

**Ohio Environmental Protection Agency (OEPA)**

**And**

**Ravenna Army Ammunition Plant (RVAAP)**

**2000 Correspondences**



State of Ohio Environmental Protection Agency  
Northeast District Office

TO	4/12/00
1	CE COR
1	ENV
	LAND MGR
	CONTRACTOR
	RETURN FOR FILE

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

January 10, 2000

Re: Ground Water Monitoring  
**Ramsdell Landfill**  
Ravenna Army Ammunition Plant

Stan Levenger, Site Manager  
R&R International, Inc.  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266

Dear Mr. Levenger:

The Ohio Environmental Protection Agency (Ohio EPA) has completed a review of your December 14, 1999, letter concerning ground water sampling at the Ramsdell Quarry Landfill (RQL). RQL is regulated by OAC 3745-27, effective 1990. RQL has not yet completed the collection of four quarters of background ground water quality in the new wells as planned. The facility was scheduled to conduct the first non-background semiannual sampling event for the new wells in December 1999. That data would be the first to be statistically evaluated.

RQL proposed to collect the fourth quarter of background samples in December 1999, and the first non-background semiannual samples in June 2000. The army is concerned that the proposal may create some compliance issues.

On December 14, 1999, Mr. Stan Levenger, Site Manager, R & R International Group, Inc., was contacted by Eric Adams, of the Ohio EPA Division of Drinking and Ground Waters regarding the December 14, 1999, letter. The following recommendations were offered by Ohio EPA.

1. Compliance with OAC Rule 3745-27-10 will be maintained if the facility:
  - a. collects the fourth quarter of background ground water quality samples in December 1999; and
  - b. conducts the first non-background semiannual sampling in February 2000.

This will maintain compliance with OAC 3745-27-10 and ensure the collection of independent samples.

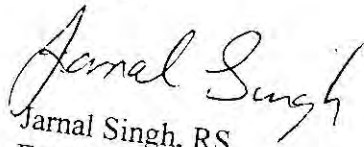




Stan Levenger, Site Manager  
R&R International, Inc.  
January 10, 2000  
Page 2

If you have any technical questions regarding this review, please contact either Eric Adams at 330-963-1185 or myself at (330) 963-1276. Please submit all correspondence to Jarnal Singh, Division of Solid and Infectious Waste Management, Northeast District Office, Ohio EPA, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Sincerely



Jarnal Singh, RS  
Environmental Specialist  
Division of Solid and Infectious  
Waste Management

JS:cl

pc: Kurt Princic, DSIWM-NEDO  
Virginia Wilson, DSIWM-NEDO  
Eric Adams, DDAGW-NEDO  
Eileen Mohr, Site Coordinator, DERR-NEDO  
Greg Orr, DHWM-NEDO  
Duwayne Porter, Portage Co. HD  
Mark Patterson, IOC-RVAAP  
John Jent, U.S. Army Corps of Engineers  
File: [LAND/Ramsdell/GRO/67]



State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

February 25, 2000

RE: GROUND WATER INVESTIGATION  
RAMSDELL QUARRY LANDFILL  
RAVENNA ARMY AMMUNITION PLANT

U.S. Army Corps of Engineers  
600 Martin Luther King Place  
P.O. Box 59  
Attn.: CEORL-ED-GS  
Louisville, KY 40201-0059

Attn.: Mr. John Jent P.E.

Dear Mr. Jent:

The Ohio Environmental Protection Agency (Ohio EPA) Northeast District Office (NEDO) has completed a review of the Final Report on the Ground Water Investigation (FRGWI) dated October 15, 1999 for the Ramsdell Quarry Landfill (RQL). This report was submitted to Ohio EPA on October 18, 1999. The Ground water investigation was performed to adhere to Ohio EPA approved work plans. The work plans were designed to comply with 1990 Revision to Ohio Administrative Code (OAC) Rule 3745-27-06(C)(2). The following issues were noted upon review of this report and require your attention:

**Compliance Issues**

1. As indicated in comment #7 below, RQL has not conducted statistical analysis as required by OAC Rule 3745-27-10(D)(4). However, RQL stated, "Results of the sampling of the new Ground water monitoring network show that Ground water quality impacts have occurred due to explosives, metals, and VOCs."

Ohio EPA recommends that RQL develop and implement a Ground Water Quality Assessment Program Plan in accordance with OAC Rule 3745-27-10(E), as indicated in comments #1 and #7 below.

2. RQL indicated that due to seasonal ground water flow reversals, upgradient ground water monitoring well MW-06 has been adversely impacted by historical operations at the facility. Therefore, the ground water monitoring program does not comply with OAC Rule 3745-27-10(B)(1)(a), as indicated in comments #1 and #8 below.

RQL should install an additional upgradient ground water monitoring well that has not been affected by historical operations at the facility and complies with OAC Rule 3745-27-10(B)(1)(a).





State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

March 1, 2000

Re: Ground Water Monitoring  
Ramsdell Landfill  
Ravenna Army Ammunition Plant

U.S. Army Corps of Engineers  
600 Martin Luther King Place  
P.O. Box 59  
Attn.: CEORL-ED-GS  
Louisville, KY 40201-0059

Attn.: Mr. John Jent P.E.

Dear Mr. Jent:

The Ohio Environmental Protection Agency (Ohio EPA) has completed a review of the October 1999 and December 1999 Monthly Progress Reports for the Ramsdell Quarry Landfill. The October report, dated November 17, 1999, was received by Ohio EPA on November 22, 1999. The December 1999 report, dated January 3, 2000, was received by Ohio EPA on January 7, 2000. Ground water at this site is being monitored under the 1990 municipal waste rules OAC Rule 3745-27-10. These monthly progress reports are supplied to the Army by its contractor SAIC and summarize the activities that have been completed during the previous month. Upon review of these reports, Ohio EPA has the following comments:

#### COMPLIANCE ISSUES

No compliance issues were identified in either of the October 1999 or December 1999 Monthly Progress Reports.

#### COMMENTS

No ground water issues were contained in either of the October 1999 or December 1999 Monthly Progress Reports.

If you have any technical questions regarding this review, please contact Jeffrey Rizzo at (330) 963-1115. Please submit all correspondence to Jarnal Singh, Ohio EPA, Northeast District Office, Division of Solid and Infectious Waste Management, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Sincerely,

Jarnal Singh, RS  
Environmental Specialist  
Division of Solid and Infectious  
Waste Management

JS:cl

pc: Kurt Princic, DSIWM-NEDO  
Virginia Wilson, DSIWM-NEDO  
Jeffery Rizzo, DDAGW-NEDO  
Eileen Mohr, Site Coordinator, DERR-NEDO

Steven Uecke, Portage Co. HD  
Mark Patterson, IOC-RVAAP  
File: [LAND/Ramsdell/GRO/67]



**From:** Eileen Mohr  
**To:** dschnabel@cdpr.ca.gov  
**Date:** 4/14/00 1:45PM  
**Subject:** Product: Rodeo Aquatic Herbicide

Duane:

Greetings! I am currently working on an arsenal clean-up project for Ohio EPA. Although the installation is inactive, they are looking at the possibility of utilizing Rodeo for treating phragmites on several portions of the installation.

I have checked various data bases but have been unable to find out any information regarding the half-life of this herbicide, degradation products etc.

If you have any information regarding Rodeo (specifically the above issues)... I would appreciate your assistance.

Thanks.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

**From:** "Duane Schnabel" <dschnabel@cdpr.ca.gov>  
**To:** <eileen.mohr@epa.state.oh.us>  
**Date:** 4/19/00 7:19AM  
**Subject:** Re: Product: Rodeo Aquatic Herbicide

Glyphosate binds very firmly with soils and no transfer to ground water is expected.

Glyphosate is metabolized in soil by microorganisms to carbon dioxide and aminomethylphosphonic acid the major metabolite. The end product for the parent compound and the metabolite is carbon dioxide.

Half life in most soil types (silty clay, sandy loam, silt loam) and either under aerobic or anaerobic conditions is approx 50 days. The metabolite is further degraded by soil microorganisms at a slower rate approx 70 days.



**From:** Eileen Mohr  
**To:** Mark, Patterson,; morgant@ioc.army.mil  
**Date:** 4/21/00 12:52PM  
**Subject:** Rodeo Usage at RVAAP

Tim

I reviewed the information that you gave to me on April 11, 2000 regarding the areas of the RVAAP that are scheduled in August for treatment of phragmites by using Rodeo Aquatic Herbicide. Four of the locations are in identified Areas of Concern (AOCs).

In addition to the information that you gave to me, I pulled information off the internet regarding Rodeo, and this information was copied for your usage at the RVAAP on April 20, 2000.

I contacted a person via email who is a specialist in the pesticide registration branch of the California EPA. His return email to me supported the other documentation that I retrieved off the internet. Specifically, that Rodeo consists of 46.2% inert ingredients and 53.8% glyphosphate (the active ingredient). Glyphosphate binds very firmly to soils, and transfer to groundwater is not expected. Glyphosphate is metabolized in soil to carbon dioxide and aminomethylphosphonic acid. The end product for the parent compound and the metabolite is carbon dioxide. The half-life of rodeo varies, but in many soil types (silty clay, sandy loam, silty loam) is around 50 days. In addition, other information indicates that glyphosphate does not accumulate in soils or the environment after repeated applications, and does not bioaccumulate in the food chain. Rodeo has been utilized in Chesapeake Bay for the control of phragmites. In 1991, the USEPA placed glyphosphate in Category E (evidence of non-carcinogenicity for humans).

Based upon the reviewed information, I do not believe that the usage of Rodeo in accordance with the application instructions/precautions in the specified areas will have an adverse effect upon the environmental investigations that are occurring at the RVAAP installation.

I have copied Jarnal Singh (Ohio EPA NEDO DSIWM) on this email, as the Ramsdell Quarry Landfill falls under his, and the Portage County Health Department's jurisdiction, and I do not know whether those programs have any specified prohibitions regarding herbicide usage at landfills. If I receive any information on that matter, I will forward it to your attention.

Please call me at 330-963-1221 if you have any questions.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

**CC:** Singh, Jarnal

**Mail Envelope Properties** (3900874C.CE7 : 5 : 52863)

**Subject:** Rodeo Usage at RVAAP  
**Creation Date:** 4/21/00 12:52PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
epa.state.oh.us		
NEDO.Central-Office	Delivered	04/21/00 12:52PM
Emohr BC (Eileen Mohr)	Opened	04/21/00 12:52PM
Jsingh CC (Jarnal Singh)		

ioc.army.mil	Transferred	04/21/00 12:52PM
morgant ( <u>morgant@ioc.army.mil</u> )		
pattersonm (Patterson, Mark)		

Post Office	Delivered	Route
NEDO.Central-Office	04/21/00 12:52PM	epa.state.oh.us ioc.army.mil

Files	Size	Date & Time
MESSAGE	3582	04/21/00 12:52PM

**Options**

**Auto Delete:** No  
**Expiration Date:** None  
**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**To Be Delivered:** Immediate  
**Status Tracking:** Delivered & Opened



RTLS/RVAAP Phragmites Locations				
Number	Location	Approx. Dimensions	Square Feet	Acreage
1	O/S Fence S of Rt. 5	70' x 20'	1,400	0.0321
2	LL#2, Bldg. 802 west side	40' x 15'	600	0.0138
3	O/S Fence N Rt 5 @ bridge	60' x 25'	1,500	0.0344
4	I/S Fence Post 19 @ woods	20' x 20'	400	0.0092
5	S Ore Pile Rd. 3 patches	15', 15', 30' x 20'	950	0.0218
6	E side of Class. Yard	80' x 5'	400	0.0092
7	Fuel Tanks @ Class Yard	75' x 50'	3,750	0.0861
8	O/S Fence RR Spur Post 15	70' x 15'	1,050	0.0241
9	NW Corner Erie BG	75' x 80'	6,000	0.1377
10	O/S Fence S of RR	125' x 50'	6,250	0.1435
11	O/S Fence in Wetland	25' circle	490	0.0112
12	O/S Fence N Grp. 7	180' x 30'	5,400	0.1240
13	O/S NF Rd. Hinkley Creek	80' x 50'	4,000	0.0918
14	O/S on 534 N of Creek	20' x 10'	200	0.0046
15	Area C McKibben Rd.	10' x 5'	50	0.0011
16	Bldg 1030 W Parking Lot	20' x 10'	200	0.0046
17	N WWIII Pond S dike	5' x 10'	50	0.0011
18	LL#8 N Side Main Access Rd.	150' x 20'	3,000	0.0689
19	F&Booster Spur by LL#7	20' x 10'	200	0.0046
20	F&Booster Spur by LL#7	5' circle	20	0.0005
21	Pad E of Slagle Rd.	10' circle	80	0.0018
22	SW Corner McCormick/Rt 80	35' x 10'	350	0.0080
23	N of Perimeter Rd @ Vair Steel	30' x 20'	600	0.0138
24	Bundling Rd Pond 2 Patches	30' x 20'	600	0.0138
25	Bundling Rd @ RR & NF Rd.	30' x 5'	150	0.0034
26	McCormick/W Class Yard Rd.	20' x 10'	200	0.0046
27	N most platform D-Block	20' x 5'	100	0.0023
28	Rt 80 Trout Pond	50' x 20'	1,000	0.0230
29	Grp 6 S of S Service Rd in brush	15' circle	180	0.0041
30	Ramsdell Quarry	Throughout	22,000	0.5051
Total			61,170	1.4043

Eileen,

Phragmites location scheduled for Rodeo treatment  
This August. Attached are 1.) label + 2.) MSDS for Rodeo

Received  
April 11, 2000

**DUANE SCHNABEL**

Telephone: (916) 445-4407  
Program/Branch: PESTICIDE REGISTRATION  
Location: LL17 66  
E-mail: dschnabel@cdpr.ca.gov

**From:** "Morgan, Timothy" <MorganT@osc.army.mil>  
**To:** 'Eileen Mohr' <eileen.mohr@epa.state.oh.us>  
**Date:** 4/24/00 7:51AM  
**Subject:** RE: Rodeo Usage at RVAAP

Eileen,

Thank you for your time on this. I have a copy of the information you pulled down off the web. It confirms what I know about Rodeo - that it is a very environmentally friendly herbicide. I have sent the scope of work down to CPT Daugherty in Columbus so he can put it out for bids. The treatment is not scheduled until August of this year with a touch-up treatment in August of 2001. We can modify the contract at any time if you, Mark or anyone else receives information that would exclude any of the designated treatment locations. It is my goal to get the best possible control of phragmites by treating every known population. I do not want to leave any seed banks. Even so, the IRP work comes first.

Tim

-----Original Message-----

**From:** Eileen Mohr [mailto:eileen.mohr@epa.state.oh.us]  
**Sent:** Friday, April 21, 2000 12:52 PM  
**To:** morganT@ioc.army.mil; pattersonm@ioc.army.mil  
**Cc:** Jarnal Singh  
**Subject:** Rodeo Usage at RVAAP

Tim

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Based upon the reviewed information, I do not believe that the usage of Rodeo in accordance with the application instructions/precautions in the specified areas will have an adverse effect upon the environmental investigations that are occurring at the RVAAP installation.

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Please call me at 330-963-1221 if you have any questions.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

CC: 'CPT Daugherty' <DaughertyT@OH-ARNG.ngb.army.mil>, "Patterson, Mark" <PattersonM@osc.army.mil>, "Morgan, Timothy" <MorganT@osc.army.mil>

**RVAAP/OEPA MEETING**

**March 1, 2000**

**10:00 AM**

**Regarding the  
Draft – Final Report on the Groundwater Investigation  
of the Ramsdell Quarry Landfill 10/99.**

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**Agenda**

1. Purpose - M. Patterson/E. Neal
2. History of Groundwater Evaluation Activities at RVAAP – J. Jent/K. Dominic
  - MW – 006 Upgradient Well
3. Constituents Measured and Observations made in the Investigation Report –  
D. Brancato
4. Discussion of the word “Impact” in the Draft report and Issues of Statistical  
Evaluation - S. Levenger
5. Future Groundwater Activities
6. OEPA letter of 2/25/00 to RVAAP – E. Neal

# SIGN-IN SHEET

## RVAAP/OEPA MEETING

March 1, 2000

10:00 AM

Regarding the  
Draft - Final Report on the Groundwater Investigation  
of the Ramsdell Quarry Landfill - 10/99

NAME	COMPANY/ORG	PHONE
PAUL ZORKO	USACE LRL	502-582-5572
David Brancato	USACE LRL	502-582-6765
Cliff R. Justice	OHIO EPA / DERR	330-963-1148
Eileen Mohr	OHIO EPA / DERR	330-963-1221
Nina Miller	RAB	330-872-7231
Rick Callahan	MKM ENGINEERS	330-358-1716
JOHN LENT	CORPS OF ENGRS / LOUISVILLE	502-582-6373
Jeff Rizz	OHIO EPA	330-963-1115
Jarnal Singh	Ohio EPA / DSIWM	330 963 1276
Steve Uecker	PCHD	330 296 9919
Mark Patterson	RVAAP	330 358-7311
Stan Levenson	MKM	330-358-2920
ERIN NEAL	NES / MKM	614-224-5333
Steven Love	Ohio EPA	330 963 1102
Bob Principio	Ohio EPA	330-963-1230

Nina Miller  
Eileen Mohr  
Todd Fisher  
David Briancato  
Paul Zorcco  
Rick Callahan  
Ernie Neal  
John Jent  
Jarnal Singh  
Stan Levenger  
Jeff Rizzo, EPA  
Steve Ucke (Portage county health department)  
Mark Patterson  
BOB Princic  
Steve Love

EN: purpose of the Meeting

MP: Ramsdell Quarry landfill visit scheduled after the blow of the stacks.

EN: January 20<sup>th</sup> memo issues flagged by EPA non compliance. 1. related to groundwater detection monitoring program. Statistical analysis 2. Ground 2710B1, groundwater monitoring. The report was regarding investigation

JJ: history of groundwater monitoring program. The quarry was used as a source of gravel. In the 40s explosives residue was burned in the bottom of the quarry, Napan bombs exploded in the 50s. In the 70s, they removed as much of the debris that they could. In the late 70 and the 80s was used as a sanitary landfill. It was closed in 1989 or 90. There were 5 wells installed in 1987. One upgradient well and 4 down gradient wells. Problem was the elevation were copied from the plan and were not correct. That made all of the groundwater plots incorrect. When we went back we found that the groundwater flow was to the NE. However, during that time period during the bad readings. Water began to pond in the quarry. When the results were plotted, the wells

gw results  
were consistent. From 1996 on the wells were not consistent, the wells had become fouled, in response to that Bill Ingold from IOC funded 6 new groundwater wells.

EN: when it was decided for the location of the new wells it was done in conjunction with the EPA

Eileen: the agency does not pick the spot, locations are suggested then there is discussion.

JJ: The study that was done had two principle purposes: one to install new wells for regulatory purposes and cercle wells for the historic contamination. (RCRA and CERCLA). Combination report. Added parameters to encompass the RCRA. In the past when the geologists bored the wells, and took semi-annual and quaterly samplings. We wanted to find out the relationship bw the water levels of the pond and the level of the wells adjacent to it. The monitoring was going to take 6 quarters. One high water event and one low water event. 4 others.

EN: Kevin Jago and Kathy Dominic. Joined form SIS.

SL 1-5 old wells, 6-11 are new wells. Statiscs were run on the old wells for quality.

SL: background will be used from quarterly results form the old well for the new wells.

DB: What measurement tools will we use to see if there is an event occuring.

Preliminary remediation goals. Presented Summary of metals detected in Ramsdell

Quarry Pond Surface Water Compared to Background. Detected 4 metals and something else that shows an event above a PRG. This should tell kkyou to move with additional characterization. As we move forward we can tell if we are exhibiting trends. Trigger and action levels with report from Eileen. We ;havve a detect but we are not sure if they are consistent with background. Below levels set by EPA. We are below criterion values



that act as trigger values. Even those these detects are occurring in the upgradient wells I don't give much credence to them, because we are unsure if they are consistent, or if they are related to the total groundwater picture, or if there is a source that occurs. My assessment it is too early to tell. Not indicative of an impact because we are below criterion for trigger levels. Primary purpose to protect groundwater and that current water location is greatly removed from any water of a potable source. Further analysis will tell us if we need to continue to monitor.

KJ: Not based on statistical analysis, the data provided at Diane's request to be used as baseline data.

EN: Assessment. Needs to be put on hold because calling for assessment on the report is not appropriate.

JR: Issue of Monitoring well 6, has explosives in it. We are not sure why. The upgradient wells are not showing explosives (III). Monitoring well 6 has either been impacted by the facility by one degree or another. Because you have man made materials showing up in the wells. I don't know where the contamination is coming from. The down gradient well that have explosives in it will trigger, as far as the EPA is concerned. Statistically you will have to trigger, if you don't you will need to change methods until you do. At this point then you would be assessed. This process a year or year and a half from today. I can't say that the metals are from the landfill. What we are trying to do is skip the procedures by saying that hey we have a problem, see what it is and then perform assessment.

EN: an assessment is a serious and costly issue. Assessment is not any good unless you have groundwater monitoring system. Jumping from a report for suitability to statisticals. Upgradient wells are an issue but I don't think that it is fair.

JR: citation was to the groundwater monitoring well.

DB: with the monitoring that has been taken to this level. The lab has looked at them all and reported them as J. Relevancy needs to be showed.

EN: We need to stick with the process. Don't want to jump from here to assessment. There is a problem on well six.

JR: don't want to see another 2 years or more in monitoring when we could be doing assessment monitoring. Enough time/effort has been spent. There are explosives in the water. No further need to keep testing for detection when we know that there is contamination. Let's skip all of that and go to assessment monitoring. To save time and money.

EN: The rules state that you must find some significant levels before moving into the assessment phase/monitoring. Let's continue to monitor until we know for sure that there is indeed a problem, that needs assessment monitoring.

We have done monitoring in the new generations wells, we might find that you are right, but then again should we jump the gun.

MP: Working with Diane, the work done by SAIC, we would continue to monitor until we knew the impact, review statistics, then put in place a plan of approach.

JR: The rules can be followed. When the results come in we can do it according to the rules, but more money will be spent, and assessment will be inevitable.

MP: We need to see the diff over time between the up and down gradient wells. There might be something coming from LL1 we are not sure of the source of contamination.

EN: I would like to proceed thru discussion and then sit down and discuss the results, the impact, and what should be done. Actual discussions, not manuals.

JJ: Can we use well #6 for RCRA testing, seeing as Ramsdell quarry is so far away, and so much testing is being done on LL#1.

JR: If we have any hits in the upgradient wells there won't be any statistical relevance.

EN: if there is contamination from LL1 that is a different project. If it is from the landfill again that would be a different project.

JJ: well 4 always had contamination

JR:

EN: write letter back to you with; regards to discussion and meeting. We will have info back with regards to 4<sup>th</sup> quarterly sampling. We will discuss the stats, cercla letter, etc. set up another meeting. Decision to go thru the monitoring, historic agency discussions with the corps. We will go from there.

JR: don't want to see solid waste management stalled while we are waiting on data.

Next issues on the letter from the OhioEPA to the Corps of Engineers.

Compliance Issues:

3. have to get information back in order to make that determination.

5.a. We are all in agreement that the wells are all one system so this comment is not pertinent to the discussion.

5b.

6. was report submitted for April. Well that was found. So that comment is null and void.

9. temperature that exceed r degrees. Samples were shipped by courier. EN stated that they would like time to explain that thoroughly. Again he mentioned discussion bw agencies.

So then we make comments, discuss them baetween ourselves, send copy to the agency , then we sit ;down and; have a meeting with regards to the comments.

Comments needed in two weeks.

10. validation qualifiers were included. And we will make and editorial fix, by putting footnotes on the proposal. Placement of qulifiers should be lplaced up front a page with a table with a list of the qualifiers.

11. Illegible of the logs: Please darken Appendix E.

12. Micropurge. Please include dark, legable reports.

Summary will be conductd, inform clients of what is happening

# SIGN-IN SHEET

RVAAP/OEPA MEETING

March 1, 2000

10:00 AM

Regarding the  
Draft - Final Report on the Groundwater Investigation  
of the Ramsdell Quarry Landfill - 10/99

NAME	COMPANY/ORG	PHONE
PAUL ZORKO	USACE LRL	502-582-5572
David Brancato	USACE LRL	502-582-6765
Chad R. Justice	OHIO EPA / DERR	330-963-1148
Eileen Mohr	OHIO EPA / DERR	330-963-1221
Nina Miller	RAB	330-872-7231
Rick Callahan	MKM ENGINEERS	330-358-1716
JOHN JENT	CORPS OF ENGRS / LOUISIANA	502-582-6373
JEFF RIZZI	OHIO EPA	330-963-1115
Jarnal Singh	Ohio EPA / DSIWM	330 963 1276
Steve Uecker	PCHD	330 296 9919
Mark Patterson	RVAAP	330 358-7311
Stan Levenson	MKM	330-358-2920
ERINIE NEAL	NES / MKM	614-224-5833
Steven Love	Ohio EPA	330 963 1102
Bob Principio	Ohio EPA	330-963-1230





**R&R INTERNATIONAL, INC.**

Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266  
Tel. (330) 358-3005  
Fax (330) 358-2021

**May 10, 2000**

THRU: Contracting Officer's Representative  
Ravenna army Ammunition Plant  
8451 State Route 5  
Ravenna, Ohio 44266-9297

TO: Ohio Environmental Protection Agency  
Northeast District Office  
2110 E. Aurora Road  
Twinsburg, OH 44087  
ATTN: Jarnal Singh, DSIWM

Reference: February, 2000 Groundwater Sampling Event Results, **RVAAP Ramsdell Landfill**

Dear Mr. Singh:

Attached please find the groundwater monitoring information for the February, 2000 sampling event at the RVAAP Ramsdell Landfill. In accordance with your letter of January 10, 2000, this sampling event represents the final quarter of background groundwater quality samples for wells 006 through 011.

Please feel free to contact the undersigned with any questions or comments regarding this information.

Respectfully,  
R&R INTERNATIONAL, INC.

J.D McGee,  
Site Manager

cc: Environmental File

**Response and Reliability - Engineering our Environment**

ABERDEEN, MD  
(410) 272-1001/1002

COLUMBUS, OH  
(614) 751-5344

DENVER, CO  
(303) 322-1511

PITTSBURGH, PA  
(412) 257-2101



**R&R INTERNATIONAL, INC.**

Ravenna Army Ammunition Plant

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## **Ramsdell Landfill**

### **February 2000 Groundwater Sampling Event**

#### **1.0 Introduction**

The following report summarizes the fourth quarter of background groundwater quality sampling event for the Ramsdell Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. The sampling event was conducted on February 23, 2000. All sampling and analysis was performed in accordance with the Revised Ramsdell Quarry Groundwater Monitoring Plan, March 1995.

#### **2.0 Description of Groundwater Flow System**

##### Physiography

Ravenna Army Ammunition Plant (RVAAP) lies within the glaciated Allegheny Plateau section of the Appalachian Plateau Province. Topography within the installation consists of gently rolling hills to moderately level terrain.

All of RVAAP is situated within the Ohio River Basin. The West Branch of the Mahoning River is the major surface stream in the area. This river flows in a southerly direction past the west end of the installation where it turns to the east and flows into the M.J. Kirwan Reservoir. From the reservoir, the west branch continues to flow in an easterly direction along the installation's southern boundary until joining the Mahoning River east of the installation. Three primary watercourses drain the installation: Sand Creek, Eagle Creek, and Hinckley Creek. Sand Creek flows in an easterly to northeasterly direction through the central portion of the installation to its confluence with the South Fork of Eagle Creek. The South Fork of Eagle Creek flows along the inside of the northern boundary of RVAAP. Hinckley Creek originates about 2 miles north of RVAAP and flows through the western portion of the installation in a southerly direction.

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## Geology

The glacially deposited surface material of RVAAP consists of glacial till and sand and gravel. Till thickness ranges from less than 3 feet in some locations to a maximum thickness of about 45 feet. Bedrock formations underlying the glacial deposits consist of consolidated sediments of the Carboniferous Age. These sediments dip gently to the southeast. Mississippian Age shales and sandstones of the Cuyahoga Group are the oldest formation to outcrop within the installation boundary. Most of the installation is underlain by Pennsylvanian Age conglomerates, shales, and sandstones of the Pottsville Formation.

## Hydrogeology and Monitoring Well Systems

The Ramsdell Quarry Landfill is located in an abandoned quarry which was excavated approximately 30 to 40 feet below the surrounding ground surface into the Sharon Member sandstone/conglomerate unit. The Sharon Member is the oldest member of the Pennsylvanian-age Pottsville Formation. Groundwater occurs in the Sharon Member approximately 20 to 25 feet BGS at the site.

The groundwater monitoring system for the Ramsdell Quarry Landfill includes six groundwater monitoring wells installed in July, 1998 (MW-006, MW-007, MW-008, MW-009, MW-010, and MW-011). These wells were installed to replace five existing groundwater monitoring wells (MW-1, MW-2, MW-3, MW-4, and MW-5) that were installed in 1988. The locations of the wells are shown in Figure 1.0. Well number MW-006 is the upgradient well for the site. Groundwater surface elevation contours suggest the groundwater flow at this site is generally to the northeast.

### **3.0 Statistical Analysis of Groundwater Data**

Due to the discontinuation of the GRITS STAT software program, TolTest, Inc. is in the process of developing a Windows 95 based Statistical reporting system. The Statistical Analysis for this sampling event will follow this report as soon as possible.





**R&R INTERNATIONAL, INC.**

Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, OH 44266

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Fax (330) 358-2021

**May 25, 2000**

THRU: Contracting Officer's Representative  
Ravenna army Ammunition Plant  
8451 State Route 5  
Ravenna, Ohio 44266-9297

TO: Ohio Environmental Protection Agency  
Northeast District Office  
2110 E. Aurora Road  
Twinsburg, OH 44087  
ATTN: Jarnal Singh, DSIWM

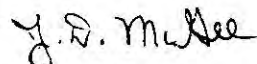
**Reference: February, 2000 Groundwater Sampling Event Results, RVAAP Ramsdell Landfill**

Dear Mr. Singh:

Attached please find the groundwater monitoring Data Validation Report for the February, 2000 sampling event at the RVAAP Ramsdell Landfill that was inadvertently omitted from our submission.

Please feel free to contact the undersigned with any questions or comments regarding this information.

Respectfully,  
R&R INTERNATIONAL, INC.

  
J.D. McGee,  
Site Manager

cc: Environmental File

**Response and Reliability - Engineering our Environment**

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Skip,

Just wanted to provide you with an update and some background information on the NOV RVAAP just received for Ramsdell Quarry Landfill (RQL). Vicki faxed a copy to you this morning.

RQL is an abandoned, sandstone quarry on the east end of the plant. It is approximately 10 acres in size and 18 feet deep at the deepest point. RQL was used from 1946 to 1989. Explosive wastes and napalm bombs were burned in the bottom of the quarry during the time period of 1946 to 1950. In 1973, inert demil material, aluminum chloride, demolition debris, and contaminated soils were placed in RQL. Most of the debris from these activities was removed and hauled to an off-site, permitted landfill. RQL was used as a permitted solid waste landfill from 1978 to 1989 accepting installation trash, demolition debris, and waste from the sewage treatment plant. Semiannual, 30-year groundwater sampling started in 1991. The operating contractor has been responsible since the detection monitoring program started for sampling the wells and reporting the results to Ohio EPA. Toltest is now responsible under section IV part 1.4.3 of the operationing contractor's scope of work.

The NOV was issued for failure to submit the data within the time limits and for not notifying OEPA of statistically significant differences (SSD) in some of the wells for the basic water parameters of pH and specific conductivity. The solid waste regs require resampling of the wells having a SSD, reporting the results to OEPA, and initiating a groundwater quality assessment program if the SSD results are confirmed.

I have been discussing the issue with Bill Ingold today since he funded replacement of the 1991 wells, which failed in 1997. The new wells were put in during the 1998 Corps project to assess whether any contaminants were in the groundwater from the hazardous waste activities at the site. This work was in addition to the semiannual monitoring under solid waste. The study showed very low levels of contaminants including explosives and propellants. We plan to set up a conference call with internal parties on Monday to discuss the issue and determine the measures needed to resolve the NOV. Do you want to take part?

