polychlorinated Biphenyl
RAO	Remedial Action Objective
RAR	Remedial Action Report
RD	Remedial Design
RI	Remedial Investigation
RL	Reporting Level
ROD	Record of Decision
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SSHO	Site Safety and Health Officer
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine

ACRONYMS AND ABBREVIATIONS (CONTINUED)

United States Fish and whome Service	USFWS	United States Fish	and Wildlife Service
--------------------------------------	-------	--------------------	----------------------

- UXO Unexploded Ordnance
- VOC Volatile Organic Compound

Science Applications International Corporation (SAIC) has been contracted by the U.S. Army Corps of Engineers (USACE), Louisville District, to provide environmental services in support of six high priority areas of concern (AOCs) at the Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio. This Remedial Action Report (RAR) describes the field activities and documents attainment of the remedial action cleanup goals (CUG) as a result of implementing a remedial action for the drainage ditch at the Fuze and Booster Quarry Landfill/Ponds (FBQ).

This work is being performed under a Performance-Based Acquisition (PBA) [formerly termed Performance-Based Contract (PBC)] in accordance with U.S. General Services Administration (GSA) Environmental Advisory Services Contract GS-10-F-0076J. In addition, planning and performance of all work elements is being conducted 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).

1.1 PURPOSE

The purpose of this Remedial Action Report (RAR) is to document the fulfillment of the selected remedy for soil and dry sediment at FBQ as stated in the *Record of Decision (ROD) for Soil and Dry Sediment at the Fuze and Booster Quarry Landfill/Ponds (RVAAP-16)* (USACE 2007a). Fulfillment of this selected remedy was executed in accordance with the *Remedial Design for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds* (USACE 2009).

This RAR summarizes all administrative and field activities performed as specified in the FBQ remedial design (RD). The report also includes a presentation of the confirmation sampling scheme and analytical results which verify the achievement of soil and dry sediment CUG for the anticipated future land use (National Guard Trainee) of FBQ.

1.2 REPORT ORGANIZATION

This RAR is organized as follows:

- Section 1: Introduction
- Section 2: Background Information
- Section 3: Project Organization
- Section 4: Construction Mobilization
- Section 5: Excavation and Sampling Activities
- Section 6: Site Restoration
- Section 7: Conclusions
- Section 8: References

• Appendices:

Appendix A: Permits, Notifications, and Approvals

- A-1. United States Fish and Wildlife Service (USFWS) Concurrence Letter
- A-2. Ohio Historic Preservation Office (OHPO) Concurrence Letter
- A-3. Ohio EPA Approval of Backfill Source
- Appendix B: Laboratory Analytical Results
- Appendix C: Data Quality Control Summary Report
- Appendix D: Field Change Request Orders
- Appendix E: Waste Manifests

This section describes the facility, describes the AOC, discusses the previous investigations at FBQ, and presents the remedial action objectives (RAOs) and remedial action CUG.

2.1 GENERAL FACILITY DESCRIPTION

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 Ohio Army National Guard (OHARNG) over a 2-year period (2002 and 2003) and the total acreage of the property was found to be 21,683.289 acres. As of February 2006, a total of 20,403 acres of the former 21,683-acre RVAAP has been transferred to the National Guard Bureau (NGB) and subsequently licensed to OHARNG for use as a military training site.

The current RVAAP consists of 1,280 acres scattered throughout the OHARNG Camp Ravenna Joint Military Training Center, herein referred to as Camp Ravenna. Camp Ravenna is in northeastern Ohio within Portage and Trumbull Counties, approximately 4.8 km (3 miles) east-northeast of the City of Ravenna and approximately 1.6 km (1 mile) northwest of the City of Newton Falls. The RVAAP portions of the property are solely located within Portage County. Camp Ravenna/RVAAP is a parcel of property approximately 17.7 km (11 miles) long and 5.6 km (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 (Figures 2-1 and 2-2). Camp Ravenna is surrounded by several communities: Windham on the north; Garrettsville 9.6 km (6 miles) to the northwest; Newton Falls 1.6 km (1 mile) to the southeast; Charlestown to the southwest; and Wayland 4.8 km (3 miles) to the south.

When RVAAP was operational, Camp Ravenna did not exist and the entire 21,683-acre parcel was a government-owned, contractor-operated industrial facility. The RVAAP IRP encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP. References to RVAAP in this document are considered to be inclusive of the historical extent of RVAAP, which is inclusive of the combined acreages of the current Camp Ravenna and RVAAP, unless otherwise specifically stated.

2.2 FUZE AND BOOSTER QUARRY LANDFILL/PONDS DESCRIPTION AND HISTORY

FBQ encompasses approximately 45 acres in the south-central part of RVAAP. Site features are presented in Figure 2-3. FBQ operated from 1945 until 1993. The western part of the AOC contains 11 small, shallow settling basins, and an abandoned rock quarry is located in the eastern portion. The RVAAP-16 AOC was expanded in 1998 to include two debris piles and three settling ponds.

Reportedly, the quarry was used for open burning and as a landfill before 1976. The debris resulting from these activities was reportedly removed during construction of three settling ponds (quarry ponds) in 1976. These quarry ponds, up to 20 to 30 ft deep and separated by earthen berms, were constructed to receive spent brine regenerate, groundwater iron oxide filtrant, and sand filtration backwash water discharge from one of the RVAAP water plants. The discharge was regulated under a National Pollutant Discharge Elimination System (NPDES) permit and continued until 1993.

2.3 PREVIOUS INVESTIGATIONS AND ACTIVITIES

The following sections provide a summary of the previous investigations and activities performed to date at FBQ.

2.3.1 Relative Risk Site Evaluation

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) performed a Relative Risk Site Evaluation at RVAAP. The Relative Risk Site Evaluation provided the U.S. Army with qualitative and quantitative data to score sites, which provided the U.S. Army with a basis for prioritizing cleanups and allocating funds. Each site evaluated was given a score of "High," "Medium," or "Low."

The Relative Risk Site Evaluation (USACHPPM 1996) assessed sediment and surface water samples from each of the three quarry ponds; groundwater and soil samples were not collected. The samples that were collected were analyzed for metals and explosives. The evaluation concluded there was no evidence of contaminant migration from the unlined quarry ponds at FBQ. The evaluation gave FBQ a final score of "High."

2.3.2 Phase I/Phase II Remedial Investigation

A Phase I/Phase II Remedial Investigation (RI) (USACE 2005a) was performed to determine the extent of contamination in affected media (e.g., soils, sediments, surface water, and groundwater). Arsenic and manganese were identified as chemicals of concern (COCs) in soil and dry sediment for the National Guard Trainee at FBQ. Calculated risks from these two metals were primarily associated with the very high dust loading factor and inhalation rate assumed for the National Guard Trainee. The exposure point concentrations (EPCs) for arsenic and manganese in soil were less than surface soil background values. The arsenic and manganese EPCs in dry sediment in the drainage ditch aggregate were greater than dry sediment background values.

The Phase I/Phase II RI did not completely determine the lateral and vertical extent of soil and dry sediment contamination.

2.3.3 Supplemental Phase II Remedial Investigation

In response to the recommendation in the Phase I/Phase II RI report (USACE 2005a), a Supplemental Phase II RI was conducted. Implementation of the *Supplemental Phase II Remedial Investigation of Central Burn Pits, Fuze and Booster Quarry Landfill/Ponds, and Open Demolition Area #2* (USACE 2005b) was completed to fill additional data needs regarding the extent of contamination in affected soil media following the Phase I/II RI. The primary objective of the Supplemental Phase II RI was to provide an updated assessment of the nature and extent of soil contamination and potential risks to receptors at FBQ at RVAAP. The sampling at FBQ defined the nature and extent of explosive and inorganic compounds detected during the previous Phase I/Phase II RI and to evaluate potential risks to receptors in support of the feasibility study (FS).

The extent of explosive contamination was defined to below reporting limits in surface and subsurface soils at FBQ. Only one explosive (nitrobenzene) was detected in the discrete samples; however, all detections of nitrobenzene were below reporting limits. The extent of manganese was defined in the Supplemental Phase II RI. The Supplemental Phase II RI results indicated inorganics above background concentrations in the perimeter samples collected; however, no substantial data gaps were identified following completion of the Supplemental Phase II RI. Results of the Supplemental Phase II RI are presented in the *Feasibility Study for Fuze and Booster Quarry Landfill/Ponds (RVAAP-16)* (USACE 2006).

2.3.4 Feasibility Study

Preliminary CUGs for soil and dry sediment were developed in the *Feasibility Study for Fuze and Booster Quarry Landfill/Ponds (RVAAP-16)* (USACE 2006) to support the remedial alternative selection process for soil and dry sediment remediation at FBQ. Remedial alternatives were assembled for impacted soils and dry sediment at FBQ. The remedial alternatives were constructed by combining general response actions, technology types, and process options retained from the screening processes described in the FS. Remedial alternatives assured adequate protection of human health and the environment, achieved RAOs, met applicable and relevant or appropriate requirements (ARARs), and permanently and significantly reduced the volume, toxicity, and/or mobility of COCs.

The analysis of chemical concentration data indicated there were no soil COCs requiring remediation to achieve National Guard Trainee and Resident Subsistence Farmer land use standards. The only dry sediment COC that required remediation was manganese within the drainage ditch aggregate at FBQ. (Sediment COCs were identified in the quarry ponds, but the sediment aggregate within the ponds is considered wet sediment.) Consequently, the recommended remedial alternative for FBQ, as presented in the FS, was Alternative 3 - Excavation of Soil/Dry Sediment with Offsite Disposal ~ National Guard Trainee Land Use. This alternative addressed dry sediment in the drainage ditch at FBQ that exceeded CUG for the anticipated future land use (National Guard Trainee), and also attained CUG for a residential land use (Resident Subsistence Farmer).

2.3.5 Community Involvement and Regulatory Approval

The *Proposed Plan for Soil and Dry Sediment at Fuze and Booster Quarry Landfill/Ponds (RVAAP-16)* (USACE 2007b) was presented to the public on April 4, 2007 and a 30-day public comment period was conducted until May 3, 2007. On April 10, 2007, a public meeting was held in Newton Falls, Ohio presenting the recommended alternative. Comments were collected and incorporated into the ROD.

The *Record of Decision for Soil and Dry Sediment at the Fuze and Booster Quarry Landfill/Ponds* (*RVAAP-16*) (USACE 2007a) documented the selected remedial action alternative (Alternative 3 - Excavation of Soil/Dry Sediment with Offsite Disposal ~ National Guard Trainee Land Use), RAO, and remedial action CUG for soil and dry sediment at FBQ.

The ROD includes a Responsiveness Summary addressing public comments received during the public comment period and public meeting. The ROD was signed by the Branch Chief for the Base Realignment and Closure Division (BRACD) on October 30, 2007 and the Director of the Ohio EPA on January 28, 2008.

2.3.6 Remedial Action Objective and Remedial Action Cleanup Goal

As stated in the ROD, the RAO for FBQ was to prevent National Guard Trainee exposure to contaminants in soil and dry sediment that exceed CUG to a depth of 4 ft below ground surface (BGS). The selected remedy addressed soil and dry sediment to a depth of 4 ft BGS because potential disturbance of soil to that depth is possible under the National Guard Trainee future land use.

There was no remedial action required for soil at FBQ. For dry sediment, manganese required remediation within the drainage ditch aggregate. From previous investigations, the manganese EPC in the drainage ditch was 4,100 mg/kg, which exceeded the CUG for the National Guard Trainee (1,950 mg/kg) and the Resident Subsistence Farmer (2,900 mg/kg). Based on the risk evaluation, remediation of dry sediment within the drainage ditch was required to achieve National Guard Trainee and Resident Subsistence Farmer CUGs. Table 2-1 presents the CUG for FBQ.

Table 2-1. Clear	nup Goal for a N	lational Guard '	Trainee for Dry	Sediment at FBQ
	.			

Chemical of Concern	Cleanup Goal (mg/kg)	
Manganese	1,950	

The dry sediment requiring remediation is within the drainage ditch aggregate.

Although future land use at FBQ is not anticipated to include unrestricted land use, the selected remedy achieved CUG for the Resident Subsistence Farmer. Land use controls with respect to chemical contamination in soil or dry sediment are not required when the remedial action attains CUGs protective for residential land use.

2.3.7 Remedial Design for the Fuze and Booster Quarry Landfill/Ponds

The *Remedial Design for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds* (USACE 2009) was developed to detail the implementation of the remedial action for dry sediment within the drainage ditch aggregate at FBQ to achieve the RAO and CUG. The RD presented the project organization, notification requirements, design drawings, and technical guidance and specifications. Additionally, the RD outlined the restoration of the drainage ditch once the contaminated dry sediment was removed. The RD was approved by the Ohio EPA on July 31, 2009.



Figure 2-1. General Location and Orientation of RVAAP/Camp Ravenna



Figure 2-2. RVAAP/Camp Ravenna Installation Map

THIS PAGE INTENTIONALLY LEFT BLANK.



Figure 2-3. Features of Fuze and Booster Quarry Landfill/Ponds

THIS PAGE INTENTIONALLY LEFT BLANK.

3.0 PROJECT ORGANIZATION

Figure 3-1 presents the project organization chart for the implementation of this remedial action. The U.S. Army was the lead entity and was responsible for the implementation of this remedial action. The USACE, Louisville District provided implementation and technical oversight on behalf of the U.S. Army. Ohio EPA was the regulatory authority governing work on this remedial action. SAIC was the primary contractor responsible for implementing the RD, which included the following:

- 1) Selected and procured a qualified remedial subcontractor (Toltest, Inc.) to perform the work described herein;
- 2) Provided project management and construction oversight;
- 3) Coordinated transportation and disposal activities with RVAAP; and
- 4) Collected confirmation samples.

A full description of the roles and responsibilities is included in Section 2.0 of the RD.



Figure 3-1. Project Organizational Chart

THIS PAGE INTENTIONALLY LEFT BLANK.

This section describes construction mobilization and site preparation activities required to implement the RD, including permit and notification requirements and site preparation activities.

4.1 PERMIT AND NOTIFICATION REQUIREMENTS

Based on review of applicable requirements, the following permits, notifications, approvals, and/or concurrence letters were required for the remedial action:

- USFWS concurrence letter (received April 30, 2009);
- OHPO concurrence letter (received June 12, 2009); and
- USACE, Pittsburgh District authorization to perform this remedial action under NWP #38 (received July 10, 2009).

All signatory documentation (e.g., permits and manifests) were obtained through RVAAP or USACE representatives. The USFWS and OHPO concurrence letters are presented in Appendix A. No other federal, state, or municipal permits, notifications, or requirements were determined to be applicable for this remedial action.

The authorization to use NWP #38 is valid until July 10, 2011 and requires the completion of the Compliance Certification Form following the remedial activities. Once the site is restored and revegetated per Section 8.0 of the RD, SAIC will coordinate with appropriate U.S. Army representatives to complete and submit this form.

Additionally, Ohio EPA was notified of the construction start date during a regularly scheduled biweekly teleconference on October 13, 2009. Throughout the project, all RVAAP Stakeholders were informed and updated of activities performed and schedule during bi-weekly teleconferences, monthly reports, and e-mail correspondences.

4.2 CHARACTERIZATION SAMPLING

On April 1, 2009, a technical memorandum was submitted to the RVAAP Stakeholders to conduct the characterization sampling specified in Section 4.0 of the RD in advance of Ohio EPA approval of the RD. This memorandum was subsequently approved and on May 1, 2009, dry sediment samples were collected from two multi-increment (MI) areas within the drainage ditch, designated FBQ-200M and FBQ-201M. These samples were collected to provide data for waste profiling and volume estimating for dry sediment to be removed from the drainage ditch. Samples from both MI areas were collected and analyzed for waste characterization parameters. The following is a summary of those sampling results:

- Both MI sample areas had concentrations exceeding the CUG (FBQ-200M=23,600 mg/kg and FBQ-201M=30,500 mg/kg) and the estimated volume for sediment removal was assumed to be accurate;
- 2) All Toxicity Characteristic Leaching Procedure (TCLP) metals, Polychlorinated Biphenyls (PCBs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, cyanide, and sulfides were either nondetectable or below the reporting limits; and
- 3) The pH of the dry sediment was between 6.4-6.7.

Based on these results, there were no changes in the extent of dry sediment removal required. Additionally, the dry sediment was considered nonhazardous waste, which was consistent with assumptions in the RD. A nonhazardous waste profile was generated by the disposal facility and signed by RVAAP facility management.

Sample results are presented in Appendix B.

4.3 MOBILIZATION AND SITE PREPARATION

4.3.1 Utility Clearance

A meeting with the RVAAP Operations and Maintenance (O&M) Contractor (Vista Sciences Corporation) was conducted on September 21, 2009. At this meeting, the Vista Science Corporation representative indicated that no utilities (subsurface or overhead) were expected to be encountered during the remedial activities. The area was cleared for work in accordance with the RD.

4.3.2 Site Preparation

Site mobilization activities began on October 14, 2009. These activities included installation of storm water controls, installation of construction traffic signage, and placement of gravel for a construction entrance/exit, portable water storage tank area, and equipment movement area. Maintenance of the construction entrance/exit, equipment movement area, and storm water controls was performed throughout the project.

Additionally, as part of the site preparation, a site walk was performed by the Munitions and Explosives of Concern (MEC) Avoidance Subcontractor. The drainage ditch requiring removal under this RD is not within the FBQ MRS Footprint Boundary in the *Site Inspection Report for Munitions Response Sites under the Military Munitions Response Program* (E2M 2008). The FBQ MRS is located east of the site. A U.S. Army and/or Department of Defense (DoD) certified unexploded ordnance (UXO) Technician III performed the site clearance and remained on site during the remedial activities. No MEC was encountered during remedial activities.

4.3.2.1 Implementing Site Controls

Prior to implementation of the Remedial Action, SAIC submitted a roster of all personnel (including subcontractors) who would be working at FBQ to the RVAAP O&M Contractor. The roster was maintained and submitted to the RVAAP O&M Contractor on a weekly basis or as necessary. The SAIC Construction Manager coordinated with RVAAP security to ensure that contact with Post 1 was maintained at all times and that Post 1 was notified of incoming deliveries or pickups. Signs were erected along the traffic route to expedite deliveries, maintain traffic flow, promote safety, and prevent interference with other RVAAP/Camp Ravenna operations (Photograph 4-1).

4.3.2.2 Rock Construction Entrance

An equipment movement area and rock construction entrance was installed in accordance with specifications on Attachment B - Drawing C-4 of the RD to facilitate loading and movement of onroad haul trucks (Photograph 4-2). The ground surface at the equipment movement area and rock construction entrance was leveled, geotextile fabric was placed over the ground surface, and courses of crushed stone (American Association of State Highway and Transportation Officials [AASHTO] No. 2) were installed. Each course of crushed stone was graded and compacted.



Photograph 4-1. Construction Traffic Route Sign

Photograph 4-2. Installation of Equipment Movement Area

4.3.2.3 Vegetation Clearing

Clearing and grubbing was required to facilitate equipment access and perform the excavation of the dry sediment. The clearing and grubbing consisted mostly of brush removal along the ditch line. Most large trees did not require removal, as excavation activities were implemented around the trees. The cleared brush and trees were either chipped and spread around the site (as shown in Photograph 4-3) or stacked along the access road (as shown in Photograph 4-4), as requested by OHARNG.



Photograph 4-3. Chipping of Cleared Vegetation



Photograph 4-4. Cleared Trees Left at Project Site

4.3.2.4 Storm Water Controls

In accordance with the RD, silt fencing (Photograph 4-5) was installed to prevent siltation downgradient of the construction area. To further minimize the potential for erosion and sediment run-off, no work was performed during periods of inclement weather, as determined by the SAIC Construction Manager. The excavation areas were opened at the beginning of each day and covered at the end of each day's activities (Photograph 4-6).

The RD required containerization and characterization of any excavation water that collected in the drainage ditch. Excavation water was defined as water (e.g., rainwater, groundwater) that came in contact with any contaminated areas within the drainage ditch. A 20,000 gallon water storage tank with secondary containment was staged on site to collect any potential excavation water. Due to the fact that there was very little rain and through the use of best management practices (e.g., covering the excavated area at night), no excavation water was generated during the remedial activities. The water storage tank was never used and was demobilized from the site once the CUG was achieved and confirmed by the laboratory.

All storm water controls were inspected daily during remedial activities and on a weekly basis during the downtime while confirmation samples were being analyzed and no activities were occurring.



Photograph 4-5. Installation of Silt Fencing



Photograph 4-6. Nightly Cover of Drainage Ditch

4.3.2.5 Dust and Wind Controls

Dust control was generally maintained by keeping traffic on improved roads and maintaining the posted speed limit. Dust generation was monitored visually by the Site Safety and Health Officer (SSHO) (from Toltest, Inc.). Soil moisture content remained sufficiently high during the work so that the area did not require spraying/misting for dust control. Airborne dust was not observed during remedial action activities.

4.3.2.6 Good Housekeeping Practices

Good housekeeping practices were conducted in accordance with Section 5.5 of the RD throughout the remedial action in order to maintain a clean and orderly work environment. The SAIC Construction Manager regularly inspected the construction site for trash and debris. Identified trash or debris was disposed accordingly. There were no leaks or spills of petroleum or chemicals from construction equipment during the remedial action activities. THIS PAGE INTENTIONALLY LEFT BLANK.

This section summarizes the sediment excavation and disposal activities conducted during this remedial action.

5.1 SEDIMENT REMOVAL ACTIVITIES

Sediment removal activities began on October 20, 2009 and were completed on October 23, 2009. During the dry sediment removal activities, a total of 209 tons of nonhazardous material was transported and disposed at the Waste Management American Landfill in Waynesburg, Ohio. Of the 209 tons of nonhazardous material, 184 tons were the contaminated dry sediment removed from the drainage ditch and 25 tons were inert absorbent material (sawdust) used to mix with the sediment during excavation and loading activities. The following sections describe the sediment removal activities in further detail.

5.1.1 Application of a Absorbent Material

At the onset of the remedial activities, it was determined that the sediment in the western portion of the ditch was potentially too wet to readily transport and dispose. Consequently, 25 tons of inert absorbent material (sawdust generated from untreated lumber) was obtained from an off-site source and used to mix with the dry sediment to ensure excavated material would not release liquid while in transport and would pass the disposal facilities' paint filter test. Photograph 5-1 shows the saturated sediment at the far western portion of the drainage ditch. Photograph 5-2 shows the mixing of sawdust with the dry sediment.



Photograph 5-1. Saturated Sediment at Western Portion of Drainage Ditch



Photograph 5-2. Mixing of Absorbent Material in Drainage Ditch

5.1.2 Truck Loading and Transportation

All excavated material was loaded directly into haul trucks for transport to a licensed disposal facility. During the loading process, haul trucks were positioned over plastic sheeting to contain any contaminated dry sediment spilled during load-out. Trucks were inspected for dry sediment on the exterior of the truck bed. Any dry sediment on the exterior of the truck was brushed off and captured prior to the truck pulling out of the loading area and all trucks were covered prior to leaving the construction site. All nonhazardous material was transported to and disposed at the Waste Management American Landfill in Waynesburg, Ohio. Photograph 5-3 shows the loading of contaminated sediment into a haul truck. Additionally, Photograph 5-4 shows the ditch line as the final removal is taking place and the ditch line is being shaped.



Photograph 5-3. Loading Excavated Material into Haul Trucks



Photograph 5-4. Final Removal of Contaminated Sediment and Shaping of the Ditch Line

5.1.3 Equipment Decontamination

Excavation equipment that contacted contaminated sediment was decontaminated prior to contacting other materials. Additionally, the excavation equipment was decontaminated prior to removal from the work site. Limited amounts of potable water (i.e., less than 30 gallons) was used for decontamination activities performed over haul trucks. Toltest, Inc. ensured free water was not present in the haul truck and that no liquids escaped the truck bed. Decontamination liquids did not change the chemical profile of the waste (i.e., addition of solvents or pH). The equipment then air dried.

5.2 CONFIRMATION SAMPLING

At the completion of the excavation activities, three MI samples were collected from the excavation footprint and analyzed in accordance with Section 7.0 of the RD. One MI confirmation sample was collected from each MI Sample Area (locations FBQ-200M and FBQ-201M) and one field duplicate sample was collected. The confirmation sample results provided data to confirm the remedial

activities discussed in the following sections attained the CUG. Photographs 5-5 and 5-6 show the sediment sampling activities. All confirmation soil sampling results are presented in Appendix B.





Photograph 5-5. Multi-Increment Sample Collection in FBQ-201M

Photograph 5-6. Multi-Increment Sample Collection in FBQ-200M

Samples FBQsd-201M-0520-SD, FBQsd-200M-0521-SD, and FBQsd-200M-0521-FD (field duplicate) were dried, sieved, and ground finely by TestAmerica Laboratories, Inc. (located in North Canton, Ohio) and were analyzed for total manganese. The results were compared against the National Guard Trainee CUG for FBQ (1,950 mg/kg). The confirmation soil sample results are presented in Table 5-1 and in Appendix B.

		Manganese Concentration		Lab	
Location	Sample ID	Laboratory Results	Cleanup Goal	Result below CUG?	Notes
Eastern half of removal area	FBQSD-200M-0521- SD	454 mg/kg	1,950 mg/kg	Yes	None
Eastern half of removal area	FBQSD-200M-0521- FD	455 mg/kg	1,950 mg/kg	Yes	Duplicate sample of FBQ-200M-0521-SD
Western half of removal area	FBQSD-201M-0520- SD	643 mg/kg	1,950 mg/kg	Yes	None

 Table 5-1. Confirmation Sample Results

The laboratory analysis indicated the manganese concentrations were below the remedial action CUG for FBQ. Therefore, no additional removal was required. Figure 5-1 shows the plan and profile view of the excavated area at FBQ.

THIS PAGE INTENTIONALLY LEFT BLANK.



Figure 5-1. FBQ Final Excavation (Plan and Profile View)
THIS PAGE INTENTIONALLY LEFT BLANK.

The following sections describe the site restoration activities, as performed in accordance with Section 8.0 of the RD.

6.1 BORROW SOURCE SAMPLING

On October 9, 2009, a plot of land at Route 5 Sand and Gravel in Ravenna, Ohio was selected and characterized for suitable backfill material for FBQ. Characterization data were collected for Ohio EPA approval. An excavation area for backfill material within the borrow source area defined by stakes and soil sample FBQ-QC-0519-QC was collected and analyzed for the parameters specified in Table 8-1 of the RD.

The soil sample results are presented in Appendix B. All inorganic concentrations were below either the surface or subsurface RVAAP background concentrations. The VOCs, SVOCs, pesticides, PCBs, explosives, and propellants concentrations were either nondetectable or the lab estimated a concentration below the laboratory reporting levels (RLs).

On November 9, 2009, SAIC provided the Ohio EPA with the borrow source characterization sample results. Ohio EPA provided e-mail correspondence approving the use of this borrow source for the remedial action restoration activities (see Appendix A).

6.2 BACKFILLING OF THE DRAINAGE DITCH

The excavation footprint of the drainage ditch at FBQ was backfilled and graded to match the existing drainage pattern and neighboring and/or original elevations on November 11, 2009. During restoration, the side walls of the drainage ditch were sloped and 55 cubic yards of backfill from the borrow source was incorporated to restore the grade and slope of the base of the ditch. The backfill material was graded and compacted.

One course of rip rap was placed as final backfill in the excavated drainage ditch to prevent erosion and restore the ditch to its current elevation. The rip rap was originally designed to be 4 to 6-inch stone. However, due to the lack of availability of 4 to 6-inch stone, field change request FCR-RVAAPFBQ-001 was issued to request permission to use 6 to 10-inch stone instead. The field change requested was granted by USACE and Ohio EPA. The backfilled drainage ditch is shown in Photograph 6-1.

During the implementation of the remedial action, the unimproved road immediately to the west of the drainage ditch was discovered to prevent water movement and flow from the end of the drainage ditch into a wetland area to the west (shown in Figure 2-3). As part of the field change request FCR-RVAAPFBQ-001, SAIC proposed to excavate a portion of the road from east to west and bring the excavated area up to grade using 6 to 10-inch limestone. Therefore, water exiting the drainage ditch

will be provided a porous media to move beneath the unimproved road and ponding will be avoided. The Subcontractor installed a straw check dam downstream of the excavation footprint to prevent sediment transport to downgradient wetlands. The check dam will remain in place until vegetation coverage on the sidewalls of the drainage ditch is at least 70 percent established.

6.3 DISPOSITION OF PLACED STONE

With the exception of a 12 ft by 90 ft portion of the equipment movement area, all placed stoned remained as installed, at the request of OHARNG. The stone removed from the 12 ft by 90 ft portion of the equipment movement area was spread along the remaining equipment staging area. The geotextile fabric under the removed stone was then removed and disposed as solid waste.

6.4 **Re-Vegetation**

Given the time of year that the remedial activities occurred, it was determined that re-seeding the areas with the prescribed seed mixtures in Tables 8-3 and 8-4 of the RD was not practical. Field change request FCR-RVAAPFBQ-002 was issued to request the use of a winter rye seed mix to provide temporary stabilization of disturbed areas until spring 2010, at which time seeding in accordance with Section 8.5 of the RD will occur. The field change request was approved by USACE, OHARNG, and Ohio EPA. The area was seeded with the winter rye seed and straw was used to mulch and cover the area. Photograph 6-2 shows the seeded and mulched construction area.



Photograph 6-1. Drainage Ditch After Backfilling



Photograph 6-2. Current Restoration of the Drainage Ditch following Remedial Actions

6.5 **REMOVAL OF EROSION CONTROLS**

At the time of submission of the RAR, the construction area will still require re-vegetation in accordance with Section 8.5 of the RD and FCR-RVAAPFBQ-002. SAIC will continue to perform biweekly inspections of the site and the silt fencing to ensure the storm water controls are intact. Once re-vegetation has occurred in accordance with Section 8.5 of the RD and the vegetation is

established to 70 percent coverage, the silt fencing and other storm water controls will be removed and disposed.

THIS PAGE INTENTIONALLY LEFT BLANK.

The selected remedy for soil and dry sediment at the Fuze and Booster Quarry Landfill/Ponds, as documented in the *Record of Decision for Soil and Dry Sediment at the Fuze and Booster Quarry Landfill/Ponds (RVAAP-16)* (USACE 2007a), was to excavate contaminated dry sediment within the drainage ditch aggregate to achieve a manganese CUG of 1,950 mg/kg for the most reasonably anticipated land use (National Guard Trainee). The remedial action described within this RAR attained the remedial action CUG and RAO established in the FBQ ROD. However, this selected remedy also removed chemical contaminants in soil that exceeded clean-up goals for the Resident Subsistence Farmer; as the manganese CUG for the National Guard Trainee is more stringent than the Resident Subsistence Farmer (2,900 mg/kg).

The RAO to prevent dispersal of contaminants and ensure underlying soil meets the lowest risk-based CUG for the exposure scenarios evaluated in the RI was achieved by the remedial action. Table 7-1 presents the removal totals from the drainage ditch at FBQ.

Table 7-1.	FBQ Drainage	Ditch Remova	al Totals
------------	--------------	---------------------	-----------

Location	Total Waste Volume (tons)		
FBQ Drainage Ditch (Nonhazardous Waste)	184		

Table 7-2 presents the final confirmation soil sampling results for the drainage ditch at FBQ.

MI Sample Area	Confirmation Soil Sample Result	Confirmation Sample Result Below Cleanup Goal? ^a
FBQ-200M (Eastern Portion)	454 mg/kg	Yes
FBQ-201M (Western Portion)	643 mg/kg	Yes

 Table 7-2.
 Confirmation Soil Sample Results

^aRemedial action cleanup goal for manganese in dry sediment is 1,950 mg/kg.

By achieving these remedial action CUG, residual contaminant levels in soil beneath the drainage ditch at FBQ are below the Ohio EPA risk benchmark (10E-5) and well within the range of values observed in surrounding soil at FBQ.

As this remedial action achieved objectives to allow for residential land use, land use controls, CERCLA five-year reviews, or O&M sampling are not required for soil and dry sediment at FBQ. Other media (i.e., surface water, wet sediment, and groundwater) and MEC will be addressed as part of future actions.

THIS PAGE INTENTIONALLY LEFT BLANK.

- Engineering-Environmental Management, Inc (E2M) 2008. Site Inspection Report for Munitions Response Sites under the Military Munitions Response Program. May 2008.
- EnviroScience, Inc. 2008. The Wetlands and Other Waters Delineation Report for the Remedial Actions at Ramsdell Quarry Landfill, Load Line 12, and Fuze and Booster Quarry Landfill/Ponds at the Ravenna Army Ammunition Plant/Ravenna Training and Logistics Site. December 2008.
- Ohio Environmental Protection Agency (Ohio EPA) 2004. Director's Final Findings and Orders in the matter of U.S. Department of the Army, Ravenna Army Ammunitions Plant. June 2004.
- USACE (United States Army Corps of Engineers) 2005a. *Phase I/Phase II Remedial Investigation of the Fuze and Booster Quarry Landfill/Ponds (RVAAP-16) at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* November 2005.
- USACE 2005b. Supplemental Phase II Remedial Investigation of Central Burn Pits, Fuze and Booster Quarry Landfill/Ponds, and Open Demolition Area #2 at Ravenna Army Ammunition Plant in Ravenna, Ohio. June 2005.
- USACE 2006. Feasibility Study for Fuze and Booster Quarry Landfill/Ponds (RVAAP-16) at the Ravenna Army Ammunition Plant, Ravenna, Ohio. June 2006.
- USACE 2007a. Record of Decision for Soil and Dry Sediment at the Fuze and Booster Quarry Landfill/Ponds (RVAAP-16) at the Ravenna Army Ammunition Plant, Ravenna, Ohio. September 2007.
- USACE 2007b. Proposed Plan for Soil and Dry Sediment at Fuze and Booster Quarry Landfill/Ponds (RVAAP-16) at the Ravenna Army Ammunition Plant, Ravenna, Ohio. March 2007.
- USACE 2009. Remedial Design for the RVAAP-49 Fuze and Booster Quarry Landfill/Ponds at the Ravenna Army Ammunition Plant in Ravenna, Ohio. June 2009.
- USACHPPM (U.S. Army Center for Health Promotion and Preventive Medicine) 1996. *Hazardous* and Medical Waste Study No. 37-EF-5360-97, Relative Risk Site Evaluation (RRSE), RVAAP, Ravenna, Ohio, 28 October – 1 November 1996, Volume 1. October 1996.

THIS PAGE INTENTIONALLY LEFT BLANK.

Appendix A Permits, Notifications, and Approvals

United States Fish and Wildlife Service
Concurrence Letter
Ohio Historic Preservation Office Concurrence
Letter
Ohio EPA Approval of Backfill Source

Appendix A-1. United States Fish and Wildlife Service Concurrence Letter



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services 4625 Morse Road, Suite 104 Columbus, Ohio 43230 614-416-8993 / FAX 614-416-8994 April 30, 2009

Tails: 2009-TA-0560

Mr. Jed Thomas SAIC 8866 Commons Blvd. Twinsburg, OH 44087

Re: Fuze and Booster Quarry Landfill/Ponds within the Ravenna Army Ammunition Plan/Camp Ravenna

Dear Mr. Thomas:

We have received your recent correspondence requesting information about the subject proposal. There are no Federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. Based on the information you have provided, at this time we have no objection to the proposed project.

ENDANGERED SPECIES COMMENTS: Due to the project type, size, and location, we do not anticipate any impact on federally listed endangered, threatened, or candidate species, or their habitats. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

If you have additional questions or require further assistance with your project proposal, please contact me at the following number (614) 416-8993 x12. I would be happy to discuss the project in further detail with you and provide additional assistance if necessary. In addition, you can find more information on natural resources in Ohio by visiting our homepage at: http://www.fws.gov/midwest/Reynoldsburg.

Sincerely,

Mary Knapp, Ph.D.

Field Supervisor

Appendix A-2. Ohio Historic Preservation Office Concurrence Letter



June 12, 2009

Jed Thomas Science Applications International 8866 Commons Boulevard Twinsburg, OH 33087

Dear Mr. Thomas:

Re: Fuze-Booster Quarry Remediation Project, Camp Ravenna, Portage County, Ohio

This is in response to the receipt of the project summary form on May 22, 2009. Our comments are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act, as amended (36 CFR Part 800).

Based on the information you provided I concur that no historic properties will be affected by the proposed project. No further coordination is required unless the scope of the work changes or historic properties are discovered during the course of the work. In such a situation, this office should be contacted as per 36 CFR 800.13.

If you have any questions please contact me at 298-2043 (or through e-mail at iguinlan@ohiohistory.org).

Sincerely, fuen Que

Julie Quinlan, Program Reviews Manager Resource Protection and Review

OHPO 2009-POR-6595/1025467

OHIO HISTORICAL SOCIETY

Ohio Historic Preservation Office 1982 Velma Avenue, Columbus, Ohio 43211-2497 ph: 614.298.2000 fx: 614.298.2037 www.ohiohistory.org Appendix A-3. Ohio EPA Approval of Backfill Source

Thomas, Jed H.

 From:
 prvs=0564c9aba9=todd.fisher@epa.state.oh.us on behalf of Todd Fisher

 [todd.fisher@epa.state.oh.us]
 Sent:

 Monday, November 09, 2009 12:32 PM

 To:
 Eileen Mohr; Thomas, Jed H.

 Cc:
 Thomas M LRL Chanda

Subject: Re: SAIC Backfill Source ~ Sampling Results

Jed,

I looked over the laboratory results and conclude that the backfill source is acceptable for use with FBQ Remedial Action activities.

Thanks,

Todd

Todd R. Fisher Project Coordinator Ohio Environmental Protection Agency Division of Emergency and Remedial Response 2110 East Aurora Rd. Twinsburg, OH 44087

Work: (330) 963-1148 Cell: (330) 389-0521 FAX: (330) 487-0769 email address: Todd.Fisher@epa.state.oh.us

>>> "Thomas, Jed H." <JED.H.THOMAS@saic.com> Monday, November 09, 2009 12:16 PM >>> Todd and Eileen -

Attached are the sample results for the backfill source at Route 5 Sand and Gravel. The sample collected was Sample ID FBQ-QC-0519-QC. The data summary incorrectly list it as FB2-QC-0519-QC. I will ensure they correct this. Basically, the results are as follows:

- 1) All the inorganic concentrations were below the RVAAP surface or subsurface background values; and
- The VOCs, SVOCs, Pesticides, PCBs, Explosives, and Propellants concentrations were either nondetectable or the lab estimated a concentration below the laboratory reporting levels (RLs).

Please let me know if you approve our use of this source for the FBQ Remedial Action. If you can let me know ASAP, I would appreciate it as we are currently mobilizing for the restoration activities.

At this point, we will use minimal quantities of this source at FBQ. If approved, we will use it at LL12 and RQL as well. We have the area staked off and Route 5 Sand and Gravel agreed to reserve the area for our future use.

Thank you, Jed

Jed Thomas, P.E. | SAIC Environmental Engineer | Energy, Environment & Infrastructure Business Unit (E2IBU) phone: 330.405.5802 | fax 330.405.9811 email: jed.h.thomas@saic.com

2/9/2010

Appendix B Laboratory Analytical Results

Media		Soil	Soil	Soil	Soil	Soil
Station		FBQSD-200M	FBQSD-200M	FBQSD-200	FBQSD-201M	FBQSD-201
		FBQSD-	FBQSD-	FBQSD-	FBQSD-	FBQSD-
		200M-0515-	200M-0515-	200-0516-	201M-0517-	201-0518-
Sample ID		SD 05/01/2000	FD	SD 05/01/2000	SD	SD
Date						05/01/2009
Deptn (It)		0.0 - 0.5	0.0 - 0.5 Multi	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
			increment			
		Multi-	Field		Multi-	
Field Type	1	increment	Duplicate	Grab	increment	Grab
Analyte (mg/kg)	Units					
Inorganics	1	1	1	1		
Manganese	MG/KG	23600 J/J	23300 J/J	NA	30500 J/J	NA
Cyanide	MG/KG	0.31 B	NA	NA	1.5	NA
Sulfide	MG/KG	31.2 U/UJ	NA	NA	31.8 U/UJ	NA
Organics-Pesticide/PCB						
PCB-1016	MG/KG	0.034 U/U	NA	NA	0.035 U/U	NA
PCB-1221	MG/KG	0.034 U/U	NA	NA	0.035 U/U	NA
PCB-1232	MG/KG	0.034 U/U	NA	NA	0.035 U/U	NA
PCB-1242	MG/KG	0.034 U/U	NA	NA	0.035 U/U	NA
PCB-1248	MG/KG	0.034 U/U	NA	NA	0.035 U/U	NA
PCB-1254	MG/KG	0.034 U/U	NA	NA	0.035 U/U	NA
PCB-1260	MG/KG	0.034 U/U	NA	NA	0.035 U/U	NA
TCLP	[Г	Г	Г	l	
Arsenic TCLP	MG/L	0.0045 B	NA	NA	0.5 U/U	NA
Barium TCLP	MG/L	4.4 B	NA	NA	2.1 B	NA
Cadmium TCLP	MG/L	0.1 U/U	NA	NA	0.1 U/U	NA
Chromium TCLP	MG/L	0.5 U/U	NA	NA	0.5 U/U	NA
Lead TCLP	MG/L	0.5 U/U	NA	NA	0.5 U/U	NA
Mercury TCLP	MG/L	0.002 U/U	NA	NA	0.002 U/U	NA
Selenium TCLP	MG/L	0.25 U/U	NA	NA	0.25 U/U	NA
Silver TCLP	MG/L	0.5 U/U	NA	NA	0.5 U/U	NA
Ignitability (Flashpoint)	DEG F	180 >/J	NA	NA	180 >/J	NA
pH	NO UNITS	6.7	NA	NA	6.4	NA
2,4-D TCLP	MG/L	0.5 U/U	NA	NA	0.5 U/U	NA
Chlordane TCLP	MG/L	0.005 U/U	NA	NA	0.005 U/U	NA
Endrin TCLP	MG/L	0.0005 U/U	NA	NA	0.0005 U/U	NA
Heptachlor TCLP	MG/L	0.0005 U/U	NA	NA	0.0005 U/U	NA
Heptachlor epoxide TCLP	MG/L	0.0005 U/U	NA	NA	0.0005 U/U	NA
Lindane TCLP	MG/L	0.0005 U/U	NA	NA	0.0005 U/U	NA
Methoxychlor TCLP	MG/L	0.001 U/U	NA	NA	0.001 U/U	NA
Silvex TCLP	MG/L	0.1 U/U	NA	NA	0.1 U/U	NA
Toxaphene TCLP	MG/L	0.02 U/U	NA	NA	0.02 U/U	NA
1,4-Dichlorobenzene TCLP	MG/L	0.004 U/U	NA	NA	0.004 U/U	NA
2,4,5-Trichlorophenol TCLP	MG/L	0.02 U/U	NA	NA NA	0.02 U/U	NA
2,4,6-Trichlorophenol TCLP	MG/L	0.02 U/U	NA	NA	0.02 U/U	NA
2,4-Dinitrotoluene TCLP	MG/L	0.02 U/U	NA	NA	0.02 U/U	NA
2-Methylphenol TCLP	MG/L	0.004 U/U	NA	NA	0.004 U/U	NA

Table B-1. Characterization Sample Results

Media		Soil	Soil	Soil	Soil	Soil
Station		FBQSD-200M	FBQSD-200M	FBQSD-200	FBQSD-201M	FBQSD-201
		FBQSD-	FBQSD-	FBQSD-	FBQSD-	FBQSD-
		200M-0515-	200M-0515-	200-0516-	201M-0517-	201-0518-
Sample ID		SD	FD	SD	SD	SD
Date		05/01/2009	05/01/2009	05/01/2009	05/01/2009	05/01/2009
Depth (ft)		0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
			Multi-			
		16.14	increment		25.24	
		Multi-	Field	Court	Multi-	Caral
Field Type	T T •4	increment	Duplicate	Grab	increment	Grab
Analyte (mg/kg)	Units					
4-Methylphenol TCLP	MG/L	0.04 U/U	NA	NA	0.04 U/U	NA
Hexachlorobenzene TCLP	MG/L	0.02 U/U	NA	NA	0.02 U/U	NA
Hexachlorobutadiene TCLP	MG/L	0.02 U/U	NA	NA	0.02 U/U	NA
Hexachloroethane TCLP	MG/L	0.02 U/U	NA	NA	0.02 U/U	NA
Nitrobenzene TCLP	MG/L	0.004 U/U	NA	NA	0.004 U/U	NA
Pentachlorophenol TCLP	MG/L	0.04 U/U	NA	NA	0.04 U/U	NA
Pyridine TCLP	MG/L	0.02 U/U	NA	NA	0.02 U/U	NA
1,1-Dichloroethene TCLP	MG/L	NA	NA	0.07 U/U	NA	0.07 U/U
1,2-Dichloroethane TCLP	MG/L	NA	NA	0.025 U/U	NA	0.025 U/U
2-Butanone TCLP	MG/L	NA	NA	0.25 U/U	NA	0.25 U/U
Benzene TCLP	MG/L	NA	NA	0.025 U/U	NA	0.025 U/U
Carbon tetrachloride TCLP	MG/L	NA	NA	0.025 U/U	NA	0.025 U/U
Chlorobenzene TCLP	MG/L	NA	NA	0.025 U/U	NA	0.025 U/U
Chloroform TCLP	MG/L	NA	NA	0.025 U/U	NA	0.025 U/U
Tetrachloroethene TCLP	MG/L	NA	NA	0.07 U/U	NA	0.07 U/U
Trichloroethene TCLP	MG/L	NA	NA	0.05 U/U	NA	0.05 U/U
Vinyl chloride TCLP	MG/L	NA	NA	0.025 U/U	NA	0.025 U/U

Table B-1	Characterization	Sample	Results (continued	١
I able D-1.	Character ization	Sample	Nesuits (continueu	,

U - Analyte is not detected.

J – Analyte is detected but below reporting levels. Value is estimated.