Section IV under part 2 General Requirements, Toltest would be responsible for correcting any violations or deficiencies in regard to inspections. But does it apply in the case of RQL solid waste responsibilities? The operating contractor's scope of work is somewhat vague but I think we need to review other requirements in the environmental section to be sure what we feel will be the limit of their responsibility.

The other major idea I would like to discuss is transferring RQL from the Solid Waste to the CERCLA Program. We believe the site should be under CERCLA because, if there is any environmental risk, it would most likely be from



the hazardous waste activities prior to the Solid waste landfill. There is much less flexibility in resolving a contaminants issue, both in regard to time frames and ultimately remedy, under the Solid Waste rules than CERCLA. Solid Waste has strict requirements on follow-up corrective action (including time limits) when there is a statistically significant hit. This usually requires costly groundwater assessment projects to determine the limit of contamination. There is no "automatic" requirement to proceed with correct action under CERCLA just because there is a significant hit. Rather, a risk assessment is done to see if it poses any adverse health risk. The risk assessor with the Corps has reviewed the 1998 report and strongly feels the low levels would pose no risk considering the distance to the nearest downgradient well (about 1.5 miles). The numbers would have to be crunched to get a final answer.

We have discussed this with both solid waste and CERCLA at OEPA. They have indicated they would be receptive to the change in the regulatory program but we would need to make a formal request. Here's where the problem comes in. Bob Whelove has discussed it with Henry Crain, who would have to approve the transfer to CERCLA. Although the transfer could potentially save much time and money for the Army, Henry is opposed to it because it would require funding to come out of his program. Whelove said he has discussed it with him several times but the answer is no. We can discuss it more on Monday if you are there.

Mark

Statistical Analysis completed on

06/14/2000 16:14

FCID	WELL_ID	PARAMETER	SAMP_DATE	REAL_DATA
67-00-06	RQLMW-06	pH	2/23/2000	6.300
67-00-06	RQLMW-07	pH	2/23/2000	6.500
67-00-06	RQLMW-07	pH	2/23/2000	6.500
67-00-06	RQLMW-08	pH	2/23/2000	6.400
67-00-06	RQLMW-09	pH	2/23/2000	6.400
67-00-06	RQLMW-10	pH	2/23/2000	6.400
67-00-06	RQLMW-11	pH	2/23/2000	6.000
67-00-06	RQLMW-06	pH	2/13/1999	6.200
67-00-06	RQLMW-06	pH	4/10/1999	6.200
67-00-06	RQLMW-06	pH	5/27/1999	6.000
67-00-06	RQLMW-07	pH	2/14/1999	6.700
67-00-06	RQLMW-07	pH	4/11/1999	6.600
67-00-06	RQLMW-07	pH	5/28/1999	6.300
67-00-06	RQLMW-08	pH	2/14/1999	6.500
67-00-06	RQLMW-08	pH	4/11/1999	6.600
67-00-06	RQLMW-08	pH	5/28/1999	6.400
67-00-06	RQLMW-09	pH	2/14/1999	6.100
67-00-06	RQLMW-09	pH	4/11/1999	6.300
67-00-06	RQLMW-09	pH	4/11/1999	6.200
67-00-06	RQLMW-09	pH	5/28/1999	6.300
67-00-06	RQLMW-10	pH	2/14/1999	6.500
67-00-06	RQLMW-10	pH	4/10/1999	6.500
67-00-06	RQLMW-10	pH	5/27/1999	6.400
67-00-06	RQLMW-11	pH	2/13/1999	4.700
67-00-06	RQLMW-11	pH	4/10/1999	4.600
67-00-06	RQLMW-11	pH	5/27/1999	4.400



## SUMMARY OF GROUNDWATER MONITORING RESULTS

## RAMSDELL LANDFILL - MONITORING WELL 011

ANALYTE**, UNITS, METHOD NO.	1998			1999				2000							
Sample Date	7/27/98	9/19/98	10/19/98	2/13/99	4/10/99	5/27/99	12/21/99	2/23/00							
<b>VOCs ug/l: 8260</b>															
Acetone	ND	ND	ND	ND	ND	ND	1.5	ND							
Acrolein	ND	ND	ND	ND	ND	ND	ND	ND							
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	ND							
Benzene	ND	ND	ND	ND	ND	ND	0.24	ND							
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND							
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND							
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND							
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND							
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND							
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND							
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ND	ND							
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND							
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ND	ND							
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND							
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND							
1,1 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND							
1,2 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND							
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
1,2 Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND							
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	ND	ND	ND							
cis-1,3-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND							
trans-1,3-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND							
Ethyl methacrylate	ND	ND	ND	ND	ND	ND	ND	ND							
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND							
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND							
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND							
Methylene chloride	ND	ND	0.74	5	ND	ND	ND	ND							
Methylethylketone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND							
Styrene	ND	ND	ND	ND	ND	ND	ND	ND							
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
Toluene	ND	ND	ND	0.46	ND	ND	0.097	ND							
1,1,1, Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND							
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND							
Vinyl acetate	ND	ND	ND	ND	ND	ND	ND	ND							
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND							
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND							
<b>Explosives ug/l: 8330</b>															
Cyclotetramethylenetetranitramine (HMX)	0.067	ND	ND	ND	ND	ND	ND	ND							
Cyclotrimethylenetrinitramine (RDX)	ND	ND	ND	ND	ND	ND	ND	ND							
2,4 Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND							
2,6 Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND							
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND							
<b>Metals ug/l</b>															
Arsenic	11.3	ND	ND	ND	ND	ND	ND	ND							
Barium	38.2	32.8	28.4	33.6	29.6	32.1	23.5	34.5							
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND							
Calcium	15200	24100	26600	14800	12600	12000	57900	44700							
Chromium	ND	ND	ND	ND	ND	ND	ND	2.7							
Copper	ND	ND	ND	5.7	ND	ND	6.8	ND							
Iron	5630	2470	1350	2450	1990	901	ND	86.7							
Lead	ND	ND	ND	ND	ND	ND	ND	ND							
Mercury	0.1	ND	ND	ND	ND	ND	ND	ND							
Magnesium	9190	13600	14400	9480	8170	8390	26000	18200							
Manganese	1720	2620	3020	1750	1200	1270	3680	3030							
Nickel	158	150	118	124	105	104	84.9	75							
Phosphorus							ND	ND							
Potassium	4960	5050	4080	4380	3930	4360	4080	4940							
Selenium	ND	ND	ND	ND	ND	ND	ND	ND							
Silver	ND	ND	ND	ND	0.8	ND	ND	ND							
Sodium	1780	2750	2850	2090	2050	2310	3130	2840							
Zinc	94.4	133	ND	165	ND	114	84.3	106							
<b>Non Metals ug/l</b>															
Alkalinity				14	ND	ND	70	80							
Ammonia Nitrogen				ND	ND	ND	ND	ND							
Chemical Oxygen Demand				ND	ND	ND	ND	ND							
Chloride				2.4	3.2	3.1	7	5							
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND							
Nitrate Nitrite				ND	ND	ND	ND	ND							
pH (SU)				4.7	4.6	4.4	6.2	6							
Phenols, Total				ND	0.024	ND	ND	ND							
Specific Conductivity, Lab (umhos/cm)				210	180	220	350	390							
Sulfate				78.3	89	90.1	150	110							
Total Dissolved Solids				160	160	146	260	320							
Total Organic Carbon				ND	ND	5	ND	ND							
Turbidity (Total Suspended Solids) NTU							0.8								



## SUMMARY OF GROUNDWATER MONITORING RESULTS

## RAMSDELL LANDFILL - MONITORING WELL 006

ANALYTE**, UNITS, METHOD NO.	1998			1999				2000					
Sample Date	7/25/98	9/20/98	10/19/98	2/13/99	4/10/99	5/27/99	12/21/99	2/23/00					
<b>VOCs ug/l 8260</b>													
Acetone	ND	ND	ND	ND	ND	ND	2.3	3.4					
Acrolein	ND	ND	ND	ND	ND	ND	ND	ND					
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	ND					
Benzene	0.52	ND	ND	ND	ND	ND	ND	ND					
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND					
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND					
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND					
Carbon Disulfide	2.4	ND	ND	ND	ND	ND	ND	ND					
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND					
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND					
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ND	ND					
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND					
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ND	ND					
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND					
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND					
1,1 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND					
1,2 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND					
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
1,2 Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND					
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	ND	ND	ND					
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND					
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND					
Ethyl methacrylate	ND	ND	ND	ND	ND	ND	ND	ND					
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND					
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND					
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND					
Methylene chloride	ND	ND	0.63	5	ND	ND	ND	ND					
Methylethylketone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND					
Styrene	ND	ND	ND	ND	ND	ND	ND	ND					
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
Toluene	ND	0.54	ND	0.48	ND	ND	0.1	0.049					
1,1,1, Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND					
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND					
Vinyl acetate	ND	ND	ND	ND	ND	ND	ND	ND					
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND					
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND					
<b>Explosives ug/l 8330</b>													
Cyclotetramethylenetetranitramine (HMX)	ND	ND	ND	ND	ND	ND	ND	ND					
Cyclotrimethylenetrinitramine (RDX)	ND	ND	ND	ND	0.38	ND	ND	ND					
2,4 Dinitrotoluene	ND	ND	ND	0.22	0.033	0.033	ND	ND					
2,6 Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND					
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND					
<b>Metals ug/l</b>													
Arsenic	9.9	28	21.8	15.5	24.5	25.8	19.4	13.9					
Barium	29.7	34	31.8	29.7	18.9	26	17.9	15.3					
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND					
Calcium	94000	97300	10600	105000	101000	125000	99000	96100					
Chromium	ND	ND	9.4	ND	ND	ND	ND	ND					
Copper	ND	5400	ND	31.4	ND	ND	ND	ND					
Iron	1240	5520	6520	7480	6150	14100	4180	3500					
Lead	ND	ND	ND	ND	ND	ND	ND	ND					
Mercury	ND	ND	ND	ND	ND	ND	ND	ND					
Magnesium	37300	39050	420000	40800	39400	53900	40700	39100					
Manganese	5460	5440	5370	4180	4000	7720	3430	3360					
Nickel	945	823	599	348	334	1470	308	222					
Phosphorus							ND						
Potassium	2910	3240	3810	2220	2320	2830	1460	1880					
Selenium	ND	ND	ND	ND	ND	ND	ND	ND					
Silver	ND	ND	ND	ND	ND	ND	ND	ND					
Sodium	1900	2070	3030	1570	1440	1830	1370	1600					
Zinc	41.7	ND	ND	40.2	ND	1910	34.9	87.8					
<b>Non Metals mg/l</b>													
Alkalinity				240	280	300	250	280					
Ammonia Nitrogen				ND	ND	ND	ND	5.7					
Chemical Oxygen Demand				ND	60	ND	ND	19					
Chloride				2.1	2.4	2.1	2	1					
Cyanide	ND		ND	ND	ND	ND	ND	ND					
Nitrate Nitrite				ND	ND	ND	ND	ND					
pH (SU)				6.2	6.2	6	6.2	6.3					
Phenols, Total				ND	ND	ND	ND	ND					
Specific Conductivity, Lab (umhos/cm)				760	670	1000	690	670					
Sulfate				152	184	380	160	190					
Total Dissolved Solids				910	550	770	470	450					
Total Organic Carbon				3	7	4	3	3					
Turbidity (Total Suspended Solids) NTU							10						



## RAMSDELL LANDFILL - MONITORING WELL 007

ANALYTE**, UNITS, METHOD NO.	1998			1999			2000												
Sample Date	7/22/98	9/20/98	10/20/98	2/14/99	4/11/99	5/28/99	12/21/99	2/23/00											
VOCs ug/l -8160																			
Acetone	ND	ND	ND	ND	ND	ND	3.2	1.6											
Acrolein	ND	ND	ND	ND	ND	ND	ND	ND											
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	ND											
Benzene	ND	ND	ND	ND	ND	ND	0.2	ND											
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND											
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND											
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND											
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND											
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND											
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND											
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ND	ND											
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND											
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND											
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ND	ND											
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND											
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND											
1,1 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND											
1,2 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND											
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND											
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND											
1,2 Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND											
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	ND	ND	ND											
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND											
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND											
Ethyl methacrylate	ND	ND	ND	ND	ND	ND	ND	ND											
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND											
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND											
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND											
Methylene chloride	ND	ND	3.7	5	ND	ND	0.17	ND											
Methylethylketone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND											
Styrene	ND	ND	ND	ND	ND	ND	ND	ND											
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND											
Toluene	ND	ND	ND	ND	ND	ND	0.13	ND											
1,1,1, Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND											
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND											
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND											
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND											
Vinyl acetate	ND	ND	ND	ND	ND	ND	ND	ND											
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND											
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND											
Explosives ug/l -8130																			
Cyclotetramethylenetetranitramine (HMX)	ND	ND	ND	ND	ND	ND	ND	ND											
Cyclotrimethylenetrinitramine (RDX)	ND	ND	ND	ND	9.49	ND	ND	ND											
2,4 Dinitrotoluene	ND	ND	ND	0.16	ND	0.11	ND	ND											
2,6 Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND											
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND											
Metals ug/l																			
Arsenic	59.4	50.2	54.3	8.9	23.1	18.5	47.6	13.7											
Barium	58.3	56.5	42.4	23.8	31.8	53.4	32.1	27											
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND											
Calcium	159000	151000	139000	81500	88600	135000	116000	111000											
Chromium	ND	ND	ND	ND	ND	ND	ND	ND											
Copper	ND	ND	ND	3.4	ND	ND	ND	ND											
Iron	85600	82500	71400	5950	25500	70400	14400	6020											
Lead	ND	ND	ND	ND	ND	ND	ND	ND											
Mercury	0.082	ND	ND	ND	ND	ND	ND	ND											
Magnesium	87700	62000	57300	103000	115000	75900	181000	14000											
Manganese	4100	4570	4330	1330	1180	1420	1050	1250											
Nickel	39.4	49.5	56.2	18.9	18.2	18.2	23.5	10.9											
Phosphorus							ND												
Potassium	12000	11300	8920	5900	7330	10600	8740	8520											
Selenium	ND	ND	ND	ND	ND	ND	ND	ND											
Silver	ND	ND	ND	ND	0.84	ND	ND	ND											
Sodium	24000	25600	22700	7870	6420	17700	11100	8640											
Zinc	84	ND	261	48	55.2	103	70.9	76.5											
Non Metals mg/l																			
Alkalinity				710	170	380	770	670											
Ammonia Nitrogen				ND	ND	ND	ND	ND											
Chemical Oxygen Demand				31	29	43	22	24											
Chloride				3.4	3.7	5.6	7	3											
Cyanide	ND		ND	ND	ND	ND	ND	ND											
Nitrate/Nitrite				ND	ND	ND	ND	ND											
pH (SU)				6.7	6.6	6.3	6.6	6.5											
Phenols, Total				ND	ND	ND	ND	ND											
Specific Conductivity, Lab (umhos/cm)				1100	1000	1300	1500	1200											
Sulfate				118	128	168	290	200											
Total Dissolved Solids				880	800	940	1100	780											
Total Organic Carbon				6	7	13	8	5											
Turbidity (Total Suspended Solids) NTU							93	780											



## SUMMARY OF GROUNDWATER MONITORING RESULTS

## RAMSDELL LANDFILL - MONITORING WELL 007

ANALYTE**, UNITS, METHOD NO.	1998			1999				2000						
Sample Date	7/22/98	9/20/98	10/20/98	2/14/99	4/11/99	5/28/99	12/21/99	2/23/00						
<b>VOCs ug/l: 8268</b>														
Acetone	ND	ND	ND	ND	ND	ND	3.2	3.8						
Acrolein	ND	ND	ND	ND	ND	ND	ND	ND						
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	ND						
Benzene	ND	ND	ND	ND	ND	ND	0.2	ND						
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND						
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND						
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND						
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND						
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND						
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND						
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ND	ND						
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND						
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND						
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ND	ND						
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND						
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND						
1,1 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND						
1,2 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND						
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND						
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND						
1,2 Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND						
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	ND	ND	ND						
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND						
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND						
Ethyl methacrylate	ND	ND	ND	ND	ND	ND	ND	ND						
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND						
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND						
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND						
Methylene chloride	ND	ND	3.7	5	ND	ND	0.17	ND						
Methyl ethyl ketone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND						
Styrene	ND	ND	ND	ND	ND	ND	ND	ND						
1,1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND						
Toluene	ND	ND	ND	ND	ND	ND	0.12	ND						
1,1,1, Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND						
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND						
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND						
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND						
Vinyl acetate	ND	ND	ND	ND	ND	ND	ND	ND						
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND						
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND						
<b>Explosives ug/l: 8336</b>														
Cyclotetramethylenetetranitramine (HMX)	ND	ND	ND	ND	ND	ND	ND	ND						
Cyclotrimethylenetrinitramine (RDX)	ND	ND	ND	ND	0.49	ND	ND	ND						
2,4 Dinitrotoluene	ND	ND	ND	0.16	ND	0.11	ND	ND						
2,6 Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND						
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND						
<b>Metals ug/l</b>														
Arsenic	59.4	58.2	54.3	6.9	23.1	38.5	47.6	13.7						
Barium	58.3	56.3	42.4	23.8	31.8	53.4	32.1	27						
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND						
Calcium	159000	151000	129000	81800	98600	135000	116000	111000						
Chromium	ND	ND	ND	ND	ND	ND	ND	ND						
Copper	ND	ND	ND	3.4	ND	ND	ND	ND						
Iron	65600	82500	71400	8980	25500	70400	14400	6020						
Lead	ND	ND	ND	ND	ND	ND	ND	ND						
Mercury	0.082	ND	ND	ND	ND	ND	ND	ND						
Magnesium	67700	62000	57300	103000	115000	95000	181000	14000						
Manganese	4100	4570	4830	1330	1180	1420	1050	1220						
Nickel	39.4	49.2	56.2	18.9	18.2	18.2	23.5	30.9						
Phosphorus							ND							
Potassium	12000	11300	8820	8900	7320	10600	8740	8520						
Selenium	ND	ND	ND	ND	ND	ND	ND	ND						
Silver	ND	ND	ND	ND	0.84	ND	ND	ND						
Sodium	24000	25600	22700	7870	8420	17700	11100	8640						
Zinc	84	ND	261	48	55.2	103	70.9	76.5						
<b>Non Metals mg/l</b>														
Alkalinity				710	170	580	270	570						
Ammonia Nitrogen				ND	ND	ND	ND	ND						
Chemical Oxygen Demand				31	29	43	22	24						
Chloride				3.4	3.7	5.6	7	3						
Cyanide	ND		ND	ND	ND	ND	ND	ND						
Nitrate Nitrite				ND	ND	ND	ND	ND						
pH (SL)				6.7	6.6	6.3	6.6	6.3						
Phenols, Total				ND	ND	ND	ND	ND						
Specific Conductivity, Lab (umhos/cm)				1100	1000	1300	1500	1200						
Sulfate				118	128	168	296	200						
Total Dissolved Solids				800	800	940	1100	780						
Total Organic Carbon				6	7	13	8	5						
Turbidity (Total Suspended Solids) NTU							93	780						



## SUMMARY OF GROUNDWATER MONITORING RESULTS

## RAMSDELL LANDFILL - MONITORING WELL 008

ANALYTE**, UNITS, METHOD NO.	1998			1999				2000					
Sample Date	7/22/98	9/19/98	10/20/98	2/14/99	4/11/99	5/28/99	12/21/99	2/23/00					
<b>VOCs ug/l #268</b>													
Acetone	9	ND	ND	ND	ND	ND	3	1.9					
Acrolein	ND	ND	ND	ND	ND	ND	ND	ND					
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	ND					
Benzene	ND	ND	ND	ND	ND	ND	0.087	ND					
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND					
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND					
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND					
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND					
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND					
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND					
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ND	ND					
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND					
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ND	ND					
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND					
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND					
1,1 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND					
1,2 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND					
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
1,2 Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND					
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	ND	ND	ND					
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND					
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND					
Ethyl methacrylate	ND	ND	ND	ND	ND	ND	ND	ND					
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND					
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND					
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND					
Methylene chloride	ND	ND	0.58	5	ND	ND	ND	ND					
Methyl ethyl ketone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND					
Styrene	ND	ND	ND	ND	ND	ND	ND	ND					
1,1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
Toluene	ND	ND	ND	0.54	ND	ND	0.08	0.069					
1,1,1, Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND					
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND					
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND					
Vinyl acetate	ND	ND	ND	ND	ND	ND	ND	ND					
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND					
Nylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND					
<b>Explosives ug/l #330</b>													
Cyclotetramethylenetetranitramine (HMX)	ND	ND	ND	ND	ND	ND	ND	ND					
Cyclotrimethylenetrinitramine (RDX)	ND	ND	ND	ND	ND	ND	ND	ND					
2,4 Dinitrotoluene	ND	ND	ND	0.35	0.076	0.069	ND	ND					
2,6 Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND					
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND					
<b>Metals ug/l</b>													
Arsenic	62.7	53.2	57.5	5.9	5.6	23.1	12.5	ND					
Barium	62.6	25.5	30	24.5	33.4	87.8	25.3	18.6					
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND					
Calcium	159000	137000	111000	34200	40400	83200	54100	46900					
Chromium	ND	ND	ND	ND	ND	ND	ND	ND					
Copper	ND	ND	6.9	ND	ND	ND	ND	ND					
Iron	65600	110000	124000	35400	50600	177000	44700	11200					
Lead	ND	ND	ND	ND	ND	ND	ND	ND					
Mercury	0.082	ND	ND	ND	ND	ND	ND	ND					
Magnesium	67700	81800	47500	69000	21800	49600	113000	61000					
Manganese	4100	6760	4520	674	660	1730	941	391					
Nickel	39.4	220	94.1	ND	ND	15.8	35.3	192					
Phosphorus							ND	ND					
Potassium	12000	6600	7400	4800	4920	9140	4920	3760					
Selenium	ND	ND	ND	ND	ND	ND	ND	ND					
Silver	ND	ND	ND	ND	1	0.7	ND	ND					
Sodium	24000	20600	16800	4680	4730	8430	6520	6740					
Zinc	84	941	107	19.1	19.5	16.1	52.6	139					
<b>Non Metals mg/l</b>													
Alkalinity				430	410	470	590	300					
Ammonia Nitrogen				ND	ND	2	ND	1.3					
Chemical Oxygen Demand				26	19	61	42	19					
Chloride				3.2	1.8	3.4	3	2					
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND					
Nitrate Nitrite				ND	ND	ND	ND	ND					
pH (SU)				6.5	6.6	6.4	6.7	6.4					
Phenols, Total				ND	ND	ND	0.048	ND					
Specific Conductivity, Lab (umhos/cm)				790	660	860	1300	740					
Sulfate				103	95.5	75.6	280	180					
Total Dissolved Solids				520	440	700	950	440					
Total Organic Carbon				5	6	13	4	3					
Turbidity (Total Suspended Solids) NTU							150	50					



## RAMSDELL LANDFILL - MONITORING WELL 009

[illegible]



## SUMMARY OF GROUNDWATER MONITORING RESULTS

## RAMSDELL LANDFILL - MONITORING WELL 010

ANALYTE**, UNITS, METHOD NO.	1998			1999				2000							
Sample Date	7/25/98	9/19/98	10/19/98	2/14/99	4/10/99	5/27/99	12/21/99	2/23/00							
<b>VOCs ug/l - 8160</b>															
Acetone	ND	ND	ND	ND	ND	ND	1.1	0.92							
Acrolein	ND	ND	ND	ND	ND	ND	ND	ND							
Acrylonitrile	ND	ND	ND	ND	ND	ND	ND	ND							
Benzene	ND	ND	ND	ND	ND	ND	0.14	ND							
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND							
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND							
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND							
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND							
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND							
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND							
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ND	ND							
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND							
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ND	ND							
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND							
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND							
1,1 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND							
1,2 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND							
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
1,2 Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND							
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	ND	ND	ND							
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND							
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND							
Ethyl methacrylate	ND	ND	ND	ND	ND	ND	ND	ND							
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND							
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND							
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND							
Methylene chloride	ND	ND	0.67	5	ND	ND	ND	ND							
Methyl ethyl ketone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND							
Styrene	ND	ND	ND	ND	ND	ND	ND	ND							
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
Toluene	0.72	ND	ND	ND	ND	ND	0.1	0.074							
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND							
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND							
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND							
Vinyl acetate	ND	ND	ND	ND	ND	ND	ND	ND							
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND							
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND							
<b>Explosives ug/l - 8130</b>															
Cyclotetramethylenetetranitramine (HMX)	ND	ND	ND	ND	ND	ND	ND	ND							
Cyclotrimethylenetrinitramine (RDX)	ND	ND	ND	ND	ND	ND	ND	ND							
2,4 Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND							
2,6 Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND							
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND							
<b>Metals ug/l</b>															
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND							
Barium	16.7	6.5	4	3.4	4	2.4	ND	ND							
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND							
Calcium	66600	63300	63100	60400	60600	64300	70000	83400							
Chromium	ND	ND	ND	ND	ND	ND	ND	ND							
Copper	ND	ND	ND	ND	ND	ND	ND	23.5							
Iron	93.5	86.3	139	ND	66.6	ND	ND	ND							
Lead	ND	ND	ND	ND	ND	ND	ND	ND							
Mercury	ND	ND	ND	ND	ND	ND	ND	ND							
Magnesium	26800	29000	24200	25400	26400	27600	29700	38400							
Manganese	3480	871	481	822	864	377	1220	1420							
Nickel	34.8	ND	17.2	ND	ND	25.2	10	ND							
Phosphorus							ND	ND							
Potassium	3570	3540	2920	2920	2880	3250	2710	3930							
Selenium	ND	ND	ND	ND	ND	ND	ND	ND							
Silver	ND	ND	ND	ND	ND	0.75	ND	ND							
Sodium	5490	3880	4520	5030	5640	7890	5260	5680							
Zinc	38.8	ND	ND	22.9	24.3	88.4	47.7	45.9							
<b>Non Metals mg/l</b>															
Alkalinity				150	130	100	130	150							
Ammonia Nitrogen				ND	ND	ND	ND	1.3							
Chemical Oxygen Demand				26	ND	ND	ND	12							
Chloride				8.8	12.4	18.4	10	10							
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND							
Nitrate Nitrite				0.3	0.3	0.1	0.1	ND							
pH (SU)				6.5	6.5	6.4	6.6	6.4							
Phenols, Total				ND	ND	0.047	0.25								
Specific Conductivity, Lab (umhos/cm)				340	480	610	550	580							
Sulfate				151	165	184	180	160							
Total Dissolved Solids				390	400	400	380	420							
Total Organic Carbon				3	1	2	1	2							
Turbidity (Total Suspended Solids) NTU							2.1	3							





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

July 27, 2000

Re: Ground Water Monitoring  
**Ramsdell Quarry Landfill**  
Ravenna Army Ammunition Plant

U.S. Army Corps of Engineers  
600 Martin Luther King Place  
P.O. Box 59  
Attn.. CEORL-ED-GS  
Louisville, KY 40201-0059

Attn.: Mr. John Jent P.E.

Dear Mr. Jent:

The Ohio Environmental Protection Agency (Ohio EPA) has completed a review of the December 1999 Groundwater Monitoring Data Report dated January 28, 2000. The report was submitted by R and R International on behalf of the Ravenna Army Ammunition Plant for the Ramsdell Quarry Landfill and was received by Ohio EPA on February 2, 2000. The December 1999 sampling event is the fourth of four events intended to reestablish background groundwater quality both upgradient and downgradient of the limits of waste placement at the Ramsdell Quarry Landfill.

A summary of the analytical results is contained within the attachment table.

Upon review of this report Ohio EPA has the following comments:

OAC 3745-27-10(B)(1)(a) states in part:

***"A groundwater monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from both the uppermost aquifer system and any significant zones of saturation that exist above the uppermost aquifer system that:***

- (a) Represent the quality of the groundwater that has not been affected by past or present operations at the sanitary landfill facility."***

The December 1999 potentiometric surface map generated from static water levels measured during the December 1999 groundwater sampling event indicates that groundwater monitoring well MW-006 is not up gradient of Ramsdell Quarry Landfill. Therefore, groundwater obtained from this well is not characteristic of groundwater quality unaffected by historic operations at the facility.



PARAMETERS	MW006	MW007	MW008	MW009	MW010	MW011
Antimony	ND	ND	ND	2.5	ND	2.5
Selenium	ND	ND	ND	8.2	ND	ND
Arsenic	19.4	47.6	12.5	ND	ND	ND
Barium	17.9	32.1	25.3	40.7	ND	23.5
Calcium	99000	116000	54100	290000	70000	57900
Cobalt	57.5	13.1	ND	ND	ND	27.4
Copper	ND	ND	ND	ND	ND	6.8
Iron	4180	14400	44700	193	ND	ND
Potassium	1460	8740	4920	3680	2710	4000
Magnesium	40700	181000	112000	44100	29700	26000
Manganese	3430	1050	941	138	1220	3680
Sodium	1570	11100	6520	3550	5260	3130
Nickel	308	23.5	35.3	ND	10	84.9
Zinc	33.9	70.9	52.6	29.1	47.7	84.3
Thallium	0.60	1.7	1.3	0.60	ND	0.60
Acetone	2.3	3.2	3.0	1.9	1.1	1.5
Benzene	ND	0.20	0.087	0.13	0.14	0.24
Methylene Chloride	ND	0.17	ND	ND	ND	ND
Toluene	0.10	0.12	0.080	0.097	0.10	0.097
1,1,2,2 - Tetrachloroethane	ND	ND	ND	0.10	ND	ND
Specific Conductance	690	1500	1200	480	550	350
pH	6.2	6.6	6.7	6.3	6.6	6.2
TDS	470	1100	950	310	380	260
Turbidity	10	93	150	3.3	2.1	0.8
Nitrate - Nitrite	ND	ND	ND	0.4	0.1	ND
Total Organic Carbon	3	8	4	4	1	ND
Chloride	2	7	3	3	10	7
Total Phenols	ND	ND	0.048	ND	0.025	ND
Sulfate	160	290	280	190	180	150
Total Alkalinity	250	770	590	70	130	70
COD	ND	22	42	12	ND	ND





State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

August 28, 2000

Re: Ground Water Monitoring  
**Ramsdell Quarry Landfill**  
Ravenna Army Ammunition Plant

U.S. Army Corps of Engineers  
600 Martin Luther King Place  
P.O. Box 59  
Attn: CEORL-ED-GS  
Louisville, KY 40201-0059

Attn: Mr. John Jent P.E.

Dear Mr. Jent:

The Ohio Environmental Protection Agency (Ohio EPA) has completed a review of the February 2000 Groundwater Monitoring Data Report dated May 10, 2000. This report was submitted by R and R International on behalf of the Ravenna Army Ammunition Plant and was received by Ohio EPA on May 12, 2000. Ramsdell Quarry Landfill is regulated by the 1990 Revision to OAC Rule 3745-27-10. The February 2000 sampling event is the second semiannual event in accordance with OAC Rule 3745-27-10(D)(4). The December 1999 sampling event was the fourth of four events intended to reestablish background groundwater quality up- and downgradient of the limits of waste placement at the Ramsdell Quarry Landfill.

A summary of the analytical results is contained within Attachment I.

Based upon review of this report the following compliance issues requires your attention:

**OAC 3745-27-10(B)(1)(a) states in part:**

*"A groundwater monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from both the uppermost aquifer system and any significant zones of saturation that exist above the uppermost aquifer system that:*

- (a) *Represent the quality of the groundwater that has not been affected by past or present operations at the sanitary landfill facility".*

The December 1999 potentiometric surface map generated from static water levels measured during the December 1999 groundwater sampling event indicate that groundwater monitoring well MW-006 is not upgradient of Ramsdell Quarry Landfill. The February 2000 potentiometric surface map generated from static water levels measured during the February 2000 groundwater sampling event





PARAMETERS	MW006	MW007	MW008	MW009	MW010	MW011
Aluminum	ND	ND	ND	354	149	1580
Antimony	ND	ND	ND	ND	1.7	10.6
Arsenic	13.9	13.7	16.7	ND	ND	ND
Barium	15.3	27.0	18.6	18.9	ND	34.5
Calcium	96100	111000	46900	17100	83400	44700
Cobalt	51.7	11.6	29.3	ND	ND	23.9
Copper	ND	ND	ND	5.4	23.5	ND
Iron	3500	6020	11200	597	ND	86.7
Potassium	1880	8520	3760	3910	3930	4040
Magnesium	39100	140000	61000	7880	38400	18200
Manganese	3360	1250	691	26.7	1420	3030
Sodium	1600	8640	6740	2580	5680	2840
Nickel	222	30.9	192	ND	ND	75.0
Zinc	87.8	76.5	139	44.1	45.9	106
Thallium	ND	ND	ND	1.40	1.8	1.8
Acetone	1.4	1.6	1.9	1.6	0.92	ND
MEK	1.0	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND
Toluene	0.049	ND	0.069	0.059	0.074	ND
1,1,2,2 - Tetrachloroethane	ND	ND	ND	ND	ND	ND
Specific Conductance	670	1200	740	150	580	350
pH	6.3	6.5	6.4	6.4	6.4	6.0
TDS	450	780	440	110	420	220
Turbidity	5.5	36	50	25	3.0	37
Nitrate - Nitrite	ND	ND	ND	0.1	ND	ND
Nitrogen as Ammonia	5.7	ND	1.3	ND	1.3	ND
Total Organic Carbon	3	5	3	5	2	ND
Chloride	3	3	2	4	10	5
Total Phenols	ND	ND	ND	ND	ND	ND
Sulfate	190	200	180	24	160	110
Total Alkalinity	280	670	300	59	150	80
COD	19	24	19	12	12	ND



Name of Offeror or Contractor: Mason & Hanger-Silas Mason Co., Inc.

ARTICLE C-3

01 FEB 95

Page 32.36 of 85

10.3.3.12.9 Inactive/Closed Solid Waste Landfills. The contractor will perform administrative and maintenance services applicable to Ravenna AAPs closed Ramsdell sanitary landfill. The landfill is currently under an EPA regulatory mandated 30-year maintenance plan. Compliance to this maintenance plan will require the following actions to be performed:

10.3.3.12.9.1 Conduct a quarterly groundwater monitoring program for specified analytical and hydraulic parameters upon the two installed downgradient and three installed upgradient wells. This groundwater monitoring program shall collect data and statistically assess migrational impact to local groundwaters outside the confines of the closed landfill.

10.3.3.12.9.2 Maintain an operational groundwater monitoring plan that will detail sampling and analytical procedures and address contingencies, risk assessments, and regulatory notifications in the event of offsite migrations into adjacent groundwaters.

10.3.3.12.9.3 Weekly recorded visual inspections of the closed landfill's structural integrity which will address the stability of the final cover cap, erosion, vegetation, soundness of siltation barriers, surface run-off conduits, appearance of any leachate outbreaks, the structural integrity of groundwater monitoring wells and their protective casings, well access roads, security, and the condition of the surface impoundment (pond) located at the lower extremity of the landfill site.

10.3.3.12.9.4 Submit quarterly reports to the Ohio EPA and Local Ohio Public Board of Health regarding current landfill status.

10.3.3.12.9.5 Remediate any violations or management attention items cited within the regulator's monthly inspection findings.

10.3.3.13 Solid Waste Generation, Collection and Disposal. The contractor will be responsible in managing Ravenna AAPs solid waste management program as it involves the generation of garbage, refuse, sludge, and other discarded solid materials resulting from industrial and commercial, construction, and demolition activities. The following responsibilities apply:

10.3.3.13.1 Develop and administer solid waste removal contracts, inspection records, and waste collection procedures.

10.3.3.13.2 Resource, recovery practices including the sale of materials for the purpose of recycling/reclamation (i.e., used motor oil, anti-freeze, scrap metals, paper, cardboard, wood, plastics).

#### 10.4 General Assigned Tasks.

10.4.1 The MCC shall maintain the compliance of the installation through continued review and investigations of current MCC activities, including all activities required under the current SOW (includes review of agricultural lessees). The review shall be limited to the activities under the MCC SOW and any and all activities under facilities use contracts entered into by the MCC or under any subcontracts initiated by the MCC.

10.4.2 The MCC shall be responsible for the oversight of all sub-contractors or facilities use contracts entered into by the MCC. This oversight responsibility shall include, but is not limited, to the immediate reporting to the COR staff of any and all environmental violations, spills, releases of hazardous materials and wastes, by any subcontractors employed by or facility use contracts entered into by the MCC.





State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

October 31, 2000

U.S. Army Corps of Engineers  
600 Martin Luther King Place  
P.O. Box 59  
Attn.. CEORL-ED-GS  
Louisville, KY 40201-0059

Attn.: Mr. John Jent P.E.

Re: Notice of violation  
**Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant**

Dear Mr. Jent:

The Ohio Environmental Protection Agency (Ohio EPA) has completed a review of the February 2000 Groundwater Monitoring Data Statistical Analysis dated June 23, 2000, submitted by R and R International on behalf of the Ravenna Army Ammunition Plant to Ohio EPA on June 29, 2000. Ramsdell Quarry Landfill is regulated by the 1990 Revision to **OAC Rule 3745-27-10**. The groundwater monitoring data generated during the February 2000 sampling event is to be compared to the background data set generated from the previous four sampling events at the Ramsdell Quarry Landfill.

Statistical analysis of groundwater monitoring data indicates a statistically significant difference (SSD) between upgradient groundwater monitoring well MW-006 and downgradient groundwater monitoring wells MW-007, MW-008, and MW-010 for pH. In addition, a SSD was determined to be present between MW-006 and MW-007 for specific conductivity.

The following violations were identified during a review of the above mentioned document and require your attention:

1) **OAC Rule 3745-27-10(D)(7)**

*All groundwater analysis and statistical analysis results generated in accordance with paragraphs (D)(3) to (D)(6) and paragraph (C)(2) of this rule shall be submitted to the director or his authorized representative not later than sixty days after sampling the well or not later than fifteen days after receiving the analysis results, whichever is sooner. All groundwater data and an accompanying text shall be submitted to the director or his authorized representative in a form specified by the director or his authorized representative.*





The groundwater monitoring system was sampled on February 22, 2000. Laboratory analyses were performed between February 23 and February 29, 2000. The resultant analytical report was forwarded to Ramsdell Quarry Landfill on March 14, 2000. The analytical laboratory data and statistical analysis were not submitted to Ohio EPA until May 12, 2000 and June 29, 2000, respectively.

Groundwater monitoring data reports should be submitted to the director of Ohio EPA no later than sixty days after sampling or 15 days after receiving the analysis reports, whichever is sooner, in accordance with **OAC Rule 3745-27-10(D)(7)**. Ramsdell Quarry Landfill did not meet the requirements of this Rule.

**2) OAC Rule 3745-27-10(D)(8)(a)**

*If, at any monitoring well, the permittee determines that there has been a statistically significant increase (or decrease in the case of pH) from background values for any parameter specified in paragraphs (D)(1)(b), (c), (d), (e), or (gg) of this rule, according to the statistical method specified by the permittee pursuant to paragraphs (C)(5) and (C)(6) of this rule, the permittee:*

*shall notify the director not later than fifteen days after receiving the statistical or analytical results indicating a statistically significant change. The notification must indicate which parameters have shown a statistically significant change from background levels; and*

Laboratory analyses were received on behalf of the facility on March 14, 2000. Statistical analyses were not submitted to Ohio EPA until June 29, 2000.

The director of Ohio EPA should be notified of the presence of a statistically significant difference no later than fifteen days after receiving the laboratory analytical results, in accordance with **OAC Rule 3745-27-10(D)(8)(a)**. Ramsdell Quarry Landfill did not meet the requirements of this Rule.

**3) OAC Rule 3745-27-10(D)(8)(b)**

*If, at any monitoring well, the permittee determines that there has been a statistically significant increase (or decrease in the case of pH) from background values for any parameter specified in paragraphs (D)(1)(b), (c), (d), (e), or (gg) of this rule, according to the statistical method specified by the permittee pursuant to paragraphs (C)(5) and (C)(6) of this rule, the permittee:*

*Shall resample, not later than fifteen days after notifying the director, the affected monitoring well(s) for those constituents demonstrating a significant change in concentration or level. The permittee shall notify the director or his authorized representative of the time of resampling prior to resampling;*

Ramsdell Quarry Landfill did not notify Ohio EPA of a resampling within 15 days of notifying the director of a SSD. Ramsdell Quarry Landfill did not notify Ohio EPA of a resampling event within 30 days of receiving the analytical laboratory results.

The director of Ohio EPA should be notified of a resampling event that is to occur no later than fifteen days after notifying the director of a statistically significant difference, in accordance with **OAC Rule 3745-27-10(D)(8)(b)**. Ramsdell Quarry Landfill did not meet the requirements of this Rule.

4) **OAC Rule 3745-27-10(D)(8)(c)**

*If, at any monitoring well, the permittee determines that there has been a statistically significant increase (or decrease in the case of pH) from background values for any parameter specified in paragraphs (D)(1)(b), (c), (d), (e), or (gg) of this rule, according to the statistical method specified by the permittee pursuant to paragraphs (C)(5) and (C)(6) of this rule, the permittee:*

*Shall, not later than sixty days after the resampling required in paragraph (D)(8)(b) of this rule, confirm or reject the original determination of a significant change in a written notification to the director based on the results of the resampling.*

The director of Ohio EPA should be notified of the analytical laboratory results of the resampling in accordance with **OAC Rule 3745-27-10(D)(8)(b)**. Ramsdell Quarry Landfill did not meet the requirements of this Rule.

5) **OAC Rule 3745-27-10(E)(1)**

*The permittee shall, within fifteen days of confirming a significant change in accordance with paragraph (D)(8)(c) of this rule, submit to the director a specific plan, based on the outline required in paragraph (C)(8) of this rule, for a groundwater quality assessment program at the sanitary landfill facility.*

In accordance with **OAC Rule 3745-27-10(E)(1)**, a Groundwater Quality Assessment Program Plan is to be submitted to the director of Ohio EPA within 15 days of confirming a SSD in accordance with **OAC Rule 3745-27-10(D)(8)(c)**. Ramsdell Quarry Landfill did not meet the requirements of this Rule.

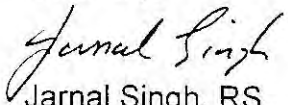
Ramsdell Quarry Landfill has identified the presence of statistically significant differences in groundwater quality indicator parameters. Ramsdell Quarry Landfill should therefore initiate a Groundwater Quality Assessment Program in accordance with **OAC Rule 3745-27-10(E)**.



U.S. Army Corps of Engineers  
October 31, 2000  
Page 4

If you have any technical questions regarding this review, please contact Jeffrey Rizzo at 330-963-1115. Please submit all correspondence to Jarnal Singh, Ohio EPA, Northeast District Office, Division of Solid and Infectious Waste Management, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Sincerely,



Jarnal Singh, RS  
Environmental Specialist  
Division of Solid and Infectious  
Waste Management

JS:cl

pc: Lynn Sowers, DSIWM-NEDO  
Virginia Wilson, DSIWM-NEDO  
Jeffrey Rizzo, DDAGW-NEDO  
Eileen Mohr, Site Coordinator, DERR, NEDO  
Steven Uecke, Portage Co. HD  
Mark Patterson, IOC-RVAAP  
File: [LAND/Ramsdell/GRO/67]

## Patterson, Mark

---

**From:** Patterson, Mark [/o=ORGANIZATION/ou=EMAIL/cn=Recipients/cn=Mark Patterson]  
**Sent:** Friday, November 03, 2000 4:20 PM  
**To:** Cramond, John  
**Cc:** Cicero, John A Jr; Woodhouse, Paul; Ingold, William; Robb, Jeffrey A  
**Subject:** 10/31/2000 NOV update

Skip,

Just wanted to provide you with an update and some background information on the NOV RVAAP just received for **Ramsdell Quarry Landfill (RQL)**. Vicki faxed a copy to you this morning.

RQL is an abandoned, sandstone quarry on the east end of the plant. It is about 10 acres in size and 18 feet deep at the deepest point. RQL was used from 1946 to 1989. Explosive wastes and napalm bombs were burned in the bottom of the quarry during the time period of 1946 to 1950. In 1973, inert demil material, aluminum chloride, demolition debris, and contaminated soils were placed in RQL. Most of the debris remaining from these activities were removed and hauled to an off-site, permitted landfill. RQL was used as a permitted solid waste landfill from 1978 to 1989 accepting trash, demolition debris, and waste from the sewage treatment plant. Semiannual, 30 year groundwater sampling started in 1991. The operating contractor has been responsible for the sampling of the wells and reporting of the data to Ohio EPA since the detection monitoring program started. Toltest is now responsible for it under section IV item 1.4.3 of the plant operations contract.

The NOV was issued for failure to submit the data within the time limits and for not notifying OEPA of statistically significant differences (SSD) in some of the wells for the basic water parameters of pH and specific conductivity. The solid waste regs require resampling of the wells having a SSD, reporting the results to OEPA, and initiating a groundwater quality assessment program if the SSD results are confirmed.

Skip,

Just wanted to provide you with an update and some background information on the NOV RVAAP just received for Ramsdell Quarry Landfill (RQL). Vicki faxed a copy to you this morning.

RQL is an abandoned, sandstone quarry on the east end of the plant. It is approximately 10 acres in size and 18 feet deep at the deepest point. RQL was used from 1946 to 1989. Explosive wastes and napalm bombs were burned in the bottom of the quarry during the time period of 1946 to 1950. In 1973, inert demil material, aluminum chloride, demolition debris, and contaminated soils were placed in RQL. Most of the debris from these activities was removed and hauled to an off-site, permitted landfill. RQL was used as a permitted solid waste landfill from 1978 to 1989 accepting installation trash, demolition debris, and waste from the sewage treatment plant. Semiannual, 30-year groundwater sampling started in 1991. The operating contractor has been responsible since the detection monitoring program started for sampling the wells and reporting the results to Ohio EPA. Toltest is now responsible under section IV part 1.4.3 of the operating contractor's scope of work.

The NOV was issued for failure to submit the data within the time limits and for not notifying OEPA of statistically significant differences (SSD) in some of the wells for the basic water parameters of pH and specific conductivity. The solid waste regs require resampling of the wells having a SSD, reporting the results to OEPA, and initiating a groundwater quality assessment program if the SSD results are confirmed.

I have been discussing the issue with Bill Ingold today since he funded replacement of the 1991 wells, which failed in 1997. The new wells were put in during the 1998 Corps project to assess whether any contaminants were in the groundwater from the hazardous waste activities at the site. This work was in addition to the semiannual monitoring under solid waste. The study showed very low levels of contaminants including explosives and propellants. We plan to set up a conference call with internal parties on Monday to discuss the issue and determine the measures needed to resolve the NOV. Do you want to take part?

Section IV under part 2 General Requirements, Toltest would be responsible for correcting any violations or deficiencies in regard to inspections. But does it apply in the case of RQL solid waste responsibilities? The operating contractor's scope of work is somewhat vague but I think we need to review other requirements in the environmental section to be sure what we feel will be the limit of their responsibility.

The other major idea I would like to discuss is transferring RQL from the Solid Waste to the CERCLA Program. We believe the site should be under CERCLA because, if there is any environmental risk, it would most likely be from the hazardous waste activities prior to the Solid waste landfill. There is much less flexibility in resolving a contaminants issue, both in regard to time frames and ultimately remedy, under the Solid Waste rules than CERCLA. Solid Waste has strict requirements on follow-up corrective action (including time limits) when there is a statistically significant hit. This usually requires costly groundwater assessment projects to determine the limit of contamination. There is no "automatic" requirement to proceed with correct action under CERCLA just because there is a significant hit. Rather, a risk



assessment is done to see if it poses any adverse health risk. The risk assessor with the Corps has reviewed the 1998 report and strongly feels the low levels would pose no risk considering the distance to the nearest downgradient well (about 1.5 miles). The numbers would have to be crunched to get a final answer.

We have discussed this with both solid waste and CERCLA at OEPA. They have indicated they would be receptive to the change in the regulatory program but we would need to make a formal request. Here's where the problem comes in. Bob Whelove has discussed it with Henry Crain, who would have to approve the transfer to CERCLA. Although the transfer could potentially save much time and money for the Army, Henry is opposed to it because it would require funding to come out of his program. Whelove said he has discussed it with him several times but the answer is no. I think this is where you could help us most by facilitating it at your level. We can discuss it more on Monday if you are there.

Mark

Mark Patterson  
Environmental Coordinator  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266  
Phone: (330) 358-7311/7312  
Fax: (330) 358-7314  
email: pattersonm@osc.army.mil



REPLY TO  
ATTENTION OF

RQL

DEPARTMENT OF THE ARMY  
HEADQUARTERS, U.S. ARMY OPERATIONS SUPPORT COMMAND  
1 ROCK ISLAND ARSENAL  
ROCK ISLAND, IL 61299-6000  
**November 20, 2000**

AMSOS-CCM-E

Mr. Michael Boyle  
President  
TolTest, Incorporated  
1916 North 12<sup>th</sup> Street  
Post Office Box 2186  
Toledo, Ohio 43603-2186

Dear Mr. Boyle:

I am increasingly concerned about notices of violation (**NOVs**) received from the Ohio Environmental Protection Agency at Ravenna Army Ammunition Plant. It has come to my attention that there have been two violations within the last two months. Your firm is under contract with the U.S. Army Operations Support Command for the operation and maintenance of Ravenna Army Ammunition Plant. It is expected that all contractual obligations will be met. These recent violations would indicate that your firm needs to refocus its commitment to their environmental activities and responsibilities.

Therefore, I need your personal support and leadership to ensure that future violations do not occur.

Questions may be addressed to the undersigned at (309) 782-7345, or email [mckinniss@osc.army.mil](mailto:mckinniss@osc.army.mil).

Sincerely,

Susan M. McKinnis  
Contracting Officer



## MEMO

**TO:** Mark Patterson, Rick Callahan  
**FROM:** Ernie Neal  
**RE:** **Ramsdell Quarry Landfill, OEPA-Notice of Violation – 10/31/00**  
**DATE:** **November 20, 2000**

**Via e-mail**

---

In regard to your recent request, I have outlined below the major issues in regard to follow-up on the NOV of October 31, 2000 from OEPA-NEDO. After your review of the issues, I suggest we collectively discuss the matter in greater detail in order that we can respond to the agency in a coordinated and thoughtful manner.

### **General Comments**

Last week I forwarded a copy the applicable OEPA groundwater regulations to Mark Patterson for his information. As you are aware, the 1990 revision of the OEPA groundwater regulations is the appropriate section of the Ohio Administrative Code (OAC) that is applicable to the Ramsdell Quarry Landfill.

In a general discussion with Mark on this issue, it was indicated that the tardiness of the groundwater data submissions was primarily a result of the validation step of the technical data. Based on the well sampling, initial laboratory data turnaround and final data validation, the 60-day submission requirement was almost an impossible goal. However, Mark related that further discussion of the issue has now indicated that the agency appreciates and concurs with the idea that data validation step is a plus for the facility as well as OEPA. Considering this fact, it appears that the agency now may want to provide some flexibility in regard to future data submissions. Obviously, this would be favorable for the RVAAP. However, it is important to note that the general OEPA enforcement policy does not normally provide for this type of discretion. If in fact this arrangement can be worked out, I suggest memorializing this understanding in writing, especially since OEPA inspectors, supervisors and Directors come and go.

### **NOV Comments**

After our internal discussion takes place in regard to the NOV, I suggest a letter be drafted to respond to the formal enforcement action. Prior that activity, I recommend the following:

- A comparison should be made between the pH and specific conductivity values for the last three sampling periods of the sampling results in question. This review should also involve a comparison of the same values with drinking water standards. This information will provide some indication as to what the issues may be and if the statistical variance is of major concern. This information may also assist us in determining if re-sampling would be necessary.
- Determine if the pH and specific conductivity values reflect a trend over the three sampling periods? If so, do the values possibly indicate well construction issues?
- Has the upgradient well data indicated reverse flow during any of the three sampling periods? If so, we should discuss the option of selecting an alternative upgradient well already established at the RVAAP for future use in the groundwater monitoring system. This option is spelled out in general detail under section (C)(4) below.

In the following paragraphs I have highlighted some major points in the applicable groundwater regulations. However, I encourage all RVAAP staff and contractors to read the text in its entirety in order that everyone gains a familiarity with the detailed requirements.

### **Noteworthy Regulatory Provisions**

#### **3745-27-10**

This portion of the regulations spells out the requirements of establishing a groundwater monitoring program. It would be advisable to determine if each of these criteria are being met for the Ramsdell Quarry Landfill.

**Paragraph (C)(1)** of the rule relates that the sampling and analyses procedures for the groundwater monitoring program shall be documented in a written plan which shall be available for inspection, on site. Further narrative of this regulation specifies the content of the plan.

**Paragraph (C)(4)** provides that groundwater quality at the existing landfill may be based on sampling of wells that are not hydraulically upgradient. The remaining portion of this requirement specifies as to how this issue can be addressed. Based on the fact that the Quarry Landfill sampling program has illustrated that reverse flow has been displayed in the past, the RVAAP may choose to utilize an alternative well, in close proximity to Ramsdell, to meet the requirements. This point is especially important since additional well construction and modification of the existing system only becomes more complex and costly at each turn.

**Paragraph (C)(8)** of the rule states that the permittee must prepare, at the time of development of the groundwater monitoring program, an outline for a groundwater



quality assessment program, which shall be available for inspection at the sanitary landfill. The regulation provides guidance in the development of this outline. As one reads further into the regulation, you can readily understand that this document is necessary if statistical significance is triggered.

**Paragraph (D)(2)** provides an opportunity for flexibility for RVAAP in establishing an alternative list of groundwater parameters to be used to meet the requirements of (D)(3) to (D)(6) of this rule. In other words, the applicant may request that the Director approve a list of alternative groundwater parameters that may be more reflective of the waste streams that were deposited in the landfill during its' operational life. Since groundwater well data has historically reflected the general types of contaminants found in the landfill and leachate, I suggest that an attempt be made to petition the agency for relief in this area. This could provide considerable cost savings if the RVAAP could meet the criteria.

**Paragraph (D)(7)** spells out the specific groundwater information and the timetable for initial sampling, re-sampling etc. **Paragraph (E)(1)** relates that if confirmation is made of the initial statistical analyses by re-sampling, the assessment outline referenced in **(C)(8)** must be brought into play as well as the development of a detailed groundwater quality assessment program. In addition, **(E)(2)** of this requirement spells out the necessary content of the assessment plan.

After you have had a chance to review this information, I would like to discuss many of the various aspects in more detail.

cc: Bill Ingold  
Khodi Irani

## Patterson, Mark

---

**From:** NEALNes@cs.com  
**Sent:** Monday, November 20, 2000 1:06 PM  
**To:** PattersonM@osc.army.mil; mkmcercla@yahoo.com  
**Cc:** IngoldW@osc.army.mil; Khodi.Irani@mkmeng.com  
**Subject:** RVAAP-Ramsdell Quarry Landfill NOV



Ramsdell NOV memo

11-20-00.doc...

Attached is my memo per the referenced subject. Perhaps we can develop a conference call and determine the next step.

I will be out of my office from noon on 11/21 to the morning of 11/28.

I will be checking my voice mail in the interim.

If I don't talk to you before Thursday, have a nice Thanksgiving!

Ern



**From:** Eileen Mohr  
**To:** 'Bob Whelove'; Jasper, Kevin L LRL02; Jent, John P LRL02; Mansy, Samir A LRL02; 'Mark Patterson'; 'Rick Callahan'; 'Steve Selecman'; 'Tom Tadsen'; Zorko, Paul L LRL02  
**Date:** 1/26/00 4:37PM  
**Subject:** Re: RVAAP- Application of Grid Sampling.

I quickly looked at the strategy that you sent out JJ and have a few quick questions/comments:

- I agree that it makes sense to sample outside of our biased sampling area since that has already been targeted (and sampled) for worst case scenario.
- Although I agree that budget issues are important, if the scientific rationale/basis and previous results pretty much dictate that we need to take a certain number of samples, we'll have to find more money somewhere. Not to be unreasonable, but the budget issue is only one part of the puzzle, not the sole driver.
- At **Erie Burning Grounds**, didn't we do a 1:1 sampling for explosives; i.e. the Jenkin methodology with all the samples additionally being sent to the lab? We need to look at this data and ensure that we are still getting good correlations. I am not suggesting that we need a 1:1 for explosives at this AOC, but how did the percentage get decreased to 10%?
- XRF for metals is a whole different story (from explosives) at this point in time. We haven't yet demonstrated that the field technology correlates well with laboratory analyses like we have for explosives. As such, we cannot overly rely on XRF. Also see the comment above regarding the proposed percentage.
- How will the grids be "randomly" selected? And is the selection process defensible?

I think thats it!

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Jent, John P LRL02" <John.P.Jent@lrl02.usace.army.mil> 01/26/00 02:06PM >>>  
To ALL,

We have attempted to work out a general strategy to incorporate grid sampling for determining sampling locations at RVAAP.

Please review the short, draft strategy attached.

<<SAMPLING STRATEGY.doc>>

DB & JJ

**CC:** Brancato, David J LRL02

**Mail Envelope Properties** (388F6930.CE7 : 5 : 52863)

**Subject:** Re: RVAAP- Application of Grid Sampling.  
**Creation Date:** 1/26/00 4:37PM  
**From:** Eileen Mohr  
**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
cpmx.saic.com stephen.b.selecman ('Steve Selecman')	Transferred	01/26/00 04:38PM
epa.state.oh.us NEDO.Central-Office Emohr BC (Eileen Mohr) Tfisher BC (Todd Fisher)	Delivered Opened	01/26/00 04:37PM 01/26/00 04:38PM
ioc.army.mil pattersonm ('Mark Patterson') whelover ('Bob Whelove')	Transferred	01/26/00 04:38PM
lrl02.usace.army.mil David.J.Brancato CC (Brancato, David J LRL John.P.Jent (Jent, John P LRL02) Kevin.L.Jasper (Jasper, Kevin L LRL02) Paul.L.Zorko (Zorko, Paul L LRL02) Samir.A.Mansy (Mansy, Samir A LRL02)	Transferred	01/26/00 04:38PM
OH-ARNG.ngb.army.mil rtlsmgr ('Tom Tadsen')	Transferred	01/26/00 04:38PM
yahoo.com mkmcercla ('Rick Callahan')	Transferred	01/26/00 04:38PM
<b>Post Office</b>  NEDO.Central-Office   ARNG.ngb.army.mil	<b>Delivered</b>  01/26/00 04:37PM	<b>Route</b> cpmx.saic.com epa.state.oh.us ioc.army.mil lrl02.usace.army.mil OH-  yahoo.com

Files	Size	Date & Time
MESSAGE	3493	01/26/00 04:37PM



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State of Ohio Environmental Protection Agency

**Northeast District Office**

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

**June 6, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**ERIE BURNING GROUNDS PHASE I RI**

Mr. Mark Patterson  
Environmental Program Manager  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9297

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the two-volume document entitled: "Phase I Remedial Investigation Report for the Erie Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna Ohio." The document, dated April 2000 and received at Ohio EPA, NEDO, on April 10, 2000, was generated for the U.S. Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC), under contract number DACA-62-94-D-0029, delivery order number 0072.

The comments in this correspondence solely reflect the review of Ohio EPA, NEDO, DERR. Comments from Ohio EPA, Central Office (CO), DERR, Ecological Assessment Unit (EAU), will be submitted to your attention under separate cover, when they are received by this office.

**VOLUME 1 - MAIN TEXT**

**General Comments (these items do not require responses from SAIC):**

1. Contamination has been confirmed through the sampling of surface water at location EBG-114 (PF534), located at the Ravenna Army Ammunition Plant (RVAAP) boundary at State Route 534. Sampling results indicated the presence of the following explosives compounds:

1,3-Dinitrobenzene	0.077J ug/l
2,4,6-Trinitrotoluene	0.46 ug/l
2,4-Dinitrotoluene	0.088J ug/l
HMX	0.093J ug/l
Nitrobenzene	0.066J ug/l

In addition to the above-referenced explosives, the concentration of cyanide in the surface water at location EBG-114 was determined to be 65 ug/l. Arsenic, barium, and manganese concentrations were also elevated above the determined background values.





MR. MARK PATTERSON

JUNE 6, 2000

PAGE 2

The position of the Army has been that no off-installation work can be conducted until contamination has been confirmed at, or beyond, the installation property boundary. As site-related contamination (SRC) has been confirmed to exist within approximately 100 feet (Figure 3-3) of the installation fence line, further discussions between Ohio EPA and the Army are warranted regarding the necessity for determining the source(s) of contamination and conducting off-post sampling.

2. In Appendix H (Ordnance and Explosive Avoidance Survey Report), on the field logs for August 12, 1999, August 16, 1999 and August 17, 1999, there are notations made that the proper personal protective equipment (PPE) was not being utilized by the asbestos abatement contractors working in Load Line 12. These field notes were made by the Explosives and Ordnance Demolition (EOD) personnel providing on-site unexploded ordnance (UXO) support to SAIC. Ohio EPA requests that this issue be brought to the attention of and discussed with the appropriate demolition contractor, such that the situation is immediately rectified, and does not occur in the future.