UJ – Analyte is not detected but the associated numerical value is an estimate and demonstrates a decreased knowledge of accuracy.
 B - Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Media		Soil	Soil	Soil
Station		FBQSD-200M	FBQSD-200M	FBQSD-201M
Sample ID		FBQSD-200M- 0521-FD	FBQSD-200M- 0521-SD	FBQSD- 201M-0520- SD
Date		10/23/2009	10/23/2009	10/20/2009
Depth (ft)		0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Field Type		Multi-increment Field Duplicate	Multi-increment	Multi- increment
Analyte (mg/kg)	Units			
Manganese	MG/KG	455	454	643

 Table B-2. Confirmation Sample Results

Table B-3. Backfill Sample Results

Media	Soil		
Station	FBQ-QC-0519		
Sample ID	FB2-QC-0519-QC		
Date		10/09/2009	
Field Type		Multi-increment	
Analyte (mg/kg)	Units		
Explosives			
1,3,5-Trinitrobenzene	MG/KG	0.25 U/U	
1,3-Dinitrobenzene	MG/KG	0.25 U/U	
2,4,6-Trinitrotoluene	MG/KG	0.25 U/U	
2,4-Dinitrotoluene	MG/KG	0.25 U/U	
2,6-Dinitrotoluene	MG/KG	0.25 U/U	
2-Amino-4,6-Dinitrotoluene	MG/KG	0.25 U/U	
2-Nitrotoluene	MG/KG	0.25 U/U	
3-Nitrotoluene	MG/KG	0.25 U/U	
4-Amino-2,6-Dinitrotoluene	MG/KG	0.25 U/U	
4-Nitrotoluene	MG/KG	0.5 U/U	
HMX	MG/KG	0.25 U/U	
Nitrobenzene	MG/KG	0.25 U/U	
Nitrocellulose	MG/KG	0.97 BJ/U	
Nitroglycerin	MG/KG	0.5 U/U	
Nitroguanidine	MG/KG	0.25 U/U	
PETN	MG/KG	0.5 U/U	
RDX	MG/KG	0.25 U/U	
Tetryl	MG/KG	0.25 U/U	
Inorganics	1		
Aluminum	MG/KG	7610	
Antimony	MG/KG	2.5 UG/U	
Arsenic	MG/KG	9	
Barium	MG/KG	36.7	
Beryllium	MG/KG	0.36 JG/J	
Cadmium	MG/KG	0.04 JG/J	
Calcium	MG/KG	568 JG/J	
Chromium	MG/KG	20.2	
Cobalt	MG/KG	6.3	
Copper	MG/KG	12.4	
Iron	MG/KG	14900	
Lead	MG/KG	10.2	
Magnesium	MG/KG	1520	
Manganese	MG/KG	378 B	
Mercury	MG/KG	0.096 J/J	
Nickel	MG/KG	16.7 B	
Potassium	MG/KG	584	
Selenium	MG/KG	0.64 JG/J	
Silver	MG/KG	0.019 JG/J	
Sodium	MG/KG	506 UG/U	
Thallium	MG/KG	1 UG/U	
Vanadium	MG/KG	14.8	

Media	Soil		
Station	FBQ-QC-0519		
Sample ID		FB2-QC-0519-QC	
Date		10/09/2009	
Field Type		Multi-increment	
Analyte (mg/kg)	Units		
Zinc	MG/KG	42.4	
Organic-Semivolatiles			
1,2,4-Trichlorobenzene	MG/KG	1.7 U/UJ	
1,2-Dichlorobenzene	MG/KG	1.7 U/UJ	
1,3-Dichlorobenzene	MG/KG	1.7 U/UJ	
1,4-Dichlorobenzene	MG/KG	1.7 U/UJ	
2,4,5-Trichlorophenol	MG/KG	1.7 U/UJ	
2,4,6-Trichlorophenol	MG/KG	1.7 U/UJ	
2,4-Dichlorophenol	MG/KG	1.7 U/UJ	
2,4-Dimethylphenol	MG/KG	1.7 U/UJ	
2,4-Dinitrophenol	MG/KG	4 U/UJ	
2,4-Dinitrotoluene	MG/KG	1.7 U/UJ	
2,6-Dinitrotoluene	MG/KG	1.7 U/UJ	
2-Chloronaphthalene	MG/KG	1.7 U/UJ	
2-Chlorophenol	MG/KG	1.7 U/UJ	
2-Methyl-4,6-dinitrophenol	MG/KG	4 U/UJ	
2-Methylnaphthalene	MG/KG	1.7 U/UJ	
2-Methylphenol	MG/KG	1.7 U/UJ	
2-Nitrobenzenamine	MG/KG	4 U/UJ	
2-Nitrophenol	MG/KG	1.7 U/UJ	
3,3'-Dichlorobenzidine	MG/KG	1.7 U/UJ	
3-Nitrobenzenamine	MG/KG	4 U/UJ	
4-Bromophenyl phenyl ether	MG/KG	1.7 U/UJ	
4-Chloro-3-methylphenol	MG/KG	1.7 U/UJ	
4-Chlorobenzenamine	MG/KG	1.7 U/UJ	
4-Chlorophenyl phenyl ether	MG/KG	1.7 U/UJ	
4-Nitrobenzenamine	MG/KG	4 U/UJ	
4-Nitrophenol	MG/KG	4 U/UJ	
Acenaphthene	MG/KG	0.25 U/UJ	
Acenaphthylene	MG/KG	0.25 U/UJ	
Anthracene	MG/KG	0.25 U/UJ	
Benz(a)anthracene	MG/KG	0.25 U/UJ	
Benzenemethanol	MG/KG	1.7 U/UJ	
Benzo(a)pyrene	MG/KG	0.25 U/UJ	
Benzo(b)fluoranthene	MG/KG	0.25 U/UJ	
Benzo(ghi)perylene	MG/KG	0.25 U/UJ	
Benzo(k)fluoranthene	MG/KG	0.25 U/UJ	
Benzoic acid	MG/KG	4 U/UJ	
Bis(2-chloroethoxy)methane	MG/KG	1.7 U/UJ	
Bis(2-chloroethyl) ether	MG/KG	1.7 U/UJ	
Bis(2-chloroisopropyl) ether	MG/KG	1.7 U/UJ	
Bis(2-ethylhexyl)phthalate	MG/KG	1.7 U/UJ	

Media	Soil		
Station	FBQ-QC-0519		
Sample ID		FB2-QC-0519-QC	
Date		10/09/2009	
Field Type		Multi-increment	
Analyte (mg/kg)	Units		
Butyl benzyl phthalate	MG/KG	1.7 U/UJ	
Carbazole	MG/KG	0.25 U/UJ	
Chrysene	MG/KG	0.25 U/UJ	
Di-n-butyl phthalate	MG/KG	1.7 U/UJ	
Di-n-octylphthalate	MG/KG	1.7 U/UJ	
Dibenz(a,h)anthracene	MG/KG	0.25 U/UJ	
Dibenzofuran	MG/KG	1.7 U/UJ	
Diethyl phthalate	MG/KG	1.7 U/UJ	
Dimethyl phthalate	MG/KG	1.7 U/UJ	
Fluoranthene	MG/KG	0.25 U/UJ	
Fluorene	MG/KG	0.25 U/UJ	
Hexachlorobenzene	MG/KG	1.7 U/UJ	
Hexachlorobutadiene	MG/KG	1.7 U/UJ	
Hexachlorocyclopentadiene	MG/KG	1.7 U/UJ	
Hexachloroethane	MG/KG	1.7 U/UJ	
Indeno(1,2,3-cd)pyrene	MG/KG	0.25 U/UJ	
Isophorone	MG/KG	1.7 U/UJ	
N-Nitroso-di-n-propylamine	MG/KG	1.7 U/UJ	
N-Nitrosodiphenylamine	MG/KG	1.7 U/UJ	
Naphthalene	MG/KG	0.25 U/UJ	
Nitrobenzene	MG/KG	1.7 U/UJ	
Pentachlorophenol	MG/KG	1.7 U/UJ	
Phenanthrene	MG/KG	0.25 U/UJ	
Phenol	MG/KG	1.7 U/UJ	
Pyrene	MG/KG	0.25 U/UJ	
m+p Methylphenol	MG/KG	1.7 U/UJ	
Organics-Pesticide/PCB		1	
4,4'-DDD	MG/KG	0.0047 J/J	
4,4'-DDE	MG/KG	0.0086 U/U	
4,4'-DDT	MG/KG	0.01 U/U	
Aldrin	MG/KG	0.02 U/U	
Dieldrin	MG/KG	0.0086 U/U	
Endosulfan I	MG/KG	0.0086 U/U	
Endosulfan II	MG/KG	0.013 U/U	
Endosulfan sulfate	MG/KG	0.015 U/U	
Endrin	MG/KG	0.0086 U/U	
Endrin aldehyde	MG/KG	0.015 U/U	
Endrin ketone	MG/KG	0.01 U/U	
Heptachlor	MG/KG	0.018 U/U	
Heptachlor epoxide	MG/KG	0.013 U/U	
Lindane	MG/KG	0.013 U/U	
Methoxychlor	MG/KG	0.025 U/UJ	

Table B-3.	Backfill	Sample	Results	(continued)
------------	----------	--------	---------	-------------

Media		Soil
Station		FBQ-QC-0519
Sample ID		FB2-QC-0519-QC
Date		10/09/2009
Field Type		Multi-increment
Analyte (mg/kg)	Units	
PCB-1016	MG/KG	0.033 U/U
PCB-1221	MG/KG	0.033 U/U
PCB-1232	MG/KG	0.033 U/U
PCB-1242	MG/KG	0.033 U/U
PCB-1248	MG/KG	0.033 U/U
PCB-1254	MG/KG	0.033 U/U
PCB-1260	MG/KG	0.033 U/U
Toxaphene	MG/KG	0.34 U/U
alpha-BHC	MG/KG	0.013 U/U
alpha-Chlordane	MG/KG	0.015 U/U
beta-BHC	MG/KG	0.018 U/U
delta-BHC	MG/KG	0.02 U/U
gamma-Chlordane	MG/KG	0.0086 U/U
Miscellaneous		
рН	NO UNITS	5.6 /J
Organic-Volatiles	1	
1,1,1-Trichloroethane	MG/KG	0.0058 U/U
1,1,2,2-Tetrachloroethane	MG/KG	0.0058 U/U
1,1,2-Trichloroethane	MG/KG	0.0058 U/U
1,1-Dichloroethane	MG/KG	0.0058 U/U
1,1-Dichloroethene	MG/KG	0.0058 U/U
1,2-Dibromoethane	MG/KG	0.0058 U/U
1,2-Dichloroethane	MG/KG	0.0058 U/U
1,2-Dichloroethene	MG/KG	0.0058 U/U
1,2-Dichloropropane	MG/KG	0.0058 U/U
2-Butanone	MG/KG	0.023 U/U
2-Hexanone	MG/KG	0.023 U/U
4-Methyl-2-pentanone	MG/KG	0.023 U/U
Acetone	MG/KG	0.023 U/U
Benzene	MG/KG	0.0058 U/U
Bromochloromethane	MG/KG	0.0058 U/U
Bromodichloromethane	MG/KG	0.0058 U/U
Bromoform	MG/KG	0.0058 U/U
Bromomethane	MG/KG	0.0058 U/U
Carbon disulfide	MG/KG	0.0058 U/U
Carbon tetrachloride	MG/KG	0.0058 U/U
Chlorobenzene	MG/KG	0.0058 U/U
Chloroethane	MG/KG	0.0058 U/U
Chloroform	MG/KG	0.0058 U/U
Chloromethane	MG/KG	0.0058 U/U
Dibromochloromethane	MG/KG	0.0058 U/U
Dimethylbenzene	MG/KG	0.012 U/U

Media		Soil					
Station	Station						
Sample ID	FB2-QC-0519-QC						
Date	10/09/2009						
Field Type		Multi-increment					
Analyte (mg/kg)	Units						
Ethylbenzene	MG/KG	0.0058 U/U					
Methylene chloride	MG/KG	0.0058 JB/U					
Styrene	MG/KG	0.0058 U/U					
Tetrachloroethene	MG/KG	0.0058 U/U					
Toluene	MG/KG	0.0058 U/U					
Trichloroethene	MG/KG	0.0058 U/U					
Vinyl chloride	MG/KG	0.0058 U/U					
cis-1,3-Dichloropropene	MG/KG	0.0058 U/U					
trans-1,3-Dichloropropene	MG/KG	0.0058 U/U					

Table B-3. Backfill Sample Results (continued)

U – Analyte is not detected.

J – Analyte is detected but below reporting levels. Value is estimated.

UJ - Analyte is not detected but the value is an estimate and demonstrates a decreased knowledge of accuracy.

B - Method blank contamination. The associated method blank contains the target analyte at a reportable level.

G - Elevated reporting limit. The reporting limit is elevated due to matrix interference.

JB - Analyte is detected the blank and sample at a level between the detection level and reporting level.

UG - Analyte was not detected but matrix interference was present.

JG - Analyte was detected between the detection level and reporting level but the concentration is estimated due to matrix interference.



.

CHAIN OF CUSTODY RECORD

COC NO .: RVAAPFBQ-TA-901

151 Lafayette Drive, Oak Ridge, Tennessee 37831(865) 481-4600				C		N	OF	CU	SI	OL	DY R	EC	OR	U				_			COC NO KVAN FB 2- 14 40				
PROJECT NAME: RVAAP - Fuze and	Booster Qu	arry Land	fill/Ponds	┝	1	int)			7	REO		TED	PAR	AMET	ERS	Т	П			Т	+	LABORATORY N TestAmerica	NAME:		
PROJECT NUMBER: 01-0833-	04-3267	1-103			(soocs)	H,Flashpo				a isi	5	Inte											ADDRESS:		
PROJECT MANAGER: Jed Thomas	ROJECT MANAGER: Jed Thomas 330-405-5802				ss, Pesticides	ide,Sulfide,p		S	:	11 #19	ene lyan	Ade. 9H								C C Freezen	ais:	4101 Shuffel Street NW North Canton, Ohio 44720 Attn: Mark Loeb			
Sampler (Signature)	(Printed Nam	ne) 216~3	214-2599	ese	stals, PCE	DCs,Cyan		3		E	CB3, R	- 1									ottles/ Vi	PHONE NO: 330	966-9387		
Sample ID Date Callage	-led 1	homes	Mately	angan	CLP(M	CLP(VG		CLI	,	C.F.		一座									o. of B	OVA SCREENING	OBSERVATIONS SPECIAL INST	COMMENTS, RUCTIONS	
Sample is Date contect	1 125	vilected	SN	5	F	F	調調			2		1994		1213	300		1000				z C		NI Processi	n ME.	
10030-2401-9515-57 05 m 100	1700	, ,	SD	2	199		A STATE			× 0					1.000						2		NI Anar	ME-2	
18250-24-0516-50 05/01/0	1 170	5	SD	r				1		11345		100		146	distant.	Contraction of the					Ì		(I I I I I I I I I I I I I I I I I I I	11-2	
FBQSD-2011-0517-50 05/01/0	1 1715		SD		1					2	領で				All and a	1.44					2		AT Procession	MI-1	
FB23D-201-0518.50 05/01/0	1 172	2 (P)	SD					1		10004		257			Sec. 1				100		1			1-1	
<u> </u>			·		100	1000				12.026-4					100										
					1					128484		100						1		_					
?			1.			_				1					10,000	8				-	_				
			Da	L				\square		110					1000				100	+	_				
	_			Þ	10			\square	-	100		Carry Carry			10.345 (5)	K.			145	+	-				
				-	1000	1/4	1	\square	2001 2010	-	1	+	-		19		200		10	+					
				\vdash		6	211	Н		- 1			-	1904		\rightarrow	1011		-	+	-				
RELINQUISHED BY:	Date/Time	RECEIV		_	1947 - BA	2	1921	Date	/Tim					BER	DEC			25		+ 2	-	Cooler Temperat	ture:		
Jul This	1109	INE CEIVI	2001.					Duit			Co									0	<u>.</u>		B.		
COMPANY NAME:	800	COMPA	NY NAME:							1	7	975	. 6	02	9	25	23		1	_	_	->			
RECEIVED BY:	EIVED BY: Date/Time RELINQUISHED BY						t	Date	e/Tim	e	·n	I Ro	ux	<u>ک</u>	,) °"		P515	5-5	۵. י	Ф5	15	-FD 051-	7-SD.	= :	
COMPANY NAME:	2.5.	COMPA	NY NAME:								• A	ll sa		مما FB	~rt Q51	s.,	lumi 1000	1-	ат 051:	s#		ss and	- A for:		
RELINQUISHED BY:	ELINQUISHED BY: Date/Time RECEIVED BY:						┢	Date	e/Tim	e		F8QSD-201M- OSI 7-50 6 De analytica This Tet 1 Managenese, TCLP (Metals, Herbiciduo, Pest, SI									, suacs)				
OMPANY NAME: COMPANY NAME:												۰,		P	CB	s , 1	Rece	tin	, 'Cy	^^	.de	-, Reactive S	thich, ph	, and '	

North Canton

15

Science Applications Intern 151 Lafayette Drive, Oak Ridg	e, Tennessee 37831(86	трану 5) 481-4600			С	HA	IN	OF	CU	STC	DYR	ECO	RD					C	COC NO.:	{VAAP5BQ-TA-PP2
PROJECT NAME: RVA Ren	AP - Fuze and Bo nedial Action	ooster Quarry Lar	ndfill/Ponds				ose		R	EQUE	STED P		TERS	;					ABORATORY I est America	NAME:
PROJECT NUMBER:	06-6199-04-3	267-132	17411	1	Hdy		trocetlut							8						
PROJECT MANAGER:	Jed Thomas 33	0-405-5802			STAL Metals		uanadine/N											4 4 N	ABORATORY / 101 Shuffel Stro lorth Canton, O	ADDRESS: eet NW hio 44720
Sampler (Signature)	(Pi	rinted Name)		1	sticide/PCE	4	erine/Nitrog		• 6						5 7 1		- Contraction of the second		HONE NO: 330)-966-9387
Sample ID	Date Collected	Time Collected	Matrix	8	VOC/Pe	xplosiv	itrogyc											5	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
32-36-0519-20	10/09/09	115Ø	Soil	i	1	1	Ĩ		1	634	-	21.0	3				4	1		
								11.87 A.			1		1. A. T.			101-12				
									ANA CONTRACT				192							
				_	100			100		19										
																		+	1	
				\checkmark	1		20 34 10	The Plant				Sec. 1				+	+			
						t	1 7			198.1	10			4				+	*****	
				+		P	\leq	\checkmark	34			50.00 1922 1020	1	2						
· · · · · · · · · · · · · · · · · · ·			······································						F			-	- 2	4	38.5		-	-	<u>5</u> .	
					14		and the second	10.1	1							10.1	+	+		1
					「空間			- (A)		121				T	1					
			_					120				de.	1. P.		100	1.2.2				
	Date	Time RECEN	VED BY:	1	1	.1		Date/T	ime	TC	TAL NU	MBER	OF CO	DNT/	INERS	5:	4	Co	ooler Temperat	ure:
	A 10/09/2009 2009 COMPANY NAME: Test Ambre Date/Time RELINQUISHED BY				les.	<u>ų</u>	1	0/9/ 134	14	Co	oler ID:							FE	EDEX NUMBER	e NA
CEIVED BY:					>			Date/T	ïme	A	lote:	MI I	Prou	so.,	3	n a	IL L	1 1	Voc jir.	. The
MPANY NAME:	PANY NAME: COMPANY NAME:						1			à	other 3 jars can be combined prior to									
LINQUISHED BY: Date/Time RECEIVED BY:				Ly	0	Date/Time					No analysis of trip blank									
MPANY NAME:	ANY NAME: 0/ 8/09 COMPANY NAME:													`						

- Te

151 Lafayette Drive, Oak Ridge	e, Tennessee 37831	865) 481-4500		1-	01				DEC			DAN	ACTO	DC.		-			Ť.	LABORATORY	
PROJECT NAME: RVA	AP - Fuze and I	Booster Qu	arry Landmi/Ponds			point)			T		TT	<u> </u>		ÎT						TestAmerica	
	PO 10926	613	2		des,SVOCs)	fe,pH,Flashi										¢.				LABORATORY A	ADDRESS:
Jul Thomas		550-405-560	2		, Pestici	de,Sulfic													ls:	North Canton, Ol Attn: Mark Loeb	hio 44720
Sampler (Signature)	mpler (Signature) (Printed Name) Jad Thomas Jed Thomas			٦.	IIS, PCB:	s,Cyani				-									ttes/ Via	PHONE NO: 330	9-966-9387
Jed Thomas				nganese	P(Metal	LP(VOC					11								of Bol	OVA	OBSERVATIONS, COMMENTS
Sample ID	Date Collected	I Time Co	ollected Matrix	Wa	2	2	19:51	0.5	$\left \right $	商会	100.2	33	111 111	2,537	-	37	SPE		2 2	SCREENING	
BQSD-201M-0520-	D 10/20/00	16009	× 2	2	A LO LA		21				105	10			-				~		
				+	100			14				000			1	10			_		
					調査			115	\square			- 6		CIE/C		2011 2011		_			
-					2.01		100			1.5		12			- 0		100		_		
N.					in de la compañía de Compañía de la compañía	1	NG.			Caller -		1054			ĺ				-		
Α							121					1000			1.0		- All				
÷.,			\backslash			100					1	1000			100	4.4					
					t		No.		2				8*7 14 54		07.445		- 19				
					20.0		-	-	1000			1000		2 AUE		F.	語の				
					33	8		100		1				111			調整				
				+	100	1			i i			4	T		1						
				+	26			100				100	1		4						
		-		+	222	121					1323	1	22				10				
	L	ate (Times		_	155	a			ime	110		IMRE	B OI	FCON		IFRS	1257	بِب		Cooler Tempera	ture:
La Thanks	- is 1	ate/ Time	mun	C.	k	e		1/20	Jag	-				001				-	-		P:
COMPANY NAME	10	20/09	COMPANY NAME		1		1~	10	-	000	her ID:									FEDEX NOMBE	n.
SALC	SAIC 1730 TOSTANG CEIVED BY: Date/Time RELINQUISHED I				2		1	74	5												
RECEIVED BY:						1		ate/T	ïme	0	MIS	Pr.	usi	~	of	2	Ja	rs	fo	r Sim Si	mph
	OMPANY NAME: COMPANY NAME:										N)	j i	50	ten	TA	ÌΤ	afte	~ 1	1	E Processin	Sfor
						1	1	1			1000			10).						
RELINQUISHED BY: A Date/Time RECEIVED BY:					11	1	Vo	Date/T	ime	1	29	MA	a	aly	515	1					
mun R	abel 1	Inter	Matak	enf	J	\sim	ZI	0	-09												
COMPANY NAME:	(°	10009	COMPANY NAME:		1			000	n												
Tor Amore	EST AMERICA 1855 TEGT AMER				i	4	10	100	\mathcal{L}												

14

North Canton

Science Applications Internati	An Employee-Owned Com onal Corporation	yany			CI	IAI	NO	FC	cus	то	DY R	ECOI	RD					COC NO.:	: RVAAPFBQ -TA - PO 4	
ROJECT NAME: RVA	AP - Fuze and Bo edial Action	oster Quarry La	andfill/Ponds	\vdash	-	Т	980	Т	RE	QUES	TED P		TERS			TT	Т	LABORATORY Test America	YNAME:	
ROJECT NUMBER:	010026813	3		1	Hdv		itrocellu													
PROJECT MANAGER:	Jed Thomas 330 んにころしっるい	1-2599			S/TAL Metal		juanadine/N											4101 Shuffel S North Canton,	r ADDRESS: treet NW Ohio 44720	
Sampler (Signature)	(Pr	inted Name)			sticide/PCI		rine/Nitro	X USA	Arrai			- 					ottles/ Vial	PHONE NO: 3	30-966-9387	
Sample ID	Date Collected	Time Collected	Matrix	ÿ	VOC/Pe	xplosive	Itrogyce	M									No. of B.	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS	
BQSD-2001-0521-	90/23/09	1020	SD				1	調		181	12					100	Ī		ME Process	
200/1 - 0521-FD	10/23/09	1020	SD									1400				and the second sec	1		M3 Procession	
/				\square		100	N.				100								0	
						ALC: NO			114.11		1999 1999				152					
					in the second				1940	1000					A.					
					6 H 4			144	1000			SA.				6.14				
		~				CHARLEN IN					2 au	奏	1000 A							
					100		5													
							電力	28			11				12	3411				
	a.u.					\leq	-	19	1	NUL NUL	-	1.2.1				200	+			
					125		1.10	100		-		100				ALC: NO	+			
				\square		AL NO.	10					1203					+			
								感	8		220	教堂	19.酒		300		Ť			
RELINQUISHED BY:	Date	Time RECE	EIVED BY:		~		Da	ate/Ti	ime	TOT	TAL NU	MBER	OF CO	IIAT	NERS	i:	2	Cooler Temper	ature:	
COMPANY NAME:	/ ³	COM	PANY NAME:				ין <i>ה</i> ין:	30	2	Coc	ler ID:							FEDEX NUMB	ER:	
RECEIVED BY:	Date	/Time RELII	RELINQUISHED BY:				Da	ate/Ti	ime	•	NI	Proces	DINE	36	ir e	ph				
COMPANY NAME:		COM	COMPANY NAME:							· Need 5 day TAT after ME								I Processing		
RELINQUISHED BY:	IED BY: Date/Time RECEIVED BY:						Da	ate/Ti	ime	-	Sam	sh I	Ds	64	70	read above)				
COMPANY NAME:	NY NAME: COMPANY NAME:				-							FB	asd	-200	popi popi	ν(- Φ \ # -	291	-50		

Appendix C Data Quality Control Summary Report

TABLE OF CONTENTS

C. DATA QUALITY CONTROL SUMMARY REPORT	1
C.1 PURPOSE	1
C.2 QUALITY ASSURANCE PROGRAM	2
C.2.1 Monthly Progress Reports	2
C.2.2 Daily Checklists	2
C.2.3 Laboratory "Definitive" Level Data Reporting	3
C.3 DATA VERIFICATION	3
C.3.1 Field Data Verification	3
C.3.2 Laboratory Data Verification	3
C.3.3 Definition Of Data Qualifiers (Flags)	5
C.3.4 Data Acceptability	6
C.4 DATA QUALITY EVALUATION	7
C.4.1 Toxicity Characteristic Leaching Procedure (TCLP)/SEDIMENT	7
C.4.2 Precision	.1
C.4.3 Sensitivity1	.1
C.4.4 Representativeness and Comparability1	3
C.4.5 Completeness1	3
C.5 DATA QUALITY ASSESSMENT SUMMARY 1	3

LIST OF TABLES

Table C-1.	FBQ Remedial Action Sampling Summary	5
Table C-2.	Primary, Duplicate, and Split Sample Correlation Table FBQ Remedial Action	5
Table C-3.	FBQ Remedial Action Summary of Rejected Analytes (Laboratory)	
	(grouped by medium and analysis group)	7
Table C-4.	Field Duplicate Comparison, Fuze and Booster Quarry Investigation	2

ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
ADR	Automated Data Review
С	Centigrade
DoD	Department of Defense
DI	Deionized
DQA	Data Quality Assessment
DQCR	Data Quality Control Report
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
FBQ	Fuze and Booster Quarry Landfill/Ponds
LCS	Laboratory Control Standard
MDL	Method Detection Level
MPR	Monthly Progress Report
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PCB	Polychlorinated Biphenyl
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RD	Remedial Design
RmAWP	Removal Action Work Plan
RI	Remedial Investigation
RPD	Relative Percent Difference
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SAP	Sampling and Analysis Plan
SDG	Sample Delivery Group
SVOC	Semivolatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TCMX	tetrachloro-meta-xylene
USACE	U.S. Army Corps of Engineers
VOC	Volatile Organic Compound
%D	Percent Difference

C.1 PURPOSE

Environmental data must always be interpreted relative to known limitations and intended use. As can be expected in environmental media of this type, there are areas and data points where the user needs to be cautioned relative to the quality of the project information presented. The data verification process and this data quality assessment (DQA) are intended to provide current and future data users assistance throughout the interpretation of these data.