**Specific Comments:**

3. Please ensure that any changes made to the main portion of the text are reflected in the Executive Summary (ES).
4. Please revise the groundwater text on the bottom of page xiv, to indicate that the historical information indicates that minor quantities of explosives and/or metals were identified in these efforts. This revision would make this bullet consistent with the information presented in the first paragraph of this section. In addition, please add text that indicates that the Erie Burning Grounds (EBG) efforts are being conducted in a phased manner, partly due to the above-referenced historical information but also due to budget considerations.
5. Please revise the text on page xxi in the recommendation section, to indicate the following: "Based upon the current and *near future* land use and site conditions, the likelihood of exposure of human receptors to contaminants within EBG is low." Whether or not the Ohio National Guard (ONG), at some point in the future, would utilize this portion of the installation is unknown.
6. Please revise the last bullet on page xxi to indicate that even if the field-observed effects approach to ecological risk assessments (ERA) at Winklepeck Burning Grounds (WBG) is approved to be utilized at the EBG, that one of the initial steps in the ERA process is to compute Hazard Quotients (HQs). (Also page 6-12)

MR. MARK PATTERSON

JUNE 6, 2000

PAGE 3

7. Please revise the text on page 1-1 to indicate that Ohio EPA reviewed and provided comments on the EBG workplans.
8. Please correct the spelling on page 1-5 to indicate that fuzes (not fuses) were produced at Load Lines 5-11.
9. In Section 1.2.2 (Demography and Land Use), please revise the text to include the projected uses of the RVAAP property by the ONG that appear in the latest Ravenna Training and Logistics Site (RTLS) projections. (Page 1-6)
10. In Section 1.3.2 (Previous Investigations at Erie Burning Grounds), please include a brief discussion regarding the historical data quality assurance/quality control (QA/QC), detection limits, etc. (Page 1-8)
11. Please revise the text on page 1-12 to specify what risk based criteria was utilized to screen the historical sediment sampling data.
12. In future investigative activities, please ensure that the date stamp is accurate for the photographs taken at a particular Area of Concern (AOC). (Applicable to several photographs in the report.)
13. In future investigative activities, please ensure that the correct acronym for the Ravenna Army Ammunition Plant is utilized. For example, many of the figures in the EBG Phase I report indicate "RVAPP" instead of "RVAAP." The current figures in the draft Phase 1 RI do not need to be revised solely based upon this comment. However, if they were to be revised for other reasons, the acronym change should be made.
14. Please ensure that the State Potentially Threatened flora and Ohio State Special Concern fauna lists are the most recent. For example, the River Otter should be added to the fauna list based upon the observance of tracks and scat. (Page 2-10)
15. On Table 3-2 (Sample List and Rationales, EBG Phase I RI), please provide an explanation for the departure from the specified depths for contingency surface soil and subsurface soil samples EBG-121 and EBG-122. In these cases, the surface soil interval ranged from 0-2 feet and the subsurface interval ranged from 2.0 to 2.5 and 2.5 to 3.0 feet. What, if any, impact does this departure have upon the risk evaluation? (Page 3-7)
16. Please provide confirmation in the revised text that all sediment samples were analyzed for Total Organic Carbon (TOC) and grain-size analyses, as is required by the facility-wide sampling and analysis plan (SAP). (Page 3-19)



17. Please provide a discussion in the revised text as to what is meant by "definitive analytical methods." (Page 3-22)
18. In the text of the revised report, please provide an explanation for elevated reporting limits for nitroguanidine and nitrocellulose in surface water; and antimony in sediment and soil. In addition, please provide confirmation that the laboratory was contacted and requested to correct (for future investigations) any equipment problems (etc.) that contributed to the greater than 80% rejection rate for thallium in surface water and sediment. (Page 4-3 and Appendix E-7)
19. In an appropriate place in the text of the revised report, please provide a discussion summarizing the results of the ballast samples that were obtained as part of the EBG study.
20. In the revised report, please include data tables that summarize all site-related inorganic compounds (metals) in the surface soil, subsurface soil, sediment, and surface water. These summary tables should be similar to the format of the summary tables for explosives/propellants, semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), and PCBs. These requested tables would be in addition to the tables summarizing the "principle site-related inorganics" that already appear in the report.
21. The text on page 4-21 indicates that for cadmium, cyanide, and thallium, that "...there are no background criteria against which to compare the detected concentrations." The text should be revised to indicate that, if during the background study conducted in conjunction with the WBG Phase II RI a certain constituent was not detected, the background was set to zero.
22. Please revise the text on page 5-1 to read: "Explosives *and propellants* with frequency of detection less than five percent are exceptions and are not eliminated as SRCs, since they are most likely related to previous processes/activities at EBG."
23. On Table 5-1, for the surface water detection limits, the "b" footnote should be removed from the project quantitation limit column.
24. The RVAAP is located in the Mahoning River Basin. The correct Ohio Administrative Code (OAC) citation for the water quality standards is OAC 3745-1-25. (Page 5-14) If necessary, adjust Table 5-3 based upon this information.
25. Please revise the first bullet on page 6-11 to read as follows: "This suggests that contaminants *may* not be migrating beyond the AOC boundary."

**VOLUME 2 - Appendices A - J**

26. In future investigative activities, please ensure that all boreholes are sealed with bentonite and not backfilled, and that this is properly noted on all logs.  
(Appendix A)
27. Appendix E:
  - A. Please include all chain of custody (COC) forms.
  - B. Please provide an explanation for the VOCs in the trip blanks (page E-12).
  - C. The text on page E-12 indicates that "A few organic samples were conducted outside of the holding time because samples were re-extracted and re-analyzed due to low surrogate recoveries." Please provide information as to whether or not the laboratory has been routinely holding onto samples right up until the holding time is due to expire. If so, this is not an acceptable practice, and the laboratory should be notified accordingly.
  - D. On Table E.1, it is noted that nine duplicate samples should have been obtained for the sediment analyses.
  - E. On Tables E.4, E.5, E.6 and E.8, please provide a footnote explaining what is meant by "RPD" and "N".
28. In Appendix F, please provide a list of all qualifiers that are utilized, and provide all TOC results.
29. Ohio EPA had previously reviewed the Investigation-Derived waste (IDW) report on December 10, 1999, concurred with the conclusions of the characterization report, and had no objection to the disposal of the IDW that was to commence on December 27, 1999.

Ohio EPA concurs with the recommendations presented in Section 6.3 of the EBG Phase I report.



MR. MARK PATTERSON  
JUNE 6, 2000  
PAGE 6

If you have any questions concerning this correspondence, please do not hesitate to contact me at (330) 963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Todd Fisher, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Bonnie Buthker, OFFO, SWDO  
Brian Tucker, CO, DERR  
LTC Tom Tadsen, RVAAP  
John Cicero, RVAAP  
Bob Whelove, IOC  
John Jent, USACE Louisville  
David Seely, USEPA Region V  
Steve Selecman, SAIC  
Kevin Jago, SAIC  
Kathy Dominic, SAIC

**RVAAP-OEPA-VISTA TECHNOLOGIES-NES**  
**MEETING 3/23/00**  
**AT RVAAP**  
**10:00 AM**

---

**AGENDA**

1. Review OEPA comments in the 2/12/98 letter to RVAAP regarding requested revisions to the closure plan  
  
Section 2.3.3 (Page 2-4) of the Container Storage Unit  
  
Section 1.5 (Page 1-15) of the Open Detonation Area  
  
Section 2.4 (Page 2-11) of the Open Detonation Area Closure Plan  
  
Table 1-2 technical correction
2. Review the issue of closure plan extension in regard to closure requirements
3. Discuss the original Director's F&Os of 7/30/92
4. Discuss the matter of drafting new F&Os considering the IRP and associated activities at RVAAP
5. Meeting Summary



# RCRA Meeting

3/23/00

1000

<u>Name</u>	<u>Org.</u>	<u>Phone/Fax.</u>
Mark Patterson	RVAAP	330-358-7311/7314
EILEEN MOHR	OESA	330-963-1221 / 330 487 0767
GREGORY ORR	OESA	330-963-4189   " "
Rick Callahan	MKM	330-358-2920 / -2924
JOHN JENT	CORPS OF ENGERS	502-582-6393 / 5168
PAUL ZORKO	" " "	502-582-5572 / 5168
Denise Gilliam	MKM	330-358-2920 / 2924
Susan McCauslin	Vista Tech.	330-358-1753 / 1754
Prakash Raja	Vista Tech	210-494-4282 / 9711
ERNIE NEAL	NES/VISTA	614-224-5333
		fax - 5334
Frank S. CZASZKOWSKI	Advent	813-887-3010 / 5792

# Ravenna Army Ammo Plant IAP Schedule

(Based on Cost to Complete current funding constraints)

CURRENT PHASE			FUTURE PHASE						
DSERTS #	SITE NAME	PHASE	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006+
RVAAP-02	Erie Burning Grounds	RI/FS							
		RD							
		RA							
		LTM							
RVAAP-03	Demolition Area #1	RI/FS							
		RD							
		RA							
		IRA							
RVAAP-04	Demolition Area #2	RI/FS							
		RD							
		RA							
		LTM							
RVAAP-05	Winklepeck Burning Ground	RI/FS							
		RD							
		RA							
		LTM							
RVAAP-06	C Block Quarry DP	RD							
		RA							
		LTM							
RVAAP-08	Load Line 1	RI/FS							
		RD							
		RA							
		LTM							
RVAAP-09	Load Line 2	RI/FS							
		RD							
		RA							
		LTM							
RVAAP-10	Load Line 3	RI/FS							
		RD							
		RA							
		LTM							
RVAAP-10	Load Line 3	RI/FS							
		RD							
		RA							
		LTM							
RVAAP-12	Load Line 12	RI/FS							
		RD							
		RA							
		LTM							
		IRA							
RVAAP-13	Building 1200	RD							
		RA							
		LTM							
RVAAP-16	Fuze and Booster Quarry Landfill/Pond	RI/FS							



# Ravenna Army Ammo Plant IAP Schedule

(Based on Cost to Complete current funding constraints)

CURRENT PHASE			FUTURE PHASE						
DSERIS #	SITE NAME	PHASE	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006+
RVAAP-19	Landfill North of Winklepeck Burning Grounds	RD							
		RA							
		LTM							
		R/FS							
RVAAP-28	Mustard Agent Burial Site	RD							
		RA							
		LTM							
		R/FS							
RVAAP-29	Upper & Lower Cobbs Ponds	RD							
		RA							
		LTM							
		R/FS							
RVAAP-32	40 & 60 MM Firing Range	RD							
		RA							
		LTM							
		R/FS							
RVAAP-33	Load Line 6 Fuze and Booster	RD							
		RA							
		LTM							
		R/FS							
RVAAP-34	Sand Creek Disposal Road Landfill	RD							
		RA							
		LTM							
		R/FS							
RVAAP-36	Pistol Range	RD							
		RA							
		LTM							
		R/FS							
RVAAP-38	NACA Test Area	RD							
		RA							
		LTM							
		R/FS							
RVAAP-39	Load Line 5 Fuze and Booster	RD							
		RA							
		LTM							
		R/FS							
RVAAP-40	Load Line 7 Fuze and Booster	RD							
		RA							
		LTM							
		R/FS							
RVAAP-41	Load Line 8 Fuze and Booster	RD							
		RA							
		LTM							
		R/FS							
RVAAP-42	Load Line 9 Fuze and Booster	RD							
		RA							
		LTM							
		R/FS							
RVAAP-43	Load Line 10 Fuze and Booster	RD							
		RA							
		LTM							
		R/FS							

# Ravenna Army Ammo Plant IAP Schedule

(Based on Cost to Complete current funding constraints)

CURRENT PHASE			FUTURE PHASE						
DSERTS #	SITE NAME	PHASE	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006+
RVAAP-44	Load Line 11 Fuze and Booster	R/FS							
		RD							
		RA							
		LTM							
		IRA							
RVAAP-45	Wet Storage Area	R/FS							
RVAAP-46	Bldg F-15 & F-16	R/FS							
		RD							
		RA							
RVAAP-47	Bldg T-5301	R/FS							
		IRA							
RVAAP-48	Anchor Test Area	R/FS							
		IRA							
RVAAP-49	Central Burn Pits	R/FS							
		RD							
		RA							
		LTM							
RVAAP-50	Atlas Scrap Yard	R/FS							
		RD							
		RA							
		LTM							
RVAAP-51	Dump Along Paris Windham Rd.	RD							
		RA							





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

August 10, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
**Open Demolition Area #1 Report**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Draft, Phase I Remedial Investigation Report for Demolition Area 1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." The document, dated June 2000 and received at Ohio EPA NEDO on July 3, 2000 was generated for the U.S. Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC), under contract number DACA 62-94-D-0029, delivery order number 0076.

The comments in this correspondence solely reflect the review of Ohio EPA NEDO DERR. Comments from Ohio EPA, Central Office (CO), DERR, Ecological Assessment Unit (EAU) will be submitted to your attention under separate cover as soon as they are received by this office.

**General Comment (does not require a response from SAIC):**

1. In several places in the text, there is an indication that RDX was detected at a concentration of 0.24 J ug/L in surface water at sampling station DA1-046. This sampling location corresponds to historical location HC-2, which represents a facility exit point. The position of the Army has been that no off-installation work can be conducted until contamination has been confirmed at, or beyond, the installation property boundary. As site-related contamination (SRC) has been confirmed to exist at the installation fence line, further discussions between Ohio EPA and the Army are warranted regarding the necessity for determining the source(s) of contamination, conducting confirmation sampling at this location, and potentially conducting off-post sampling.



**Specific Comments:**

2. Please ensure that any changes made to the main portion of the text are reflected in the Executive Summary (ES).
3. In the ES (page xiii line 5), please remove the reference to groundwater, as one screening sample from a geoprobe boring does not characterize the occurrence and distribution of contamination in groundwater.
4. Please revise page xv lines 11-12 to indicate that soil contamination was confirmed at Open Demolition Area 1 (ODA 1) as a result of the Relative Risk Site Evaluation (RRSE) conducted by the US Center for Health Promotion and Preventive Medicine (USACHPPM) at this Area of Concern (AOC).
5. The statements on page xvi lines 8-9 and 25-26 should be modified to indicate that the conclusion that certain classes of chemical compounds has had little impact on the surface and sub-surface soils is based upon minimal sampling locations. This comment is also applicable to page xx, lines 17 and 26.
6. Please remove the statement on page xvi lines 46-47 (as well as page 4-29 lines 16-17 and page 6-7 lines 25-26) from the text, given that only one screening sample of groundwater has been obtained from this AOC. If it is not removed, the text should be modified to indicate that there is no clear evidence to indicate that leaching to groundwater has not occurred.
7. Please remove the statement from the text on page xix (lines 50-51) that indicates that constituents identified as human health or ecological chemicals of potential concern (COPCs) do not conclusively reflect impacts related to ODA 1. Given that explosives and/or propellants are detected in various media, and discussed in chapter 5 as COPCs, this statement is not accurate.
8. Page xx (lines 30-32) indicates that the maximum concentration for aluminum in sediment is equal to the surface soil background criterion for this element. Please provide an explanation as to why the two different media are being compared, or remove line 31 and a portion of 32 from the text of the report.
9. Page xxi lines 1-2 (also page 4-29 lines 5-6 and 11-12; page 6-3 lines 47-48 and page 6-7 lines 31-32) indicate that the sediment and surface water in Hinckley Creek have not been impacted by the former operations at ODA 1. Sampling station HC-2 has shown an estimated concentration of an explosive compound, and as such the source(s) of this contamination should be determined. The Agency does not concur with the recommendation against conducting an



ecological risk assessment at ODA 1 that is detailed in the text on page xxi, lines 32-34 (also page 6-8 lines 10-12); nor the recommendation for not conducting additional investigation or action regarding the surface water and sediment in Hinckley Creek (page 6-7 lines 32-33 and 6-8 lines 15-17).

10. Please remove the statement from the text on page xxi (lines 6-7) that indicates that the shallow groundwater in the vicinity of DA1-027 does not appear to have been impacted by the former operations at ODA 1, as the Agency is not in agreement with this conclusion. A screening sample of groundwater indicates an estimated concentration of 0.045 ug/L of 1,3-dinitrobenzene at this location. The position of the Ohio EPA regarding the use of groundwater screening results is as follows: if the concentration of a particular contaminant is reported as non-detect (ND) that is not conclusive proof that no contamination exists; and, any concentration of a particular contaminant that is reported from a screening sample is considered to represent a minimum concentration.
11. Please revise the text on page 1-1 (line 11) to indicate that the Ohio EPA reviewed and provided comments on the ODA 1 workplan.
12. Please revise the spelling on pages 1-6 (line 3) and 1-7 (line 41) to read "fuzes" instead of "fuses."
13. In section 1.2.2 (page 1-6, lines 36-40), please revise the text to include the projected uses of the Ravenna Army Ammunition Plant (RVAAP) property by the Ohio National Guard (ONG) that appear in the latest Ravenna Training and Logistics Site (RTLS) projections.
14. A Phase I Remedial Investigation (RI) will be conducted at all RVAAP AOCs (high, medium, and low), given that a Phase I RI is equivalent to a Site Investigation (SI). Please adjust the text accordingly on page 1-9, lines 1-2.
15. Please provide the detection limits for constituents reported as non-detect on Table 1-1 that is found on page 1-9.
16. On page 1-9 (lines 32-33), the text indicates that the USACHPPM RRSE report does not indicate whether or not the samples that were obtained were biased towards areas of obvious contamination. As a point of information (no text revision required), the Ohio EPA assisted in obtaining the RRSE samples at ODA 1, and an attempt was made to bias sample locations based upon whether or not it visually looked like contamination was present.

17. With respect to the text on page 1-11 (lines 13-15) that discusses human health and ecological risk assessments, please remove the phrase "if required" from line 15.
18. On Table 3-2 (page 3-8), please revise the table to indicate that the groundwater sample represents a screening sample result.
19. Please provide an explanation in the text as to the frequency of detection (FOD) screen being utilized for sample aggregates of twenty or greater, i.e., how was the cut-off number of twenty determined? (Page 4-3, lines 44-46)
20. On Table 4-2 (page 4-5), please provide verification that sodium was only detected in one out of seventy samples in the subsurface soil.
21. In several portions of the text, there is the notation that various target analyte list (TAL) metals did not have established background criteria. These statements need to be revised to indicate that if a particular TAL metal was not detected at the background sampling locations, that the background for that constituent was set at 0.00 mg/kg. (Page 4-18, lines 5-6)
22. The text on page 4-18 (line 5) indicates that thallium was detected at all sampling locations. In lines 10-12 on the same page there is the notation that thallium was detected more frequently on the eastern side of the AOC than on the western side. Please adjust the discrepancy.
23. Please modify the text on page 5-1 (line 19) to read: "Explosives and propellants with a frequency of detection...."
24. Please revise the text on page 5-10 (lines 28-29) to indicate that the RVAAP is located in the Mahoning River Basin, and, as such, these are the appropriate Ohio Water Quality Standards (OWQS) to reference. In addition, any applicable change should be made to Table 5-3 (pages 5-16 - 5-22)
25. In Appendix D (page D-10), please remove the reference to toluene as being a common laboratory artifact.
26. In Appendix D (page D-11), please provide the contamination source(s) of methylene chloride and styrene in the project trip blanks.
27. In Appendix D (page D-11), please provide further information regarding the several samples that were analyzed outside of the appropriate holding time because they had to be re-extracted and re-analyzed. In particular, has the



Mark Patterson

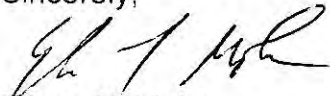
Page 5

laboratory been holding all the samples until close to the expiration of holding times? If so, this is not an acceptable practice.

28. In Appendix D: on Tables D-4 through D-9, there should be a key at the end of each table that indicates what the various abbreviations represent.
29. In Appendix E, please provide the project chain of custody (COC) forms.
30. Please refer to a previous email dated December 10, 1999 from Ohio EPA to SAIC that specifically responds to the investigation-derived waste (IDW) report (Appendix H). The Agency had concurred with the conclusions of the characterization report and had no objection to the disposal of the IDW as proposed in the plan.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr

Project Coordinator

Division of Emergency and Remedial Response

cc: Bob Princic, NEDO DERR  
Todd Fisher, NEDO DERR  
Diane Kurlich, NEDO DDAGW  
Bonnie Buthker, OFFO SWDO  
Brian Tucker, CO DERR  
LTC Tom Tadsen, RVAAP  
John Cicero, RVAAP  
Bob Whelove, OSC  
John Jent, USACE Louisville  
David Seely, USEPA Region V  
Steve Selecman, SAIC  
Kevin Jago, SAIC  
Kathy Dominic, SAIC



State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

TO	10/2/00
CR-COE	10/6/00
ENV	
CONTRACTOR	Bob Taft, Governor
RETURN FOR FILE	Christopher Jones, Director

September 30, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
**Open Demolition Area #1**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Explosive Safety Submission, OE/UXO Locating, Removal and Disposal at Open Demolition Area 1, Ravenna Army Ammunition Plant." This document dated September 2000, and received by Ohio EPA on September 29, 2000, was prepared by MKM Engineers Inc. for the US Army Operations Support Command (OSC) under contract number DAAA09-98-G-0001.0031.

The Ohio EPA, NEDO, DERR has the following comments on the document:

1. The text on page 5 should indicate that the OSC "...ultimately intends to transfer the rest of the RVAAP property....", as approximately 16,000 acres have already been transferred to the control of the National Guard Bureau (NGB). The disposition of the rest of the acreage is currently under discussion between the NGB and the Army.
2. Open Demolition Area (ODA) #1 will be cleared for unexploded ordnance (UXO) and Ordnance and Explosive Waste (OEW) to a depth of four feet. The text on page 6 indicates that this depth is the default standard for the intended use of the area. Please confirm with the appropriate representatives of the Ohio National Guard (ONG) that this depth is adequate for the proposed end use of this Area of Concern (AOC). If not, it is incumbent upon the OSC and the NGB/ONG to institute the necessary land use controls /restrictions for this area to ensure the safety of the military personnel that will be training in this area.





3. Please define the acronym "SUXOS" that is utilized throughout the text of the explosives safety submission.
4. Please ensure that the magazines that are to be utilized for the storage of the recovered UXO will have the necessary and required signs posted. Please contact Mr. Greg Orr of Ohio EPA, NEDO, Division of Hazardous Waste Management (DHWM) at 330-963-1200 for additional information regarding this issue. (Pages 8 and 18)
5. In the event that detonation of UXO or suspected UXO is determined to be necessary, this must be coordinated with the Ohio EPA in order to receive the necessary emergency permits. Please contact Mr. Greg Orr of Ohio EPA, NEDO, DHWM at 330-963-1200 for additional information regarding this issue. (Pages 9, 11, 12, 13, 14, 15, 17, and 21)
6. The text on page 10 indicates that the Ravenna Army Ammunition Plant (RVAAP) is not known as a buried Chemical Warfare Materiel (CWM) site. Please be advised that the RVAAP is listed on the Non-Stockpile Chemical Warfare Materiel Preliminary Environmental Impact Statement (NSCWMPEIS) as a site with potential CWM due to the suspected/reported presence of a mustard agent burial site (AOC 28).
7. Please ensure that all decontamination fluids are containerized and characterized, and ultimately disposed of in accordance with all applicable state and federal rules, laws and regulations. (Pages 12 and 14)
8. The text on pages 12 and 14 allude to and directly reference the thermal treatment of scrap material by processing it through the MKM flashing furnace in order to attain 5X levels. As such, the flashing furnace should appear in the decontamination demil/disposal treatment flow chart that is found in Appendix B.
9. On page 12, please confirm in section 11.2, that the areas excavated to the four foot depth will be swept for magnetic anomalies prior to filling in the grids with clean soil. This would provide the NGB/ONG with information regarding the potential presence of anomalies at a greater than four foot depth.
10. Please revise the draft technical memorandum in Appendix C (at your convenience) to reflect the discussions and agreements between the Ohio EPA and MKM reached on September 29, 2000. These decisions included: the grid number from which the excavated soil also needs to be moved to Load Line 4 due to metals concentrations; the additional soil that needs to be excavated at identified Science Applications International Corporation (SAIC) sampling

Mark Patterson  
Page 3

locations that contain metals concentrations not consistent with background concentrations; and, the grids and sampling locations whose metals concentrations were determined to be consistent with background. In addition, please revise the tech memo to indicate that five of the twenty grids are contaminated solely with OE/UXO (i.e., no identified environmental contamination).

11. Although the Ohio EPA does not have regulatory authority regarding health and safety plans (HASPs), the following comments are offered for your consideration:
  - a. The entire document should be spell-checked.
  - b. The site-specific HASP should reference the installation-wide HASP, under which this plan is tiered.
  - c. The text of the HASP should reference the correct appendices. (Pages 6, 10, and 11). In particular, it is noted that section 2.3 (emergency action) references the incorrect appendix for critical phone numbers, driving directions, evacuation routes, rally points, and emergency response duties.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

cc: Bob Princic, NEDO DERR  
Todd Fisher, NEDO DERR  
Greg Orr, NEDO DHWM  
Bonnie Buthker, OFFO SWDO  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
Bill Ingold, OSC  
Srini Neralla, MKM  
Rick Callahan, MKM





State of Ohio Environmental Protection Agency

**Northeast District Office**

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

**November 6, 2000**

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
**Open Demolition Area #1**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) has received and reviewed the document entitled: "OE/UXO Locating, Removal and Disposal at Open Demolition Area 1, Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, received on November 01, 2000 was prepared by MKM Engineers Inc. for the U.S. Army Operations Support Command (OSC) under contract number DAAA09-98-G-0001.0031.

The revised document was compared to the draft submittal which was received on September 29, 2000, and the Response to Comment (RTC) document which was received via email on November 03, 2000. As previously conveyed to MKM Engineers via telephone on November 03, 2000, the revised workplan did not incorporate the requested Ohio EPA changes (detailed in Ohio EPA correspondence dated September 30, 2000). However, the RTC document was acceptable to the Agency. As agreed during the November 03, 2000 telephone conversation, the Ohio EPA will not require an additional revision of the document; however, the Agency requests that a copy of the RTC document and this correspondence be attached to the copies of the above-referenced workplan. This is particularly requested for copies of the document utilized in the on-site work by MKM, the official Ravenna Army Ammunition Plant (RVAAP) copy, and any copies that may be in the two document repositories (Newton Falls and Ravenna libraries). I will ensure that a copy of the RTC and correspondence are attached to the Ohio EPA copy of the document.



Mark Patterson  
Page 2

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

cc: Bob Princic, NEDO DERR  
Greg Orr, NEDO DHWM  
John Cicero, RVAAP  
Todd Fisher, NEDO DERR  
Rick Callahan, MKM Engineers

Bonnie Buthker, OFFO SWDO  
Bill Ingold, OSC  
LTC Tom Tadsen, RVAAP  
David Seely, USEPA Region V  
Srini Neralla, MKM Engineers



## Patterson, Mark

---

**From:** Eileen Mohr [emohr@sssnet.com]  
**Sent:** Monday, November 06, 2000 5:51 PM  
**To:** pattersonm@ioc.army.mil; richard.callahan@mkmeng.com  
**Cc:** eileen.mohr@epa.state.oh.us  
**Subject:** Open Demolition Area #1 - Grid 5

Rick and Mark:

The purpose of this email is to memorialize a conversation held between Rick Callahan (MKM) and Eileen Mohr (Ohio EPA) regarding grid #5 at Open Demolition Area (ODA) #1 on November 6, 2000 at the Ravenna Army Ammunition Plant (RVAAP). The email also contains additional information/requests from the Agency after additional thought about the issue.

On November 6, 2000 while excavating grid #5 in accordance with the specified workplan, a solvent like odor was noted by MKM personnel. Work was halted and a PID was brought to the site area to obtain field measurements of organic vapors. The following was recorded:

- the 0-1 foot was excavated as per the plan, sifted and is staged at Load Line 4. This soil did not register any PID readings.
- the 1-2 foot interval had PID readings of 40-50 ppm; at the 2' interval the PID reading was approximately 200 ppm; at the 2.5-3 foot interval the readings were approximately 1000 ppm; and at depths greater than 3.5 feet the readings ranged from 1 or 2 up to 5 ppm.
- the area in which the PID readings were the highest was limited in extent.

Subsequent to discussing the situation, the following was agreed-upon:

- the 0-1 foot interval was removed, sifted and moved to LL4 in accordance with the workplan
- the area in the vicinity of the highest PID readings will be "surgically removed" to a depth of 4 feet. That is, the soil that is most contaminated will be removed; however, the volume of soil that is removed will be minimized. This soil will be segregated, sifted to remove any potential OE/UXO, containerized and stored under cover at LL4. Future discussions will be held between the Ohio EPA and MKM to determine the analytical testing suite and subsequent disposition of the soil.
- the soil in the areas of grid 5 where relatively minor detections of organics were indicated by the PID will be excavated, segregated, sifted for OE/UXO, and be tested again via hand-held instrumentation to determine if after sifting any VOCs remain. If VOCs are detected, the soils cannot be used as backfill material and must be staged in a separate area under cover. Discussions will be held between Ohio EPA and MKM to determine the analytical suite. In addition, the Ohio EPA requests that MKM contact the Agency to discuss (if the PID readings come back non-detect) the number of samples taken, locations, depths in the stockpile etc. to ensure that the Ohio EPA is in agreement with the conclusions reached.

In addition: while excavating, sifting and transporting the soils, please ensure that personnel will be utilizing the proper PPE.

I can be reached via my pager on Tues (11/7) at 614-617-9050; after that time frame I will be in Louisville KY at the USACE conference at the Holiday Inn and can be reached there should any questions arise, or if I have incorrectly summarized our conversation in this email.

Thanks.

Eileen



State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

TO	5/17/00
✓	CR-COR
✓	ENV
	LAND MGR
	CONTRACTOR
	RETURN FOR FILE

Bob Taft, Governor  
Christopher Jones, Director

**April 5, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**OPEN DEMOLITION AREA # 2**

Ms. Susan McCauslin  
Environmental Coordinator  
Vista Technologies, Inc.  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266

Dear Ms. McCauslin:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Report of Analytical Results, Demolition Area # 2 CERCLA Sites, Ravenna Army Ammunition Plant, Ravenna, OH." This document, dated March 6, 2000 and received at Ohio EPA on March 28, 2000, was prepared for the Commander of the U.S. Army Industrial Operations Command (IOC) by Vista Technologies, Inc., under the basic order agreement DAAA09-99-D-018, Deliver Order # 0001.

Ohio EPA, NEDO, DERR, has the following comments on the submitted document:

1. In the designated CERCLA areas of Open Demolition Area (ODA) # 2 that will be undergoing surgical removal of unexploded ordnance (UXO), please refer to: Ohio EPA correspondence to IOC, dated November 3, 1997 and October 15, 1999; Ohio EPA e-mails to Vista, dated October 27, 1999 and November 1, 1999; and Vista correspondence to Ohio EPA, dated October 21, 1999, which (in part) specifically deals with the issue of investigation-derived wastes (IDW) that will be generated as part of this operation. The agreement as to how to handle the soil resulting from the UXO surgical operation must be adhered to, and described in this report. Please adjust all pertinent portions of the report accordingly.
2. In several places within the text of the report, there are references to conversations held with installation personnel regarding potential disposal areas and the contents of those areas. These conversations should be documented in the report (i.e., with whom the conversations were held, the person's relationship to the installation, dates/times of the conversations, etc.).
3. With respect to the analyses conducted on the obtained soil samples:
  - A. In Section I(B), please revise the text to more accurately reflect the analytical suite to which the soil samples were subjected. Specifically, the samples were analyzed for more than Target Analyte List (TAL) metals and/or Target Compound Leaching Procedure (TCLP) metals. This portion of the text, as written, directly contradicts the analytical list presented at the end of Section II on page three of the report.





MS. SUSAN MCCAUSLIN

APRIL 5, 2000

PAGE 2

- B. In Section III of the report (Burial Site # 1) the analytical suite listed is not complete (when compared to Table 2), and should be revised accordingly.
  - C. The text on page three of the report indicates that samples obtained from the 0-1' level were not analyzed for explosives and propellant compounds. This statement contradicts the analytical results presented in the back of the report. The text of the report should be adjusted accordingly.
- 4. Please revise the third bullet in Section II to read: "All other surface soils were taken from the approximate middle of the triangle." (The sub-surface sample depths listed in the text should be omitted.)
  - 5. The text of the report should contain a chart or table which clearly indicates for each sample: the location from which the sample was obtained, the sample designation number, the sample depth, whether the sample represents a discrete or composite sample, etc.
  - 6. In the "Sample Analytical Results" section:
    - A. Please remove all references to the U.S. Geological Survey (USGS) Ohio reference values, the 1997 RCRA Closure Field Investigation Study, and the IDW characterization study (1996) as the sources utilized for background determination. All TAL metal results should be compared to the installation-specific background that was determined during the studies conducted at the Winklepeck Burning Grounds (WBG), and this section of the report subsequently revised. Copies of the draft-final WBG report are on file at the installation for your review.
    - B. Please provide an explanation for the higher detection limits for explosives compounds in soil boring SC-B.
    - C. Please remove statements from the text such as (not all inclusive): "... marginally above reference values which is within 10%"; "... values were exceedingly small and determined to be insignificant"; "...levels did not present disposal problems..."; "... after the soil is sifted it can be placed back on site"; and, indications that detectable explosives/propellant compounds are not above "reference values," as any detected concentrations of explosive and propellant compounds are above the determined installation background. Currently, Remedial Goal Options (RGOs) have not been agreed-upon between the stakeholders, so it is premature to indicate what concentrations may be acceptable to leave in place at this Area of Concern (AOC).
    - D. Please revise this section to be consistent with comment # 1 detailed above.
  - 7. Please revise the conclusion section to be consistent with the above-referenced comments, particularly item # 1 detailed above.

MS. SUSAN MCCAUSLIN

APRIL 5, 2000

PAGE 3

8. In Tables 2 through 6:
  - A. Please remove the USGS Ohio reference values, and utilize the installation specific background that was determined during the WBG study.
  - B. Please provide a footnote that indicates what is meant by an asterisk and numbers that are in bold print.
  - C. Please confirm that none of the laboratory analytical data had any qualifiers.
9. In the revised document, please include a copy of the laboratory quality assurance/quality control (QA/QC) reports, laboratory reports, copies of the chain of custody (COC) forms, copies of pertinent field notes, etc.
10. Please revise Table 14 to include detection limits for all analytical constituents.
11. Please revise Appendix B (References) to include the documents cited in this correspondence. Specifically, the WBG draft-final report and the correspondence from Ohio EPA regarding IDW should be referenced, and the RCRA closure report and the IDW characterization and disposal plan should be deleted.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Greg Orr, NEDO, DHWM  
Bonnie Buthker, OFFO, SWDO  
Mark Patterson, RVAAP  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
John Jent, USACE Louisville  
Robert Matthys, IOC  
Bob Whelove, IOC  
Prakash Raja, Vista





State of Ohio Environmental Protection Agency

Northeast District Office

# 1

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

April 28, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
MONITORING WELL (DET-1)  
**DETONATION AREA**  
OH5-210-020-736

TO	5/1/00
CR-COR	
ENV	
LAND MGR	
CONTRACTOR	
RETURN FOR FILE	

John Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9297

Dear Mr. Cicero:

During the week of June 1, 1998, unstable ordinance was exploded by the Army in the Open Detonation Area (ODA) at the Ravenna Army Ammunition Plant (RVAAP). Although the explosions were conducted outside the area defined as a RCRA unit, the pit used for the detonations was located approximately 10 to 15 feet away from the up gradient well (DET-1) used for the RCRA ground water monitoring program. Because of Ohio EPA concerns with how these explosions may have compromised the physical integrity of this well and/or introduced site specific contaminants of concern into the ground in the area of the up gradient monitoring point, the RVAAP was requested to replace this well. The replacement well was installed at the site on April 4, 2000. This letter is to clarify RVAAP's compliance with the statistical requirements of OAC 3745-54-98 (F).

Upon the detonation of unstable ordinance in the vicinity of up gradient well DET-1, the integrity of the well and ground water chemical data obtained from the well became questionable. Therefore, the last acceptable background ground water data was obtained from this well prior to June 1, 1998. Thus, valid statistical analyses of up gradient versus down gradient ground water data have not been possible for almost two years. In addition, valid statistical analyses will not be possible until sufficient background ground water data for the statistical method being used by the facility have been collected from the newly installed well. The statistical analysis of ground water data is required by OAC 3745-54-98 (F). Thus, until sufficient background data is obtained to allow for such analyses, RVAAP is in violation of OAC 3745-54-98 (F).

The Ohio EPA recommends that independent background ground water quality samples be collected from the new up gradient well within the next 180 days. RVAAP should follow Chapter 3 in U.S. EPA's April 1989 document titled "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities" for the selection of a sampling interval.

RAVENNA ARMY AMMUNITION PLANT

APRIL 28, 2000

PAGE - 2 -

The selected sampling interval must allow sufficient time to pass between sampling events to ensure that independent samples are collected from the up gradient well. The calculations used to derive the background sampling interval should be submitted to Ohio EPA for review, along with the sampling schedule. Ohio EPA recommends that background sampling begin as soon as possible.

Should you have any questions regarding this matter, please do not hesitate to contact me at (330) 963-1189.

Sincerely,



Gregory Orr

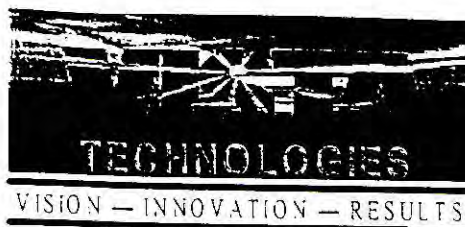
Environmental Specialist

Division of Hazardous Waste Management

GO:ddb

cc: Mark Patterson, RVAAP  
Tom Crepeau, DHWM Central File, Ohio EPA  
Harriet Croke, USEPA - Region V  
Natalie Oryshkewych, DHWM, NEDO  
Eileen Mohr, DERR, NEDO  
Dianne Kurlich, DDAGW, NEDO  
Jarnal Singh, DSIWM, NEDO  
Mark Navarre, Legal, CO





June 26, 2000

*Mark for*

TO	6/27/00
<input checked="" type="checkbox"/>	CR-COR
<input checked="" type="checkbox"/>	ENV
	LAND MGR
	CONTRACTOR
	RETURN FOR FILE

THRU: Contracting Officer's Representative  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, Ohio 44266-9297

TO: Ohio Environmental Protection Agency  
Northeast District Office  
2110 E. Aurora Road  
Twinsburg, OH 44087  
ATTN: Gregory Orr, DHWM

Re: Ravenna Army Ammunition Plant **Open Detonation (OD) Area Hazardous**  
Waste Treatment Unit Closure Plan Modification and Extension

Dear Mr. Orr:

This letter is in follow-up to the March 23 and April 20, 2000 meetings involving representatives of Ohio EPA-NEDO, Ravenna Army Ammunition Plant (RVAAP) staff and environmental consultants regarding the RVAAP OD area hazardous waste treatment unit closure plan.

During the meetings we collectively reviewed two matters:

#### RVAAP OD Area Closure Plan Modifications

We addressed the approved revised hazardous waste closure plan for the RVAAP OD Area dated October 1997. In a February 12, 1998 letter, OEPA approved the revised closure plan and requested that the RVAAP prepare a few minor modifications in the plan for submittal to the agency. Those specific modifications were discussed in detail during our meetings and the modified pages incorporating the specified changes are formally submitted in an attachment to this correspondence.

Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, Ohio 44266  
Phone: 330-358-1753  
Fax: 330-358-1754  
[www.vistatechnologies.com](http://www.vistatechnologies.com)

## **RVAAP Hazardous Waste Closure Plan Extension**

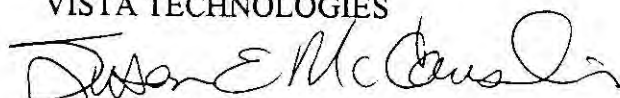
Our discussion of March 23<sup>rd</sup> also reviewed the need for an extension of time to complete closure of the RVAAP OD area hazardous waste closure plan based upon ongoing site-wide remediation activities taking place under the recently developed RVAAP Installation Action Plan (IAP) adopted in March 2000. The RVAAP IAP has established an 8-10 year schedule for the evaluation, remediation and restoration of the facility. Due to remedial actions outlined under the RVAAP IAP, OEPA and RVAAP jointly discussed and agreed that it was neither practical nor prudent, for several reasons, to complete closure of the RVAAP OD area prior to completion of the planned restoration activities. First and foremost, future activities taking place under the IAP may require that the RVAAP OD area be utilized to safely detonate and burn any unexploded ordnance items uncovered during future site remediation. Secondly, it would be unwise to complete formal closure of the RVAAP OD area only to reinitiate burning and detonation activity in the same area should that become necessary.

In addition, we also reviewed at our meeting the need to provide some flexibility for the formulated IAP schedule based on a series of factors that cannot be tightly controlled, including congressional funding issues, environmental permitting factors, and site specific remediation complications that may arise during facility decommissioning activities. Considering these issues, in accordance with OAC 3745-66-13, the RVAAP formally requests approval of an extension of time to complete closure of this unit until September 30, 2010.

In order that Ohio EPA can be kept apprised of the progress and developments of facility closure, the RVAAP would agree to provide annual summary reports to the OEPA-Division of Hazardous Waste Management outlining the accomplished activities of the RVAAP Installation Action Plan if requested to do so.

If you have any questions or would like further information on these issues, feel free to contact me at (330) 358-1753. The Government point of contact for this subject is Mr. Mark Patterson, at (330) 358-7311.

Respectfully,  
VISTA TECHNOLOGIES



Susan E. McCauslin  
Environmental Coordinator

cc: Mark Patterson, RVAAP  
Ernie Neal, NES  
Eileen Mohr, OEPA NEDO DERR



REVISED PAGES FOR INSERTION INTO  
THE REVISED CLOSURE PLAN

FOR

THE OPEN DETONATION (OD) TREATMENT AREA  
HAZARDOUS WASTE MANAGEMENT UNIT

RAVENNA ARMY AMMUNITION PLANT

DATE OF SUBMISSION: OCTOBER 31, 1997  
REVISED JUNE 19, 2000

OD AREA, AND WHERE THE CREEK EXITS DEMOLITION AREA #2. THERE WERE NO DETECTIONS OF EXPLOSIVES OR METALS ABOVE SITE-WIDE BACKGROUND VALUES IN ANY OF THE THREE SAMPLES, AND NO SITE-RELATED ORGANIC COMPOUNDS WERE DETECTED. NEITHER EXPLOSIVES NOR METALS POSE A THREAT TO HUMAN HEALTH. SPECIFIC ANALYTICAL RESULTS FOR THESE SAMPLING POINTS ARE PROVIDED IN THE SAMPLING AND ANALYSIS PLAN (AS APPENDIX A2) THAT ACCOMPANIES THIS CLOSURE PLAN.

THE APPROACH ADOPTED IN THIS CLOSURE PLAN IS TO DEFINE THE LATERAL EXTENT OF POTENTIAL CONTAMINATION AS THE DELINEATED BOUNDARY OF THE RCRA-REGULATED AREA SHOWN IN FIGURE 1-3. THE CONFOUNDING PRESENCE OF LIKE CONSTITUENTS FROM NON-REGULATED SOURCES MAKES THE DETERMINATION OF LATERAL EXTENT BY SAMPLING IMPOSSIBLE. THE AREA WITHIN THE BOUNDS OF THE RCRA-REGULATED OD AREA WILL BE SAMPLED AND EVALUATED AS DESCRIBED IN SECTION 2.2 OF THIS CLOSURE PLAN. VERTICAL EXTENT OF CONTAMINATION WILL BE ASSESSED WITHIN THE UNIT BOUNDARY. THE AREA OUTSIDE THE BOUNDARY OF THE OD AREA WILL BE EVALUATED IN THE ONGOING CERCLA PROCESS. BECAUSE THE LIST OF ANALYTES IDENTIFIED IN THIS CLOSURE PLAN IS IDENTICAL TO THAT PROPOSED FOR THE PHASE II RI, NO POSSIBLE WASTE CONSTITUENTS WILL BE OMITTED.

### **1.5.1 Waste Managed**

The RVAAP detonated large caliber munitions and "off-spec" bulk explosives at the OD unit. The past operating procedures were to place explosives to be detonated in a pit that had been excavated to a minimum depth of 4 feet. The trench was backfilled with 2 feet of soil, and the explosives were detonated. After detonation, the site was carefully policed for shrapnel, scrap metal, or any unexploded ordnance (UXO). The OD unit and surrounding area have been used for the treatment of munitions since 1948. MUNITIONS WERE LAST TREATED AT THE OD AREA IN 1993. Materials treated in this area have included primer elements, bombs, and various caliber munitions ranging from 40 mm to 8 inches. The OD unit is surrounded by an area of approximately 20 acres that may have formerly been used for burial of munitions. Bombs, white phosphorus, and other UXO may have been buried within the immediate vicinity of the OD unit. ~~The OD unit is shown in Figure 1-4.~~ Wastes treated at the OD unit had the EPA hazardous waste number D003. Treatment by OD removes the reactivity characteristic. Wastes were not chemically characterized by analysis prior to OD since adequate physical and chemical data were obtained through process knowledge.

~~The open burning and open demolition of munitions has ceased at RVAAP. In accordance with the Interim Measures Plan for the OD Area #2, a thorough unexploded ordnance~~



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Medium	Potential Waste Code	Constituents
<u>SOIL</u>	<u>NONE</u>	<u>COPPER</u>
<u>SOIL</u>	<u>NONE</u>	<u>IRON</u>
Soil	D008	Lead
<u>SOIL</u>	<u>NONE</u>	<u>MAGNESIUM</u>
<u>SOIL</u>	<u>NONE</u>	<u>MANGANESE</u>
Soil	D009	Mercury
<u>SOIL</u>	<u>NONE</u>	<u>NICKEL</u>
<u>SOIL</u>	<u>NONE</u>	<u>POTASSIUM</u>
<u>SOIL</u>	<u>NONE</u>	<u>SELENIUM</u>
<u>SOIL</u>	<u>NONE</u>	<u>SILVER</u>
<u>SOIL</u>	<u>NONE</u>	<u>SODIUM</u>
<u>SOIL</u>	<u>NONE</u>	<u>THALLIUM</u>
<u>SOIL</u>	<u>NONE</u>	<u>VANADIUM</u>
<u>SOIL</u>	<u>NONE</u>	<u>ZINC</u>
Soil	D030	2,4-dinitrotoluene
<u>SOIL</u>	<u>NONE</u>	<u>2,6-DINITROTOLUENE</u>
Soil	None, potential risk-based removal required	<del>2,4,5-trinitrotoluene (TNT)</del> <u>2,4,6-TRINITROTOLUENE (TNT)</u> 1,3,5-hexahydro-1,3,5-trinitrohydrazine (RDX) 1,3,5,7-hexahydro-1,3,5,7-tetranitrohydrazine (HMX)
<u>SOIL</u>	<u>NONE</u>	<u>1,3,5-TNB</u>
<u>SOIL</u>	<u>NONE</u>	<u>TETRYL</u>
<u>SOIL</u>	<u>NONE</u>	<u>1,3-DNB</u>
<u>SOIL</u>	<u>NONE</u>	<u>NITROBENZENE</u>

DATE OF SUBMISSION: OCTOBER 31, 1997  
REVISED JUNE 19, 2000

REQUIREMENTS. ALL APPLICABLE GENERATOR STANDARDS WILL BE ADHERED TO, AS ESTABLISHED IN OAC 3745-52. A 90-DAY STORAGE AREA MAY BE ESTABLISHED FOR THE PURPOSE OF STAGING HAZARDOUS WASTE PRIOR TO DISPOSAL. IF SO, IT WILL BE ESTABLISHED AND OPERATED IN ACCORDANCE WITH THE REQUIREMENTS OF OAC 3745-52-34. ALL HAZARDOUS WASTE WILL BE SHIPPED BY A PERMITTED HAZARDOUS WASTE HAULER AND DISPOSED OF AT A RCRA- PERMITTED TSDF.

NON-HAZARDOUS CONTAMINATED SOIL AND DEBRIS WILL BE MANAGED AS A SOLID WASTE IN ACCORDANCE WITH ALL OHIO SOLID WASTE REGULATIONS.

## **2.4 DECONTAMINATION EFFORTS**

NON-DISPOSABLE EQUIPMENT WILL BE DECONTAMINATED AT A PREVIOUSLY CONSTRUCTED DECONTAMINATION AREA PRIOR TO BEING REMOVED FROM THE ZONE OF CONSTRUCTION. EQUIPMENT SUCH AS LARGE EARTHMOVING EQUIPMENT AND SMALL HAND TOOLS WILL BE BRUSHED FREE OF VISIBLE DEBRIS AND THEN TRIPLE WASHED. PORTIONS OF LARGE EARTHMOVING EQUIPMENT IN CONTACT WITH POTENTIALLY CONTAMINATED SOILS WILL BE BRUSHED FREE OF VISIBLE DEBRIS AND TRIPLE-WASHED WITH STEAM. SMALL HAND TOOLS WILL BE DECONTAMINATED IN ACCORDANCE WITH THE FEBRUARY 1996 FACILITY-WIDE SAMPLING AND ANALYSIS PLAN. ALL RINSATE WILL BE COLLECTED AND MANAGED AS HAZARDOUS WASTE, UNLESS THE RINSATE IS SAMPLED AND SUBSEQUENT ANALYSIS DEMONSTRATES THAT IT IS NON-HAZARDOUS. ALL DEBRIS AND SOIL BRUSHED FROM NON-DISPOSABLE EQUIPMENT DURING DECONTAMINATION WILL BE LIKEWISE MANAGED AS HAZARDOUS WASTE.

EARTHMOVING EQUIPMENT, SUCH AS BULLDOZERS AND BACKHOES, WILL NOT LEAVE THE LIMITS OF CONSTRUCTION WITHOUT FIRST BEING DECONTAMINATED. THE DECONTAMINATION PAD WILL BE SITUATED IN A LOCATION THAT EQUIPMENT LEAVING THE ZONE OF CONSTRUCTION TO DRIVE ON "CLEAN ROADS" MUST FIRST PASS THROUGH THE DECONTAMINATION AREA.

THE DECONTAMINATION PAD WILL BE CONSTRUCTED ON THE SOUTHWARD-SLOPING REGION OF THE OD AREA AT THE BOUNDARY OF THE DELINEATED RCRA-REGULATED AREA, AS SHOWN IN FIGURE 2-2. A SUMP PIT WITH A CAPACITY OF APPROXIMATELY 55 GALLONS WILL BE EXCAVATED AT THE LOWEST POINT, SO THAT RINSATE WILL FLOW BY GRAVITY INTO THE PIT. THE PERIMETER OF THE DECONTAMINATION PAD WILL BE SURROUNDED BY A



DATE OF SUBMISSION: OCTOBER 31, 1997  
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DIKE (E.G., WOOD, PVC, OR OTHER STRUCTURALLY COMPETENT MATERIAL).  
THE AREA OF THE PAD WILL BE LARGE ENOUGH TO ACCOMODATE THE LARGEST  
PIECE OF EARTHMOVING EQUIPMENT EXPECTED TO BE USED DURING THE OD  
AREA CLOSURE. TWO LAYERS OF 30-MIL GEOMEMBRANE LINER (OR  
EQUIVALENT) WILL BE PLACED OVER THE ENTIRE AREA AND OVER THE DIKE AT  
THE PAD'S PERIMETER, AND THE LINER WILL BE SECURED TO THE DIKE. GIVEN  
THE NATURE OF THE EQUIPMENT TO BE DECONTAMINATED AT THE PAD.

## Patterson, Mark

---

**From:** Eileen Mohr [eileen.mohr@epa.state.oh.us]  
**Sent:** Thursday, August 03, 2000 2:18 PM  
**To:** John.P.Jent@lrl02.usace.army.mil; smccauslin@vistatechnologies.com  
**Cc:** Bob Princic; PattersonM@ioc.army.mil  
**Subject:** Re: Draft SOW, Phase II Demolition Area 2

Susan and John:

I have received and reviewed the draft SOW (dated July 31, 2000) for the proposed Phase II work at Open Demolition Area (ODA) #2 and have the following comments:

1. On page 1 (summary), it is noted that the proposed work is not the completion of a Phase II RI. A Phase I RI was conducted on this AOC in 1996, however, no Phase II activities have been conducted to date. Please revise.
2. I was unable to make the preliminary scoping meeting on July 20, 2000, and it was my understanding that meeting notes were to be forthcoming as a result of the meeting. Please advise me as to when the summary notes will be received, as this may provide an explanation for several of the questions in this memo.
3. On page 3, please add in propellants as a potential COC.
4. On page 4, there is a notation that the Phase 1 sediment results were compared to background concentrations. Please be advised that the site-wide background concentrations for various media were determined during the Winklepeck Burning Grounds Phase II, and that the "background" determined as part of the Phase I activities was not complete. Please revise.
5. In several areas of the SOW, there are references being made to the use of previous analytical data that was obtained from this AOC. Based upon the amount of soil disturbance resulting from the UXO removal operations, there is a possibility that some of the previously obtained data will no longer be valid. This should be kept in mind when scoping the sampling numbers and locations. (ex. pages 4,5, 8 etc.)
6. The text on page 5 indicates that "... additional efforts to define nature and extent may be warranted in the next major phase...." What next major phase? The purpose of this Phase II is to determine as well as possible the nature and extent. Every once in a while a few additional samples need to be tacked onto the FS phase, but the goal should be to accomplish this task in the Phase II RI. Please revise.
7. Task I should include the scoping of enough resources for a draft and final report. (Page 7)
8. Please use the acronym "AOC" when specifically talking about the ODA2 area instead of using the term "site." This makes the terminology consistent among all the contractors. (page 8)
9. Please ensure that enough funds are scoped in for a draft and final workplan, as well as comment resolution meetings. (page 8)
10. Monitor well locations (page 11), soil sampling locations (page 13) and surface water/sediment sampling locations (page 14) should be selected with concurrence from Ohio EPA.
11. It was my understanding from a 07/25/00 telephone conversation with USACE that 12 additional monitoring wells were to be drilled, instead of the 14 previously scoped during the IAP meeting. This SOW now indicates that 10 will be drilled. Please provide an explanation for the differences. (page 11)
12. What is meant by the language referencing IDW that "Disposal options include.... stabilization with either onsite or offsite disposal..." Please ensure that the intent of this statement adheres to the Ohio EPA correspondence dated 11/97 that details IDW options. (pages 11, 13, 14)
13. With respect to soil sampling:
  - a. please explain how a total of 40 sample locations were chosen;
  - b. refer to comment #10;
  - c. with respect to the use of XRF, please be advised that the correlation between this field screening technique and laboratory analyses has not been determined. As such, it is difficult to understand why only half of the samples are being proposed for laboratory analyses. In addition, the XRF may not be capable of analyzing for the 23 TAL metals, and at an acceptable detection limit. In addition, what criteria would be utilized to determine whether or not a sample is sent to the lab?;



d. will any gridding take place at ODA2 for random sampling purposes to ensure that extent has been determined? This would be consistent with other AOCs that are being investigated.;

e. there should be contingency samples added into the soil sampling strategy.

14. With respect to surface water and sediment sampling, please refer to comment #10. In addition, on what basis will the two surface water sampling events occur? Is it to be based upon seasonal factors or precipitation events? Confirm that surface water and sediment samples will be co-located. How will the fact that surface water will be collected in two different time frames impact upon the report deliverables?

15. On page 15, it appears that one of the outgrowths of this Phase II RI is to generate RGOs. Please confirm.

16. The determination of the ground surface and TOC elevations of all installed monitoring wells must be made in accordance with the existing facility-wide plans. (page 16)

17. Please ensure that enough funding is scoped in such that draft and final reports and comment resolution meetings can be funded. (page 17)

18. Table 1:

a. please scope in contingency samples;

b. for the QC samples, please split out the number of samples based upon type, i.e. MS/MSD, duplicates, trips, etc.

c. Please revise the groundwater section, as it appears that there will be 12 QC samples;

d. provide an explanation for why total and dissolved metals will be analyzed;

e. at AOCs where we expected that propellants would be a COC, the percentage of sample locations sampled for this constituent was greater than 10%. Please revise this percentage upwards;

f. refer to previous comments regarding the use of XRF. Given that metals are a COC, the number of metals analyses needs to be set at 100% of the obtained samples;

g. adjust the surface water section to indicate that 6 samples will be obtained; and,

h. all sediment samples must have TOC and grain size analyses.

Please call if you have any questions.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

## Patterson, Mark

---

**From:** Eileen Mohr [eileen.mohr@epa.state.oh.us]  
**Sent:** Monday, September 11, 2000 2:14 PM  
**To:** john.p.jent@lrl02.usace.army.mil; Susan McCauslin  
**Cc:** PattersonM@loc.army.mil  
**Subject:** Draft SOW for ODA2 - Revised

Sue -

I received and reviewed the document entitled "Draft Scope of Work for the Phase II Remedial Investigation of Demolition Area #2, Ravenna Army Ammunition Plant." Thanks for sending the hard copy (due to email problems) that was received at Ohio EPA NEDO DERR on September 11, 2000.

I reviewed the revised document with respect to the initial draft and Ohio EPA comments dated 8/3/00, as well as with respect to the comment resolution conference call on 08/16/00.

I have the following comments on the revised SOW:

1. As discussed during the conference call on 08/16/00, fencing of the ODA2 area probably makes sense given the inherent safety issues and the potential for utilizing this AOC in the future for demolition activities. However, that is not to say that fencing is the only option, i.e. as previously discussed, there should be a removal of the UXO/suspected UXO spilling down into Sand Creek. In addition, there should be additional discussion on how to remediate the "poppey fields", as well as waiting for the results of the baseline human health and ecological risk assessments to ensure that we are not missing major pathways/issues etc. that need to be dealt with. (No text change required).
2. It is noted that the first and last bullets on page 4 were not described. (No text change required).
3. On the sampling table: how will the vertical extent of contamination be determined if no samples are obtained from a depth of greater than three feet; and, the estimated number of samples for explosives and propellant analyses may not be adequate, and if this is the case, how will this issue be dealt with?

Please call (330-963-1221) if you have any questions.

Thanks.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
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State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

**October 31, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
OH5-210-020-736  
**ODA#2 WELL**  
INSTALLATION/ABANDONMENT

John Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9297

TO	11/3/00
1	CRP
1	ENV
1	IND SPEC
1	VISTA 11/3/00
1	CONTRACTOR
	RETURN FOR FILE

Dear Mr. Cicero:

Thank you for submitting the document entitled: "Final Report, Monitoring Well Installation, Well Abandonment and Survey, Demo Area-2, Ravenna Army Ammunition Plant, dated September 11, 2000. This report addresses the well installation/well abandonment and survey of the Open Detonation Area #2 (ODA2) at the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. This report was prepared for the U.S. Operations Support Command, Rock Island, IL by VISTA Technologies.

Based upon review of this document, the Ohio EPA has the following comments. Please be advised that additional comments are forthcoming. Please submit all requested information to this office, to my attention within fourteen (14) days after receipt of this letter.

**COMMENTS:**

1. The third paragraph on page 7 references a 1992 AEHA hydrogeologic study and indicates that only arsenic was detected above background in soils. Please provide additional information on the background concentrations referenced in this report. For all future investigations, VISTA should utilize the installation-wide background that was determined during the Winklepeck Burning Grounds (WBG) Remedial Investigation (RI).
2. On pages 9-10, the laboratory results indicate that low-levels of explosives were detected in the newly-installed upgradient monitoring well. Were explosives previously detected in the (now-abandoned) "old" upgradient well? What impact, if any, does this have on your program?
3. In attachment 5 (page 3), the text of the report indicates that "no excess fluids were generated from the hydrochloric acid and methanol rinses of non-dedicated sampling equipment." Please provide clarification for this statement. If non-dedicated equipment were decontaminated in accordance with the existing facility-wide wordplay, then decontamination fluids were generated that must be disposed of in accordance with all applicable State and Federal rules, laws, and regulations.

RAVENNA ARMY AMMUNITION PLANT

OCTOBER 31, 2000

PAGE - 2 -

4. On Table 6-1 (attachment 5, page 5), VISTA needs to provide additional information regarding the length of time that they plan to hold the contaminated (non-hazardous) investigation-derived wastes (IDW) at Building 1502. In correspondence from Ohio EPA Division of Emergency and Remedial Response (DERR) dated November 3, 1997, an allowance was made to temporarily store all generated solid IDW that fits this category at the point of generation (i.e. within the Area of Concern - AOC). Firstly, is building 1502 located within Open Demolition Area #2? Secondly, it was my understanding that the current thinking is to leave this AOC open for additional detonations. As such, there would be no remediation of the AOC, and thus the temporary storage of the contaminated (non-hazardous) soil condition does not apply. It is recommended that the soils also be disposed of off-site at a licensed facility in accordance with all applicable state and federal rules, laws, and regulations.

If you should have any questions regarding this matter, please feel free to contact me at (330) 963-1189.

Sincerely,



Gregory Orr

Environmental Specialist

Division of Hazardous Waste Management

GO:ddw

cc: Natalie Oryshkewych, DHWM, NEDO  
Diane Kurlich, DDAGW, NEDO  
Eileen Mohr, DERR, NEDO  
Jarnal Singh, DSIWM, NEDO  
Mark Patterson, RVAAP





State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

TO	12/13/00
FROM	2110 E. Aurora Road
SUBJECT	2110 E. Aurora Road
DATE	12/13/00
TIME	12:13
LOCATION	2110 E. Aurora Road
REMARKS	2110 E. Aurora Road
CONTRACTOR	2110 E. Aurora Road
RETURN FOR	2110 E. Aurora Road

Christopher Jones, Director

December 11, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
OH5-210-020-736  
**ODA#2 WELL INSTALLATION/ABANDONMENT**

John Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9297

Dear Mr. Cicero:

Thank you for submittal, dated November 14, 2000, regarding the Ravenna Army Ammunition Plant's (RVAAP) Open Detonation Area (ODA) #2 well installation/abandonment. This documentation is a response to my October 31, 2000 comment letter based upon the review of the document entitled: "Final Report, Monitoring Well Installation, Well Abandonment and Survey, Demo Area-2, Ravenna Army Ammunition Plant," dated September 11, 2000. The report addressed the well installation/well abandonment and survey of the ODA#2 at the RVAAP, located at 8451 State Route 5, Ravenna, Ohio. That report was prepared for the U.S. Operations Support Command, Rock Island, IL by VISTA Technologies.

Based upon review of this document, the Ohio EPA has the following comments. Please be advised that additional comments are forthcoming. Please submit all requested information to this office, to my attention within fourteen (14) days after receipt of this letter.

**COMMENTS:**

1. Comment #1: Please provide a discussion of the comparison of analytical results to the installation-wide background values.
2. Comment #2: Your response is acceptable.
3. Comment #3: Your response is acceptable.
4. Comment #4: Regarding the first portion of the question, your response is acceptable. As for the second part, VISTA should confirm with RVAAP that remediation of this AOC is scheduled to take place. It was understood by the Agency that RVAAP was thinking about fencing off the entire AOC, and re-using a portion for future detonations. It was also understood that there will be a removal of soil/suspected UXO from the southern portion of the bank of Sand Creek. If VISTA means to include the soils generated as part of the well drilling effort with the removal of soil from the Sand Creek bank, then the response is acceptable. Please address this concern.

If you should have any questions regarding this matter, please feel free to contact me at (330) 963-1189.