The purpose of this DQA report is as follows:

- 1) To describe the quality control (QC) procedures followed to ensure data generated by Science Applications International Corporation (SAIC) during these investigations at the Ravenna Army Ammunition Plant (RVAAP) would meet project requirements;
- 2) To describe the quality of the data collected; and
- 3) To describe problems encountered during the course of the study and their solutions.

This report provides an assessment of the analytical information gathered while implementing the *Remedial Design for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds* characterization, confirmation, and backfill sampling efforts. This appendix documents that the quality of the data met the overall objectives of this confirmation sampling effort. References will be directed toward those quality assurance (QA) procedures that establish data credibility. The primary intent of this assessment is to illustrate that data generated for these studies can withstand scientific scrutiny, are appropriate for their intended purpose, are technically defensible, and are of known and acceptable sensitivity, precision, and accuracy.

Multiple activities were performed to achieve the desired data quality for this project. As discussed in the report, decisions were made during the initial scoping of this effort to define the quality and quantity of data required. Data quality objectives (DQOs) were established to guide the implementation of the field sampling and laboratory analysis. A QA program was established to standardize procedures and to document activities [refer to the Facility-wide Quality Assurance Project Plan (QAPP) within the *Facility-wide Sampling and Analysis Plan for Environmental Investigations* (USACE 2001)]. This program provided a means to detect and correct any deficiencies in the process. Upon receipt by the project team, data were subjected to verification and automated data review (ADR) validation as to identify and qualify problems related to the analysis. These review steps contributed to this final DQA where data used in the investigation are identified as having met the criteria and are being employed appropriately.

C.2 QUALITY ASSURANCE PROGRAM

A Facility-wide QAPP was developed to guide the investigation. This QAAPP is found in Part II of the *Facility-wide Sampling and Analysis Plan for Environmental Investigations* (USACE 2001). The purpose of this document was to enumerate the quantity and type of samples to be taken to inspect the area of concern (AOC), and to define the quantity and type of QA/QC samples to be used to evaluate the quality of the data obtained. The parameters and procedures for sampling are presented in Section 4.0 and 7.0 of the *Remedial Design for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds*.

The QAPP and RD established requirements for both field and laboratory QC procedures. In general, field QC duplicates for manganese were collected each environmental sample matrix collected in the area being investigated. No QA split samples, field blanks, or rinsate blanks were collected. Analytical laboratory QC duplicates, matrix spikes (MS), laboratory control samples (LCS), and method blanks were required for every 20 samples or less of each matrix and analyte.

A primary goal of the RVAAP QA Program was to ensure that the quality of results for all environmental measurements was appropriate for their intended use. To this end, the QAPP and standardized field procedures were compiled to guide the investigation. Through the process of readiness review, training, QC implementation, and detailed documentation, the project has successfully accomplished the goals set for the QA Program. Surveillances were conducted to determine the adequacy of field performance as evaluated against the QA plan and procedures.

C.2.1 Monthly Progress Reports

Monthly Progress Reports (MPRs) were completed by the SAIC Project Manager for the duration of the project. The MPRs contained a summary of field activities for this remedial action issued per the *Project Management Plan for the Six High Priority Areas of Concern* (SAIC 2005). The monthly reports included a status and summary of project activities. These reports were issued to the U.S. Army Corps of Engineers (USACE), Louisville District Project Manager, which was then submitted to the Ohio EPA. Access to these reports can be obtained through the USACE, Louisville District Project Manager.

C.2.2 Daily Checklists

The SAIC Construction Manager produced all Daily Checklists. These include information such as, but not limited to, sub-tier contractors on-site, equipment on-site, work performed summaries, QC activities, Health and Safety activities, problems encountered, and corrective actions. The daily reports were submitted to the USACE, Louisville District Project Manager and may be obtained through his office.

C.2.3 Laboratory "Definitive" Level Data Reporting

The QAPP for this project identified requirements for laboratory data reporting and identified Whitewater Associates, Inc. (with TestAmerica, Inc.) as the laboratory for the project. U.S. Environmental Protection Agency (EPA) "definitive" data have been reported, including the following basic information:

- Laboratory case narratives;
- Sample results (soils/sediments reported per dry weight);
- Laboratory method blank results;
- LCS results;
- Laboratory sample MS recoveries;
- Laboratory duplicate results;
- Surrogate recoveries [volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and herbicides];
- Sample extraction dates; and
- Sample analysis dates.

This information from the laboratory, along with field information, provides the basis for subsequent data evaluation relative to sensitivity, precision, accuracy, representativeness, and completeness. These have been presented in Section D4.0.

C.3 DATA VERIFICATION

The objective when evaluating the project data quality is to determine data usability. The evaluation is based on the interpretation of laboratory QC measures, field QC measures, and the project DQOs. This project implemented the ADR electronic review process in combination with technical oversight to facilitate laboratory data review. ADR output was reviewed by the project-designated verification staff and the project laboratory coordinator. The ADR product is retained in the project database and available within that structure.

C.3.1 Field Data Verification

Daily Checklists were completed by the SAIC Construction Manager. The Daily Checklists and other field-generated documents such as forms, logs, and reports were peer reviewed onsite. These logs and all associated field information have been delivered to the USACE, Louisville District Project Manager and can be obtained through his office.

C.3.2 Laboratory Data Verification

Analytical data generated for this project have been subjected to data verification and review. The following describes this systematic process and the evaluation activities performed. Several criteria have been established against which the data were compared and from which a judgment was

rendered regarding the acceptance and qualification of the data. These criteria in addition to project specific QC criteria are entered into the database and evaluated using the ADR programming. Because it is beyond the scope of this report to cite those criteria, the reader is directed to the following documents for specific detail:

- SAIC Technical Support Contractor QA Technical Procedure (TP-DM-300-7) Data Verification and Validation;
- EPA National Functional Guidelines for Inorganic Data Review, EPA 540-R-04-004, October 2004;
- EPA National Functional Guidelines for Organic Data Review, EPA-540/R-99/008, October 1999; and
- Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories, Version 3, January 2006.

Upon receipt of field and analytical data, verification staff performed a systematic examination of the reports, utilizing the ADR process to ensure the content, presentation, and administrative validity of the data. Discrepancies identified during this process were recorded and documented utilizing the dataset. As part of data verification, standardized laboratory electronic data deliverables were subjected to review. This technical evaluation ensured that all contract-specified requirements had been met, and that electronic information conformed to reported hardcopy data. QA Program Nonconformance Report and Corrective Action systems were implemented as required.

During the verification phase of the review and evaluation process, data were subjected to a systematic technical review by examining all field and analytical QC results and laboratory documentation, following EPA functional guidelines, the ADR process, and SAIC internal procedures for laboratory data review. These data review guidelines define the technical review criteria, methods for evaluation of the criteria, and actions to be taken resulting from the review of these criteria. The primary objective of this phase was to assess and summarize the quality and reliability of the data for the intended use and to document factors that may affect the usability of the data. This process did not include in-depth review of raw data instrument out-put or recalculation of results from the primary instrument out-put. This data verification and analytical review process included, but not necessarily limited to, the following parameters:

- Data completeness;
- Analytical holding times and sample preservation;
- Calibration (initial and continuing);
- Method blanks;
- Sample results verification;
- Surrogate recovery;
- LCS analysis;
- Internal standard performance;
- MS recovery;
- Duplicate analysis comparison;
- Reported detection limits;
- Compound and element quantification;
- Reported detection levels; and
- Secondary dilutions.

As an end result of this phase of the review, the data were qualified based on the technical assessment of the verification/validation criteria. Qualifiers were applied to each field and analytical result to indicate the usability of the data for its intended purpose.

C.3.3 Definition of Data Qualifiers (Flags)

During the data verification process, all laboratory data were assigned appropriate data qualification flags and reason codes. Qualification flags are defined as follows:

- "B" Indicates that an analyte was present in the method blank and sample at a level above the reporting level for organics or the analyte is detected but at a level between the detection level and reporting level for inorganics.
- "JB" Indicates that an analyte was detected both in the blank and sample at a level between the detection level and reporting level in inorganics.
- "G" Indicates that analyte was detected but matrix interference was present in the sample.
- "UG" Indicates that an analyte was not detected but there was matrix interference present.
- "JG" Indicates that an analyte was detected at a level between the detection level and reporting level but the concentration is estimated due to matrix interference.
- "U" Indicates the analyte was analyzed for, but not detected above, the level of the associated value.
- "J" Indicates the analyte was positively identified; however, the associated numerical value is an approximate concentration of the analyte in the sample.
- "UJ" Indicates the analyte was analyzed for, but not detected above, the associated value; however, the reported value is an estimate and demonstrates a decreased knowledge of its accuracy or precision.
- "R" Indicates the analyte value reported is unusable. The integrity of the analyte identification, accuracy, precision, or sensitivity has raised significant questions as to the reality of the information presented.

"=" Indicates the analyte has been validated, the analyte has been positively identified, and the associated concentration value is accurate.

C.3.4 Data Acceptability

Seven environmental sediment/soil and two field duplicate samples were collected on September 1, 2009 and October 9, 20, and 23, 2009 resulting in 277 discrete analyses (i.e., analytes) being obtained, reviewed, and integrated into the assessment (these totals do not field measurements and field descriptions). The project produced acceptable results for 100% of the sample analyses performed and successfully collected investigation samples under the direction of the Sampling and Analysis Plan (SAP) and the USACE, Louisville District.

Table D-1 presents a summary of the collected confirmation samples. It tallies the successful collection of all targeted field duplicate samples, while Table D-2 identifies a cross reference for duplicate sample pair numbers. Table D-3 provides a summary of rejected analyses grouped by media and analyte category. The majority of estimated values were based on exceeded SVOC extraction holding time criteria.

					Equipment	Site Source	USACE
		Environmental	Field	Trip	Rinsate	Water	Split
Area	Media	Samples	Duplicates	Blanks	Blanks	Blanks	Samples
FBQ	TCLP/Soil	7	2	1	-	-	-

Table C-1.	FBQ Remedial	Action	Sampling	Summary
------------	--------------	--------	----------	---------

TCLP = Toxicity Characteristic Leaching Procedure.

USACE = U.S. Army Corps of Engineers.

Table C-2. Primary, Duplicate, and Split Sample Correlation FBQ Remedial Action

Media	Station #	Sample #	Duplicate #	Laboratory SDG #	Split #
Sediment	200M	FBQSD-200M-0515-SD	FBQSD-200M-0515-FD	A9E050250	-
Sediment	200M	FBQSD-200M-0521-SD	FBQSD-200M-0521-FD	A9J230352	-

SDG = Sample delivery group.

Media	Analysis Group	Rejected/	Total	Percent Rejected
TCLP/Sediment	TCLP Metals/Hg Manganese TCLP VOC TCLP SVOC TCLP Pesticides PCBs TCLP Herbicides General Chem.	0/ 0/ 0/ 0/ 0/ 0/ 0/	16 3 20 24 14 14 4 8	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
Soil	Metals/Hg Manganese VOC SVOC Pesticides PCBs Explosives General Chem.	0/ 0/ 0/ 0/ 0/ 0/ 0/ 0/	23 3 35 66 21 7 17 2	$\begin{array}{c} 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0$
	Project Totals	0/	277	0.0

Table C-3. FBQ Remedial ActionSummary of Rejected Analytes (Laboratory)(grouped by medium and analysis group)

TCLP = Toxicity Characteristic Leaching Procedure.

For this remedial action, two field duplicates were analyzed for sediment/soil media. Equipment rinsate, site potable water source and Deionized (DI) water source samples were not collected since these samples were for confirmation only at FBQ.

C.4 DATA QUALITY EVALUATION

C.4.1 Toxicity Characteristic Leaching Procedure (TCLP)/SEDIMENT

Sample Delivery Group (SDG) A9E050250 (ID #s: FBQSD-200-0516-SD, FBQSD-201-0518-SD, FBQSD-200M-0515-SD, FBQSD-201M-0517-SD, FBQSD-200M-0515-FD)

TCLP VOCs: Analytical holding times were met for all samples. Initial calibration criteria were achieved for all compounds analyzed. Continuing calibration criteria were achieved with the exception of carbon tetrachloride which exhibited a slightly high %difference (%D) of +26.84%. No qualifications of the associated sample data were required however, since this analyte was not detected. Surrogate recoveries were acceptable. Internal standard area and retention time criteria were acceptable. The method blank was free of contamination. LCS recoveries were within acceptance limits. MS/Matrix Spike Duplicate (MSD) did not apply to any TCLP VOC samples in this Sample Delivery Group (SDG). No dilutions or reanalyses were required. No data were estimated or rejected.

TCLP SVOCs: Holding time criteria were met. Initial and continuing calibrations were acceptable. Surrogate recoveries and internal standard area/retention time criteria were acceptable. The preparation blank was free of contamination. All LCS recoveries were within acceptance limits. MS/MSD did not apply to any TCLP SVOC samples in this SDG. No dilutions or reanalyses were required. No data were estimated or rejected for any reason.

TCLP Pesticides: Holding time criteria were acceptable. Initial and continuing calibrations were acceptable. The preparation blank was free of contamination. Surrogate recoveries were acceptable with the exception of slightly high tetrachloro-meta-xylene (TCMX) recovery at 111% in FBQSD-201M-0517-SD. No qualifications of the sample data were required however, since there were no positive results present in this sample. LCS recoveries were within control limits. MS/MSD did not apply to this sample. No dilutions or reanalyses were required. No data were estimated or rejected.

PCBs: Holding time criteria were met. Initial and continuing calibrations were acceptable. Surrogate recoveries were acceptable. The preparation blank was free of contamination and had no impact on the sample data. All LCS recoveries were within control limits. MS/MSD recoveries (%R) and relative percent differences (RPD) were within acceptance limits in FBQSD-200M-0515-SD of this delivery group. No dilutions or reanalyses were required. No data were estimated or rejected.

TCLP Herbicides: Holding time criteria were met. Initial and continuing calibrations were acceptable. The preparation blank was free of contamination. Surrogate and LCS recoveries were within control limits. MS/MSD did not apply to any samples in this sample group. No dilutions or reanalyses were required. No data were estimated or rejected.

TCLP Metals/Mercury and Manganese: Holding time criteria were met. All initial and continuing calibrations were acceptable. The sediment preparation blank contained low level manganese at 0.36mg/Kg. The TCLP Metals/Hg preparation blank contained barium (0.002mg/L) and selenium (0.0053mg/L). No qualifications of the data were required however, since manganese in sediment samples exceeded the action level and barium and selenium were not detected in TCLP samples. All LCS recoveries were acceptable for TCLP Metals/Hg and manganese. All matrix spike (MS) recoveries and laboratory duplicate RPD value for manganese were acceptable in FBQSD-200M-0515-SD. MS/MSD or laboratory duplicate did not apply to any TCLP Metal/Hg samples in this SDG. All 3 sediment samples were reported at 1:20 dilutions for manganese and the 2 TCLP Metals/Hg samples were reported at 1:20 dilutions for cadmium, lead, selenium, and silver. No data were estimated or rejected.

General Chemistry (Sulfide, pH, Total Cyanide, Flashpoint): Due to exceeded holding times from collection to analysis, results for flashpoint (J), and sulfide (UJ) were qualified as estimated in sediment samples FBQSD-200M-0515-SD and FBQSD-201M-0517-SD. All associated initial and continuing calibration criteria were acceptable. All general chemistry parameter laboratory blanks were clean. All LCS recoveries were acceptable. MS/MSD and RPD values for Total Cyanide were within acceptance limits in FBQSD-200M-0515-SD. MS/MSD did not apply to any other general chemistry parameters for samples contained in this SDG. Laboratory duplicate RPD values for

flashpoint and pH were acceptable in FBQSD-200M-0515-SD. No dilutions or reanalyses were required. No data were rejected.

SDG. A9J230103 (ID #: FBQSD-201M-0520-SD)

Manganese: Holding time was met. Initial and continuing calibrations were acceptable. The manganese preparation blank and associated calibration blanks were clean. Manganese LCS recovery of 104% was acceptable. MS/MSD was analyzed on this sample but due to the sample concentration being greater than 4 times the spiking level, percent recovery was not calculated and therefore, does not apply. Serial dilution results were acceptable. Laboratory duplicate did not apply to this sample. Due to the sample matrix, this sample was analyzed and reported at 1:10 dilution. No data were estimated or rejected for any reason.

SDG. A9J230352 (ID #: FBQSD-200M-0521-SD, FBQSD-200M-0521-FD)

Manganese: Holding times were acceptable. Initial and continuing calibration criteria were acceptable. The manganese preparation blank and associated calibration blanks were clean. Manganese LCS recovery of 104% was within control limits. MS/MSD was analyzed a sample not contained directly in the SDG and therefore, did not apply. Laboratory duplicate and serial dilution also did not apply to these samples. It is noted however, that these samples are field duplicates and exhibited acceptable RPD value of 0.22%. Due to the nature of the sample matrix, both samples were analyzed and reported at 1:10 dilutions. No data were estimated or rejected for any reason.

SDG. A9J090368 (*ID #s: FB2-QC-0519-QC, FB2-QC-0519-QC* (*VOC*), *TRIP BLANK*)

This sample was received at the laboratory at 0.4 degrees centigrade (C) which is below the lower 4+/-2 degree limit. Since the temperature is below the limit, preservation and sample integrity should not be compromised so no qualifications of the data were required.

VOCs (Full list): Holding times were met. Initial calibration criteria were acceptable. Surrogate recoveries and internal standard area/retention time criteria were acceptable. Continuing calibration criteria were acceptable for most analytes with the exception of less than -20 percent difference (%D) values for bromomethane (-36.34%), chloroethane (-21.28%), and bromoform (-34.73%) which caused these analytes in associated sample TRIP BLANK to be qualified as estimated (UJ). The VOC trip blank was free of contamination and had no impact on the sample data. The two associated VOC laboratory blanks contained acetone (8.9 ug/Kg), methylene chloride (1.5ug/Kg and 1.2ug/Kg), and 2-hexanone (0.65ug/Kg). Therefore, based on VOC laboratory blank levels, the result for methylene chloride in associated sample FB2-QC-0519-QC (VOC) was qualified as not detected (U). All LCS recoveries were within control limits except for high recoveries for bromoform at 131% and bromomethane at 146%. No qualifications of the associated data were required however, since these analytes were not detected. MS/MSD recoveries and RPD values were within control limits in FB2-QC-0519-QC (VOC). Note that the VOC trip blank sample TRIP BLANK was not listed on the chain of custody. No dilutions or reanalyses were required. No data were rejected.

SVOCs (Full list): The holding time limit of 14 days from collection to extraction was exceeded by 5 days for sample FB2-QC-0519-QC which caused all SVOC results in this sample to be qualified as estimated (UJ). Initial calibration criteria were acceptable. Continuing calibration criteria were acceptable for most SVOC analytes with the exception of less than -20% D values for bis(2-chloroisopropyl)ether (-37.72%) and 2-nitroaniline (-22.91%) which caused these analytes to be qualified as estimated (UJ) in sample FB2-QC-0519-QC. Surrogate recoveries and internal standard area/retention time criteria were acceptable. The SVOC preparation blank was free of contamination and had no impact on the sample data. LCS recoveries were within control limits. MS/MSD did not apply to this sample. Due to matrix interferences, SVOC sample FB2-QC-0519-QC was analyzed and reported at a 1:5 dilution. No SVOC data were rejected for any reason.

Pesticides (Full list): Holding time criteria were acceptable. Surrogate recovery criteria were within control limits. Initial calibrations were acceptable. Continuing calibrations were acceptable for most pesticide analytes with the exception of greater than +/-15% D values for 4,4'-DDD (-20.10%) and methoxychlor (-30.75%). Therefore, based on continuing calibration deviations, positive result for 4,4'-DDD was estimated (J) and non-detect result for methoxychlor was estimated (UJ) in FB2-QC-0519-QC. The pesticides preparation blank was free of contamination and had no impact on the sample data. LCS recoveries were within control limits. MS/MSD did not apply to this sample. Due to matrix interferences, pesticides sample FB2-QC-0519-QC was analyzed and reported at a 1:5 dilution. No data were rejected for any reason.

PCBs: Holding times were met. Initial and continuing calibration criteria were acceptable. Surrogate recovery was acceptable. The PCB soil preparation blank was free of contamination and had no impact on the sample data. All PCB LCS recoveries were within control limits. MS/MSD recoveries and RPD values were within control limits in sample FB2-QC-0519-QC of this SDG. No dilutions or reanalyses were required. No PCB data were estimated or rejected for any reason.

Explosives and Nitroguanidine: Holding time criteria were met. Initial and continuing calibrations were acceptable. Surrogate recoveries were within control limits. The preparation blanks were clean. All explosives/nitroguanidine LCS recoveries were within control limits. MS/MSD did not apply to this sample. No dilution or reanalysis was required for this sample. No data were estimated or rejected.

General Chemistry (Nitrocellulose, pH): Holding times were met for the nitrocellulose analysis. Holding time for pH is not specified for method 9045C, but six hours after sample receipt is generally accepted. Analysis of pH occurred 8 days after collection/laboratory receipt which caused pH to be qualified as estimated (J) for sample FB2-QC-0519-QC. Nitrocellulose initial and continuing calibration criteria were acceptable. The pH measurement apparatus was properly calibrated. The laboratory blank contained 1.4mg/Kg nitrocellulose. Therefore, based on the laboratory blank, result for nitrocellulose in sample FB2-QC-0519-QC was qualified as not detected (U). Blanks do not apply to pH. LCS recoveries were within control limits for both nitrocellulose and pH. MS/MSD did not apply to this sample. Laboratory duplicate RPD for pH of 5.6% was acceptable in FB2-QC-0519-QC of this SDG. No dilution or reanalysis was required for this sample. No data were rejected.

Metals/Hg: Holding times were met. Initial and continuing calibration criteria were acceptable. The metals preparation blank contained manganese (0.18mg/Kg) and nickel (0.20mg/Kg). No qualifications of the sample data were required however, since sample analyte concentrations exceeded the blank action levels. All associated calibration blanks were free of target analyte contamination and had no impact on the sample data. LCS recoveries were within control limits with the exception of slightly low recovery for selenium at 78%. Since this recovery value was within the marginal exceedance limits of 75-120%, no qualification of the sample data was required. Matrix spike, laboratory duplicate, and serial dilution did not apply to this sample. Due to matrix interferences, sample FB2-QC-0519-QC was analyzed and reported at 1:5 dilution for all metals analytes except mercury which was reported undiluted. No data were estimated or rejected for any reason.

C.4.2 Precision

Field duplicate samples were collected to ascertain the contribution to variability (i.e., precision) due to the combination of environmental media, sampling consistency, and analytical precision. The field duplicate samples were collected from the same spatial and temporal conditions as the primary environmental sample.

Field duplicate comparison information in Table D-4 presents the RPD for field duplicate measurements, by analyte. RPD was calculated because both samples were > 5 times the reporting level. When one or both sample values are between the reporting level and 5 times the reporting level, the absolute difference is evaluated. If both samples were not detected for a given analyte, precision is considered acceptable. To review information, this DQA has implemented general criteria for comparison of absolute difference measurements and RPDs. RPD criteria were set at 50 and absolute difference criteria were set at 3 times the reporting level. Note that field duplicates applied only to manganese for this project sample set. Field duplicate comparison is good for manganese in sediment duplicate pair FBQSD-200M-0515-SD/FBQSD-200M-0515-FD at 1.28% RPD. Field duplicate comparison is also good for manganese in sediment duplicate pair FBQSD-200M-0521-SD/FBQSD-200M-0515-FD at 0.22% RPD.

C.4.3 Sensitivity

Determination of minimum detectable values allows the investigation to assess the relative confidence that can be placed in a value relative to the magnitude or level of analyte concentration observed. The closer a measured value comes to the minimum detectable concentration, the less confidence and more variation the measurement will have. Project sensitivity goals were expressed as quantitation level goals in the QAPP. These levels were achieved or exceeded throughout the analytical process. Actual laboratory method detection levels (MDLs) were adequate to support project quantitation level goals. Individual analyte reporting levels varied due to matrix differences and contaminant analyte concentrations. Reporting levels were elevated in TCLP/sediments and soils due to dilution factors, inherent moisture content variability, and results being reported in the standard

dry weight format. Reporting level variations have been considered during data interpretation and statistical applications.