Sincerely,

Gregory Orr  
Environmental Specialist  
Division of Hazardous Waste Management

GO:ddw

cc: Natalie Oryshkewych, DHWM, NEDO  
Diane Kurlich, DDAGW, NEDO  
Eileen Mohr, DERR, NEDO  
Jarnal Singh, DSIWM, NEDO  
Mark Patterson, RVAAP



Key: H=HEAST N=NCELA V=VAT/DRAWN O=Other EPA DOCUMENTS F=FOUNTAIN EXTRACT/STATION C=CANCER DRUG NO=NONCANCER ENDPOINT S=SOIL STATUS=STATUS max=CEILING LIMIT Where: nc=100% soil Where: nc=100% soil

# FOR PLANNING PURPOSES

TOXICITY INFORMATION						CAS No.	CONTAMINANT	PRELIMINARY REMEDIATION GOALS (PRGs)				SOIL SCREENING LEVELS	
SFO 1/(mg/kg-d)	RfDo (mg/kg-d)	SFI 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils				Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m <sup>3</sup> )	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
8.7E-03	4.0E-03	5.7E-03	4.0E-03	r 0	30560-15-1		Acephate	5.6E+01	ca** 2.8E+02	ca* 7.7E-01	ca* 7.7E+00	ca*	
		7.7E-03	2.6E-03	r 1	75-07-0		Acetaldehyde	1.1E+01	ca** 2.3E+01	ca** 8.7E-01	ca* 1.7E+00	ca	
	2.0E-02		2.0E-02	r 0 0.1	34256-82-1		Acetochlor	1.2E+03	nc 1.8E+04	nc 7.3E+01	nc 7.3E+02	nc	
	1.0E-01		1.0E-01	r 1	87-64-1		Acetone	1.6E+03	nc 6.2E+03	nc 3.7E+02	nc 6.1E+02	nc	1.6E+01 8.0E-01
	8.0E-04		8.0E-04	r 0 0.1	75-56-5		Acetone cyanohydrin	4.9E+01	nc 7.0E+02	nc 2.9E+00	nc 2.9E+01	nc	
	6.0E-03		1.7E-02	r 1	75-05-8		Acetonitrile	2.7E+02	nc 1.7E+03	nc 6.2E+01	nc 7.9E+01	nc	
	1.0E-01		5.7E-05	x 1	95-80-2		Acetophenone	4.9E-01	nc 1.6E+00	nc 2.1E-02	nc 4.2E-02	nc	
1.1E-01	1.3E-02	1.1E-01	1.3E-02	r 0 0.1	50-09-4		Acfluorfen	4.4E+00	ca 2.2E+01	ca 6.1E-02	ca 6.1E-01	ca	
	2.0E-02		5.7E-06	r 1	135-02-9		Acrolein	1.0E-01	nc 3.4E-01	nc 2.1E-02	nc 4.2E-02	nc	
4.0E+00	2.0E-04	4.9E+00	2.0E-04	r 0 0.1	79-06-1		Acrylamide	1.1E-01	ca 5.4E-01	ca 1.5E-03	ca 1.5E-02	ca	
5.4E-01	1.0E-03	2.4E-01	5.7E-04	r 1	79-10-7		Acrylic acid	2.9E+04	nc 1.0E+05	max 1.0E+00	nc 1.8E+04	nc	
					107-13-1		Acrylonitrile	2.1E-01	ca* 5.1E-01	ca* 2.8E-02	ca* 3.9E-02	ca*	
8.1E-02	1.0E-02	8.0E-02	1.0E-02	r 0 0.1	15972-60-8		Alachlor	6.0E+00	ca 3.1E+01	ca 8.4E-02	ca 8.4E-01	ca	
	1.5E-01		1.5E-01	r 0 0.1	1595-54-5		Alar	9.2E+03	nc 1.0E+05	max 5.5E+02	nc 5.5E+03	nc	
	1.0E-03		1.0E-03	r 0 0.1	116-06-3		Aldicarb	6.1E+01	nc 8.8E+02	nc 3.7E+00	nc 3.6E+01	nc	
	1.0E-03		1.0E-03	r 0 0.1	168-96-4		Aldicarb sulfone	6.1E+01	nc 8.8E+02	nc 3.7E+00	nc 3.6E+01	nc	
1.7E+01	3.0E-05	1.0E-01	3.0E-05	r 0 0.1	330-20-2		Aldrin	2.9E-02	ca* 1.5E-01	ca 3.9E-04	ca 4.0E-03	ca	5.0E-01 2.0E-02
	2.5E-01		2.5E-01	r 0 0.1	135-05-4		Allyl	1.5E+04	nc 1.0E+05	max 9.1E+02	nc 9.1E+03	nc	
	5.0E-03		5.0E-03	r 0 0.1	107-10-9		Allyl alcohol	3.1E+02	nc 4.4E+03	nc 1.8E+01	nc 1.8E+02	nc	
	5.0E-02		2.9E-04	r 0 0.1	107-26-1		Allyl chloride	3.0E+03	nc 4.3E+04	nc 1.0E+00	nc 1.8E+03	nc	
1.0E+00			1.4E-03	nc	7429-90-5		Aluminum	7.6E+04	nc 1.0E+05	max 5.1E+00	nc 3.6E+04	nc	
4.0E-04				0	20859-73-8		Aluminum phosphide	3.1E+01	nc 8.2E+02	nc	1.5E+01	nc	
3.0E-04			3.0E-04	r 0 0.1	57489-29-4		Amdro	1.8E+01	nc 2.6E+02	nc 1.1E+00	nc 1.1E+01	nc	
9.0E-03			3.0E-03	r 0 0.1	634-12-9		Ametryn	5.5E+02	nc 7.9E+03	nc 3.3E+01	nc 3.3E+02	nc	
7.0E-02			7.0E-02	r 0 0.1	891-27-5		m-Aminophenol	4.3E+03	nc 6.2E+04	nc 2.6E+02	nc 2.6E+03	nc	
2.0E-05			2.0E-05	r 0 0.1	504-24-1		4-Aminopyridine	1.2E+00	nc 1.8E+01	ca 7.3E-02	ca 7.3E-01	ca	
2.4E-03			2.5E-03	r 0 0.1	33089-61-1		Amitraz	1.5E+02	nc 2.2E+03	ca 9.1E+00	nc 9.1E+01	nc	
			2.9E-02		4664-41-1		Ammonia			1.0E+02			
5.7E-03	2.0E-01			0 0.1	7733-06-0		Ammonium sulfamate	1.2E+04	nc 1.0E+05	max	7.3E+03	nc	
	7.0E-03	5.7E-03	2.9E-04	r 0 0.1	62-53-3		Aniline	8.5E+01	ca** 4.3E+02	ca* 1.0E+00	nc 1.2E+01	ca*	
4.0E-04				0	7440-36-0		Antimony and compounds	3.1E+01	nc 8.2E+02	nc	1.5E+01	nc	5.0E+00 3.0E-01
5.0E-04				0	1314-60-9		Antimony pentoxide	3.9E+01	nc 1.0E+03	nc	1.8E+01	nc	
9.0E-04				0	26300-74-5		Antimony potassium tartrate	7.0E+01	nc 1.8E+03	nc	3.3E+01	nc	
4.0E-04				0	1332-81-0		Antimony tetroxide	3.1E+01	nc 8.2E+02	nc	1.5E+01	nc	
			5.7E-05	r 0	1309-64-4		Antimony trioxide	3.1E+01	nc 8.2E+02	nc 2.1E-01	nc 1.5E+01	nc	
	1.3E+00		1.3E-02	r 0 0.1	54111-24-5		Apollo	7.9E+02	nc 1.1E+04	nc 4.7E+01	nc 4.7E+02	nc	
2.5E-02	5.0E-01	2.5E-02	5.0E-02	r 0 0.1	146-57-8		Aramite	1.9E+01	ca 9.9E+01	ca 2.7E-01	ca 2.7E+00	ca	
3.0E-04				0 0.03	7440-38-2		Arsenic (nncancer endpoint)	2.2E+01	nc 4.4E+02	nc			
1.5E+00	3.0E-04	1.5E+01		0 0.03	7440-38-2		Arsenic (cancer endpoint)	3.9E-01	ca* 2.7E+00	ca 4.5E-04	ca 4.5E-02	ca	2.9E+01 1.0E+00
			1.4E-05	r 0	7784-42-1		Arsine (see arsenic for cancer endpoint)			5.2E-02			
9.0E-03			9.0E-03	r 0 0.1	16575-12-6		Assure	5.5E+02	nc 7.9E+03	nc 3.3E+01	nc 3.3E+02	nc	
5.0E-02			5.0E-02	r 0 0.1	3337-71-1		Asulam	3.1E+03	nc 4.4E+04	nc 1.8E+02	nc 1.8E+03	nc	
2.2E-01	3.5E-02	2.2E-01	3.5E-02	r 0 0.1	1512-24-5		Atrazine	2.2E+00	ca 1.1E+01	ca 3.1E-02	ca 3.0E-01	ca	
	4.0E-04		4.0E-04	r 0 0.1	71751-41-2		Avermectin B1	2.4E+01	nc 3.5E+02	nc 1.5E+00	nc 1.5E+01	nc	
		1.1E-01		0 0.1	71-43-3		Azobenzene	4.4E+00	ca 2.2E+01	ca 6.2E-02	ca 6.1E-01	ca	
4.0E-03			1.4E-04	nc	343-89-1		Barium and compounds	5.4E+03	nc 1.0E+05	max 5.2E-01	nc 2.6E+03	nc	1.6E+03 8.2E+01
4.0E-03			4.0E-04	r 0 0.1	134-76-1		Baygon	2.4E+02	nc 3.5E+03	nc 1.5E+01	nc 1.5E+02	nc	
3.0E-03			3.0E-02	r 0 0.1	421-13-4		Bayleton	1.8E+03	nc 2.6E+04	nc 1.1E+02	nc 1.1E+03	nc	
2.5E-02	2.5E-02			r 0 0.1	14335-97-5		Baythroid	1.5E+03	nc 2.2E+04	nc 9.1E+01	nc 9.1E+02	nc	
3.0E-01			3.0E-01	r 0 0.1	1861-49-1		Benefin	1.8E+04	nc 1.0E+05	max 1.1E+03	nc 1.1E+04	nc	
5.0E-02			5.0E-02	r 0 0.1	17804-35-0		Benomyl	3.1E+03	nc 4.4E+04	nc 1.8E+02	nc 1.8E+03	nc	
3.0E-02			3.0E-02	r 0 0.1	25037-89-0		Bentazon	1.8E+03	nc 2.6E+04	nc 1.1E+02	nc 1.1E+03	nc	
1.0E-01			1.0E-01	r 0 0.1	100-52-7		Benzaldehyde	6.1E+03	nc 8.8E+04	nc 3.7E+02	nc 3.6E+03	nc	
5.5E-00	3.0E-03	5.5E-02	1.7E-02	nc	71-43-2		Benzene	6.5E-01	ca* 1.5E+00	ca* 2.5E-01	ca* 3.5E-01	ca*	3.0E-02 2.0E-03



Rev. 1 RIS h:HEAST h:NCEA h:WITHDRAWN h:Other EPA DOCUMENTS h:PROJIE EXTRACTION h: CANCER PRG h:NONCANCER PRG sat:SOIL SATURATION max:CEILING LIMIT \*where nc < 100X ca) \*\*where nc < 10X ca)

# FOR PLANNING PURPOSES

TOXICITY INFORMATION					CAS No.	CONTAMINANT	PRELIMINARY REMEDIATION GOALS (PRGs)				SOIL SCREENING LEVELS	
SFo 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils			Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m <sup>3</sup> )	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
2.3E+02	3.0E-03	2.3E+02	3.0E-03	r 0 0	92-87-5	Benzidine	2.1E-03	ca 1.1E-02	ca 2.9E-05	ca 2.9E-04	ca	ca
1.3E+01	4.0E+00	1.3E+01	4.0E+00	r 0 0.1	65-85-0	Benzoic acid	1.0E+05	max 1.0E+05	max 1.5E+04	nc 1.5E+05	ca 4.0E+02	ca 2.0E+01
				C 0.1	98-07-7	Benzotrithloride	3.7E-02	ca 1.9E-01	ca 5.2E-04	ca 5.2E-03	ca	ca
1.7E-01	3.0E-01	1.7E-01	3.0E-01	r 0 0.1	100-51-6	Benzyl alcohol	1.8E+04	nc 1.0E+05	max 1.1E+03	nc 1.1E+04	ca	ca
				1	100-44-7	Benzyl chloride	8.9E-01	ca 2.3E+00	ca 4.0E-02	ca 6.6E-02	ca	ca
	2.0E-03	5.4E+00	5.4E+00	r 0	7440-41-7	Beryllium and compounds	1.5E+02	nc 2.2E+03	ca** 8.0E-04	ca* 7.3E+01	nc 6.3E+01	ca 3.0E+00
	1.0E-04		1.0E-04	r 0 0.1	141-60-2	Bidrin	6.1E+00	nc 8.8E+01	ca 3.7E-01	nc 3.6E+00	nc	nc
	1.5E-02		1.5E-02	r 0 0.1	82657-04-3	Biphenanthrin (Talstar)	9.2E+02	nc 1.3E+04	nc 5.5E+01	nc 5.5E+02	nc	nc
	5.0E-02		5.0E-02	r 0 0.1	92-52-4	1,1-Biphenyl	3.5E+02	ca* 3.5E+02	ca* 1.8E+02	nc 3.0E+02	nc	nc
1.1E+00	1.2E+00	1.2E+00	1.2E+00	r 1	111-44-4	Bis(2-chloroethyl)ether	2.1E-01	ca 6.2E-01	ca 5.8E-03	ca 9.8E-03	ca 4.0E-04	ca 2.0E-05
7.0E-02	4.0E-02	3.4E-02	4.0E-02	r 1	108-60-1	Bis(2-chloroisopropyl)ether	2.9E+00	ca 8.1E+00	ca 1.9E-01	ca 2.7E-01	ca	ca
2.2E+02	2.2E+02	2.2E+02	2.2E+02	r 1	542-88-1	Bis(chloromethyl)ether	1.9E-04	ca 4.4E-04	ca 3.1E-05	ca 5.2E-05	ca	ca
7.0E-02	4.0E-02	3.5E-02	4.0E-02	r 1	108-60-1	Bis(2-chloro-1-methylethyl)ether	2.9E+00	ca 8.1E+00	ca 1.9E-01	ca 2.7E-01	ca	ca
1.4E-02	2.0E-02	1.4E-02	2.2E-02	r 0 0.1	117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)	3.5E+01	ca* 1.8E+02	ca 4.8E-01	ca 4.8E+00	ca	ca
5.0E-02	5.0E-02	5.0E-02	5.0E-02	r 0 0.1	80-05-7	Bisphenol A	3.1E+03	nc 4.4E+04	nc 1.8E+02	nc 1.8E+03	nc	nc
9.0E-02		5.7E-03	5.7E-03	r 0 0.1	7440-42-8	Boron	5.5E+03	nc 7.9E+04	nc 2.1E+01	nc 3.3E+03	nc	nc
	2.0E-02		2.0E-04	r 0 0.1	109-66-1	Boron trifluoride			7.3E-01	nc		
			2.9E-04	r 0 0.1	109-66-1	Bromobenzene	2.8E+01	nc 9.2E+01	nc 1.0E+01	nc 2.0E+01	nc	nc
5.2E-02	2.0E-02	5.2E-02	2.0E-02	r 1	75-27-4	Bromodichloromethane	1.0E+00	ca 2.4E+00	ca 1.1E-01	ca 1.8E-01	ca 6.0E-01	ca 3.0E-02
7.6E-03	2.0E-02	2.9E-02	2.0E-02	r 0 0.1	74-20-2	Bromoform (tribromomethane)	6.2E+01	ca* 3.1E+02	ca* 1.7E+00	ca* 8.5E+00	ca* 8.0E-01	ca* 4.0E-02
1.4E-03	1.4E-03	1.4E-03	1.4E-03	r 1	74-83-9	Bromomethane (Methyl bromide)	3.9E+00	nc 1.3E+01	nc 5.2E+00	nc 8.7E+00	nc 2.0E-01	nc 1.0E-02
	5.0E-03		5.0E-03	r 0 0.1	101-55-3	4-Bromophenyl phenyl ether	3.1E+02	nc 4.4E+03	nc 1.8E+01	nc 1.8E+02	nc	nc
	2.0E-02		2.0E-02	r 0 0.1	2104-96-3	Bromophos	1.2E+03	nc 1.8E+04	nc 7.3E+01	nc 7.3E+02	nc	nc
	2.0E-02		2.0E-02	r 0 0.1	1589-84-5	Bromoxynil	1.2E+03	nc 1.8E+04	nc 7.3E+01	nc 7.3E+02	nc	nc
1.8E+03	1.8E+03	1.8E+03	1.8E+03	r 0 0.1	1689-99-2	Bromoxynil octanoate	3.5E-03	ca 7.6E-03	ca 3.7E-03	ca 6.2E-03	ca 1.7E+01	ca 9.0E-01
	1.0E-01		1.0E-01	r 0 0.1	71-36-3	1,3-Butadiene	6.1E+03	nc 8.8E+04	nc 3.7E+02	nc 3.6E+03	nc	nc
	5.0E-02		5.0E-02	r 0 0.1	2008-41-5	1-Butanol	3.1E+03	nc 4.4E+04	nc 1.8E+02	nc 1.8E+03	nc	nc
	1.0E-02		1.0E-02	r 1	104-51-8	Butylate	1.4E+02	nc 2.4E+02	ca* 3.7E+01	nc 6.1E+01	nc	nc
	1.0E-02		1.0E-02	r 1	135-98-5	n-Butylbenzene	1.1E+02	nc 2.2E+02	ca* 3.7E+01	nc 6.1E+01	nc	nc
	1.0E-02		1.0E-02	r 1	98-06-6	sec-Butylbenzene	1.3E+02	nc 3.9E+02	ca* 3.7E+01	nc 6.1E+01	nc	nc
	2.0E-01		2.0E-01	r 0 0.1	65-82-7	tert-Butylbenzene	1.2E+04	nc 1.0E+05	max 7.3E+02	nc 7.3E+03	nc 9.3E+02	nc 8.1E+02
	1.0E+00		1.0E+00	r 0 0.1	65-70-1	Butyl benzyl phthalate	6.1E+04	nc 1.0E+05	max 3.7E+03	nc 3.6E+04	nc	nc
	3.0E-03		3.0E-03	r 0 0.1	75-60-5	Butylphthalyl butylglycolate	1.8E+02	nc 2.6E+03	nc 1.1E+01	nc 1.1E+02	nc	nc
	5.0E-04		5.0E-04	r 0 0.001	7440-43-9	Cacodylic acid	3.7E+01	nc 8.1E+02	nc 1.1E-03	ca 1.8E+01	nc 8.0E+00	ca 4.0E-01
						Cadmium and compounds	9.0E+00					
						"CAL-Modified PRG" (PEA, 1994)						
	5.0E-01		5.0E-01	r 0 0.1	105-69-2	Caprolactam	3.1E+04	nc 1.0E+05	max 1.8E+03	nc 1.8E+04	nc	nc
8.4E-03	2.0E-03	8.4E-03	2.0E-03	r 0 0.1	2425-06-1	Captafol	5.7E+01	ca** 2.9E+02	ca** 7.8E-01	ca** 7.8E+00	ca** 6.0E-01	ca** 3.0E-02
3.5E-03	1.3E-01	3.5E-03	1.3E-01	r 0 0.1	133-06-2	Captan	1.4E+02	ca* 7.0E+02	ca 1.9E+00	ca 1.9E+01	ca	ca
	1.0E-01		1.1E-01	r 0 0.1	63-25-2	Carbaryl	6.1E+03	nc 8.8E+04	nc 4.0E+02	nc 3.6E+03	nc	nc
	2.0E-02		2.0E-02	r 0 0.1	86-74-8	Carbazole	2.4E+01	ca 1.2E+02	ca 3.4E-01	ca 3.4E+00	ca 6.0E-01	ca 3.0E-02
	5.0E-03		5.0E-03	r 0 0.1	1563-65-2	Carbofuran	3.1E+02	nc 4.4E+03	nc 1.8E+01	nc 1.8E+02	nc	nc
	1.0E-01		2.0E-01	r 1	75-15-0	Carbon disulfide	3.6E+02	nc 7.2E+02	ca* 7.3E+02	nc 1.0E+03	nc 3.2E+01	nc 2.0E+00
1.3E-01	7.0E-04	5.0E-02	7.0E-04	r 1	56-23-5	Carbon tetrachloride	2.4E-01	ca** 5.3E-01	ca* 1.3E-01	ca* 1.7E-01	ca* 7.0E-02	ca* 3.0E-03
	1.0E-02		1.0E-02	r 0 0.1	54-26-14-b	Carbosulfan	6.1E+02	nc 8.8E+03	nc 3.7E+01	nc 3.6E+02	nc	nc
	1.0E-01		1.0E-01	r 0 0.1	1234-06-4	Carboxin	6.1E+03	nc 8.8E+04	nc 3.7E+02	nc 3.6E+03	nc	nc
	1.0E-02		1.5E-02	r 0 0.1	133-50-4	Chloramben	9.2E+02	nc 1.3E+04	nc 5.5E+01	nc 5.5E+02	nc	nc
	4.0E-01		4.0E-01	r 0 0.1	118-75-2	Chloranil	1.2E+00	ca 6.1E+00	ca 1.7E-02	ca 1.7E-01	ca	ca
1.5E-01	5.0E-04	3.5E-01	2.0E-04	r 0 0.04	12789-03-6	Chlordane	1.6E+00	ca* 1.1E+01	ca* 1.9E-02	ca* 1.9E-01	ca* 1.0E+01	ca* 5.0E-01
	2.0E-02		2.0E-02	r 0 0.1	90982-32-4	Chlorimuron-ethyl	1.2E+03	nc 1.8E+04	nc 7.3E+01	nc 7.3E+02	nc	nc
	1.0E-01		5.7E-05	r 0	7782-50-5	Chlorine			2.1E-01	nc		
			5.7E-05	r 0	10049-04-4	Chlorine dioxide			2.1E-01	nc		
				r 1	107-20-0	Chloroacetaldehyde						
	2.0E-02		2.0E-02	r 0 0.1	75-11-8	Chloroacetic acid	1.2E+02	nc 1.8E+03	nc 7.3E+00	nc 7.3E+01	nc	nc



Key: PRG: In-FAST n-NCEA = WITHDRAWN - Other EPA DOCUMENTS - PRG: EXTRAPOLATION - CANCER PRG: nc = NONCANCER PRG: sat = SOIL SATURATION max = CCL USE: MIT = where nc < 100X sat = \*\*where nc < 10X sat

# FOR PLANNING PURPOSES

TOXICITY INFORMATION					CAS No.	CONTAMINANT	PRELIMINARY REMEDIATION GOALS (PRGs)					SOIL SCREENING LEVELS		
SFO 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils			Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m³)	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)		
8.6E-06	r	8.6E-06	r	1	532-27-4	2-Chloroacetophenone	3.3E-02	nc	1.1E-01	nc	3.1E-02	nc	5.2E-02	nc
4.0E-03	r	4.0E-03	r	0.01	106-47-8	4-Chloroaniline	2.4E+02	nc	3.5E+03	nc	1.5E+01	nc	1.5E+02	nc
2.0E-02	r	1.7E-02	r	1	108-90-7	Chlorobenzene	1.5E+02	nc	5.4E+02	nc	6.2E+01	nc	1.1E+02	nc
2.7E-01	h	2.0E-02	r	0.01	510-15-6	Chlorobenzilate	1.8E+00	ca	9.1E+00	ca	2.5E-02	ca	2.5E-01	ca
2.0E-01	h	2.0E-01	r	0.01	74-11-3	p-Chlorobenzoic acid	1.2E+04	nc	1.0E+05	max	7.3E+02	nc	7.3E+03	nc
2.0E-02	h	2.0E-02	r	0.01	106-50-6	4-Chlorobenzotrifluoride	1.2E+03	nc	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc
2.0E-02	h	2.0E-02	r	1	126-99-8	2-Chloro-1,3-butadiene	3.6E+00	ca	1.2E+01	nc	7.3E+00	nc	1.4E+01	nc
4.0E-01	h	4.0E-01	r	1	109-69-3	1-Chlorobutane	4.8E+02	sat	4.8E+02	sat	1.5E+03	nc	2.4E+03	nc
1.4E+01	r	1.4E+01	r	1	75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	3.4E+02	sat	3.4E+02	sat	5.2E+04	nc	8.7E+04	nc
1.4E+01	r	1.4E+01	r	1	75-45-6	Chlorodifluoromethane	3.4E+02	sat	3.4E+02	sat	5.1E+04	nc	8.5E+04	nc
4.0E-01	h	2.9E-03	r	1	75-00-3	Chloroethane	3.0E+00	ca	6.5E+00	ca	2.3E+00	ca	4.6E+00	ca
1.4E+01	r	1.4E+01	r	1	110-75-8	2-Chloroethyl vinyl ether	3.4E+02	sat	3.4E+02	sat	5.1E+04	nc	8.5E+04	nc
3.1E-03	r	3.1E-03	r	1	57-66-3	Chloroform	2.4E-01	ca**	5.2E-01	ca**	8.4E-02	ca**	1.6E-01	ca**
1.3E-02	h	6.3E-03	r	1	74-87-3	Chloromethane	1.2E+00	ca	2.7E+00	ca	1.1E+00	ca	1.5E+00	ca
5.8E-01	h	5.8E-01	r	0.01	95-69-2	4-Chloro-2-methylaniline	8.4E-01	ca	4.3E+00	ca	1.2E-02	ca	1.2E-01	ca
4.4E-01	h	4.0E-02	r	0.01	105-93-3	4-Chloro-2-methylaniline hydrochloride	1.1E+00	ca	5.4E+00	ca	1.5E-02	ca	1.5E-01	ca
4.0E-02	r	4.0E-02	r	1	91-58-7	beta-Chloronaphthalene	3.9E+03	nc	2.7E+04	nc	2.9E+02	nc	4.9E+02	nc
2.5E-02	r	2.5E-02	r	1	88-73-3	o-Chloronitrobenzene	8.1E+00	ca	2.3E+01	ca	2.7E-01	ca	4.5E-01	ca
5.0E-03	r	5.0E-03	r	1	80-03-5	p-Chloronitrobenzene	1.1E+01	ca	3.2E+01	ca	3.7E-01	ca	6.2E-01	ca
2.9E-02	r	2.9E-02	r	1	95-57-6	2-Chlorophenol	6.3E+01	nc	2.4E+02	nc	1.8E+01	nc	3.0E+01	nc
1.1E-02	h	1.1E-02	r	0.01	75-29-9	2-Chloropropane	1.7E+02	nc	5.9E+02	nc	1.0E+02	nc	1.7E+02	nc
2.0E-02	r	2.0E-02	r	1	1897-45-9	Chlorothalonil	4.4E+01	ca*	2.2E+02	ca*	6.1E-01	ca*	6.1E+00	ca*
2.0E-01	r	2.0E-01	r	0.01	95-49-8	o-Chlorotoluene	1.6E+02	nc	5.7E+02	nc	7.3E+01	nc	1.2E+02	nc
2.0E-01	r	2.0E-01	r	0.01	121-21-3	Chlorophoram	1.2E+04	nc	1.0E+05	max	7.3E+02	nc	7.3E+03	nc
3.0E-03	r	3.0E-03	r	0.01	2921-88-2	Chlorpyrifos	1.8E+02	nc	2.6E+03	nc	1.1E+01	nc	1.1E+02	nc
1.0E-02	h	1.0E-02	r	0.01	1558-13-0	Chlorpyrifos-methyl	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc
5.0E-03	r	5.0E-03	r	0.01	1460-72-3	Chlorsulfuron	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc	1.8E+03	nc
6.0E-04	r	6.0E-04	r	0.01	60278-56-4	Chlorthiophos	4.9E+01	nc	7.0E+02	nc	2.9E+00	nc	2.9E+01	nc
1.0E+00	r	4.2E+01	r	0	15065-63-1	Total Chromium (1:6 ratio Cr VI:Cr III)	2.1E+02	ca	4.5E+02	ca	1.6E-04	ca	1.6E-01	ca
5.0E-03	r	2.9E+02	r	0	18040-29-9	Chromium III	1.0E+05	max	1.0E+05	max	0.0E+00	nc	5.5E+04	nc
0.0E-02	h	0.0E-02	r	0	7440-48-4	Chromium VI	3.0E+01	ca**	6.4E+01	ca	2.3E-05	ca	1.1E+02	nc
3.0E-02	r	3.0E-02	r	0	18040-29-9	"CAL-Modified PRG" (PEA, 1994)	2.0E-01	nc	2.0E-01	nc	1.6E-01	nc	1.6E-01	nc
0.0E-02	h	0.0E-02	r	0	7440-48-4	Cobalt	4.7E+03	nc	1.0E+05	max	2.2E+03	nc	2.2E+03	nc
3.0E-02	h	3.0E-02	r	0	5007-45-7	Coke Oven Emissions	2.9E+03	nc	7.6E+04	nc	3.1E-03	ca	1.4E+03	nc
1.0E+00	r	1.0E+00	r	0	7440-50-8	Copper and compounds	5.3E-03	ca	1.1E-02	ca	3.5E-03	ca	5.9E-03	ca
1.0E-01	r	1.0E-01	r	1	111-31-3	Crotonaldehyde	1.6E+02	nc	5.2E+02	nc	4.0E+02	nc	6.6E+02	nc
2.0E-01	h	2.0E-01	r	0.01	21725-46-2	Cumene (isopropylbenzene)	5.8E-01	ca	2.9E+00	ca	8.0E-03	ca	8.0E-02	ca
2.0E-02	r	2.0E-02	r	1	74-90-6	Cyanazine	1.1E+01	nc	3.5E+01	nc	3.1E+00	nc	6.2E+00	nc
4.0E-02	r	4.0E-02	r	1	490-19-5	Cyanide and compounds	1.3E+02	nc	4.3E+02	nc	1.5E+02	nc	2.4E+02	nc
9.0E-02	r	9.0E-02	r	1	506-68-3	Cyanogen	2.9E+02	nc	9.7E+02	nc	3.3E+02	nc	5.5E+02	nc
5.0E-02	r	5.0E-02	r	1	506-77-4	Cyanogen bromide	1.6E+02	nc	5.4E+02	nc	1.8E+02	nc	3.0E+02	nc
5.7E+00	r	5.7E+00	r	1	110-82-7	Cyanogen chloride	1.4E+02	sat	1.4E+02	sat	2.1E+04	nc	3.5E+04	nc
5.0E+00	r	5.0E+00	r	0.01	108-94-1	Cyclohexane	1.0E+05	max	1.0E+05	max	1.8E+04	nc	1.8E+05	nc
2.0E-01	r	2.0E-01	r	0.01	108-91-8	Cyclohexanone	1.2E+04	ca	1.0E+05	max	7.3E+02	nc	7.3E+03	nc
5.0E-01	r	5.0E-01	r	0.01	60045-85-8	Cyclohexylamine	3.1E+02	ca	4.4E+03	nc	1.8E+01	nc	1.8E+02	nc
1.0E-02	r	1.0E-02	r	0.01	50315-07-8	Cyhalothrin/Karate	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc
2.0E-01	r	2.0E-01	r	0.01	49015-07-6	Cypermethrin	4.6E+02	nc	6.6E+03	nc	2.7E+01	nc	2.7E+02	nc
1.0E-02	r	1.0E-02	r	0.01	1851-32-7	Cyromazine	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc
3.0E-02	r	3.0E-02	r	0.01	75-95-0	Dacthal	1.8E+03	nc	2.6E+04	nc	1.1E+02	nc	1.1E+03	nc
2.5E-02	r	2.5E-02	r	0.01	35515-41-6	Dalapon	1.5E+03	nc	2.2E+04	nc	9.1E+01	nc	9.1E+02	nc
2.0E-01	r	2.0E-01	r	0.01	72-54-8	Danitol	2.4E+00	ca	1.7E+01	ca	2.8E-02	ca	2.8E-01	ca
5.0E-01	r	5.0E-01	r	0.01	72-55-6	DDD	1.7E+00	ca	1.2E+01	ca	2.0E-02	ca	2.0E-01	ca
5.0E-01	r	5.0E-01	r	0.01	50-29-3	DDE	1.7E+00	ca	1.2E+01	ca	2.0E-02	ca	2.0E-01	ca
5.0E-01	r	5.0E-01	r	0.01	50-29-3	DDT	1.7E+00	ca	1.2E+01	ca	2.0E-02	ca	2.0E-01	ca