Method blank determinations were performed with each analytical sample batch for each analyte under investigation. These blanks were evaluated during data review to determine their potential impact on individual data points. Review action levels are set at 5 times the reporting level for all analytes, except those designated as common laboratory contaminants (methylene chloride, acetone, toluene, 2-butanone, and phthalate compounds) with action levels set at 10 times reporting levels. During data review, reported sample concentrations are assessed against method blank action levels and the following qualifications are made when reportable quantities of analyte were observed in the associated method blank:

- When the analyte sample concentration is above 5 or 10 times the action level, the data are not qualified and it is considered a positive value.
- When the analyte sample concentration is determined below 5 or 10 times the action level but above the reporting level, the data are considered impacted by the method blank and the value reported is qualified as a non-detect at the analyte value reported. These data are then qualified as "U."
- When the analyte sample concentration is determined below 5 or 10 times the action level and below the reporting level, the data are considered impacted by the method blank and the value reported is qualified as a non-detect at the reporting level. These data are then qualified as "U."

All laboratory method/preparation blanks for TCLP/Sediment/Soil VOC, SVOC, Pesticides, PCB, Herbicides, Sulfide, and Cyanide were non-detects for most analytical parameters and had no impact for this sample set. The metals sediment laboratory blank contained manganese and the TCLP Metals laboratory blank contained low levels of barium and selenium. No qualifications of the data were required however, since these analytes were not detected in the associated samples. Volatiles soil laboratory method blanks contained low levels of acetone, 2-hexanone, and methylene chloride. Only one sample was qualified as undetected (U) for methylene chloride due to laboratory blanks. The VOC trip blank was free of target analyte presence. Therefore, overall laboratory sensitivity has been achieved. Note that since the samples collected for this phase of the project were for confirmation only, no field, or rinsate blanks were collected.

Analysis	FBQSD-200M-0515-SD/ FBQSD-200M-0515-FD Sediment RPD	FBQSD-200M-0521-SD/ FBQSD-200M-0521-FD Sediment RPD
1111113515		
Manganese	1.28	0.22

Table	C-4. Field	d Duplicate	Comparison.	Fuze and	Booster	Ouarry	Investigation
Labic	C-4. 1 ICK	Duplicate	comparison,	r uze anu	DUUSICI	Quarry	mesugation

RPD = Relative percent difference.

C.4.4 Representativeness and Comparability

Representativeness expresses the degree to which data accurately reflect the analyte or parameter of interest for the environmental site and is the qualitative term most concerned with the proper design of the sampling program. Factors that affect the representativeness of analytical data include proper preservation, holding times, use of standard sampling and analytical methods, and determination of matrix or analyte interferences. Samples were delivered to the laboratory by overnight express courier, were received in good condition, and at appropriate temperature except for sample FB2-QC-0519-QC which was received below 4°C +/-2°C at 0.4°C. This temperature does not compromise preservation or sample integrity. All analyses were performed within the recommended analytical holding times with the exceptions of flashpoint and sulfide for samples FBQSD-200M-0515-SD and FBQSD-201M-0517-SD, and extraction holding time was exceeded for SVOC sample FB2-QC-0519-QC. Sample preservation, analytical methodologies, and sampling methodologies were documented to be adequate and consistently applied.

Comparability, like representativeness, is a qualitative term relative to an individual project data set. These RVAAP AOC confirmation investigations employed appropriate sampling methodologies, site surveillance, use of standard sampling devices, uniform training, documentation of sampling, standard analytical protocols/procedures, QC checks with standard control limits, and universally accepted data reporting units to ensure comparability to other data sets. Through the proper implementation and documentation of these standard practices, the project has established the confidence that the data will be comparable to other project and programmatic information.

C.4.5 Completeness

Usable data are defined as those data that pass individual scrutiny during the verification and validation process and are accepted for unrestricted application to the human health risk assessment evaluation or equivalent type applications. Estimated data are acceptable for project objectives.

Objectives for remedial action confirmation data have been achieved. The project produced usable results for 100% of the sample analyses performed and successfully collected all the samples planned.

C.5 DATA QUALITY ASSESSMENT SUMMARY

The overall quality of information meets or exceeds the established project objectives. Through proper implementation of the project data verification and assessment process, project information has been determined to be acceptable for use.

Data, as presented, have been qualified as usable or estimated "J or UJ." Data that have been estimated provide indications of accuracy, precision, or sensitivity being less than desired but adequate for interpretation. No data points were rejected (R). Qualifiers have been applied to data when necessary.

Overall, data produced for this project demonstrate that they can withstand scientific scrutiny, are appropriate for its intended purpose, are technically defensible, and are of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of QA and QC measures. The environmental information presented has an established confidence that allows utilization for the project objectives and provides data for future needs.

Appendix D Field Change Request Forms

FIELD CHANGE REQUEST (FCR)

FCR NOFCR-RVAAPFBQ-001 DATE INITIATED _11/10/09	
CONTRACT NO. GSA Contract No. GS-10F-0076J Delivery Order No. W912QR-05-F-0033	
REQUESTOR IDENTIFICATION NAME Jed Thomas ORGANIZATION SAIC PHONE 330-405-5802	
TITLE SAIC Construction Manager SIGNATURE	
BASELINE IDENTIFICATION	2 - 4 - 2 ¹²⁴
BASELINE(S) AFFECTED ☐ Cost ☐ Scope ☐ Milestone ⊠ Method of Accomplishment AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION) Final Remedial Design for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds DESCRIPTION OF CHANGE: 1) The design specifies that 4-6 inch limestone (rip-rap) will be placed in the remediated drainage ditch at FBQ. SAIC and our remedial subcontractor would like to use 6-10 inch limestone due to the local availability of this stone. The 4-6 inch rip-rap is not readily available from the guarry providing the material.	er press
2) Additionally, SAIC and our remedial subcontractor would like to extend the stone further to the west of the remediated area in the drainage ditch. Currently, the west end of the drainage ditch intersects with a road that accesses monitoring wells to the north. This road creates water ponding, as it is downstream of the drainage ditch. SAIC will excavate a channel out of this road and backfill it with stone to 1) provide a porous area for the drainage ditch water to drain and 2) still allow vehicular access to the monitoring wells. This has already discussed with and verbally approved by Mark Patterson.	
JUSTIFICATION:	
 The 4-6 inch limestone is not readily available at the quarry providing the material. The creation of this channel will eliminate some of the ponded water that is in the western (downstream) portion of the drainage ditch. The water will continue its downstream path towards Greenleaf Road. 	
IMPACT OF NOT IMPLEMENTING REQUEST:	
 There will be schedule delays associated with not implementing the request for larger stone. The 6-10 inch stone is readily available and can be brought on site immediately. The 4-6 inch rip rap will need to be brought to the quarry via rail. The water will become ponded and stagnant at the western portion of the drainage ditch. The water may overflow the ditch and create standing water and ponding in areas adjacent to the drainage ditch. 	
PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST: SAIC Construction Manager and Remedial Subcontractor	
COST ESTIMATE (\$) 0 ESTIMATOR SIGNATURE No cost impact to USACE PHONE NA DATE NA	
PREVIOUS FCR AFFECTED YES NO; IF YES, FCR NO.	
USACE COTR F/ NAT PETERS LAL COR DATE 11 Nov 09	
OHIO EPA PROJECT MANAGER John DATE 12NOV \$9	
SAIC H&S MANGER SIGNATURE (IF APPLICABLE) NA DATE NA	

FIELD CHANGE REQUEST (FCR)

FCR NO. FCR-RVAAPFBQ-002 DATE INITIATED 11/10/09	
CONTRACT NO. GSA Contract No. GS-10F-0076J Delivery Order No. W912QR-05-F-0033	
REQUESTOR IDENTIFICATION NAME Jed Thomas ORGANIZATION SAIC PHONE 330-405-5802	
TITLE SAIC Construction Manager SIGNATURE	
BASELINE IDENTIFICATION	11 State 1
BASELINE(S) AFFECTED Cost Scope Milestone Method of Accomplishment AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION) Final Remedial Design for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds DESCRIPTION OF CHANGE: SAIC and our remedial subcontractor would like to seed the construction area with a winter rye mixture to provide vegetation coverage during the winter months after the remedial action. SAIC will perform site and stormwater inspections until the seed establishes per the requirements in the RD. In the Spring of 2010, SAIC will re-seed the construction area and drainage ditch in accordance with Section 8.5 of the RD.	2
JUSTIFICATION:	
Given that the winter months are very near, we would like to seed the area with a seed mixture that will grow rapidly and provide vegetation coverage during the winter months. There is a high likelihood that if we put the seed mixture that is specified in Section 8.5 of this RD in place during this time of year, the seeds will die before establishing. Also, the seed provider recommended a winter rye mixture be used instead of a winter wheat, as it is probably too late in the year for winter wheat to establish.	
IMPACT OF NOT IMPLEMENTING REQUEST:	
The seed in Section 8.5 may die due to upcoming cold temperatures and the construction and removal areas will remain unvegetated throughout the winter months.	
PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST: SAIC Construction Manager and Remedial Subcontractor	
COST ESTIMATE (\$) 0 ESTIMATOR SIGNATURE No cost impact to USACE	
PHONE <u>NA</u> DATE <u>NA</u>	
PREVIOUS FCR AFFECTED VES NO; IF YES, FCR NO.	
USACE COTR F/NAT PETErs URE COR DATE 11NOV Ø9	
OHIO EPA PROJECT MANAGER AND ACCOUNTS DATE 12NOV \$9	
SAIC H&S MANGER SIGNATURE (IF APPLICABLE) <u>NA</u> DATE <u>NA</u>	

Appendix E Waste Manifests



RVAAP Fuze and Booster Quarry Landfill/Ponds Remedial Action Manifest Log



Disposal Date	Type of Waste	Source/ Location	Date of Generation	Transporter	Truck License No.	Disposal Facility	Waste Profile No.	Manifest Document No.	Facility Quantity (tons)	Copy of manifest leaving site (Y/N)	Signed Manifest Rec'd (Y/N)	Signed Manifest to Regs (Y/N)	Notes
10/22/09	Nonhaz	FBO	10/22/09	IMW Trucking	P\/H3170	American	107408OH	373013	18 54	v	v	v	None
10/22/09	Nonhaz	FBQ	10/22/09	JMW Trucking	PVH3171	American Landfill	107408OH	373014	22.23	Y	Y	Y	None
10/22/09	Nonhaz	FBQ	10/22/09	JMW Trucking	PVH3176	American Landfill	107408OH	373015	20.06	Y	Y	Y	None
10/22/09	Nonhaz	FBQ	10/22/09	JMW Trucking	PVH3170	American Landfill	107408OH	373016	22.37	Y	Y	Y	None
10/22/09	Nonhaz	FBQ	10/22/09	JMW Trucking	PVH3171	American Landfill	107408OH	373017	22.51	Y	Y	Y	None
10/22/09	Nonhaz	FBQ	10/22/09	JMW Trucking	PVH3176	American Landfill	107408OH	373018	22.66	Y	Y	Y	None
10/23/09	Nonhaz	FBQ	10/23/09	JMW Trucking	PVH3168	American Landfill	107408OH	373019	22.49	Y	Y	Y	None
10/23/09	Nonhaz	FBQ	10/23/09	JMW Trucking	PVH3194	American Landfill	107408OH	373020	21.61	Y	Y	Y	None
10/23/09	Nonhaz	FBQ	10/23/09	JMW Trucking	PVH3169	American Landfill	107408OH	373021	20.99	Y	Y	Y	None
10/23/09	Nonhaz	FBQ	10/23/09	JMW Trucking	PVH3173	American Landfill	107408OH	373022	15.83	Y	Y	Y	None

- Note that the quantities entered on the manifest were weights estimated in the field. Quantities in this table are actual weights, as measured at the receiving facility.



NON-HAZARDOUS WASTE MANIFEST

Landfill & Industrial Services www.WMDisposal.com (800) wmdisposal

WASTE MANIFEST	041 5210620	736	1 1	Sol J. Emergen	70/-4	1178	4. Wento in	3 (3013
Generator's Name and Meling Add Ravenna Army Amm 3451 State Rte. 5 Ravenna, OH 44265	unition Plant	····		Generator	Sille Address (1	f different litten n	reiling address)		
energiar's Phone	330-358-7312			des a					
Transporter 1 Company Name			(784) B		100 - 10 B	•··· ·	U.S. EPA ID	Number	· · · · · · · · · · · · · · · · · · ·
				la.			1		
Transporter 2 Company Name							U.S EPA IO	Number	
Ominated Sanila Mana and Sk.			(12) 			<u> </u>	100 504 10	Bu and Date	
American Lanofill		· ·		10 10			0.0.07.0		
VS16 Chapel St Waynesburg, CH 44	20:5	53		¥.					
arilly's Physe	8-866-3265	2					Î		
	······································		2	e ()	10. Cor	ntainera	11. Total	12. Unil	
y, waste snipping wame and	Physical Description; Including Co	NOT	<u> </u>	·	No.	Туре	Quantity	WYL/VOL	
Non-Haz Scil	400-e909		R of	аны л а					107403OH
Exp.Dt. 10/01/	2010	°, ⁵	N 6			1			
County : Porta	35 			<u> </u>					
		11 125							
Special Handling Instructions and	Additional Information	international waters in out to	Bzardous wa	sice as defined by	federal, statz, d	ar local regulation	ns and does no	f contain regulation	ed quantities of PCB's, cable international and
Special Handling Instructions and GENERATOR'S CENTIFICATION reducative meterials, or the liquid governmental regulationa.	Additional Information I hereby certify that the above d I his waste has been accurately ama	eocribed waste is not h y classified, described, p	azardous wa	ele as defined by arked, and labele Skonature	lederal, state, i d and is in prop	ar locati regulation er condition far l	ms and does no ransportation ac	f contain regulation	ed quantities of PCB's, cable international and Month Day Year
Special Handling Instructions and GENERATOR'S CENTIFICATION reducective meterials, or the flavid governmential regulationa. reventor's Printed Typed N	Additional Information : I hereby certify that the above d . This waste has been accurately ame	escribed waste is not hi y classified, described, p	ezerdous wa seckaged, m	ste as defined by srked, and labele Skynature	federal, state, c d shd is in prop	ar local regulation er condition for l	ins and foes no reinsportation ac	/ contain regulat	ed quantities of PCB's, cable international and Month Day Year j:
GEN PRATOR'S CENTIFICATION reductive meterials, or the float governmentar regulationa memor sufference is Printed Typed N Service Printed Typed N	Additional Information	leastbed waste is not h y classified, described, p	ezardous wa seckaged. m	ete as defined by arked, and labele Skjnature ort from U.S.	Isderal, state, d and is in prop Port of a	ar locat regulation or condition for I	ins and does no ransportation ac	f contain regulation	ed quantities of PCB's, cable international and Month Day Year i
GENERATOR'S CENTIFICATION GENERATOR'S CENTIFICATION modicative meterials, or the liquid governmental regulational enemics subferror's Printed Typed N Thernational Shipmence ansporter Signature (or expont and	Additional Information Therapy certify that the above of a. This waste has been accurately ame This moont to U.S. (). C. D.	iescribed waste is not h y classified, described, p	ezardous wa seckeged. m	ete as defined by arked, and labele Signature ort from U.S.	Isderal, state, d and is in prop Port of a Date lea	ar locati reguletio er condition far l enbylexat	ins and does no renaportation ac	r contain regulate	ed quantities of PCB's, cable international and Month Day Year j::
Generative flandling instructions and Generative meterials, or the liquid governmental regulationa. ensure automore of Printed Typed N international Shipments International Shipments Transporter Accountedgment of R anaporter 1 Printed Typed Name	Additional Information Interably certify that the above d This ready certify that the above d This reade has been accurately ama Import to U.S. (L) projet of Materials	eacribed wasts is not h y classified, described, p	azardous wa seckaged, m	ste as defined by arked, and labele Signature art from U.S.	Iederal, state, d and is in prop Port of a Date jea	er locat reguletio er condition for l http://ext. http://ext.	ns and does no ransportation ac	n contain regulat contain spot	ed quantities of PCB's, cable international and Month Day Year Month Day Year
Special Handling Instructions and GENERATOR'S CENTIFICATION rodicactive meterials, or the liquid governmental regulationa. International Stopments ansporter Signature (for exports one Anapporter 1 Printed/Typed Name ansporter 2 Printed/Typed Name	Additional Information E Thereby certify that the above of This waste has been accurately arms This waste to U.S. C. receipt of Materials	ieorribed waste is not h y classified, described, p	szardous wa suckaged. m	ele as defined by srked, and labele Signature ort from U.S. Signature Signature	federal, state, d and is in prop Port of a Date is	or local regulation er condition for 1 entry/exst	ns and does no ranaportation ac	f contain negulation	ed quantities of PCB's, cable international and Month Day Year i Month Day Year down Day Year
GENERATOR'S CENTIFICATION radicative metericits, or the liquid governmental regulationa. areation's Officer & Printed Typed N Themational Shipments: ansporter Signature (for exports only ansporter Actinguidedment of R ansporter 1 Printed Typed Name ansporter 1 Printed Typed Name	Additional Information I heroby certify that the above d This waste has been accurately ama I import to U.S. (c) Coupled Materials	iescribed waste is not hi y daastiid, described, p	ezardous wa seckaged. m	ste as defined by sited, and labele Signature ort from U.S. Signature	Indersi, space, o	or local regulation or condition for I entrylect	ns and foed no	f contain regulat	ed quantities of PCB's, cable international and Month Day Year j:
GENERATOR'S CENTIFICATION GENERATOR'S CENTIFICATION molocaclive meterials, or the liquid governmental regulationa. areation's Official Typed N international Shipments international Shipments intrasporter Actionswedgment of R anaporter J Printed/Typed Name ransporter 2 Printed/Typed Name Decrepancy Decrepancy	Additional Information	escribed waste is not hi y classified, described, p	azardous wa seckaged, m	ste as defined by arted, and labele Signature ort from U.S. Signature	laderal scatt, d	tr locat regulation er condition for l http:/exct	ns and does no	f contain regulation	ed quantities of PCB's, cable international and Month Day Year i
GENERATOR'S CENTIFICATION radicactive meterials, or the liquid governmental regulationa. arransformer that regulationa. arransformer Printed Typed N thermational Shipments ansporter Signature (for exports on ansporter Signature (for exports on ansporter Actnowledgmert of R ansporter 1 Printed Typed Name ansporter 2 Printed Typed Name bacrepancy a. Discrepancy indication Space	Additional Information E heroby certify that the above d I. This waste has been accurately anne] Import to U.S. (). Conjugt of Materials	eorribed waste is not h y classified, described, p	szardous wa seckaged. m	ete as defined by sited, and labele Signature of from U.S. Signature Signature Res	federal, state, d and is in prop Port of a Date is kdue	or local regulation er condition for I entryfesst	ns and does no ransportation ac		ed quantities of PCB's, cable international and Month Day Year i Month Day Year , Month Cay Year ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;
GENERATOR'S CENTIFICATION radicative meterials, or the liquid governmental regulations and a state of the liquid governmental regulations arrenator suffering of the liquid governmental regulations arrenator suffering of the liquid arrenator suffering of the liquid ransporter 2 Privilial Typed Name To becompany To Decompany To Anternate Fescely for Generator	Additional Information E heroby certify that the above d A This waste has been accurately ame I import to U.S. () Council Materials C Outputty	eecribed waste is not h y daastiid, described, y	ezardous wa seckaged. m	ste as defined by sited, and labele Signature of from U.S. Signation Signation The Signature The Signature	Inderal, state, d and is in pro- Port of a Date ins A A A A A A A A A A A A A A A A A A A	or local regulation or condition for I entry/exet ming U.S.	ins and foes no ransportation ac 	f contain regulation	ed quantities of PCB's, cable international and Month Day Year j:
GENERATOR'S CENTIFICATION address of the second s	Additional Information	escribed waste is not h gasstied, described, p	ezardous wa seckaged. m	ste as defined by arted, and labele Signature of from U.S. Signature 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Indertal statute, d and is in prop Port of a Date into Adver anifest Reference	or locat regulation er condition for l en condition for l en tyriest ning U.S.	na and does no ransportation ac 	f contain regulation	ed quantities of PCB's, cable international and Month Day Year i Month Day Year , Month Day Year ; Full Rejection
GENERATOR'S CENTIFICATION address framework of the second secon	Additional Information	escribed vises is not N	ezardous wa seckaged, m	ete 3s defined by arked, and labele Signature of from U.S. Signature 2 2 Res M	Indertal, statute, d d and is in prop Port of a Data jata Adve	or local regulation or condition for I entry/exit	ns end does no rensportation ac 	f contain regulate contain regulate containg to apple	ed quantities of PCB's, cable international and Month Day Year i Month Day Year i Month Day Year i Full Rejection
GENERATOR'S CERTIFICATION GENERATOR'S CERTIFICATION radioactive materials, or tree laude governmental regulations. Aremator architeror's Printed Typed IN Transporter Actionetes degree a Transporter 2 Printed Typed Name To Anemator 2 Printed Typed Name To Decrepancy Indication Space To Anemate Packity (or Cenerator) actify's Phone To Signature of Alternata Facility (or	Additional Information E Thermby certify that the above d This waste has been accurately arma Generator Generator	eacribed waste is not to y classified, described, p	ezardous wa seckaged, m	ete as defined by arked, and labele Signature art from U.S. Signature Ras M	Inderai, statz, d anci is in prop Port of a Data (stat active antifest Reference	or local regulation er condition for l en trylezet ming (L.S.:	Ins and does no reinsportation ac 	f contain regulate contain regulate contains to apple	ed quantities of PCB's, cable international and Month Day Year Month Day Year Month Day Year
GENERATOR'S CERTIFICATION GENERATOR'S CERTIFICATION radioactive meterials, or the liquid governmentar inguistiona. Sevenator arguistance Sevenator arguistance Consequence Actionweldgment of Canaporter 1 Printed/Typed Name Transporter 2 Printed/Typed Name Transporter 2 Printed/Typed Name To Advance Actionweldgment of Decrepancy To Advance Packty (or Generator) acatily s Phone: To Advance Alternate Facility (or Veight ficket #	Additional Information	escribed waste is not N y classified, described, p	ezardous wa seckaged. m	ete as defined by arked, and labele Signature at from U.S. Signature Rea M	Inderal, state, d and is in prop Port of e Date (state) autore avilest Reference avilest Reference	or local regulation er condition for l entry/ext nring LLS:	ins and does no reinsportation ac	tion	ed quantities of PCB's, cable international and Month Day Year Month Day Year Month Day Year Full Rejection
GENERATOR'S CENTIFICATION advantage instructions and advantage of the second second second advantage of the second	Additional Information I heroby certify that the above 4 This waste has been accurately arms I import to U.S. () Countify Generator	escribed waste is not h gassfield, described, p gassfield, described, describe	azardous wa wockaged, m	ste as defined by arted, and labele Signature of from U.S. Signature 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Indertal scatter, d and is in prop Port of a Data ins Adve anifest Reference	or locat regulation er condition for l en condition for l en lyviesst nong U.S.	Ins and does no rensportation ac in the second second second second in Partial Relect U.S. EPA ID	i contain regulati scording to appli	ed quantities of PCB's, cable international and Month Day Year i Month Day Year , Month Day Year Fill Rejection
GENERATOR'S CENTIFICATION GENERATOR'S CENTIFICATION reducative materials or trea liquid gorenmental regulational international Stipments thermational Stipments international Stipments international Stipments Transporter 2 Printed/Typed Name Decempancy Decempancy Decempancy Atternative Pecktry (or Cenerator) actity's Phone Te Signature of Alternate Feedary (or reight ficker # elight Ficker #	Additional Information	escribed waste is not h grassified, describert, p grassified, describert, de	enifett exce	ete 3a defined by arked, and labele Signature of from U.S. Signature Deposes Que Deposes Que	Indertal, statute, d d and is in prop Port of a Data jata adore anifest Referance to	or local regulation or condition for I entrylext	ns end does no rensportation ac 	f contain regulate contain regulate contains to apple	ed quantities of PCB's, cable international and Month Day Year I I I Month Day Year Full Rejection
GENERATOR'S CERTIFICATION GENERATOR'S CERTIFICATION radioactive meterials, or tree laud government regulationa. International Shipments International Shipments Transporter Actional growth or the fault Transporter Signifium (for exports ont Transporter 2 Printed/Typed Name To Abarnatis Pecifity (or Cenerator) actity's Prone. To Signifium Pecifity (or Cenerator) actity's Prone. To Barnatis Pecifity (or Cenerator) actity'	Additional Information	escribed waste is not h y described, described, p 	enifest arco	ete as defined by arked, and tabele Signature art from U.S. Signature Ras Disposal Gr Disposal Gr Disposal Gr Disposal Gr Disposal Gr Disposal Gr	Inderni, statit, d and is in prop Port of a Data jas kdue avifest Reference to	in local regulation er constition for l Phily/ext http://ext behumber	Ins and does no renaportation ex- in Partial Reject	f contain regulation	ed quantities of PCB's, cable international and Month Day Year I I I I I I I I I I I I I I I I I I I

02/02 50-21-22 5003 50 /50

llitbred resitemA

£ ...