**FOR PLANNING PURPOSES**

TOXICITY INFORMATION					CONTAMINANT		PRELIMINARY REMEDIATION GOALS (PRGs)					SOIL SCREENING LEVELS				
SFo 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils	CAS No.		Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m <sup>3</sup> )	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)				
6.1E-02	1.0E-02	r	1.0E-02	r	0.01	1163-19-5	Decabromodiphenyl ether	6.1E+02	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc		
	4.0E-05	i	4.0E-05	i	0.01	8065-48-3	Demeton	2.4E+00	3.5E+01	nc	1.5E-01	nc	1.5E+00	nc		
	6.1E-02	r	6.1E-02	r	0.01	2303-16-4	Diallate	8.0E+00	4.0E+01	ca	1.1E-01	ca	1.1E+00	ca		
	9.0E-04	h	9.0E-04	r	0.01	333-41-6	Diazinon	5.5E+01	7.9E+02	nc	3.3E+00	nc	3.3E+01	nc		
	4.0E-03	n	4.0E-03	i	1	132-64-9	Dibenzofuran	2.9E+02	5.1E+03	nc	1.5E+01	nc	2.4E+01	nc		
	1.0E-02	r	1.0E-02	i	0.01	100-37-6	1,4-Dibromobenzene	6.1E+02	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc		
8.4E-02	h	8.4E-02	r	0.01	134-46-7	Dibromochloromethane	1.1E+00	2.7E+00	ca	8.0E-02	ca	1.3E-01	ca	4.0E-01	2.0E-02	
1.4E+00	h	1.4E+00	r	0.01	581-77-4	1,2-Dibromo-3-chloropropane	4.5E-01	4.0E+00	ca	2.1E-01	ca	4.8E-02	ca			
8.5E+01	5.7E-05	i	5.7E-05	h	1	105-53-4	1,2-Dibromoethane	6.9E-03	4.8E-02	ca	8.7E-03	ca	7.6E-04	ca		
	1.0E-01	i	1.0E-01	r	0.01	84-74-7	Diethyl phthalate	6.1E+03	8.8E+04	nc	3.7E+02	nc	3.6E+03	nc	2.3E+03	2.7E+02
	3.0E-02	i	3.0E-02	r	0.01	1919-00-9	Dicamba		2.6E+04	nc	1.1E+02	nc	1.1E+03	nc		
2.4E-02	9.0E-02	h	9.0E-02	h	1	95-50-1	1,2-Dichlorobenzene	3.7E+02	3.7E+02	sat	2.1E+02	nc	3.7E+02	nc	1.7E+01	9.0E-01
	9.0E-04	h	9.0E-04	r	1	541-73-1	1,3-Dichlorobenzene	1.3E+01	5.2E+01	nc	3.3E+00	nc	5.5E+00	nc		
	3.0E-02	h	3.0E-02	n	2.0E-02	106-46-7	1,4-Dichlorobenzene	3.4E+00	8.1E+00	ca	3.1E-01	ca	5.0E-01	ca	2.0E+00	1.0E-01
4.5E-01	i	4.5E-01	r	0.01	91-94-1	3,3-Dichlorobenzidine	1.1E+00	5.5E+00	ca	1.5E-02	ca	1.5E-01	ca	7.0E-03	3.0E-04	
9.3E+00	3.0E-02	h	3.0E-02	r	0.01	50-08-7	4,4'-Dichlorobenzophenone	1.8E+03	2.6E+04	ca	1.1E+02	ca	1.1E+03	ca		
	6.0E+00	h	6.0E+00	h	1	764-41-6	1,4-Dichloro-2-butene	7.9E-03	1.8E-02	ca	7.2E-04	ca	1.2E-03	ca		
	5.7E-02	h	5.7E-02	h	1	75-34-8	Dichlorodifluoromethane	9.4E+01	3.1E+02	nc	2.1E+02	nc	3.9E+02	nc		
5.7E-02	1.0E-01	h	1.0E-01	h	1	75-34-3	1,1-Dichloroethane	5.9E+02	2.1E+03	nc	5.2E+02	nc	8.1E+02	nc	2.3E+01	1.0E+00
	5.7E-02	h	5.7E-02	h	1	75-34-3	"CAL-Modified PRG"	3.3E+00	7.1E+00	ca	1.2E+00	ca	2.0E+00	ca		
	9.1E-02	i	9.1E-02	n	5.0E-02	107-06-7	1,2-Dichloroethane (EDC)	3.5E+01	7.6E+01	ca	7.4E-02	ca	1.2E-01	ca	2.0E-02	1.0E-03
6.0E-01	9.0E-03	i	9.0E-03	r	1	75-35-4	1,1-Dichloroethylene	5.4E-02	1.2E-01	ca	3.8E-02	ca	4.6E-02	ca	6.0E-02	3.0E-03
	1.0E-02	h	1.0E-02	r	1	156-59-7	1,2-Dichloroethylene (cis)	4.3E+01	1.5E+02	ca	3.7E+01	ca	6.1E+01	ca	4.0E-01	2.0E-02
	2.0E-02	i	2.0E-02	r	1	156-60-5	1,2-Dichloroethylene (trans)	6.3E+01	2.1E+02	nc	7.3E+01	nc	1.2E+02	nc	7.0E-01	3.0E-02
9.0E-03	3.0E-03	i	3.0E-03	r	0.01	120-83-2	2,4-Dichlorophenol	1.8E+02	2.6E+03	nc	1.1E+01	nc	1.1E+02	nc	1.0E+00	5.0E-02
	5.0E-03	i	5.0E-03	r	0.01	94-82-4	4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	4.9E+02	7.0E+03	nc	2.9E+01	nc	2.9E+02	nc		
	1.0E-02	h	1.0E-02	r	0.05	94-76-7	2,4-Dichlorophenoxyacetic Acid (2,4-D)	6.9E+02	1.2E+04	nc	3.7E+01	nc	3.6E+02	nc		
0.5E-02	1.1E-03	i	1.1E-03	r	1	76-87-6	1,2-Dichloropropane	3.5E+01	7.7E-01	ca	9.9E-02	ca	1.6E-01	ca	3.0E-02	1.0E-03
	3.0E-02	h	3.0E-02	i	1	542-75-9	1,3-Dichloropropene	7.0E-01	1.6E+00	ca	4.8E-01	ca	4.0E-01	ca	4.0E-03	2.0E-04
	3.0E-03	h	3.0E-03	r	0.01	615-23-9	2,3-Dichloropropanol	1.8E+02	2.6E+03	nc	1.1E+01	nc	1.1E+02	nc		
2.5E-01	5.0E-04	i	5.0E-04	i	0.01	62-73-7	Dichlorvos	1.7E+00	8.5E+00	ca	2.3E-02	ca	2.3E-01	ca		
	4.5E-01	h	4.5E-01	r	0.01	115-32-2	Dicofol	1.1E+00	5.6E+00	ca	1.5E-02	ca	1.5E-01	ca		
	3.0E-02	h	3.0E-02	h	1	77-73-7	Dicyclopentadiene	5.4E-01	1.8E+00	nc	2.1E-01	nc	4.2E-01	nc		
1.0E+01	5.0E-05	i	5.0E-05	i	0.01	68-57-1	Dieldrin	3.0E-02	1.5E-01	ca	4.2E-04	ca	4.2E-03	ca	4.0E-03	2.0E-04
	5.0E-03	r	5.0E-03	h	0.01	107-04-7	Diethylene glycol, monobutyl ether	3.5E+02	5.0E+03	nc	2.1E+01	nc	2.1E+02	nc		
	3.0E+03	h	3.0E+03	i	0.01	111-10-0	Diethylene glycol, monoethyl ether	1.0E+05	1.0E+05	max	7.3E+03	nc	7.3E+04	nc		
1.2E-01	1.0E-02	h	1.0E-02	r	0.01	617-44-5	Diethylformamide	6.7E+02	9.7E+03	nc	4.0E+01	nc	4.0E+02	nc		
	6.0E-01	i	6.0E-01	r	0.01	103-23-1	Di(2-ethylhexyl)adipate	4.1E+02	2.1E+03	ca	5.6E+00	ca	5.6E+01	ca		
	5.0E-01	h	5.0E-01	r	0.01	84-66-2	Diethyl phthalate	4.9E+04	1.0E+05	max	2.9E+03	nc	2.9E+04	nc		
4.7E+03	1.0E-04	ca	5.2E-04	ca	1.4E-06	2.9E+03	Diethylstilbestrol	1.0E-04	5.2E-04	ca	1.4E-06	ca	1.4E-05	ca		
	8.0E-02	i	8.0E-02	r	0.01	43222-48-6	Difenzoquat (Avenge)	4.9E+03	7.0E+04	nc	2.9E+02	nc	2.9E+03	nc		
	2.0E-02	i	2.0E-02	r	0.01	93677-34-5	Diffubenzuron	1.2E+03	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc		
	1.1E+01	i	1.1E+01	r	1	75-37-6	1,1-Difluoroethane				4.2E+04	nc	6.9E+04	nc		
	2.0E-02	h	2.0E-02	r	0.01	2805-17-0	Diisopropyl phthalate	1.2E+03	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc		
	9.0E-02	i	9.0E-02	r	0.01	1446-75-0	Diisopropyl methylphosphonate	4.9E+03	7.0E+04	nc	2.9E+02	nc	2.9E+03	nc		
	1.1E+02	i	1.1E+02	r	0.01	541-73-1	Dimethipin	1.2E+03	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc		
	2.0E-04	i	2.0E-04	r	0.01	50-07-5	Dimethoate	1.2E+01	1.8E+02	nc	7.3E-01	nc	7.3E+00	nc		
	1.4E-02	h	1.4E-02	r	0.01	119-91-4	3,3'-Dimethoxybenzidine	3.5E+01	1.8E+02	ca	4.8E-01	ca	4.8E+00	ca		
	5.7E-06	x	5.7E-06	x	1	124-40-3	Dimethylamine	6.7E-02	2.5E-01	nc	2.1E-02	nc	3.5E-02	nc		
	2.0E-03	i	2.0E-03	r	0.01	121-60-7	N-N-Dimethylaniline	1.2E+02	1.8E+03	nc	7.3E+00	nc	7.3E+01	nc		
	7.5E-01	h	7.5E-01	i	0.01	95-09-1	2,4-Dimethylaniline	6.5E-01	3.3E+00	ca	9.0E-03	ca	9.0E-02	ca		
5.6E-01	h	5.6E-01	i	0.01	21436-96-4	2,4-Dimethylaniline hydrochloride	8.4E-01	4.3E+00	ca	1.2E-02	ca	1.2E-01	ca			
9.2E+00	h	9.2E+00	i	0.01	119-91-3	3,3'-Dimethylbenzidine	5.3E-02	2.7E-01	ca	7.3E-04	ca	7.3E-03	ca			



**FOR PLANNING PURPOSES**

TOXICITY INFORMATION					CONTAMINANT	PRELIMINARY REMEDIATION GOALS (PRGs)				SOIL SCREENING LEVELS		
SFO 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils	CAS No.		Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m^3)	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
2.8E+00	x	3.5E+00	x	0	57-14-7	1,1-Dimethylhydrazine	1.9E-01	9.5E-01	1.9E-03	2.6E-02		
3.7E+01	x	3.7E+01	x	0	540-73-8	1,2-Dimethylhydrazine	1.3E-02	6.7E-02	1.8E-04	1.8E-03		
				0	68-12-2	N,N-Dimethylformamide	6.1E+03	8.8E+04	3.1E+01	3.6E+03		
	1.0E-03		1.0E-03	0	122-09-8	Dimethylphenethylamine	6.1E+01	8.8E+02	3.7E+00	3.6E+01		
	2.0E-02		2.0E-02	0	105-67-9	2,4-Dimethylphenol	1.2E+03	1.8E+04	7.3E+01	7.3E+02	9.0E+00	4.0E-01
	6.0E-04		6.0E-04	0	576-26-1	2,6-Dimethylphenol	3.7E+01	5.3E+02	2.2E+00	2.2E+01		
	1.0E-03		1.0E-03	0	95-65-8	3,4-Dimethylphenol	6.1E+01	8.8E+02	3.7E+00	3.6E+01		
	1.0E+03		1.0E+03	0	131-11-3	Dimethyl phthalate	1.0E+05	1.0E+05	3.7E+04	3.6E+05		
	1.0E-03		1.0E-03	0	120-61-6	Dimethyl terephthalate	6.1E+03	8.8E+04	3.7E+02	3.6E+03		
	2.0E-03		2.0E-03	0	131-89-5	4,6-Dinitro-o-cyclohexyl phenol	1.2E+02	1.8E+03	7.3E+00	7.3E+01		
	4.0E-04		4.0E-04	0	528-29-0	1,2-Dinitrobenzene	2.4E+01	3.5E+02	1.5E+00	1.5E+01		
	1.0E-04		1.0E-04	0	99-65-0	1,3-Dinitrobenzene	6.1E+00	8.8E+01	3.7E-01	3.6E+00		
	4.0E-04		4.0E-04	0	100-25-4	1,4-Dinitrobenzene	2.4E+01	3.5E+02	1.5E+00	1.5E+01		
	2.0E-03		2.0E-03	0	51-28-5	2,4-Dinitrophenol	1.2E+02	1.8E+03	7.3E+00	7.3E+01	3.0E-01	1.0E-02
6.8E-01		6.8E-01		0	25321-14-6	Dinitrotoluene mixture	7.2E-01	3.6E+00	9.9E-03	9.9E-02	8.0E-04	4.0E-05
	2.0E-03		2.0E-03	0	121-14-0	2,4-Dinitrotoluene (see Dinitrotoluene mixture)	1.2E+02	1.8E+03	7.3E+00	7.3E+01	8.0E-04	4.0E-05
	1.0E-03		1.0E-03	0	606-20-3	2,6-Dinitrotoluene (see Dinitrotoluene mixture)	6.1E+01	8.8E+02	3.7E+00	3.6E+01	7.0E-04	3.0E-05
	1.0E-03		1.0E-03	0	88-86-7	Dinoseb	6.1E+01	8.8E+02	3.7E+00	3.6E+01		
	2.0E-02		2.0E-02	0	117-84-0	di-n-Octyl phthalate	1.2E+03	1.0E+04	7.3E+01	7.3E+02	1.0E+04	1.0E+04
1.1E-02		1.1E-02		0	123-91-1	1,4-Dioxane	4.4E+01	2.2E+02	6.1E-01	6.1E+00		
1.5E+05		1.5E+05		0	1746-01-6	Dioxin (2,3,7,8-TCDD)	3.9E-06	2.7E-05	4.5E-08	4.5E-07		
	3.0E-02		3.0E-02	0	957-51-7	Diphenamid	1.8E+03	2.6E+04	1.1E+02	1.1E+03		
	2.5E-02		2.5E-02	0	122-39-4	Diphenylamine	1.5E+03	2.2E+04	9.1E+01	9.1E+02		
	3.0E-04		3.0E-04	0	74-31-7	N,N-Diphenyl-1,4 benzenediamine (DPPD)	1.8E+01	2.6E+02	1.1E+00	1.1E+01		
8.0E-01		8.0E-01		0	122-66-7	1,2-Diphenylhydrazine	6.1E-01	3.1E+00	8.7E-03	8.4E-02		
	9.0E-03		9.0E-03	0	127-61-9	Diphenyl sulfone	5.5E+02	7.9E+03	3.3E+01	3.3E+02		
	2.0E-03		2.0E-03	0	81-00-7	Diquat	1.3E+02	1.9E+03	8.0E+00	8.0E+01		
8.0E+00		8.0E+00		0	1937-37-7	Direct black 38	5.7E-02	2.9E-01	7.8E-04	7.8E-03		
8.1E+00		8.1E+00		0	2602-45-7	Direct blue 6	6.0E-02	3.0E-01	8.3E-04	8.3E-03		
9.3E+00		9.3E+00		0	1607-1-86-8	Direct brown 95	5.2E-02	2.7E-01	7.2E-04	7.2E-03		
	4.0E-05		4.0E-05	0	798-04-4	Disulfoton	2.4E+00	3.5E+01	1.5E-01	1.5E+00		
	1.0E-02		1.0E-02	0	505-29-3	1,4-Dithiane	6.1E+02	8.8E+03	3.7E+01	3.6E+02		
	2.0E-03		2.0E-03	0	330-54-1	Diuron	1.2E+02	1.8E+03	7.3E+00	7.3E+01		
	4.0E-03		4.0E-03	0	2439-10-3	Dodine	2.4E+02	3.5E+03	1.5E+01	1.5E+02		
	2.0E-01		2.0E-01	0	2429-91-6	Dysprosium	1.6E+04	1.0E+05	2.2E+01	2.2E+02	1.8E+01	9.0E-01
	6.0E-03		6.0E-03	0	115-26-2	Endosulfan	3.7E+02	5.3E+03	2.2E+01	2.2E+02		
	2.0E-02		2.0E-02	0	145-73-3	Endothall	1.2E+03	1.8E+04	7.3E+01	7.3E+02		
	3.0E-04		3.0E-04	0	72-20-8	Endrin	1.8E+01	2.6E+02	1.1E+00	1.1E+01	1.0E+00	5.0E-02
9.9E-03		9.9E-03		0	106-89-8	Epichlorohydrin	7.6E+00	2.6E+01	1.0E+00	2.0E+00		
	5.7E-03		5.7E-03	0	106-85-7	1,2-Epoxybutane	3.5E+02	5.0E+03	2.1E+01	2.1E+02		
	2.5E-02		2.5E-02	0	759-94-4	EPTC (S-Ethyl dipropylthiocarbamate)	1.5E+03	2.2E+04	9.1E+01	9.1E+02		
	6.0E-03		6.0E-03	0	16872-87-0	Ethephon (2-chloroethyl phosphonic acid)	3.1E+02	4.4E+03	1.8E+01	1.8E+02		
	5.0E-04		5.0E-04	0	563-12-2	Ethion	3.1E+01	4.4E+02	1.8E+00	1.8E+01		
	4.0E-01		4.0E-01	0	110-80-5	2-Ethoxyethanol	2.4E+04	1.0E+05	2.1E+02	1.5E+04		
	3.0E-01		3.0E-01	0	111-15-9	2-Ethoxyethanol acetate	1.8E+04	1.0E+05	1.1E+03	1.1E+04		
	9.0E-01		9.0E-01	1	141-78-6	Ethyl acetate	1.9E+04	3.7E+04	3.3E+03	5.5E+03		
4.8E-02		4.8E-02		1	140-88-9	Ethyl acrylate	2.1E-01	4.5E-01	1.4E-01	2.3E-01		
	1.0E-01		1.0E-01	1	100-41-4	Ethylbenzene	2.3E+02	2.3E+02	1.1E+03	1.3E+03	1.3E+01	7.0E-01
	4.0E-01		4.0E-01	1	75-00-3	Ethyl chloride	3.0E+00	6.5E+00	2.3E+00	4.6E+00		
	3.0E-01		3.0E-01	0	109-78-4	Ethylene cyanohydrin	1.8E+04	1.0E+05	1.1E+03	1.1E+04		
	2.0E-02		2.0E-02	0	107-15-3	Ethylene diamine	1.2E+03	1.8E+04	7.3E+01	7.3E+02		
	2.0E+00		2.0E+00	0	107-21-1	Ethylene glycol	1.0E+05	1.0E+05	7.3E+03	7.3E+04		
	5.0E-01		5.0E-01	0	111-76-3	Ethylene glycol, monobutyl ether	3.1E+04	1.0E+05	1.4E+04	1.8E+04		
1.0E+00		1.0E+00		1	75-21-8	Ethylene oxide	1.4E-01	3.6E-01	1.9E-02	2.4E-02		



**FOR PLANNING PURPOSES**

TOXICITY INFORMATION					CONTAMINANT		PRELIMINARY REMEDIATION GOALS (PRGs)					SOIL SCREENING LEVELS	
SFO 1/(mg/kg-d)	RfDo (mg/kg-d)	SFI 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils	CAS No.	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m <sup>3</sup> )	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg) DAF 1 (mg/kg)			
1.1E-01	8.0E-05	1.1E-01	8.0E-05	0.01	96-45-7	4.4E+00	2.2E+01	6.1E-02	6.1E-01				
	2.0E-01		2.0E-01		50-29-7	1.8E+03	1.8E+03	7.3E+02	1.2E+03				
	9.0E-02		9.0E-02		97-53-2	1.4E+02	1.4E+02	3.3E+02	5.5E+02				
	1.0E-05		1.0E-05	0.01	2104-64-5	6.1E-01	8.8E+00	3.7E-02	3.6E-01				
	2.0E+00		3.0E+00	0.01	84-72-0	1.0E+05	1.0E+05	1.1E+04	1.1E+05				
	8.0E-03		8.0E-03	0.01	101200-34-0	4.9E+02	7.0E+03	2.9E+01	2.9E+02				
	2.5E-04		2.5E-04	0.01	12224-19-1	1.5E+01	2.2E+02	9.1E-01	9.1E+00				
	1.0E-02		1.0E-02	0.01	2164-11-2	7.9E+02	1.1E+04	4.7E+01	4.7E+02				
	6.0E-02		6.0E-02	0.01	10564-38-4	3.7E+03	5.3E+04		2.2E+03				
	8.0E-02		8.0E-02	0.01	59756-60-4	4.9E+03	7.0E+04	2.9E+02	2.9E+03				
	2.0E-02		2.0E-02	0.01	58425-91-3	1.2E+03	1.8E+04	7.3E+01	7.3E+02				
	6.0E-02		6.0E-02	0.01	65332-96-5	3.7E+03	5.3E+04	2.2E+02	2.2E+03				
	1.0E-02		1.0E-02	0.01	69405-34-9	6.1E+02	8.8E+03	3.7E+01	3.6E+02				
3.5E-02	1.0E-01	3.5E-03	1.0E-01	0.01	133-07-3	1.4E+02	7.0E+02	1.9E+00	1.9E+01				
1.0E-01		1.0E-01		0.01	72778-02-0	2.6E+00	1.3E+01	3.5E-02	3.5E-01				
	2.0E-05		2.0E-05	0.01	944-22-9	1.2E+02	1.8E+03	7.3E+00	7.3E+01				
	1.0E-01		4.0E-02	0.01	50-00-0	9.2E+03	1.0E+05	1.5E-01	5.5E+03				
	2.0E+02		2.0E+02	0.01	64-19-0	1.0E+05	1.0E+05	7.3E+03	7.3E+04				
	3.0E+00		2.0E+00	0.01	35149-14-7	1.0E+05	1.0E+05	1.1E+04	1.1E+05				
	3.0E+01		8.0E+00	0.01	36-13-7	5.6E+03	5.6E+03	3.1E+04	5.9E+04				
	1.0E-03		1.0E-03	0.01	110-00-9	2.5E+00	8.5E+00	3.7E+00	6.1E+00				
3.8E+00		3.8E+00		0.01	67-45-8	1.3E-01	6.5E-01	1.8E-03	1.8E-02				
	3.0E-03		1.4E-02	0.01	95-01-1	1.8E+02	2.6E+03	5.2E+01	1.1E+02				
5.0E+01		5.0E+01		0.01	531-82-8	9.7E-03	4.9E-02	1.3E-04	1.3E-03				
3.0E-02		3.0E-02		0.01	60566-05-0	1.6E+01	8.2E+01	2.2E-01	2.2E+00				
	4.0E-04		4.0E-04	0.01	77182-82-2	2.4E+01	3.5E+02	1.5E+00	1.5E+01				
	4.0E-04		2.0E-04	0.01	705-34-4	2.4E+01	3.5E+02	1.0E+00	1.5E+01				
	1.0E-01		1.0E-01	0.01	1071-93-6	6.1E+03	8.8E+04	3.7E+02	3.6E+03				
	5.0E-05		5.0E-05	0.01	69806-43-2	3.1E+00	4.4E+01	1.8E-01	1.8E+00				
	1.3E-07		1.3E-07	0.01	19277-27-3	7.9E+02	1.1E+04	4.7E+01	4.7E+02				
4.7E+00	5.0E-04	4.5E+00	5.0E-04	0.01	76-44-2	1.1E-01	5.5E-01	1.5E-03	1.5E-02	2.3E+01	1.0E+00		
9.1E+00	1.3E-05	9.1E+00	1.3E-05	0.01	1024-87-3	5.3E-02	2.7E-01	7.4E-04	7.4E-03	7.0E-01	3.0E-02		
	2.0E-03		2.0E-03	0.01	87-82-1	1.2E+02	1.8E+03	7.3E+00	7.3E+01				
1.6E+00	8.0E-04	1.6E+00	8.0E-04	0.01	118-74-1	3.0E-01	1.5E+00	4.2E-03	4.2E-02	2.0E+00	1.0E-01		
7.8E-02	3.0E-04	7.8E-02	3.0E-04	0.01	87-66-3	6.2E+00	3.2E+01	8.6E-02	8.6E-01	2.0E+00	1.0E-01		
4.9E+00		4.9E+00		0.04	316-84-6	9.0E-02	5.9E-01	1.1E-03	1.1E-02	5.0E-04	3.0E-05		
1.8E+00		1.8E+00		0.04	318-85-7	3.2E-01	2.1E+00	3.7E-03	3.7E-02	3.0E-03	1.0E-04		
1.3E+00	3.0E-04	1.3E+00	3.0E-04	0.04	58-89-9	4.4E-01	2.9E+00	5.2E-03	5.2E-02	9.0E-03	5.0E-04		
1.8E+00		1.8E+00		0.04	605-73-1	3.2E-01	2.1E+00	3.8E-03	3.7E-02	3.0E-03	1.0E-04		
	7.0E-03		2.0E-05	0.01	77-47-4	4.2E-02	5.9E+03	7.3E-02	2.6E+02	4.0E+02	2.0E+01		
5.2E+03		4.5E+03		0.01	19408-74-3	7.8E-05	4.0E-04	1.5E-06	1.1E-05				
1.4E-02	1.0E-03	1.4E-02	1.0E-03	0.01	67-72-1	3.5E+01	1.8E+02	4.8E-01	4.8E+00	5.0E-01	2.0E-02		
	3.0E-04		3.0E-04	0.01	70-30-4	1.8E+01	2.6E+02	1.1E+00	1.1E+01				
1.1E-01	3.0E-03	1.1E-01	3.0E-03	0.01	121-82-4	4.4E+00	2.2E+01	6.1E-02	6.1E-01				
	2.9E-06		2.9E-06	0.01	427-06-0	1.7E-01	2.5E+00	1.0E-02	1.0E-01				
	0.0E-00		5.0E-00	0.01	110-54-1	1.1E+02	1.1E+02	2.1E+02	3.5E+02				
	3.3E-03		3.3E-03	0.01	51235-104-1	2.0E+03	2.9E+04	1.2E+02	1.2E+03				
	5.0E-03		5.0E-03	0.01	2091-41-0	3.1E+03	4.4E+04	1.8E+02	1.8E+03				
3.0E+00		1.7E+01		0.01	307-31-2	1.6E-01	8.2E-01	3.9E-04	2.2E-02				
3.0E+00		1.7E+01		0.01	60-34-4	1.6E-01	8.2E-01	4.0E-04	2.2E-02				
3.0E+00		1.7E+01		0.01	57-14-7	1.6E-01	8.2E-01	4.0E-04	2.2E-02				
		5.7E-02			7647-01-0			2.1E+01					
3.0E-03		2.9E-04			7783-06-4			1.0E+00	1.1E+02				
4.0E-02		4.0E-02		0.01	123-31-5	2.4E+03	3.5E+04	1.5E+02	1.5E+03				



Key: U=IRIS; P=IEAST; n=NCEA; w=WITHDRAWN; o=Other EPA DOCUMENTS; r=ROUTE; E=EXTRAPOLATION; ca=CANCER PRG; nc=NONCANCER PRG; sat=SOIL SATURATION; max=CEILING LIMIT; \*where nc < 100X ca; \*\*where nc < 10X ca

FOR PLANNING PURPOSES															
TOXICITY INFORMATION					CAS No.	CONTAMINANT	PRELIMINARY REMEDIATION GOALS (PRGs)				SOIL SCREENING LEVELS				
SFo 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils			Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m³)	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)			
1.3E-02	i	1.3E-02	i	0	0.1	36554-44-0	Imazalil	7.9E+02	nc	1.1E+04	nc	4.7E+02	nc		
2.5E-01	i	2.5E-01	i	0	0.1	91335-37-7	Imazaquin	1.5E+04	nc	1.0E+05	max	9.1E+02	nc	9.1E+03	nc
4.0E-02	i	4.0E-02	i	0	0.1	36734-19-7	Iprodione	2.4E+03	nc	3.5E+04	nc	1.5E+02	nc	1.5E+03	nc
3.0E-01	n				0	7439-89-6	Iron	2.3E+04	nc	1.0E+05	max			1.1E+04	nc
3.0E-01	i	3.0E-01	i	1		76-83-1	Isobutanol	1.3E+04	nc	4.0E+04	sat	1.1E+03	nc	1.8E+03	nc
9.5E-04	i	9.5E-04	i	0	0.1	78-59-1	Isophorone	5.1E+02	ca*	2.6E+03	ca*	7.1E+00	ca	7.1E+01	ca
1.5E-02	i	1.5E-02	i	0	0.1	33409-13-3	Isopropalin	9.2E+02	nc	1.3E+04	nc	5.5E+01	nc	5.5E+02	nc
1.3E-01	i	1.1E-01	i	0	0.1	1940-54-8	Isopropyl methyl phosphonic acid	6.1E+03	nc	8.8E+04	nc	4.0E+02	nc	3.6E+03	nc
5.0E-02	i	5.0E-02	i	0	0.1	82508-50-7	Isoxaben	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc	1.8E+03	nc
1.8E+01	n	1.8E+01	n	0	0.1	143-50-6	Kepone	2.7E-02	ca	1.4E-01	ca	3.7E-04	ca	3.7E-03	ca
2.0E-03	i	2.0E-03	i	0	0.1	77601-63-4	Lactofen	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc	7.3E+01	nc
PRGs Based on EPA Mode 5 (IEUBK 1994 and TRW 1996):						7439-97-1	Lead	4.0E+02	nc	7.5E+02	nc				
1.0E-07	i				0	0.1	78-30-2	Lead (tetraethyl)	6.1E-03	nc	8.8E-02	nc	3.6E-03	nc	
2.0E-03	i	2.0E-03	i	0	0.1	330-55-7	Linuron	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc	7.3E+01	nc
2.0E-02	n				0	7439-93-2	Lithium	1.6E+03	nc	4.1E+04	nc			7.3E+02	nc
2.0E-01	i	2.0E-01	i	0	0.1	83355-90-6	Londax	1.2E+04	nc	1.0E+05	max	7.3E+02	nc	7.3E+03	nc
2.0E-02	i	2.0E-02	i	0	0.1	121-75-5	Malathion	1.2E+03	nc	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc
1.0E-01	i	1.0E-01	i	0	0.1	109-21-6	Maleic anhydride	6.1E+03	nc	8.8E+04	nc	3.7E+02	nc	3.6E+03	nc
5.0E-01	i	5.0E-01	i	1		173-33-1	Maleic hydrazide	1.7E+03	nc	2.4E+03	sat	1.8E+03	nc	3.0E+03	nc
2.0E-05	n	2.0E-05	n	0	0.1	109-77-3	Malononitrile	1.2E+00	nc	1.8E+01	nc	7.3E-02	nc	7.3E-01	nc
3.0E-02	n	3.0E-02	n	0	0.1	8018-01-7	Mancozeb	1.8E+03	nc	2.6E+04	nc	1.1E+02	nc	1.1E+03	nc
6.0E-02	n	6.0E-02	n	0	0.1	12427-38-2	Maneb	8.1E+00	ca*	4.1E+01	ca	1.1E-01	ca	1.1E+00	ca
2.4E-02	i	1.4E-05	i	0		7439-96-9	Manganese and compounds	1.8E+03	nc	3.2E+04	nc	5.1E-02	nc	8.8E+02	nc
9.0E-05	n	9.0E-05	n	0	0.1	950-10-7	Mephosfolan	5.5E+00	nc	7.9E+01	nc	3.3E-01	nc	3.3E+00	nc
3.0E-02	i	3.0E-02	i	0	0.1	2450-526-4	Mepiquat	1.8E+03	nc	2.6E+04	nc	1.1E+02	nc	1.1E+03	nc
2.0E-02	n	1.0E-01	n	0	0.1	144-30-4	2-Mercaptobenzothiazole	1.7E+01	ca	8.5E+01	ca	2.3E-01	ca	2.3E+00	ca
3.0E-04	i				0	7440-66-7	Mercury and compounds	2.3E+01	nc	6.1E+02	nc			1.1E+01	nc
		6.6E-05				7439-97-6	Mercury (elemental)				3.1E-01	nc			
1.0E-04	i				0	22967-02-6	Mercury (methyl)	6.1E+00	nc	8.8E+01	nc			3.6E+00	nc
3.0E-05	i	3.0E-05	i	0	0.1	750-63-5	Merphos	1.8E+00	nc	2.6E+01	nc	1.1E-01	nc	1.1E+00	nc
3.0E-05	i	3.0E-05	i	0	0.1	78-48-8	Merphos oxide	1.8E+00	nc	2.6E+01	nc	1.1E-01	nc	1.1E+00	nc
6.0E-02	i	6.0E-02	i	0	0.1	57837-19-1	Metalaxyl	3.7E+03	nc	5.3E+04	nc	2.2E+02	nc	2.2E+03	nc
1.0E-04	i	2.0E-04	i	1		120-95-7	Methacrylonitrile	2.1E+00	nc	8.8E+00	nc	7.3E-01	nc	1.0E+00	nc
3.0E-05	i	3.0E-05	i	0	0.1	13285-92-6	Methamidophos	3.1E+00	nc	4.4E+01	nc	1.8E-01	nc	1.8E+00	nc
5.0E-01	i	5.0E-01	i	0	0.1	67-56-1	Methanol	3.1E+04	nc	1.0E+05	max	1.8E+03	nc	1.8E+04	nc
1.0E-03	i	1.0E-03	i	0	0.1	960-37-8	Methidathion	6.1E+01	nc	8.8E+02	nc	3.7E+00	nc	3.6E+01	nc
1.5E-02	i	2.5E-02	i	1		107-07-2	Methomyl	4.4E+01	nc	1.5E+02	nc	9.1E+01	nc	1.5E+02	nc
5.0E-03	i	5.0E-03	i	0	0.1	72-43-6	Methoxychlor	3.1E+02	nc	4.4E+03	nc	1.8E+01	nc	1.8E+02	nc
1.0E-03	n	5.7E-03	n	0	0.1	109-90-4	2-Methoxyethanol	6.1E+01	nc	8.8E+02	nc	2.1E+01	nc	3.6E+01	nc
2.0E-03	n	2.0E-03	n	0	0.1	110-49-6	2-Methoxyethanol acetate	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc	7.3E+01	nc
4.5E-02	n	4.5E-02	n	0	0.1	99-55-2	2-Methoxy-5-nitroaniline	1.1E+01	ca	5.4E+01	ca	1.5E-01	ca	1.5E+00	ca
		1.0E+00			0	79-20-9	Methyl acetate	2.2E+04	nc	9.6E+04	nc	3.7E+03	nc	6.1E+03	nc
2.0E-02	n	3.0E-02	n	1		96-33-3	Methyl acrylate	7.0E+01	nc	2.3E+02	nc	1.1E+02	nc	1.8E+02	nc
2.4E-01	n	2.4E-01	n	0	0.1	94-53-4	2-Methylaniline (o-toluidine)	2.0E+00	ca	1.0E+01	ca	2.8E-02	ca	2.8E-01	ca
1.8E-01	n	1.8E-01	n	0	0.1	620-21-1	2-Methylaniline hydrochloride	2.7E+00	ca	1.4E+01	ca	3.7E-02	ca	3.7E-01	ca
1.0E+00	n	1.0E+00	n	0	0.1	79-12-1	Methyl chlorocarbonate	6.1E+04	nc	1.0E+05	max	3.7E+03	nc	3.6E+04	nc
5.0E-04	i	5.0E-04	i	0	0.1	94-74-4	2-Methyl-4-chlorophenoxyacetic acid	3.1E+01	nc	4.4E+02	nc	1.8E+00	nc	1.8E+01	nc
1.0E-02	i	1.0E-02	i	0	0.1	94-81-5	4-(2-Methyl-4-chlorophenoxy) butyric acid	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc
1.0E-03	i	1.0E-03	i	0	0.1	93-65-2	2-(2-Methyl-4-chlorophenoxy) propionic acid	6.1E+01	nc	8.8E+02	nc	3.7E+00	nc	3.6E+01	nc
1.0E-03	i	1.0E-03	i	0	0.1	16484-77-6	2-(2-Methyl-1,4-chlorophenoxy) propionic acid	6.1E+01	nc	8.8E+02	nc	3.7E+00	nc	3.6E+01	nc
8.8E-01	i	8.8E-01	i	1		108-87-2	Methylcyclohexane	2.6E+03	nc	8.8E+03	nc	3.1E+03	nc	5.2E+03	nc
2.5E-01	n	2.5E-01	n	0	0.1	101-77-9	4,4'-Methylenebisbenzeneamine	1.9E+00	ca	9.9E+00	ca	2.7E-02	ca	2.7E-01	ca
1.3E-01	n	7.0E-04	n	0	0.1	101-14-4	4,4'-Methylene bis(2-chloroaniline)	3.7E+00	ca*	1.9E+01	ca*	5.2E-02	ca*	5.2E-01	ca*
4.6E-02	n	4.6E-02	n	0	0.1	101-01-1	4,4'-Methylene bis(N,N'-dimethyl)aniline	1.1E+01	ca	5.4E+01	ca	1.5E-01	ca	1.5E+00	ca



key: IRIS h=HEAST n=NCEA x=WITHDRAWN o=Other EPA DOCUMENTS f=ROUTE EXTRAPOLOATION ca=CANCER PRG nc=NONCANCER PRG sat=SOL SATURATION max=CF LEV/1 M.T. \*where nc < 100X sat \*\*where nc < 10X sat