1.2

NON-HAZARDOUS WASTE MANIFEST

Landfill & Industrial Services www.WMDisposai.com (800) wmdisposai

NON-HAZARDOUS WASTE MANIFEST	Generator ID Number 0H5210020736	2. Page 1 of	3. Emergency Res \$12-76	01-4198	4. Wasto T	racking Humbe	73014
Ravenna Arniy Ammuni 8451 State Rte. 5 Ravenna, OH 44286 Generalor's Prore:	330-358-7312	×	SAME	idness (if different tha	n mailing address	•)	
6. Transporter T Company Name JMW Truck 7. Transporter 2 Company Name	ling Services		· · · · · · · · · · · · · · · · · · ·			D Number	2
 Destinated Facility Name and Sile Addition American Landfill 7916 Chapel St Waynesburg, OH 44688 330-6 	6 6-3265		<u>.</u>		U.S. EPA II	D Number	
Facility's Phone: 9. Waste Shipping Name and Phys	icel Description; Including Color			10. Containers	ft. Total Quantity	12. Limit Wt./Vbl	Approval #
Non-Haz Soil				L semi	zΦ	ton	107408CH
Exp.Dt.: 10/01/201]						
County : Portage	······································						
	· · · · · · · · · · · · · · · · · · ·	1					
13. Special Hendling Instructions and Addie None 14. GENERATOR'S CERTIFICATION: The	nal information reby certify that the shows described watta is	nol hazarcious waste a	is defined by faderal	state, or local regula	None and does no	oi contain regula	led quantities of PCB's,
reductive materials, or free Rquids. Th governmental regulations. Generator scotters's PrintedTyped Name Mark Park Park 15. International Shipments	is weete has been accuretely classified, desc CONSON	lbed, packaged, merke	d, and labeled and is Signature Om U.S.	in proper condition to A Patt	r he nepartation a	eccording to appi	icable International and Month Day Yea
Transporter Signature (for exports only): 10. Transporter Aphrowledgment of Racept Transporter & Pristod/Typed Name Transporter & Pristod/Typed Name	of Madorizates	- P	The	27AP			North Day Y
17. Discrepancy 17e. Discrepancy indication Space) Quantity		C Rosidue		🗌 Partial Rejec	alon:	Full Rejection
176 Akomats Facility (or Généraior)			Manifest R	afarance Number:		Number	
vrc. orginature of Axempte Facility (of Gene- Weight Tickel #	anot}	1. ¹ .	Disposal Grid	10 10 12 10 		<u>,</u>	Monin Day Year
Nei Weight	· · · · · · · · · · · · · · · · · · ·				7	·	ų
18 Designated Facility Owner or Operator: Printed/Typed Name	Sentification of receipt of materials covered by	the manifest except as	note in item 17a Signature	-p	> :	11	Nonth Day Fraze

03:21:01 53-15-5008 18 \50

llitbnøJ nøshemA

.

WASTE MANIFEST 0H 521002	0736	2. Pege 1 of	3. Emergency Respons	e Phone 1-4/98	4. Wanta Tri	icking Numper. 3 /	3015
Revenue Army Ammunition Plant 2451 State Rife, 5			Generator's Site Addre	ss (if different train r	naling address)		
Ravenna, OH 44266 330-355-7312			Same	2			
JMW Trucking Servic	:es	· · · · · · · · · · · · · · · · · · ·				Number	
at whister Farlabi, Nama and Sila Address				<u></u>	US FPAR	Number	
American Landfill 7916 Chapei St Waynesburg, OH 44688 300.866.3365	68	27	~				
9. Waste Shipping Name and Physical Description; Including	Color		10. Na	Containers	11. Total Quantity	12. Unit WL/Vol.	Approval #
Non-Haz Soil			1	semi	20	ton	1074BSOH
Exp.D4.: 10/01/2010							
County : Portage							x 2 2 2 2
		17					
j Special Handling Instructions and Additional Information			ن <u>والي من</u>	<u></u>		حام محمد سال	
None							
CENERATOR'S CERTIFICATION - I haven with that the show	e described waste is not nely classified, described	hezerclous waste f, peckaged, merke	as defined by lederal, at d, and labeled and is in	ste, or local regulation proper condition for	ant and does no transportation a	i contain regutat containg to appli	ed quantites of PCB's, cable international and
activective maleries, or free liquids. This waste has been accurate governmental regulations.		·	Signature Man	e Patter	ion y	an .	10 ZZ 0
controlocities allevises, or first fullis. This waste has been accor governmental regulations. erable stofferor's Printed Typed Name Mark & Patterson			rom U.S. Por	t of entrylexit			
control of the second s			Dai	a leaving U.S.:	<u> </u>		
reflection materials of the figulds. This weater has been accord generative and the second se	- <i>s</i> a	 		X.M	Tol	De	Month Day Yes
policitic matterials, or the Rejulds. This weate has been accord pownnemula regulations. This weate has been accord pownnemula regulations. M&r K Patterson Insport to U.S. Insport to U.S. Transport Accounted great of Access of Materials sporter 2 PrintedTyped Name Discrepancy	- <i>5</i> a		Seniator Signature Signature	4 kroving U.S.:	100	De	Month Day Yes
Biosche malerials, or free legids. This weste has been netzer gerennental regulations. M&r K Patterson citerrational Shipmenta Import to U.S. Sporter Synature (for aports oxly): Transporter Activated gment of Recent of Malerials sporter 2 PrintedTransform of Recent of Malerials Discreptory Indication Space	5a 		Sensitive Schellung Residue		Perial Report	BOT .	Month Day Ye
adioactive mailefails, or fine liquids. This weeke has been neckno governmental regulations. Mar K Patterson Chlemetional Shipments [International Shipments] International Shipments [International Shipments] International Shipments (Recepts or W): Transposite ActiveNeedgement of Recept of Mainfields Scopers 17 International Shipment of Recept of Scoperson International Shipment of Recept of Scoperson International Scoperson International Shipment of Recept of Scoperson International Shipment of Recept of Scoperson International Scoperson International Shipment of Recept of Scoperson International Scoperson	- 5a		Bandara Santa Sant	srence Number:	Partial Report	Son Number	Month Day Ye
adioactive mailefails, or fine liquids. This wale has been neckno governmental regulations. International Stigments [international Stigments of the state of the	50		Dail	srence Number:	Perial Reject	Sor Number	Month Day Ye / 0 2 2 C Month Day Ye
Alternate Facility (or Generator) Styrature of Alternate Facility (or Generator) Styrature of Alternate Facility (or Generator)	5a 		Dail	srence Number:	U.S. EPA ID	son Number	Month Day Ye

-

1. Generator ID Number	- 2. Paga 1	of 3. Emergence	y Response	Phone	4. Waste Ti	racking Number	(MANIFEST)
WASTE MANIFEST OH52.1002073	6 1	812	701-	4198	•	37	3016
Benerator's Name and Mailing Address Ravenna Army Ammunition Plant	0.000 246	Generator's :	Site Address	(if different than n	nailing address	u.	
Ravenna, CH 14266		Sa	me				
nerator's Phone: 330-358-7312				,	U.S. EPAK	Number	
JMW TULKINA Service	S				NA	A .	
Transporter 2 Company Name	· • • • • • • • • • • • • • • • • • • •				U.S. EPAIL	D Number	5
Designated Facility Name and Site Address	<u> </u>				U.S. EPAIL	3 Number	
American Landfill 7916 Chanal St	2	÷.					
Waynesburg, OH 44388	2						
ality's Phone: 339-605-5203	·	T	10.0	untainera	15 Tetal	17 Unit	
9. Waste Shipping Name and Physical Description; Including Color			No.	Туре	Quantity	WE/Vol	Approval #
Nan-Haz Soit	1.		1	Servi	20	toh	18745801
Exp.Dt. 10/01/2010	g - 2						
County . Portage	2 ⁰¹ 2						
· · · · · · · · · · · · · · · · · · ·						: 1	
		<u> </u>	7	<u> </u>	L		
Special Handling Instructions and Additional Information		- ¹ 4 ₆ 3 2 4	<u></u>	<u> </u>		<u> </u>	
Special Handling Instructions and Additional Information None GENERATOR'S CERTIFICATION: Thatfoly cartly that the above described malanative moleculation free legals. This waste has been accurately classifi	waste is not hazandous we ed. described, packeged, mi	ale as defined by I	aderel, state and is in pr	r, oc local regulatic	ons and does n transportation :	int contain regula	ted quantifies of PCB*s.
Special Handling Instructions and Additional Information None GENERATOR'S CERTIFICATION: 1 Nariaby cartly that he above described reducetion materials, or the Roads. This waste has been accurately classific governmental regulations. nersitor's Offeror's PrintedTypod Name Here 10 Here 10 Here	waste is not hazardous wa ed. described, packaged, mi	ale as defined by I arked, and labeled Signature	lederel, stale and is in pr	n or local regulation spee condition for 1	one and does n transportation a Tern Am	ot contain regula according to app	ted quantifies of PCB's. Scalar International and Month Day Y 100 22 0
Special Handling Instructions and Additional Information Special Handling Instructions and Additional Information GENERATOR'S CERTIFICATION: 1 hardby cartly that the above described additional schemes, or the kquids. The wasse has been accurately classifi governmental regulations. nerstor schemes' Printed Typed Name Mark M Pattersch Informational Shiphiens Insport to U.S	waate is not hazandoua we ed. described, packinged, m	sie as defined by artect, and labeled Signature	ederel, stale and is in pr Naul Port c	e, or tocal requirier spec condition for Pat	ons and does n ransportation i tersen	ot contain regula according to app	led quantities of PCB's, liceble International and Month Day Y ID 22 J
Special Handling Instructions and Additional Information None GENERATOR'S CERTIFICATION: Transity certify that the above described reclarche materies, or the spaids. This waste has been accurately classify performance regulations. marker Statute (or sports only): International Shiphmens International Shiphmens In	waste is not hazardoua we ed. described. peckaged, mi	ale as defined by price, and labeled Signature	ederei, state and is in pr Naul Port o Data	e, or local requirite opper condition for the part of the part entry Part entry Part	ore and does n transportation : tergion	sot contain regula according to app	ted quantities of PCB*a. Scaple International and Month Day Yr IP 22 9
Special Handling Instructions and Additional Information	waste is not hazardous wa ed, described, packinged, m Exp	ate as defined by arked, and labeled Signature off from U.S.	ederel, state and is in pr Nau Port o Data	o or local regulatic spee condition for 1 P Pat I entry/soit earling U.S:	rrs and Goes n ramportation terson t	od contain regula according to app	ted quantities of PCBs, scable International and Month Day Y IP 22 9 Month Day Y / 0, 22 9
Special Handling Instructions and Additional Information REFERENCIPE'S CERTIFICATION: Therefore certify that the above described additional the materials, or the Reads. This wasse has been accurately classific geventurental regulations. Provide the materials or the Reads. This wasse has been accurately classific means of contents. Printed Typed Name Mark Putter Stan International Shiphients International Sh	vesste in not hezandoua we ed. described, peckleged, m	ale as defined by interfed and labeled Signature interfed and labeled Signature interfed and the second sec	ederei, state and is in pr Naut Port c Deta Sta	e or local regulatic per condition for 2 Pat 1 entry/exit eaving U.S. 7	terson Terson	of contain regula according to app	Ied quantities of PCB's. Scable International and Month Day Y IP 22 I Month Day T J O, 22 Month Day Y
Special Handling Instructions and Additional Information Norice GENERATOR'S CERTIFICATION: Thereby certify that the above described records and the materials, or the legisla. This wasia has been accurately classify preventional regulations. Instructional Structures Instructure for accords on the legisla. Instructure for accords on the location of Materials Instructure for accords on the location of the l	waste is not hazardous we ed. described. peckaged, mi	ate as defined by srked, and labeled Signature of from U.S. Signature Signature Signature	ederei, state and is in pr Nan Data Data	e, or local regulatic paper condition for Pat 1 entry?ait 2 2 2 3	ors and does n terreportation in terrefor T	oct contrain regula according to app	ted quantities of PCB's. Scale International and Month Dey Yr IP 22 9 Wonth Day Yr Month Dey Y
Special Handling Instructions and Additional Information None GENERATOR'S CERTIFICATION: Transity carity that the above described reduction materials, or the Routd. This waste has been accurately classific governmental regulations M. A. N. Putter Scin Informational Shiphitenis Inform	venste is not hazandous we ed. described, peckegied, m Esp 	ale as defined by interfed and labeled Signature interfed and U.S.	ederei, state and is h pr Port c Data due	r or local regulatic per condition for 2 Pat 1 entry/exit 2	res and closes in transportation is terston Partial Rejo	of contain regula according to app	Ied quantities of PCBs. Scable International and Month Day Y IP 22 9 Month Day Y / O, 22 1 Month Day Y
Special Handling Instructions and Additional Information Norice Second Sec	waste is not hazardous we ed. described. peckinged, m Exp	ale as defined by arked, and labeled Signature off from U.S. Signature Signature Real Ma	ederel, state and is in por Port o Data Data due	o o local regulatic per condition for Pat I entrylasit earling U.S. 7	ors and does n tarrsportation terster Partial Reje	od contain regula according to app 2000	ted quantifies of PCBs. Scable International and Month Dey Yr 10 22 0 Month Dey Yr Month Dey Yr Full Rejection
Special Handling Instructions and Additional Information None GENERATOR'S CERTIFICATION: Thereby certify that the above described mataxistic mataries, or free Routs. This waste has been accurately classific generator schemes Printed Typed Name M.A. NK Putter Sch Informational Shiphienis Informational Shiphienis Information of Receipt of Matarials Insporter Signature (or exponts only): Transporter Achievidegment of Receipt of Matarials Insporter 1 PrintedTyped Name Decompany L Discrepancy Indication South	weste is not hezardous we ed. described, peckiged, m	ale as defined by i sriked, and labeled Signature int from U.S. Signature Signature Signature Ma	ederei, stat and is in pr Port c Deta Deta due nitast Baler	o o local regutatic per condition for Pat I entry taxit 2 7 7	ors and does n namportation tersten Partial Rejo	ot contain regula according to app 2000	Ied quantities of PCB's, Scable International and Month Day Yr ID 22 0 Adonth Day Yr I O, 22 0 Month Day Yr G Full Rejection
Special Handling Instructions and Additional Information None GENERATOR'S CERTIFICATION: harisby cartify that the above described reductive matarias, or the liquids. This waste has been accurately classify performanical regulations. marked to the sports only: Transports Achieved grant of Receipt of Materials resports ' Printed/Typed Name resports ' Printed/Type	vezste in not hazandoua we ed. described. peckegied, mi Esp 7.vpe	ale as defined by encod, and labeled Signature I ont from U.S. Signature Signature Signature Real Ma	Inderes, statis and is in pro- Port o Data Data due	r or local regulatic sper condition for 2 Pat 1 entry/axit 2 /	res and does in transportation in ters. A dr Partial Rejo U.S. EPA II	ot contain regula according to app 2000	Ied quantities of PCB's. Scable International and Month Day Y IO 22 0 Month Day Y G Full Rejection
Special Handling Instructions and Additional Information Norice GENERATOR'S CERTIFICATION: Thereby certify that the above described radioactive malarials, or the logist, This waste has been accurately classify governmental regulation. main active malarials, or the logist, This waste has been accurately classify governmental regulation. main active malarials, or the logist, This waste has been accurately classify governmental regulation. main active regulation. main active regulation. main active regulation. intermational Striphents intermational Striphents insporter Signature (or segments of Necetpi of Matarials insporter 2 Prohed Typed Name insporter 2 Prohed/Typed Name proporter 2 Prohed/Typed Name Descriptory Descriptory Descriptory Descriptory Conternation Descriptory Descriptory Descriptory Descriptory Descriptory Descriptory <td>Waaste is not hazardoua we ed. described. peckinged, m Exp</td> <td>ale as defined by arked, and labeled Signature of from U.S. Signature Signature Real Ma</td> <td>ederel, state and is in pr Natur Port o Data Data due offerst Referen</td> <td>o or local regulatic sper condition for P Pat I entry/asir eaving U.S. 7</td> <td>ors and Goes n transportation tersportation Tersport Partial Rejo</td> <td>ot contain regula according to app Decision</td> <td>Ied quantities of PCB's. Scable International and Month Dey Y 10, 22, 0 Month Dey Y Full Rejection</td>	Waaste is not hazardoua we ed. described. peckinged, m Exp	ale as defined by arked, and labeled Signature of from U.S. Signature Signature Real Ma	ederel, state and is in pr Natur Port o Data Data due offerst Referen	o or local regulatic sper condition for P Pat I entry/asir eaving U.S. 7	ors and Goes n transportation tersportation Tersport Partial Rejo	ot contain regula according to app Decision	Ied quantities of PCB's. Scable International and Month Dey Y 10, 22, 0 Month Dey Y Full Rejection
Special Handling Instructions and Additional Information Nonice Second Sec	resulte is not hozprebuis we ed. described, packaged, m 	ale as defined by i priced, and labeled Signature Signature Signature Signature Signature Ma	ederei, stat and is in pr Port c Deta due miast Baler	o o local regutatic per condition for P Pat I entry/avit 7	ors and close n rearsportation i terster Partial Repo	ection	Ied quantities of PCB's Scable International and Month Day Y IO 22.0 Month Day Y G Full Rejection

llitbneJ nesitemA

602E9980EE

·· -

NON-HAZARDOUS 1. Generator ID Number	2. Page 1 of	3. Emergency 8/2 -	201 -	une 4198	4. Weste Trai	cking Number (A	3017
Ravenna Arrey Ammunition Plant	<u> </u>	Generator's S	te Address (It	different than m	eking address)		
6401 State Rie. 5 Ravenna, OH 44266 330-353-7312		Sa	me	#		<u></u>	
anaportar Scorpany Normo JMW Trucking Services ransporter 2 Company Nama			0 04.0001 7			A Number	
Designated Facility Name and Site Address American Landfill 7916 Chapel St Waynesburg, OH 446SR	E				U.S. EPAID	Number	
330-966-3265	<u> </u>		10 Co	ntainera Type	11. Total Outentity	12. Unit W2.Vol.	Approval #
Non-Haz Soil		s20 0	1	serni	2Φ	ton	\07498C
Exp.Dt.: 10/01/2010	en <u>en de la com</u> ercia.					! 	
County : Portage		4		Ì		ļ	
	но И., П		B.		1		
Special Handling Instructions and Additional Information				<u>.</u>	3 M ² t		
(VOTE)		the staff and been	foderal, state	or local regulation for	ions and does n transportation a	ot contain regular according to app	ted quantities of PC Scelule informational
(VOT)E. 4. GENERATOR'S CERTIFICATION: I hereby outly that the above described waste is in padioactive materials, or the iquids. This waste has been accurately classified, describe operammental regulations.	ot hazardous wasle ed, packaged, mark	ed, and labeled		- 1.1		Man	Month Day
4. GENERATOR'S CERTIFICATION: I hereby gardly that the above described waste is in radioactive materials, or the liquids. This waste has been accurately classified, describe governmental regulations. ienamour schemer's Printed Typed Name Mark Patter Sch.	ot hazerdous wasle ed, packeged, mark . Export	Signature	ark	Pott	essen	Har	Nonth Day
OV OV LE. GENERATOR'S CERTIFICATION: Thereby cartily that the above described waste is in addocative materials, or the liquids. This waste has been accurately classified, describe governmental registriona. enamitar scheme Shipmans Index Description Import to U.S. magonier Signature (for apports only)) E Transporter Achnowledgraphi of Receipt of Materials	ot hazerdous wasie ed, peckeged, mark Export	signature Signature I MY from U.S.	ark	Putt	essin D	Harr -	Month Day
CONTE: CONTENT CERTIFICATION: I Investory cardiny that this above described waste is in addicative materials, or hos liquids. This waste has been accurately classified, describe governmental inguidiona. MAAK PALERSON Inport to U.S. Insegnetic Sprinter (for exports only) Transporter Acknowledginger of Receipt of Materials Transporter 2 PhenedTyped Name	ot hazardoua weste ed, packaged, mark	Signature Signature Inom U.S.	ark	Patt Internet	érsin D	Harr	
CONTRACTOR'S DERIFICATION: Thereby partity that the above described waste is in addocate materials, or free liquids. This waste has been accurately classified, describe governmental inguidiona. Ensance: Scherer's Printer/Typed Name Import to U.S. Imagoner Signatum (for exports only) Imagoner Signatum (for exports only) Imagoner Signatum (for exports only) Imagoner 2 Physical Typed Name Imagoner I Difference I Imagener Imagener Imagoner I Physical Typed Name Imagoner	ot heardqua vestie ed peckeged, mark	to commo U Sector U S.	ark Porto	Potl	Erstin CD C, Partial Roje	Histor	Month Day 1027 1027 1027 1027 1007 1
CONTEX Contraction of the second described where is in advanced metale is in advanced metales, or the liquid. Contraction of the liquid. C	o heardous vesto ad peringed, mark	Segment of years of the second	sicked	Pott	Essen Cl Partial Rep U.S. EPA I	Protection Of Number	Month Day
COVER. Constraints CERTIFICATION: I hereby cartify that the above described waske is in productory matching, or here liquids. The wask has been accurately classified, describe yearmoweld regulations. Marker and the second statements Indect of the second stateme	o hezerdoju vesto ad peckagad, mark	Source and labolatory	ark Porto	Pott I miryenig Barro V. Arron V. arco Number	ESSIN- CO ; Parisi Roy US EPA	Scien O Number	Month Day
CONTRATOR'S CERTIFICATION: I hereby carling that the above described waske is in productory matching of the liquid. Contraction of the liquid. Contraction of the liquid. The wask has been accurately classified, describe governmental regulation. Contraction of the liquid. The matching of the liquid. Index of the liqu	o hezerdoju vesto ad periagoni, mark	Source of the second of the se	ark Porto States Sectors Invitest Rater	Patt I miryenig Barro UK: And Composition	ESSIN- CC : Partial Roy U.S. EPA	Notion 10 Normber	Month Day

09:42:59 53-15-5003 6 \50

Hitbned neoltemA

60/2998022

NON-HAZARDOUS		. 2. Page 1 of	3. Emergency Re	sponse Pl	1199	14, Waste Tra	ching Number 27	(MANIFEST)
WASTE MANIFEST 0752/00.	10136		Generator's Site /	uddriess (I	If different than m	eling address)	v .(5010
Best State Rie. 5 Bassing OH 64755			50	~	0			2
330-353-7312 enstor's Phone: personal Company Name				 		U.S. EPAID	Number	
JMW Trucking S	ervices					U.S. EPAID	Number	<u> </u>
ransporter 2 Company Name		3					kis metanar	<u></u>
esignaled Facility Name and Ska Address American Landfill		-200 - 54 542	* *			U.S. EPAID	istrantinen.	1
7916 Chapel St Waynesburg, OH 44688						Ĩ.		
illy's Phone: 5:33-600 -3 20-3	ng Color			10. Co	ontainers	11. Total Quantity	12. Unit WL/VoL	Approval #
s, resting chapping rearing and r organis description, and and	999 1920 - Colore Color de La Calegoria 1921 - Color Calegoria de La Calegoria de La Calegoria de La Calegoria de La			,ND.	iype	<u> </u>	t = 1	10740SOH
Non-Haz 504				1	semi	2Φ	Ton	<u></u>
	in the second	 24						
Exp.Dt. 10/01/2010	<u> </u>			ei Schei		<u></u>	1	
	25		1				1	
i County Portage	10	12	Ì				. I	
County Portage	*	2 		1994		<u> </u>		- 100 (100-1-100) (99-1-1-1-0-1)
County Portage								
Country Portage	,							
County . Portage Special Handling Instructions and Additional Information	; <u>1</u> * 1					4(3)		
County - Portage Special Handing Instructions and Additional Information None Generators CERTIFICATION: Thereby Certify that the at reductive maturate, or the kquids. This waste has been ac	zove described waste is n analyty dassified, describ	of hazirdous was	e as defined by lod	eral, state d is in par	, er ibcal regulatin sper condition for	one and does n	vol contain regu	latec quantities of PCB's, spicable international and
Country . Portage Special Handling Instructions and Additional Information None GENERATOR'S CERTIFICATION: Thereby certify that the at redicactive maintails, or here inquices. This washe has been acc governmental equilations. The provide the advector adve	Dove described waste is n uraitety classified, describ	of hazardous wast ed, packaged, mar	e as selfned by lod ted, and lubeled an Signature	oral states dis non	, or local regulation oper condition for Part	one and does r variaboristication tersion	val contain regu acconting to at Hom	alsted quantities of PCB's, spikable intermultional and Moosh Dey Year :10 22 000
Country Portage Special Handking Instructions and Additional Information None Generators CERTIFICATION: Thereby certify that the at redicative matrials, or the kquids. This waste has been acc governmental migulations. Thereby Sufferers Printed Typed Parme Mark Patterson Informational Shipmenta	bore descriturd wasin in in urately descrited, deecrit	o(hizžir dous wast ed. packaged, mar	e as defined by load keed, and labelide an Signature 1	eral, state d is a pro Orle Port o Date 1	, or local regulation poer condition for Pat d entrylext eating U.S.	one and does n vanaponision territor	val contoin regul according to at	lates quantities of PCB's, spicable international and Month Day Year 1 0 2 2
County Portage Special Handling Instructions and Additional Information None Generications and Additional Information None Generication maturate, or thes logues, This waste has been acc governmental impulsions. Mark Patters and Patters and Patters Informational Supprentia	bove described wasie is n urstaty dassified, describ	o(ħ₽234 dous was ed, packaged, mar Expo	e as selfned by lod ked, and labeled an Signature I M A from U.S. Signature	Porto Date 1 70	, er iocal regulatin sper condition for Pat d entryfeat ieat mg U.S.	one and does n Unreported on territor	ul contan regulación de la contan regulación de la contante de la	Astec quantities of PCB's, spicable international and Month Day Year Month Day Year Month Day Year
Country Portage Special Handling Instructions and Additional Information None GENERATOR'S CERTIFICATION: Thereby certify that the at radicactive maintails, or here inquices. This washe has been acc governmental equilations. Mark Country Country Country Country Country Informational Submernia Informational Up and Party Country Information Informational Submernia Informational Submernia Informational Information Informational Submernia Informational Information Informational Information Informational Information Information Informational Information Informational Information Information Informational Information	bove described waste is n araitety dassified, describ	of hazardous was ed, packaged, mar Expo	e as defined by lod ted, and labeled an Signature I trom U.S. Signature 1 Signature	ank porto 200	a, or local regulation sper condition for Pat 4 entryleat: earing U.S.:	ne and does r varsporteson terrson albr	ut contain regulacontain regulacontain () a se	Asted quartities of PCB's, spikeble international and Month Day Year 10, 22, 50 Month Day Year Month Day Year
County Portage Special Handling Instructions and Additional Information None Generative materials or the kquids. This waste has been acc governmental regulations. This waste has been acc material acc	pore described washin is in arabity disslifed, describ	ot hazirdous wast ed, packaged, mar	e as cefined by lock ked, and labeled an Signature in trom U.S. Signature 1 Signature	aral, state d is n pr Port o Date 1 20	o, or local regulation sper condition for A entryfeast is a ong U.S. 	nes and does r vanaponasion terson aller	ul conten regulation according to at	Anect quantities of PCB's, spikable international and Month Day Yes 10, 22, 00 Month Day Yes 10, 22, 00 Month Day Yes 0, 22, 00 Month Day Yes
County Portage Spocial Handling Instructions and Additional Information None Generators Certification: Thereby certify that the at redoctive maintake, or the kquids. This wash has been acc generated an explosion. Mark Patters of the sport only. Informational Solomenta I	bove described wiskle is n surability dassified, describ	ot hazardous was ed, packaged, mar Expo	e as selfneet by lod ked, and labeled an Signature 1 Signature 1 Signature 1 Signature 1 Signature	eral, sitted d is n pro- Port or Date I 200	n, er local reguladin oper condition for Part d entryfeatt eatryfeatt 	one and does n transportation terrupn terrupn	ul contain regul according to a Hism J	Abrec quantities of PCB's, spicable international and Month Day Year Month Day Year Month Day Yea Month Day Yea Month Day Yea
Country Portage Special Handling Instructions and Additional Information None Generators Cemtercanon Interventy certify that the at redicactive maintake, or here inputs. This waste has been acc governmental equilations. International Statemental International Internation Internation International Intern	bove described waste is n narstely dassified, describ A	or hazardous was ed, packaged, ma Expo	e as defined by lod ted, and labeled an Signature I M Signature I Signature I Signature I Signature I Signature I Signature I Signature I M Manjé	eral, state d is in por Port o Date 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	a, or local regulation sper condition for Pat 4 antryleast 5 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	one and does n transportation territori allor Partici Reit U.S. EPA	victioniterin regulacioniterin regulacionitering to ap Plana Plana Solutioniterina petion ID Number	Asted quantities of PCB's, spikable international and Month Day Year (0, 22, 50 Month Day Year Month Day Year Day Full Rejection
Country Portage Special Handling Instructions and Additional Information None Generators certification: Thereby certify that the at reductive materials to the kquids. This waste has been acc generation angulations. Amore Special Printed Typed Name Informational Shoreman Decrepancy Discrepancy nuccition trace Decrepancy Discrepancy nuccition trace Decrepancy Discrepancy Discrepancy	pore described waste is n arabity dissified, describ	ot hazardous was ed, packaged, mar	e as defined by lock keel, and labeled an Signature A trom U.S. Signature I Signature I Resolut Manjd	aril, state d is in par Port o Date 1 200 sel Rofer	n or local regulation oper condition for Pat of entryleat: 	Die and does r transportation terson plan Partiel Refe U.S. EPA	ut contain regulacontain regul	Aneo quantities of PCB's, spicable international and Month Day Year 10, 22, 45 Month Day Year 2, Full Rejection
Country Portage Spoces Handing Instructions and Additional Information None Generators Certification: Thereby certify that the at governmental regulations megacitor and additional information Mark Yatter Sant Information: Office Printed Typed James Mark Yester Sant Information: Shipmenta Information U.S. Information: Shipmenta Information U.S. Information: Shipmenta Information Information: Shipmenta Information Decrepancy Decrepancy Decrepancy Decrepancy Hudgetion Trace Decrepancy Decrepancy Decrepancy Statements Facility (or Generator)	bore described waste is n narstety dassified, describ	or hazardous was ed, packaged, mar	e as defined by lodi ked, and labeled an Signature I Signature I Signature I Residu Manid	and, state d is n pro- Port o Date 1 2 2 2	n, er local reguladi oper condition for Pat d entryfexit teat.org U.S. *	one and does n transportation terratorn terratorn L Partiel Refe U.S. EPA	ut conton regu according to as Here Dector	Anton Day Year Month Day Year Month Day Year Month Day Year Month Day Year Deut Rejection
Country Portage Special Handling Instructions and Additional Information None Generators CentrePration: Thereby certify that the at redication maturate, or the kyulos. This waste has been acc generation and equilations. This waste has been acc informations Shoreman Import to U.S. anaporter Advocated Import to U.S. anaporter Sorgature (for exposite of Matemiate acception of Printed Typed Name Decoremancy a Discreption of Matemiate Facility (or Generator) active's Printed Country Facility Trainets Facility (or Generator) active's Printed	Dove described waste is n prately classified, describ A	of hazardous was ed, packaged, mar	e as defined by lock ked, and labeled an Signature Signature Signature C Residue Manjd	and, state d is n par Port o Date 1 20 a a asi Rofan	a, or local regulation oper condition for Pat 4 entryleast + - - - - - - - - - - - - - - - - - -	Die and does r Vansporieson terraon L'Partiel Rok U.S. EPA	ut contain regulacontain regulacontain regulacontain () a set of the set of t	Asted quantities of PCB's, spikeble international and Month Day Year 10, 22, 50 Month Day Year Month Day Year E Full Rejection

02/21 6002-21-22 51:87:60

llifbrial risoliamA

NON-HAZARDOUS	1. Generator ID	Number	12.P	pge 1 of 3, Emergen	y Response F	Those /	4. Waste Tra	ching Number	3019
WASTE MANIFEST	Wrass Munition Place	100207	<u> 56 '</u>	Generator's	Site Address	(if different then r	malfing address)		
3451 Sizte Rte. 5 Bayeona (35 44266	() (5.5		C.	NG 18 1221				
enerator's Phone:	330-353	-7312			me				-
TIME TO THE TOTOL	10King	Seculio	÷				NA		
Transporter 2 Company Name	9		*				U.S. EPAID	Number	
Designated Facility Name and St	e Address		•		ta savat a		U.S. EPA 10	Number	
American Landfill 7916 Chapel St									
Waynesburg, OH 4	4680 340-866-3265		ii ta	55	\$1		į.		
A Marte Stiening Name of	ad Discussi Description				10. C	onlainers	11. Tola	12. Unit	Approval #
			• • • • • • • • • • •		- No.	Тура			1074057
Non-Haz Soil					1	semi	20	ton	074001
21 <u>27 21 22 22 22 22 2</u> 2 20 20 20 20 20 20 20 20 20 20 20 20 20		energianist i en energianist				+	:	<u>+</u>	
Exp.Dt. 10/01	172010				e e			i	
	e dinana ing kana							1 :	
R (200 262)					3	10	1	1	
Coursy : Port	aðs		a _a te a			_	İ	<u> </u>	
Cours: Port			e _a t e		 			<u> </u>	
County : Port	Zg≥		en de la constante de la consta Constante de la constante de la c		¥. ~.		· · .		
County : Port	nd Additional Informa			4 4 69 5	F.			<u>.</u>	
County : Port	izg⊋ nd Addtiona∏intorra		ri i	2 A 19	₩				
County : Port	2 g ⊋ nd Additional Informa ION: I heraby cently Judgs. This waste has	tion that the above describit	ed waste is not hazardd	ug waste as defined b ped, marked, and laisek	v federal, stab	e, or local regulat	Sons and does no	t contain regule	kied quantities of PCA
County : Port	292 nd AdoRional Informa ON: I hereby cently juids. This waste has Name	tion that the above describe been accurately class	nd waste 1s not hazards Med. described, packar	us waste as defined b jed, marked, and tabek Signature	/ Nodersil, stabl and is in pr	e, or local require upper consiston for	Sons and does no r transportation a	st contain regula	xied quantities of PCL Mattion mensional a Month Day 1.5.1-27
COURDY : Port	DN: I hereby certify uses. This waste has a terms. I import to U.S.	tion that the above describin been accurately class QA	ed waste is not hazarde Med. described, packar	nus waske as defined b ged, marked, and habek Signature 1 Expon from U.S.	r federal, stab od and is in pr M. M. Port o		both and does no transportation o Unreportation	ot contain regule	ved quantities of PCI Vicable international Month Day 10:2
COURD: Port	IS 2 2 2 Ind Additional Information Informa	tion that the above describe been accurately classic QA	ed waste is not hezerok Med. described. packag	us waste as defined b sed, marked, and tabek Signature	/ Moderni, stab of and is in pr M. M. Port c Date	e, or local regulat page condition for the Path of entry/festit leaving U.S.	sons and does no rangeotation o therion	si contain require contain require to app	Aird quantities of PCC Aird accontines of PCC Month Day 10 2
COURD : Port	Ind Additional Information Additional Information Infor	tion that the above describe been accurately dead QA	ed waste is not hazarde Med. described. packar E	us waste as defined b sed, marked, and labek Signature 1 Expon from U.S. Signature	Anderni, stabi nd and is in pr M M Port o Date D C	e, or local require oper condition for the Path of entryfesit teaming U.S.	terson PM	of contain negation coording to appro- groups of the second secon	Aled qualifies of PCI Islabio international Month Day Month Day
COURD: Port	CN: I heraby carity N: I heraby carity uses This was has Name a <u>Her</u> s I import to U.S Conty Receipt of Material Receipt of Material	tion that the above describe been accurately clean CA	ed weste is not hezerok Med, described, packag	us waste as defined b sed, marked, and tabek Signature j Expon from U.S. Signature	r Nederal, stab od and is in pr M. M. Port o Date X. C. C.	e, or local regulations for the second secon	sons and does no rangeotation o thereion P.M.	si contain neguta conting to app HOM	Med quantities of PCI Meditic elemstional a Month Day I (2) Month Day Month Day
COURDY : Port	292 nd Additional Information Information (Information) Information (Inf	tion that the above describe been accurately class QA	ed waste is not hazarde Kied, described, packar	uis waste as defined b sed, marked, and habet Signature 1 Signature 2 Signature 1 Signatu	Alderal, stable and is in pr Mark Date Date	a, or local regulation poper condition for the Part of entry/exit among U.S.	Partel Reper	ot contain regula coording to app 9000	And quantities of PCC North Day 10 22 Month Day Konth Day Konth Day
COURD : Port	CN: Thereby centry CN: Thereby centry UNS: Thereby centry UNS: Thereby centry Satters Satters Import to Lis Control Receipt of Watertak Control Co	tion that the above describe been accurately clean CA	ed weste is not hezerde Med, described, packag	us waste as defined b sed, marked, and tabek Signature) Expon from U.S. Scharture Constant Scharture Scharture Scharture Scharture	r føderal, statu od and is in pr M M Port o Date Date Date	e, or local regulations for the second standard second standard second s	Sons and does no rangotuson s tterson Person Particol Report	st contain regula contring to app POINT There stion	And quantities of PCC Allogic normalization Month Day 10:22 Month Day Month Day Month Day
COURDY : Port	Ind Additional Information Additional Information Ad	tion that the above describe been accurately dead	ed waste is not hazarde Med, described, packas	Signature	r Noderal, stabl d and is in pr Mark Port c Date Rodice skillue Harviest Rofer	a, or local requilation poper condition for the Part of entry/esite earling U.S.	Borna and does no reansportation a ttersion Partice Regist U.S. EPAR	of conjuint regular coording to app of 9992 of 9992 of 9992 ction	And quantities of PCI North Day 10 22 Month Day Konth Day Konth Day
COURD : Port	CAN: I hereby certify uses. This waste has a Hereby certify in Receipt of Metorical Control o	tion that the above describe been accurately class QA	ed waste is not hezerde fied, described, packag	Us waste as defined b ped, marked, and labek Signature) Expon from U.S. Signature (/ Noderal, stabu od and is in pr M M Date 2010 2010 2010 2010 2010 2010 2010 201	e, or local regulations for the second secon	Sorte and does no remejoritation o therefore Particle Registre U.S. EPA III	ot contain regule contring to app to appo to app to app to app to app to app to	Aled quantities of PCL Month Day Month Day Month Day Month Day Full Reject
COURDY : Port	CM: I heroby cently ind Additional Information CM: I heroby cently lates. This waster has a <u>Heroby</u> information information C. A. S. S. (or Generator)	tion But the above describe been accuntely class 201774	nd weste is not hezerok Bied, described, packag	Us waste as defined b ped, marked, and tabek Signature	r federal, stab de and is in pr M M Port c Date Roman	e, or local regulation for the second	Sona and does no rangeotation o therefore Dented Reserved U.S. EPA II i	1 containin megula coording to app 1 Optim 1 Optim 2 containing to app 1 Optim 2 containing to app 1 Optim 2 containing to app 2 containing to app	Aled quantities of PCI Nicebie enternations: 3 Moeth Day 10,22 Month Day Month Day
COURD: Port	CAN: I hereby certify UAS: Thereby certify UAS: This waste has a Hereby certify a Hereby certify	tion that the above describe been accurately class 2A SOTTA	ed waste is not hizzerde field, described, packar	Lis waste en defined b ad, marted, and laber Signature Espon from U.S.	Anderni, stabi or and is in pr M M Part of Date Solue Anniest Rolor	a, or local required poper consisten for the Part of entryfesti tearing U.S.	Parted Reparts	al contain respué coording to app for the second for the second fo	Aled qualifies of PCC Statute International Month Day Month Day Month Day Fut Reject Month Day

02/01 6002-21-62 81:27:50

American Landrill

NON-HAZARDOUS HS210020736	5	2. Page 1 of :	3. Emorgency	701	-4178	4, W2810 1100	37	3020
Constator's Name and Malling Address Rayanna Army Ammunition Plant 2451 State Rise 5			Generalor's S	ite Address (If	different (ban m	valang Boldress)		
Ravenna, OH 44255 330-359-7312		1	Sav	ne				
Transporter I Company Name JMW Trucking Servit Transporter 2 Company Name	دوح	- 07				U.S. EPARD	Number Number	
Desvonated Facility Name and Site Address				ыз к и ас		U.S. EPA DI	Number	
American Landfill 7915 Chapel St Waynesburg, OH 44588 2 Misen.2255		3 	*			Ĩ		
9. Waste Shipping Name and Physical Description: Including Color	 	N.	•	10. Cor Na	tainers Type	11, Tolal Quantity	12. Unit Wit. Not	Approval #
Non-Haz Soit	••••••			1	semi	20	ton	(97408)
Exp.Dt.: 10/01/2010								
County . Partage	0 							
					1	<u> </u>		
13. Special Handling instructions and Additional Information		<u>}.</u>						
13. Special Handling instructions and Additional Information 14. GENERATOR'S CERTIFICATION: I handly carify that the above des radicative materiate, no trop (quick). This waste has been accurately o governmental regulations. Generator's Concrot Privacy Planme The materials of the second seco	cribed wasle is not h lossified, described, j	ezardous weste peckaged, mark	as defined by ad, and labele Signature from U.S.	federal, state, of and is in pro- main and is in pro-	or local regulation for local	Bors and does no transportation a	ot contain regula coording to app	ind quantities of P lighting internationa World Og 1972
Special Handling indiructions and Additional Information NONE GENERATOR'S DERTIFICATION: I harvely certify theil the above des reducading materials, or too liquids. This waste has been accurately o government angeletons. Generator's Difference Photomy Patternstan Mark Patternsta Insponse Visionauxe (for exponse or cip): Transponer Signature (for exponse or cip): Transponer Acknowledgement of Receipt of Materiale	cribed wasia is not h	azardous weste parksgod, mark	as defined by bd, and labele Signature Iron U.S.	radioral, state, e and is in pro- M AM Port of Data le O	or local regular per condition for the Patt entrylect entrylect fits:	terson	at contain regula	iad guantities of P ingebra internationa Month Og 101 2
13. Special Handling inductions and Additional Information NONE 14. GENERATOR'S CERTIFICATION: 1 hareby carify that the above dea radoactive materials, or tree inducts. This waster has been accurately of governmental regulations. Generator's Official regulations. Generator's Official regulations. The waster has been accurately of The material regulations. Generator's Official regulations. Tacapooler Signature (for supports only): 18. Transporter Acknowledgment of Receipt of Materials: Transporter Acknowledgment of Receipt of Materials: Transporter Acknowledgment of Receipt of Materials: Transporter Transporter Acknowledgment of Receipt of Materials: Transporter Jermiced Typed Name The spectra of Promodify of Materials Transporter Jermiced Typed Name	cobed vegale is not h lassified, described, j	azardous weste packsgod.mak Experi	ss defined by od, and label Signature from U.S.	Indensity states of and is in provide Mary Port of Data for Data for Data for Data for	or hear regulation for the Part orthyleot - arring U.S. Later	terson	ol contain regule	ind quantities of P lightly international Month Da Month Da Month Da
13. Special Handling inductions and Additional Information NODE 14. GENERATOR'S DERTIFICATION: Thereby carify that the above des raduadrie materials, or the lights. The waste has been accurately o government angulators. Generator sufference Printed Types Home 15. International Schements Tanaporte: Addressing for supports only: 16. Transporte: Addressing for supports only: 17. Discrepancy The Dense Types Name The Discrepancy The Discrepancy The Discrepancy The Discrepancy	cribed westa is not h lassifiad, described, i	ezerdous weste packaged, mark	as defined by bd. and label Signature from U.S.	saderal, state, a and be point Mary Port of Data je Cont Solue Solue	or locar regular per condition 10 ke Pat entryleot wing US	Bors and does no transportation a terson	ot contain regula recording to app TOMO	ind quantities of A ligable international Wonth Dg Month Da Month Da Fue Rey
Special Handling indirections and Additional Information NODE GENERATOR'S DERTIFICATION: I harvely certify that the above dea reducading materials, or too liquids. This waste has been accurately o government angulators. Generator's Default angulators. The second seco	cribed waste is not h jassified, described, j	azardous wesłe packagod, mark	ss defined by od, and label Signature From U.S. Sanstray	faderal, state, g and is is pro- M AM Port of Data le Data le Solue solue tanitest Rafere	or locar regular proceedings of the proceeding of the providence o	Bors and does no transportation a terson Partial Reje	SI contain regula Coondra to app ADMA Fabro Fabro D Number	ind quantities of P lighthe internationa Month Cg 18 2 Month Da Q Q South Da
Special Handling inductions and Additional Information None Sector 2015 DERTIFICATION: I hereby cartist that the above dee reducative meterials, or too liquids. This waste has been accurately o government regulations. Might K. Pattensid Ensight Regulations Tarapporter Signature (or exports only): Insport to U.S. Tarapporter Signature (or exports only): Tarapporter Signature (or Generator) Tarapporter Signature of Adjoinate Facility (or Generator) Tarapporter (or exporter Signature (or exporter)	cribed weste is not h Jacsillad, described, j 	azardous veste azardous veste construction c	es defined by and label Signature from U.S. Sectors 1 	Indered, states, of and is in pro- Port of Data le Data le Colora Soluto Internet Rafere Stri	or local regulation for per constition for the Part entrylest wring U.S. U.L. noo Humber	Dors and does no transportation a terson	or contain regule coording to app 2000 2000 2000 2000 2000 2000 2000 2	ind quantities of P light's internation: Wonth Og 1 g 2 Month Og Vonth Og Fut Rey Honth Og

00:43:36 23-12-2009 5 / 50

llifbneJ neoiremA

ION MAZARDOUS 1. Generals	x IO Number	2. Page 1 d	I . 3. Emergency	Response P	hone a	, 4, Waste Tri	1.cking Number (M. 37	3021
VASTE MANIFEST	5210020736		B12- Generator's S	70	i different than m	ating address)		
Ravenne Army Ammunition F Sassi State Rife, 5	Piant		~	MC.				
Ravenna, Of 44266 330-	353-7712		1 54	ræ.	10 00-00-0012-000			
kasor's Phone:	<u> </u>					U.S. EPA IC	Number	
JMW Trvcking	Juvico	na an mu n		101 I.S.		U.S. EPA IC	Number	
and Ste Address	r		2	8 (N)		U.S. EPA IC	Number	
American Landfill 7918 Chapel St								
Waynesburg, OH 10828 339-896-3	205	51 1941 (1947) (1947) (1947)				 		
9. Waste Shipping Name and Physicel De	ecription, Including Color			10. C	Type	11, Total Quantity	12. Unit Wh_Nol	Approval N
i Non-Haz Soil	<u> </u>	2			میں اور	1	·	10740901
					Simi	20		
Eva Or 10,01/2010				ļ	i	1	· 1	
	<u></u> . 				÷	7		
County : Portage	41 31			ļ		<u> </u>		
	<u> </u>					1	1	
50 ••••			e (1	<u>[·</u>			بأسر أجري	
Special Handling Instructions and Additional In	nionnation							
None	27						95-3 N a	
GENERATOR'S CERTIFICATION: I hereby	certify that the above described wast iste has been accurately clessified, de	e is not hazardous w scribed, packsged, n	aste as defined t narted, and tabe	led and is in p	te, or local regula proper condition fe	ibons and does or transportation	not contain regula n according to app	ed quantities of PCE icable internations! a
radioactive materials, of tree boulds. This was	·		Signature	MA	ab P	atters	en de	IØ 23
radioactive melenals, of the boulds. The war governmental regulations. enerator's Offeron's Printed/Typed Name	(INPA)	(<u>)</u> Ex	port from U.S.	Por	of entrylexit;	· · · ·		
residencifie melenais, or the policies. I the way government regulations. anarator Cofferor's Printed Typed Name Mark Patte International Symmetric Import	1 to U.S.						and the second sec	
reducedbe meterials of the equilits. I na will powemmental regulations interactor GORector's Pronted Typed Name Na A K Patter International Stepments International St	latenalt		Strates	201	6 112	T		Month Day
reduced to me equility. In a way governing regulations mercanor diotheror's Protect Typed Name March Part Part enspone Signature (or experts only! Transporter Achnowledgment of Receipt of h ansporter: 1 Protect Typed Name March Carbon Human Hane	lio U.S. Jaioriste L.S.		Stracher	Mhr	k lih	Iter	ą	Month Day Month Day
reducedbe meterials of the pounds, in a we powernigenial regulations interactor of Ofference Protectory Program International Stephanics Import ansportes Synatrue (do exports only) Transbotter Standard Greekel of It assportes 1 Printed Typed Neme International Strandard Neme International Standard Standard Standard ansportes 1 Printed Typed Neme	Lous.		Sec.	Mhr	k lih	Iter	9	Month Day
reducedbe meterials of the pounds. In a way governing regulations intercape deflects's finaled types Name March 200 and the pound of	Azieriak C.S.	2 2 2		Mbr.	k lih	. Iter	ajjecilon	Fuß Reject
reducedve melenals, or tree equicits, in a way geovernigental regulations. Internation & Offeren's Printed/Typed Name Antonio Statement of Receive of the ansporter Synatrice (for exports only) ansporter 1 Printed/Typed Name IMARC IC WALTS ansporter 2 Printed/Typed Name IMARC IC WALTS ansporter 2 Printed/Typed Name	Laterials	2 2 120		Maritesi Re	k Uh	Dartial R	ajecilon	Full Reject
reducedve melenals, or tree equicit, in a way geoverniteration regulations anerator (Offeror's Project/Typed Name March Ashenwedgment of Receipt of the anegoties Separative (or exports only): S. Transpolate Ashenwedgment of Receipt of the anegoties 1 Printed/Typed Name Marcostel 2 Printed/Typed Name 7. Discregancy 78. Discregancy Indication Scotte 1. Discregancy 78. Alianneta Facility (or Generator)	10 U.S. Azərisis <u>Q.S</u> Isarr.:y	<u>, , , , , , , , , , , , , , , , , , , </u>	2 	Maritesi Ref	k Wh	Darial R	ajection A 10 Number	Hantin Day
reduced/ve melenals, or tree equicit, in a way geoverniteration regulations anarraion (Cofference Protect/Typed Name Anarray (Cofference Protect/Typed Name Anarray (Cofference Actional Street Street) Anarporties 1 Printed/Typed Name Anarporties 1 Printed/Typed Name Anarporties 2 Printed/Typed Name 7 Discregancy 7 Discregancy 7 Discregancy Indication Scipto 7 Alternate Facility (or Generator) 7 Alternate Facility (or Generator)	rio U.S. Ialeriale <u>C.S</u> Isorrig DT T			Mbr. Iosidue Manitesi Ro	k Uh	Partial R	3	Month Day
radioactive malerials, or the equicit. I na way governitural regulations energiate (Offeror's Final Offeron Man Stransporter Spinal View (Service Man Energiate Spinal View (Service Man Energiate Spinal View (Service Man Energiate Spinal View (Service Man Energiate Spinal Offeron Man Energiate Spinal Offeron Service (Service Service Service Man Stransporter Science Man Energiate Spinal Offeron Service (Service Service Service Service) (Service Service Service Service) (Service Service Servi	rio U.S. Azieński <u>C.S.</u> uarr.// D.T. o)	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		Mbr. tesidue Manitest Ref	k Uh	Dertial R	ajection A 10 Number	Manth Day 0 23 Month Day Full Reject

llitbrisJ risolasmA

WASTE MANIFEST 0H521002073	6 1	812	- 701	-4/25	4. Waste	Fracking Numbe	(MANIFEST) 73022
5. Generator & Long and Maline Address Pay en na Army Arm numition Plant 9451 Store Date		Gemerator	s Sile Address	(if different than	mailing address	s)	
Ravenna, OH 44266			SAME				
Generator's Phone: 338-338-7312 5. Transporter 1 Company Name				<u></u>	11 8 EDA 1	0 Number	
JMW Trucking Services	1. 11. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.						
ransporter 2 Company Name	ŝ.	3 ⁸ 5			U.S. EPA R	0 Number	
Designated Facility Name and Size Address A merican Landfill	بهر تأسيمان الت	• • • • • • • • • • • • • • • • • • •		<u></u>	U.S. EPA R) Number	
7516 Chapel St Waxnachurg OH 14689		2 ⁶ 8 .					
actiny's Phone: 330 4966 -3265		12.9			ł		
9. Waste Shipping Name and Physical Description; Industing Color			10. C	Ontainers	11. Total Quantity	12. Unit WL/Vol.	Арргочаі з
Non-Haz Soil	in the second		<u> </u>	1		+	10740807
	\$153			Semi	<u>2</u> 0	tons	
Exp DL, 10/01/2018	** *						
under and the second	101 TO 101	and the second s				- 	. 6.81. a 1 1 8.9
County : Portage					Ì	1 0	
County : Portage				-			i)
County : Portage				,			
County : Portage Special Handling Instructions and Additional Information ODNERATION'S CERTIFICATION: Thereby partity that the above described a productive materials, or free kguids. This waste has been accurately described governmental regulations.	résta la not hazardivit é 1. decréted, packagod,	value as defined by	federal, state, 1 and 16 in proj	or local regulation	ris and does no	t contain regulat	ed quentities of PCB's, cable international and
County : Portage . Special Handling Instructions and Addisonal Information . BENERATOR 'S CERTIFICATION: Thereby carify that the above described a geovernmental regulations. anerator Colleror's PalagedToped Name Add Education PalagedToped Name PalagedToped Palaged	réate la not hazardivit é 1. described, packagot,	waste an defined by marked, and labeled Signature	seceral, state, i and is in proj 2 ards	or local regulation are condition for I Patta	res and does no rarespontation as	tooritalin regulati xxarding izi appli	ed quentilies of PCB's, cable international and Month Day Ye / () 23.0
County : Portage Special Handling Instructions and Additional Information Benerator & Clean Provide County of the Additional Information Benerator & Clean Provide County of the Additional Information Benerator & Clean Provide County of the Additional Information Informational Shipments Inf	réste le not hezerdoui s 1 described, packaged, i Es	wastin as defined by marked, and labeles Signature uport from U.S.	isceral, state, i and is in prog 2 2 2 2 3 Port of Date vs	or local regulations ar condition for I Patta entry/exit	rrs and does no rangeotation at	A contain regular A contain regular A contain so a spit	ed quantities of POB's, cable international and Month Day Ye
County : Portage . Special Handling Instructions and Additional Information . BENERATOR 'S CERTIFICATION: I hereby carify that the above described geovernment regulations. . International Shipments	vaste ja not jazardous a 1. decentrad, packaged,	waste an defined by marked, and tabeler Signature sport from U.S.	incorat, azzia, i and is in prop 2 arXR Port of Date so	or local regulation are condition for I Patta entry/exit	res and does no ransportation at	i contain regular xxxriing iz appli	ed quentities of PCB's. cable international and Month Day Ye Month Day Ye
County : Portage	réste le not hezerdoui s 1 described, packaged, i 2 described, packaged, i	wastil as defined by marked, and labeler Signature Aport from U.S. Seguatre Seguatre	isceral, state, iard is in prov 2 arbs Date vs	or local regulationer condition for I Potta ontry least where U.S.	ris and does no rangeotation at Elian		ed quantities of POB's, cable international and Month Day Ye / () 23 (Month Day Ye Month Day Ye Month Day Ye
County : Portage 3. Special Handling Instructions and Additional Information 4. OEMERATOR'S CERTIFICATION: Thereby bartly that the above described and/orders/w materials, or fee Roulds. This waste has been accurately described and/orders/weighted to U.S. anstruct/cofferor's Private/Typed Name Materials Informational Stuarters Informationa	Vôste la not hazardous a Loscribad, packaged,	vasin as defined by merked, and labeler Signature yport from U.S.	incorat, atea and is in prop 2 art of Date of Control	or local regulation are condition for I Patta ontry last wing U.B.	res and does no rangeortation at	Contain regulation	ed quentities of PCB's, cable international and Month Day Ye / (() 23 () Month Day Ye (0) 23 () Month Day Ye
County : Portage 3. Special Handling Instructions and Additional Information 4. GENERATOR'S CERTIFICATION: I Intreby certify that the above described a madatactive materials, or free Ruids. This waste has been accurately classified governmental regulations. amenator's Offen Paidet/Depid Name March Paitterss Informational Shipmens Info	réste le not hezerdoui s i descrited packaget, i El	vestil an defined by marked, and labeler Signature sport from U.S. Signature good from U.S.	Seceral, states, 3 and 16 in prog Port of Date sp Cont of Date	or local requisito are condition for I Patta miry/esit Jaco	rrs and does no ransportation at the first second second Portial Reject	koontain regulaa Koontain regulaa Koontain Soortain Koont	ed quantities of POB's, cable international and Month Day Ye (0 23 0 Month Day Ye 10 23 0 Month Day Ye Month Day Ye
County : Portage 3. Special Handling Instructions and Additional Information 4. BENERATOR'S GERTIFICATION: Thereby carify that the above described of modicative materials, or fee Routs, This want has been accurately desided generator-offerors Plausdom, provide the above described of the above described of the above described of generator-offerors of the above described of the above describe	Västa la not hazandous a diskoritand packaged, Es Trot	vasin as defined by marked, and labeler Signature y uport from U.S. Signature Signature Signature Signature Mas	Indersel, statis, I and is in prop 2 arXR Port of Date so Port of Date so Date so Sup Sup Sup Sup	or local regulation are condition for I Patta Marine U.B. Dash E pa Number	ns and does no raregorians and MACN	Accordation regulated accordation programmed accordation programmed accordation programmed accordation according to according according to according to according according to according to according according to according to according to according according to according to according to according to according according to according to according to according to according according to according to according to according to according to according according to according to a	ed quentilies of PCB's, cable international and Month Day Ye 10:23 C Month Day Ye 10:23 C Month Day Ye
County : Portage 3. Special Handling Instructions and Addisonal Information 4. OEMERATOR 'S CERTIFICATION: Thereby certify that the above described i medicative materials or free Routes. This wasta has been accurately described geowrened at regulations. americal collector's Polyled/Typed Name County Polyled/Typed Name Transporter Springers County (or separate of the coles of Materials amporter Printed/Typed Name County Printed Typed Name County Printed Typed Name Discrepancy Discre	elate is not hearefould of t described packaged, E En	vials as defined by method, and isbeets Signature aport from U.S. Seguitar Seguitar Resk	Sectoral, state, 3 and 16 in prog 2 arJy Date vo Date vo Date vo Sue Sue	or local requisitioner condition for I Patter Patter Variationer Date Variationer E pa Number	rrs and does no raresportation as EULON Portial Reject U.S. EPATD	A contain regular contain regular Contain regular Contain Cont	ed quantities of PCB's, cobe international and Month Day Ye / () 23 () Month Day Ye 0 23 () Month Day Ye 10 23 ()
County : Portage 3. Special Handling Instructions and Additional Information 4. GENERATOR'S CERTIFICATION: I hereby certify that the above described i madicactive materials of free Routs. This want has been accurately desided governmental regulations. memory of the Routs and Additional Information 1. International Stupernets 1. International Stupernets 1. International Stupernets 1. International Stupernets 2. Sponture of Atternatio Facility (of Generator)	Vádu la not hazardou s 1. described, packaged, r Es	vasta an defined by marked, and solve Signature sport from U.S. Sografure Sografure Sografure Marked	federal, state, and is in prog Port of Date y Cast Reference	or tocal regulation are condition for t Potta ming U.S. Data Data Data Control Control Data Data Control Control Data Control Control Data Control Control Data Control Control Data Control Control Data Control Control Data Control Control Data Control Co	ris and does in rangeotation at Lan	Acontain regular Acontain regular Aconta	ed quantities of PCB's, cable international and Month Day Ye 10.23 C Month Day Ye 10.23 C Month Day Ye Month Day Ye
County : Portage 3. Special Handling Instructions and Additional Information 4. GENERATOR 3: GERTIFICATION: I hereby bartify that the above described productive materials, to free Regulds. This waste has been accurately described geownerchait regulations. ansatter Collector's Private/Typed Name Informational Shupments Informational Shupm	Vásta la not hazardous a describad, packaged, Ex IV24	vasin an defined by manned, and labeler Signature Was Signature Si	Inderet, attria and is in prop 20107 Date so Date so due thest Referen	or local requisitions are condition for I Patta Data Data Data Data Data Data Dat	res and does no raresportation at RAGON	A contain regulation applies a	ed quentities of PCB's, cable international and Month Day Ye 0 23 0 Month Day Ye 0 23 0 Month Day Ye 0 23 0 Month Day Ye

03'46'54 53-15-5006 8 \50

llitbnsJ nsoltemA

February 17, 2010

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response						
	Ohio EPA (Todd R. Fisher)										
O-1	Document Distribution Pg.	Document Distribution Pg.	The Southwest District office (SWDO) is no longer providing review support on RVAAP documents.	Please remove "Ohio EPA-SWDO – Ohio Environmental Protection Agency – Southwest District Office" from the footnote of the distribution table.	Agree. Ohio EPA-SWDO is removed from the distribution table as recommended.						
0-2	Page 5-3 Lines 5-7	Page 5-3	The text states that samples were "dried, sieved, and ground finely by the fixed-base laboratory and were analyzed for total manganese. The results were compared against the remedial action CUG for FBQ (1,950 mg/kg)." The name of the laboratory has been omitted and it is unclear what CUG is being referenced (National Guard Trainee vs. Residential Farmer, etc.).	Please include the name of the fixed- base laboratory. In addition, please indicate which CUG is being used.	Agree. Text revised as follows: "Samples FBQsd-201M-0520-SD, FBQsd-200M- 0521-SD, and FBQsd-200M-0521-FD (field duplicate) were dried, sieved, and ground finely by TestAmerica Laboratories, Inc. (located in North Canton, Ohio) and were analyzed for total manganese. The results were compared against the National Guard Trainee CUG for FBQ (1,950 mg/kg). The confirmation soil sample results are presented in Table 5-1 and in Appendix B.						
O-3	Page 5-5 Figure 5-1	Figure 5-1	This figure shows cross-sections with vertical exaggerations of 5x.	Please add "VERTICAL EXAGGERATION = 5X" to the bottom of the figure.	Agree. The phrase "VERTICAL EXAGGERATION = 5X" will be added under scales in Figure 5-1.						
O-4	Page 5-5 Figure 5-1	Figure 5-1	The legend shows the Munitions Response Site (MRS) Boundary as a solid black line. No apparent MRS boundary is shown on the figure.	Please remove "Munitions Response Site Boundary" from the legend.	Agree. The view of the figure does not include the MRS Boundary. The "Munitions Response Site Boundary" will be removed from the legend.						

Page 1 of 9

February 17, 2010

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response
O-5	Page 6-1 Lines 18-20	Appendix A.3	The text states that "Ohio EPA provided e-mail correspondence approving the use of this borrow source for the remedial action restoration activities. " A copy of this e-mail is not included in the report.	Please provide a copy of Ohio EPA's e-mail approving the backfill source material.	Agree. A new appendix will be created and named "Ohio EPA Approval of Backfill Source". A copy of an e-mail approving the use of the material will be included in this new appendix.
O-6	Page 7-1 Lines 8-10	Page 7-1	The text states that remedy "exceeded clean-up goals for the Resident Subsistence Farmer; as the manganese CUG for the National Guard Trainee is more stringent than the Residential Farmer." The CUG value for Residential Subsistence Farmer has been omitted.	Please add the CUG value for the Resident Subsistence Farmer to the text.	Agree. Text revised as follows: "However, this selected remedy also removed chemical contaminants in soil that exceeded clean- up goals for the Resident Subsistence Farmer; as the manganese CUG for the National Guard Trainee is more stringent than the Resident Subsistence Farmer (2,900 mg/kg)."
O-7	Appendix A-3	N/A	The letter from the USACE Pittsburg Branch Chief Scott A. Hans is unsigned.	Please provide a signature copy.	Agree. However, in response to comment A-10, SAIC proposes to remove Appendix A-3 from the Remedial Action Report. When the requirements of the permit are met and the Compliance Certification Form is signed, SAIC will ensure that a signed version of the letter is submitted to the Admin Record.
O-8	Appendix B Laboratory Analytical Results	Appendix B	This appendix contains no SAIC Chain of Custodies or Laboratory summary of analytical results.	Please provide Laboratory Chain of Custodies and the Laboratory summary of analytical results.	Agree. The Chains of Custody will be put in Appendix B. Clarification. A summary of the laboratory results are included in Appendix C: Data Quality Control

Summary Report.

Page 2 of 9

February 17, 2010

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response
			USAC	CE (Thomas Chanda)	
A-1	Page i. TOC	тос	Sections 4.3.2.1 thru 4.3.2.6 (Pages 4.2 thru 4.5) not listed in TOC. This comment of absence within the TOC of the four-digit numbered section has been referenced a number of times in past document reviews. The document preparer needs to correctly autolink (or by manual entry) between TOC and the main document's 4-numbered section.	Following Format Guidelines please insert the missing sections	Agree. A check will be performed to ensure that all section headers are included in the table of contents.
A-2	Page iii TOC	List of Figures	Missing Fig. 2-3 – Page 2-9		Agree. Figure 2-3 will be added to the table of contents.
A-3	Page 1-1	Page 1-1		To be consistent with TOC and Page 7-1, use plural form, "Conclusions" versus what is listed Line 40	Agree. Line 40 on Page 1-1 will replace "Conclusion" with "Conclusions".
A-4	Page 2-9	TOC	Reference Comment 2.		Agree. Figure 2-3 will be added to the table of contents.
A-5	Page 4-2	Page 4-2	"Both MI sample areas had concentrations exceeding the CUGs and"	For the benefit of the reader, it would be prudent to annotate what specific chemical concentrations are exceeding the CUGs	Agree. Text revised as follows: "1) Both MI sample areas had concentrations exceeding the CUG (FBQ-200M=23,600 mg/kg and FBQ-201M=30,500 mg/kg) and the estimated volume for sediment removal was assumed to be accurate;"

Page 3 of 9

February 17, 2010

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response
A-6	Page 5-1	Page 5-1	There is no mention of the sawdust/absorbent material originating from the project site	For better clarification and not mislead readers, it should be noted the sawdust/absorbent originated from on- site tree and brush clearing.	Clarification. The sawdust was obtained from an off-site source. Text revised as follows: "Consequently, 25 tons of inert absorbent material (sawdust generated from untreated lumber) was obtained from an off-site source and used to mix with the dry sediment to ensure excavated material would not release liquid while in transport and would pass the disposal facilities' paint filter test."
A-7	Page 5-2	Page 5-3	It's just seems with the redundancy of "remedial" the sentence projects an off-kilter train of thought.	Personal preference; it would seem better to say "the remedial activities discussed in the following sections achieved the prescribed CUGs".	Agree. Text revised as follows: "The confirmation sample results provided data to confirm the remedial activities discussed in the following sections attained the remedial action CUG s ."
A-8	Page 5-1	Fig. 5-1		In future drawings/figures/illustrations, it would be more beneficial to the reader as a matter of convenience, pertinent to folded sheets the Figure Number were listed on the left side within the Legend/Title Block Area	Clarification. The Legend/Title Block is on the right side of the figure. This is consistent with SAIC documents that the legend is either on the bottom or the right of the figure (dependent upon the space and orientation needed to present a given figure). We generally do not put the document title in the title block, as this can create issues with document production efficiency. If the figure needs to be re-named or re-numbered at the last minute during document production, the change can be quickly made in MS Word. If it is in the title block, a change will need to be made in CAD. No text change proposed.

Page 4 of 9

February 17, 2010

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response
A-9	Appendix A	N/A	There is no signature (Scott A. Hans) on the USACE Letter. Did SAIC receive a signed letter?	For reasons to preclude outside questioning in the validity of authorization documents within the Administrative Record; it would be more official if this were a signed Notification Letter. Is it possible, SAIC can obtain a signed document?	Agree. However, in response to comment A-10, SAIC proposes to remove Appendix A-3 from the Remedial Action Report. When the requirements of the permit are met and the Compliance Certification Form is signed, SAIC will ensure that a signed version of the letter is submitted to the Admin Record.
A-10	Appendix A	N/A	The enclosure titled: – "Compliance Certification Form" is not signed. At the time this form is officially entered into the Administrative Record will it contain the necessary signature (plus, the appropriate dated cover-letter by the respective signee.	The reviewer acknowledges there may be some reluctance from the author being that final seeding is not complete but, if so, then there needs to be some note of justification as for no signature on the form. It would seem feasible to speak with the USACE Pitts. POC to see if the signed form submittal would be acceptable in advance of final seeding. If not, then the official RA Closure Report will not be placed in Admin Record until such time the form is signed.	Agree. To rectify, SAIC proposes to remove the USACE-Pittsburgh letter in Appendix A-3 from this Remedial Action Report. Once the requirements of the permit are met, SAIC will ensure that the Compliance Certification Form is signed, submitted to USACE-Pittsburgh, and submitted to the Admin Record under a different cover.
A-11	Appendix B Table B-3	Appendix B Table B-3	There are several lab qualifier codes listed that are not identified within Appendix C (Data QC Summary Report – FBQ 2009) – Page C-5. Missing codes: B; BJ; UG; JG; Further, there is no legend at the end of the lab report to explain any of the codes	Please respond and correct accordingly	Agree. A footnote will be added to the end of the tables defining the lab qualifiers.

Page 5 of 9

Page 6 of 9

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response
A-12	Appendix C Page C-5	Appendix C		Reference Comment #11 above	Comment noted. These definitions will be used to define the lab qualifiers, as specified in response to Comment A-11.
A-13	Appendix E	NA	NHW Manifest: Columns 10, 11, 12 & Blocks 14, 15, 16 are illegible.	Please replace with legible copy	Clarification. These manifests are written on multi- ply paper, given to the truck driver, signed at the landfill, and scanned and re-sent to SAIC. This string of events reduces the quality of some of the manifests. Unfortunately, this is the best quality we can re-produce for this manifest. No text change proposed.
A-14	Appendix E	NA	Presuming the illegible manifest #373013 is reporting disposal of 20 tons at the landfill facility – All 10 manifests cumulatively report 200 tons of material transported off-site. Within the main RA closure report on Page 5-1 Line 8 it reports that "209 Tons was transported and disposed"	Please address the discrepancy; there needs to be an accounting of the missing 9 Tons (18,000 lbs.) of disposed material. Is there a disposal manifest missing?	Clarification. The tonnages presented on the waste manifests were field estimates. The actual weights reported by the landfill scales are presented on the Manifest Log at the beginning of Appendix E. Please note the footnote at the bottom of the Manifest Log stating "Note that the quantities entered on the manifest were weights estimated in the field. Quantities in this table are actual weights, as measured at the receiving facility." No text change proposed.

February 17, 2010

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response	
Camp Ravenna (Katie Elgin)						
CR-1	Pg 1-2, Line 3 and 4	Pg 1-2	"USFWS Approval" and "OHPO Approval". Please change 'Approval' to 'Concurrence Letter'. USFWS and OHPO do not actually provide an 'approval' of the project. We consult with them on projects and they provide their concurrence. Please also change this throughout the report where applicable.		Agree. "Approval" is changed to "Concurrence Letter" when referencing the USFWS and OHPO letters.	
CR-2	Pg 4-2, Line 33	Pg 4-2	"The drainage ditch requiring removal under this RD was not included in the FBQ Proposed New MRS Footprint Boundary in the Site Inspection Report for Munitions Response Sites under the MMRP." The MRS footprint in not proposed. The footprint was established in the SI.	Suggested text revision: "The drainage ditch requiring removal under this RD is not within the FBQ MRS footprint. The FBQ MRS is located east of the site."	Agree. Text revised as follows: "The drainage ditch requiring removal under this RD is not within the FBQ MRS Footprint Boundary in the Site Inspection Report for Munitions Response Sites under the Military Munitions Response Program (E2M 2008). The FBQ MRS is located east of the site."	

Page 7 of 9

Page 8 of 9

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response
CR-3	Pg 7-1, Line 25	Pg 7-1	"The US Army intends to transfer FBQ to the NGB once remedial actions are complete. The NGB will subsequently license the land to the OHARNG for military training use. OHARNG has established future land use (mounted training, no digging) for FBQ based on anticipated training mission and utilization of Camp Ravenna. This land use includes operation of wheeled and tracked vehicles." The area where the RD was completed is OHARNG property. The property east of the access road is still BRAC property. Additionally, future use at FBQ will include both dismounted and mounted training (especially now that the site was cleaned up to residential use). Recommend deleting this statement overall as it is incorrect and is really not needed in the conclusions section.		Agree. The sentences starting on Page 7-1, line 25 thru 29 will be deleted.

Page 9 of 9

Comment Number	Page or Sheet & Line No.	New Page or Sheet	Comment	Recommendation	Response
CR-4	Pg 7-1	Pg 7-1	"Land use controls to address any other media (surface water, wet sediment, and groundwater) or regarding MEC may be required and will be implemented by the US Army and OHARNG under the Military Munitions Response Program (MMRP)." Here, you are indicating that LUCs will be used to address other media (surface water, wet sediment, and groundwater) at this site. This is not correct. This statement needs revised. Suggested revised text: "Other media (surface water, wet sediment, and groundwater) and MEC will be addressed as part of future actions."		Agree. Text revised as recommended.