# FOR PLANNING PURPOSES

TOXICITY INFORMATION					CONTAMINANT		PRELIMINARY REMEDIATION GOALS (PRGs)					SOIL SCREENING LEVELS				
SFO 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs C soils	CAS No.	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m <sup>3</sup> )	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)					
7.5E-02	1.0E-02	h	1.0E-02	r 1	74-95-3	6.7E+01	nc	2.4E+02	nc	3.7E+01	nc	6.1E+01	nc	2.0E-02	1.0E-03	
	6.0E-02	r	1.6E-03	i	75-09-2	8.9E+00	ca	2.1E+01	ca	4.1E+00	ca	4.3E+00	ca			
	1.7E-04	r	1.7E-04	i 0 0.1	101-68-8	1.0E+01	nc	1.5E+02	nc	6.2E-01	nc	6.2E+00	nc			
1.1E+00	6.0E-01	i	2.9E-01	- 1	78-93-3	7.3E+03	nc	2.8E+04	nc	1.0E+03	nc	1.9E+03	nc			
					60-34-4	4.4E-01	ca	2.2E+00	ca	6.1E-03	ca	6.1E-02	ca			
	8.0E-02	h	1.1E+00	i	108-10-1	7.9E+02	nc	2.9E+03	nc	8.3E+01	nc	1.6E+02	nc			
3.4E+02	5.7E-04	r	5.7E-04	- 0.1	74-93-1	3.5E+01	nc	5.0E+02	nc	2.1E+00	nc	2.1E+01	nc			
	1.4E+00	i	1.6E+01	r 1	80-62-6	2.2E+03	nc	2.7E+03	nc	7.3E+02	nc	1.4E+03	nc			
			2.9E-02	r	99-55-8	1.5E+01	ca	7.5E+01	ca	2.0E-01	ca	2.0E+00	ca			
	2.5E-04	i	2.5E-04	r 0 0.1	298-00-0	1.5E+01	nc	2.2E+02	nc	9.1E-01	nc	9.1E+00	nc	1.5E+01	8.0E-01	
	5.0E-02	i	5.0E-02	r 0 0.1	95-48-7	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc	1.8E+03	nc			
	5.0E-02	x	5.0E-02	r 0 0.1	108-39-4	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc	1.8E+03	nc			
	5.0E-03	i	5.0E-03	r 0 0.1	106-44-5	3.1E+02	nc	4.4E+03	nc	1.8E+01	nc	1.8E+02	nc			
	2.0E-02	nc	2.0E-02	r 0 0.1	893-13-5	1.2E+03	nc	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc			
	6.0E-03	h	1.1E-02	r 1	25013-15-4	1.3E+02	nc	5.6E+02	nc	4.2E+01	nc	6.0E+01	nc			
3.4E+02	7.0E-02	h	2.0E-02	r 1	68-83-9	6.8E+02	ca	6.8E+02	ca	2.6E+02	nc	4.3E+02	nc			
			5.0E+01	r 1	1034-04-3			3.1E+03	nc	2.0E+01	nc	6.2E+00	ca			
			1.8E+04	i		1.7E+01	ca	3.7E+01	ca	3.7E+00	ca	6.2E+00	ca			
1.8E+00	1.5E-01	r	1.5E-01	r 0 0.1	51218-45-2	9.2E+03	nc	1.0E+05	nc	5.5E+02	nc	5.5E+03	nc			
	2.5E-02	x	2.5E-02	r 0 0.1	21047-64-9	1.5E+03	nc	2.2E+04	nc	9.1E+01	nc	9.1E+02	nc			
	2.0E-04	x	1.8E+00	i	2385-55-5	2.7E-01	ca	1.4E+00	ca	3.7E-03	ca	3.7E-02	ca			
	2.0E-03	i	2.0E-03	r 0 0.1	2212-67-1	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc	7.3E+01	nc			
	5.0E-03	h		0.1	7439-99-7	3.9E+02	nc	1.0E+04	nc		nc	1.8E+02	nc			
	1.0E-01	h	1.0E-01	r 0 0.1	10599-50-3	6.1E+03	nc	8.8E+04	nc	3.7E+02	nc	3.6E+03	nc			
	2.0E-03	i	2.0E-03	r 0 0.1	300-76-5	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc	7.3E+01	nc	1.3E+02	7.0E+00	
	1.0E-01	i	1.0E-01	r 0 0.1	15299-99-7	6.1E+03	nc	8.8E+04	nc	3.7E+02	nc	3.6E+03	nc			
	2.0E-02				7440-02-0	1.6E+03	nc	4.1E+04	nc	7.3E+02	nc	7.3E+02	nc			
						1.5E+02										
		5.4E-01	i		0			8.0E-03	ca							
		1.7E+00	i		0	12035-72-2		1.1E+04	ca	4.0E-03	ca					
Tap Water PRG Based on Infant NOAEL (see IRIS)	1.5E-03	x	1.5E-03	r 0 0.1	1929-82-4	9.2E+01	nc	1.3E+03	nc	5.5E+00	nc	5.5E+01	nc			
					14797-55-8					1.0E+04	nc					
	1.0E-01	x			10102-43-9	7.8E+03	nc	1.0E+05	nc		nc	3.6E+03	nc			
Tap Water PRGs Based on Infant NOAEL (see IRIS)					14197-85-0					1.0E+03	nc			1.0E-01	7.0E-03	
	5.7E-05		5.7E-05	r 0 0.1	68-74-4	3.5E+00	nc	5.0E+01	nc	2.1E-01	nc	2.1E+00	nc			
	5.0E-04	i	5.7E-04	r 0 0.1	96-65-3	2.0E+01	nc	1.1E+02	nc	2.1E+00	nc	3.4E+00	nc			
1.5E+01	2.0E-02	h	1.0E-02	r 0 0.1	67-26-9	4.3E+03	nc	6.2E+04	nc	2.6E+02	nc	2.6E+03	nc			
					59-87-0	3.2E-01	ca	1.6E+00	ca	7.2E-04	ca	4.5E-02	ca			
	1.4E+02	h	1.4E+02	r	55-63-0	3.5E+01	ca	1.8E+02	ca	4.8E-01	ca	4.8E+00	ca			
	1.0E-01		1.0E-01	r 0 0.1	68-88-7	6.1E+03	nc	8.8E+04	nc	3.7E+02	nc	3.6E+03	nc			
	8.0E-03	h	8.0E-03	r 0 0.1	100-02-7	4.9E+02	nc	7.0E+03	nc	2.9E+01	nc	2.9E+02	nc			
	3.4E+00	r	5.7E-03	5.7E-03	79-49-9			7.2E-04	ca	1.2E-03	ca					
5.4E+00	5.6E+00	r		1	924-16-3	2.4E-02	ca	6.1E-02	ca	1.2E-03	ca	2.0E-03	ca			
	2.8E+00	i	2.8E+00	r	0 0.1	1116-54-7	1.7E-01	ca	8.8E-01	ca	2.4E-03	ca	2.4E-02			ca
	1.5E+02	r	1.5E+02	r	0 0.1	55-18-5	3.2E-03	ca	1.6E-02	ca	4.5E-05	ca	4.5E-04			ca
4.1E+01	4.1E+01	x	4.1E+01	r	0 0.1	62-75-9	9.5E-03	ca	4.8E-02	ca	1.4E-04	ca	1.3E-03	ca	1.0E+00	6.0E-02
	4.9E-03	x	4.9E-03	i	0 0.1	86-30-6	9.9E+01	ca	5.0E+02	ca	1.4E+00	ca	1.4E+01	ca		
	2.9E+00	x	7.0E+00	r	0 0.1	6211-64-7	6.9E-02	ca	3.5E-01	ca	9.6E-04	ca	9.6E-03	ca		
2.2E+01	2.2E+01	i		0.1	10805-95-6	2.2E-02	ca	1.1E-01	ca	3.1E-04	ca	3.1E-03	ca	5.0E-05	2.0E-06	
	2.1E+02	i	2.1E+02	r	0 0.1	930-55-2	2.3E-01	ca	1.2E+00	ca	3.1E-03	ca	3.2E-02			ca
			1.0E-02	r 1	99-08-1	3.7E+02	nc	1.0E+03	nc	3.7E+01	nc	6.1E+01	nc			
1.0E-02	1.0E-02	h	1.0E-02	r 1	98-72-2	3.7E+02	nc	1.0E+03	nc	3.7E+01	nc	6.1E+01	nc			
	1.0E-02	x	1.0E-02	r 1	99-99-0	3.7E+02	nc	1.0E+03	nc	3.7E+01	nc	6.1E+01	nc			
	4.0E-02	x	4.0E-02	r 0 0.1	27314-13-2	2.4E+03	nc	3.5E+04	nc	1.5E+02	nc	1.5E+03	nc			



Key: (IRIS) = HEAST n=NECA x=WITHDRAWN g=Other EPA DOCUMENTS r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT \*where nc < 100X ca; \*\*where nc < 10X ca

# FOR PLANNING PURPOSES

TOXICITY INFORMATION					CAS No.	CONTAMINANT	PRELIMINARY REMEDIATION GOALS (PRGs)				SOIL SCREENING LEVELS	
SFo 1/(mg/kg-d)	RfD (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils			Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m <sup>3</sup> )	Tap Water (ug/g)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
7.0E-04	i		7.0E-04	i 0 0.1	85509-19-9	NuStar	4.3E+01	nc	6.2E+02	nc	2.6E+00	nc
3.0E-03	i		3.0E-03	i 0 0.1	32536-52-0	Octabromodiphenyl ether	1.8E+02	nc	2.6E+03	nc	1.1E+01	nc
2.0E-03	h		2.0E-03	i 0 0.1	122-16-9	Octamethylpyrophosphoramide	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc
5.0E-02	i		5.0E-02	i 0 0.1	19044-88-3	Oryzalin	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc
5.0E-03	i		5.0E-03	i 0 0.1	15566-30-9	Oxadiazon	3.1E+02	nc	4.4E+03	nc	1.8E+01	nc
2.5E-02	i		2.5E-02	i 0 0.1	1135-22-0	Oxamyl	1.5E+03	nc	2.2E+04	nc	9.1E+01	nc
2.0E-03	i		2.0E-03	i 0 0.1	43974-03-3	Oxyfluorfen	1.8E+02	nc	2.6E+03	nc	1.1E+01	nc
1.3E-02	i		1.3E-02	i 0 0.1	1139-62-3	Paclobutrazol	7.9E+02	nc	1.1E+04	nc	4.7E+01	nc
4.5E-03	i		4.5E-03	i 0 0.1	4485-14-7	Paraquat	2.7E+02	nc	4.0E+03	nc	1.6E+01	nc
6.0E-03	h		6.0E-03	i 0 0.1	34-18-2	Parathion	3.7E+02	nc	5.3E+03	nc	2.2E+01	nc
5.0E-02	h		5.0E-02	i 0 0.1	1114-71-2	Pebulate	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc
4.0E-02	i		4.0E-02	i 0 0.1	49487-42-1	Pendimethalin	2.4E+03	nc	3.5E+04	nc	1.5E+03	nc
2.3E-02	nc	2.3E-02		0 0.1	87-84-3	Pentabromo-6-chloro cyclohexane	2.1E+01	ca	1.1E+02	ca	2.9E-01	ca
2.0E-03			2.0E-03	i 0 0.1	32534-81-9	Pentabromodiphenyl ether	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc
8.0E-04	i		8.0E-04	i 0 0.1	105-83-5	Pentachlorobenzene	4.9E+01	nc	7.0E+02	nc	2.9E+00	nc
3.0E-03	i	2.6E-01	3.0E-03	i 0 0.1	87-18-8	Pentachloronitrobenzene	1.9E+00	ca*	9.5E+00	ca	2.6E-01	ca
3.0E-02	i	1.2E-01	3.0E-02	i 0 0.1	87-18-8	Pentachlorophenol	3.0E+00	ca*	1.1E+01	ca*	5.6E-01	ca
1.0E-04	x			0	111-10-3	Perchlorate	3.9E+01	nc	1.0E+03	nc	1.8E+01	nc
5.0E-02	i		5.0E-02	i 0 0.1	50-09-5	Permethrin	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc
2.5E-01	i		2.5E-01	i 0 0.1	14694-53-4	Phenmedipham	1.5E+04	nc	1.0E+05	max	9.1E+02	nc
5.0E-01	i		5.0E-01	i 0 0.1	125-55-2	Phenol	3.7E+04	nc	1.0E+05	max	2.2E+03	nc
2.0E-03	nc		2.0E-03	i 0 0.1	52-84-2	Phenothiazine	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc
6.0E-03	i		6.0E-03	i 0 0.1	105-48-0	m-Phenylenediamine	3.7E+02	nc	5.3E+03	nc	2.2E+01	nc
1.5E-01	h		1.5E-01	i 0 0.1	105-50-3	p-Phenylenediamine	1.2E+04	nc	1.0E+05	max	6.9E+02	nc
8.0E-05	i		8.0E-05	i 0 0.1	77-16-4	Phenylmercuric acetate	4.9E+00	nc	7.0E+01	nc	2.9E-01	nc
1.0E-03	h	1.9E-03		0 0.1	80-14-7	2-Phenylphenol	2.5E+02	ca	1.3E+03	ca	3.5E+00	ca
2.0E-04	h		2.0E-04	i 0 0.1	305-50-2	Phorate	1.2E+01	nc	1.8E+02	nc	7.3E-01	nc
2.0E-02	i		2.0E-02	i 0 0.1	305-11-8	Phosmet	1.2E+03	nc	1.8E+04	nc	7.3E+01	nc
3.0E-04	h		3.0E-04	i 0 0.1	78-13-5	Phosphine	1.8E+01	nc	2.6E+02	nc	3.1E-01	nc
			2.9E-03	i	1304-33-7	Phosphoric acid			1.0E+01	nc		
2.0E-02				0	7723-14-0	Phosphorus (white)	1.6E+00	nc	4.1E+01	nc	7.3E-01	nc
1.0E+03	h		1.0E+03	i 0 0.1	105-21-0	p-Phthalic acid	6.1E+04	nc	1.0E+05	max	3.7E+03	nc
2.0E+00	i		2.4E-02	h 0 0.1	85-44-9	Phthalic anhydride	1.0E+05	max	1.0E+05	max	1.2E+02	nc
7.0E-02	i		7.0E-02	i 0 0.1	1918-32-1	Picloram	4.3E+03	nc	6.2E+04	nc	2.6E+02	nc
1.0E-02	i		1.0E-02	i 0 0.1	21499-41-3	Pirimiphos-methyl	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc
8.0E+00	h	7.0E+06	8.0E+00	i 0 0.1		Polybrominated biphenyls	5.5E-02	ca**	2.8E-01	ca**	7.6E-04	ca**
2.0E+00	h	2.0E+00		0 0.14	1336-36-3	Polychlorinated biphenyls (PCBs)	2.2E-01	ca	1.0E+00	ca	3.4E-03	ca
7.0E-02	h	7.0E-02		0 0.14	12674-11-2	Aroclor 1016	3.9E+00	nc	2.9E+01	ca**	9.6E-02	ca**
2.0E+00	i	2.0E+00		0 0.14	11134-28-2	Aroclor 1221	2.2E-01	ca	1.0E+00	ca	3.4E-03	ca
2.0E+00	i	2.0E+00		0 0.14	11141-18-5	Aroclor 1232	2.2E-01	ca	1.0E+00	ca	3.4E-03	ca
2.0E+00	i	2.0E+00		0 0.14	53469-21-9	Aroclor 1242	2.2E-01	ca	1.0E+00	ca	3.4E-03	ca
2.0E+00	i	2.0E+00		0 0.14	12672-29-6	Aroclor 1248	2.2E-01	ca	1.0E+00	ca	3.4E-03	ca
2.0E+00	i	2.0E+00		0 0.14	11097-09-1	Aroclor 1254	2.2E-01	ca**	1.0E+00	ca*	3.4E-03	ca*
2.0E+00	i	2.0E+00		0 0.14	11066-82-5	Aroclor 1260	2.2E-01	ca	1.0E+00	ca	3.4E-03	ca
				0 1		Polynuclear aromatic hydrocarbons (PAHs)						
6.0E-02	i		6.0E-02	i 0 0.1	83-32-7	Acenaphthene	3.7E+03	nc	3.8E+04	nc	2.2E+02	nc
3.0E-01	h		3.0E-01	i 0 0.1	130-12-7	Anthracene	2.2E+04	nc	1.0E+05	max	1.1E+03	nc
		3.1E-01		0 0.13	56-55-3	Benz[a]anthracene	6.2E-01	ca	2.9E+00	ca	1.8E+03	nc
7.3E-01	h		3.1E-01	h	205-99-2	Benzo[b]fluoranthene	6.2E-01	ca	2.9E+00	ca	9.2E-02	ca
7.3E-01	h		3.1E-02	h	207-08-9	Benzo[k]fluoranthene	6.2E+00	ca	2.9E+01	ca	9.2E-01	ca
						"CAL-Modified PRG" (PEA, 1994)	6.1E-01					
7.3E+00	i		3.1E+00	h	50-32-6	Benzo[a]pyrene	6.2E-02	ca	2.9E-01	ca	9.2E-03	ca
						"CAL-Modified PRG" (PEA, 1994)					1.5E-03	
7.3E-03	h		3.1E-03	h	218-01-9	Chrysene	6.2E+01	ca	2.9E+02	ca	9.2E+00	ca



**FOR PLANNING PURPOSES**

TOXICITY INFORMATION					CONTAMINANT		PRELIMINARY REMEDIATION GOALS (PRGs)				SOIL SCREENING LEVELS						
SFo 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils	CAS No.		Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m <sup>3</sup> )	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)					
7.3E+00	n	3.1E+00	n	0	0 13	53-70-5	"CAL-Modified PRG" (PEA, 1994)	6.1E+00									
4.0E-02	i	4.0E-02	i	0	0 13	205-44-0	Dibenz[ah]anthracene	6.2E-02	ca	2.9E-01	ca	2.2E-03	ca	2.0E+00	8.0E-02		
4.0E-02	i	4.0E-02	i	0	0 13	205-44-0	Fluoranthene	2.3E+03	nc	3.0E+04	nc	1.5E+02	nc	1.5E+03	nc	4.3E+03	2.1E+02
4.0E-02	i	4.0E-02	i	0	0 13	85-73-7	Fluorene	2.6E+03	nc	3.3E+04	nc	1.5E+02	nc	2.4E+02	nc	5.6E+02	2.8E+01
8.0E-04	i	8.0E-04	i	0	0 13	145-33-6	Indeno[1,2,3-cd]pyrene	6.2E-01	ca	2.9E+00	ca	2.2E-02	ca	9.2E-02	ca	1.4E+01	7.0E-01
8.0E-04	i	8.0E-04	i	0	0 13	85-73-7	Naphthalene	5.6E+01	nc	1.9E+02	nc	3.1E+00	nc	6.2E+00	nc	8.4E+01	4.0E+00
3.0E-02	i	3.0E-02	i	0	0 13	129-07-1	Pyrene	2.3E+03	nc	5.4E+04	nc	1.1E+02	nc	1.8E+02	nc	4.2E+03	2.1E+02
9.0E-03	i	9.0E-03	i	0	0 13	1775-14-5	Prochloraz	3.2E+00	ca	1.6E+01	ca	4.5E-02	ca	4.5E-01	ca		
6.0E-03	i	6.0E-03	i	0	0 13	21-00-0	Profluralin	3.7E+02	nc	5.3E+03	nc	2.2E+01	nc	2.2E+02	nc		
1.5E-02	i	1.5E-02	i	0	0 13	1010-18-9	Prometon	9.2E+02	nc	1.3E+04	nc	5.5E+01	nc	5.5E+02	nc		
4.0E-03	i	4.0E-03	i	0	0 13	1287-19-6	Prometryn	2.4E+02	nc	3.5E+03	nc	1.5E+01	nc	1.5E+02	nc		
7.5E-02	i	7.5E-02	i	0	0 13	2550-65-5	Pronamide	4.6E+03	nc	6.6E+04	nc	2.7E+02	nc	2.7E+03	nc		
1.3E-02	i	1.3E-02	i	0	0 13	1015-10-7	Propachlor	7.9E+02	nc	1.1E+04	nc	4.7E+01	nc	4.7E+02	nc		
5.0E-03	i	5.0E-03	i	0	0 13	100-58-6	Propanil	3.1E+02	nc	4.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
2.0E-02	i	2.0E-02	i	0	0 13	1512-35-6	Propargite	1.2E+03	nc	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc		
2.0E-03	i	2.0E-03	i	0	0 13	101-19-1	Propargyl alcohol	1.2E+02	nc	1.8E+03	nc	7.3E+00	nc	7.3E+01	nc		
2.0E-02	i	2.0E-02	i	0	0 13	110-49-1	Propazine	1.2E+03	nc	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc		
2.0E-02	i	2.0E-02	i	0	0 13	110-49-1	Propham	1.2E+03	nc	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc		
1.3E-02	i	1.3E-02	i	0	0 13	4008-90-7	Propiconazole	7.9E+02	nc	1.1E+04	nc	4.7E+01	nc	4.7E+02	nc		
1.0E-01	i	1.0E-01	i	0	0 13	98-82-8	Isopropylbenzene (Cumene)	1.6E+02	nc	5.2E+02	nc	4.0E+02	nc	6.6E+02	nc		
1.0E-02	i	1.0E-02	i	0	0 13	103-65-1	n-Propylbenzene	1.4E+02	nc	2.4E+02	nc	3.7E+01	nc	6.1E+01	nc		
2.0E+01	i	2.0E+01	i	0	0 13	55-55-6	Propylene glycol	1.0E+05	max	1.0E+05	max	7.3E+04	nc	7.3E+05	nc		
7.0E+01	i	7.0E+01	i	0	0 13	111-26-2	Propylene glycol, monoethyl ether	4.3E+04	nc	1.0E+05	max	2.6E+03	nc	2.6E+04	nc		
7.0E+01	i	7.0E+01	i	0	0 13	107-58-0	Propylene glycol, monomethyl ether	4.3E+04	nc	1.0E+05	max	2.1E+03	nc	2.6E+04	nc		
3.6E-03	i	3.6E-03	i	0	0 13	25-59-5	Propylene oxide	1.9E+00	ca	9.1E+00	ca	5.2E-01	ca	2.2E-01	ca		
2.5E-01	i	2.5E-01	i	0	0 13	400-50-7	Pursuit	1.5E+04	nc	1.0E+05	max	9.1E+02	nc	9.1E+03	nc		
2.5E-02	i	2.5E-02	i	0	0 13	106-33-5	Pydrit	1.5E+03	nc	2.2E+04	nc	9.1E+01	nc	9.1E+02	nc		
1.0E-03	i	1.0E-03	i	0	0 13	110-86-1	Pyridine	6.1E+01	nc	8.8E+02	nc	3.7E+00	nc	3.6E+01	nc		
5.0E-04	i	5.0E-04	i	0	0 13	13593-03-6	Quinalphos	3.1E+01	nc	4.4E+02	nc	1.8E+00	nc	1.8E+01	nc		
5.0E-04	i	5.0E-04	i	0	0 13	51-42-5	Quinoline	4.1E-02	ca	2.1E-01	ca	5.6E-04	ca	5.6E-03	ca		
3.0E-03	i	3.0E-03	i	0	0 13	121-82-4	RDX (Cyclonite)	4.4E+00	ca	2.2E+01	ca	6.1E-02	ca	6.1E-01	ca		
3.0E-02	i	3.0E-02	i	0	0 13	12483-86-8	Resmethrin	1.8E+03	nc	2.6E+04	nc	1.1E+02	nc	1.1E+03	nc		
5.0E-02	i	5.0E-02	i	0	0 13	2959-84-3	Ronnel	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
4.0E-03	i	4.0E-03	i	0	0 13	83-39-4	Rotenone	2.4E+02	nc	3.5E+03	nc	1.5E+01	nc	1.5E+02	nc		
2.5E-02	i	2.5E-02	i	0	0 13	2989-91-0	Savay	1.5E+03	nc	2.2E+04	nc	9.1E+01	nc	9.1E+02	nc		
5.0E-03	i	5.0E-03	i	0	0 13	284-02-6	Selenious Acid	3.1E+02	nc	4.4E+03	nc		nc	1.8E+02	nc		
7.0E-02	i	7.0E-02	i	0	0 13	7782-49-2	Selenium	3.9E+02	nc	1.0E+04	nc		nc	1.8E+02	nc	5.0E+00	3.0E-01
1.0E-03	i	1.0E-03	i	0	0 13	479-10-4	Selenourea	3.1E+02	nc	4.4E+03	nc		nc	1.8E+02	nc		
9.0E-02	i	9.0E-02	i	0	0 13	74051-89-2	Sethoxydim	5.5E+03	nc	7.9E+04	nc	3.3E+02	nc	3.3E+03	nc		
9.0E-03	i	9.0E-03	i	0	0 13	7440-22-4	Silver and compounds	3.9E+02	nc	1.0E+04	nc		nc	1.8E+02	nc	3.4E+01	2.0E+00
5.0E-03	i	5.0E-03	i	0	0 13	127-24-9	Simazine	4.1E+00	ca	2.1E+01	ca	5.6E-02	ca	5.6E-01	ca		
4.0E-03	i	4.0E-03	i	0	0 13	29528-72-8	Sodium azide										
3.0E-02	i	3.0E-02	i	0	0 13	148-18-5	Sodium diethyldithiocarbamate	1.8E+00	ca	9.1E+00	ca	2.5E-02	ca	2.5E-01	ca		
7.0E-03	i	7.0E-03	i	0	0 13	607-04-6	Sodium fluoroacetate	1.2E+00	nc	1.8E+01	nc	7.3E-02	nc	7.3E-01	nc		
1.0E-03	i	1.0E-03	i	0	0 13	15078-29-8	Sodium metavanadate	6.1E+01	nc	8.8E+02	nc	3.7E+00	nc	3.6E+01	nc		
6.0E-01	i	6.0E-01	i	0	0 13	7440-17-6	Strontium, stable	4.7E+04	nc	1.0E+05	max		nc	2.2E+04	nc		
1.0E+04	i	1.0E+04	i	0	0 13	58-06-7	Strychnine	1.8E+01	nc	2.6E+02	nc	1.1E+00	nc	1.1E+01	nc		
2.0E-01	i	2.0E-01	i	0	0 13	700-47-5	Styrene	1.7E+03	sol	1.7E+03	sol	1.1E+03	nc	1.6E+03	nc	4.0E+00	2.0E-01
1.0E-03	i	1.0E-03	i	0	0 13	80-07-0	1,1'-Sulfonylbis (4-chlorobenzene)	7.8E+01	nc	2.0E+03	nc	3.7E+00	nc	3.6E+01	nc		
2.5E-02	i	2.5E-02	i	0	0 13	8267-1-5	Systhane	1.5E+03	nc	2.2E+04	nc	9.1E+01	nc	9.1E+02	nc		
1.5E+05	i	1.5E+05	i	0	0 13	1746-01-6	2,3,7,8-TCDD (dioxin)	3.9E-06	ca	2.7E-05	ca	4.5E-08	ca	4.5E-07	ca		
7.0E-02	i	7.0E-02	i	0	0 13	54014-18-1	Tebuthiuron	4.3E+03	nc	6.2E+04	nc	2.6E+02	nc	2.6E+03	nc		
2.0E-02	i	2.0E-02	i	0	0 13	3463-95-8	Temephos	1.2E+03	nc	1.8E+04	nc	7.3E+01	nc	7.3E+02	nc		
1.3E-02	i	1.3E-02	i	0	0 13	540-11-2	Terbacil	7.9E+02	nc	1.1E+04	nc	4.7E+01	nc	4.7E+02	nc		



Key: (S)HS (S)HEAST (N)NCEA (X)WITHDRAWN (O)Other EPA DOCUMENTS (R)R1 (L)EXTRAPOLATION (C)CANCER PRG (NC)NONCANCER PRG (S)SATURATED (MAX)CEILING LIMIT (WHERE NC < 100X (C) (WHERE NC < 10X (C))

# FOR PLANNING PURPOSES

TOXICITY INFORMATION					CONTAMINANT	PRELIMINARY REMEDIATION GOALS (PRGs)					SOIL SCREENING LEVELS		
SFo 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs. C soils	CAS No.	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m <sup>3</sup> )	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)		
2.9E-05	F	2.5E-05	F	O	15371-28-9	1.5E+00	nc	2.2E+01	nc	9.1E-02	nc	9.1E-01	nc
1.0E-03	F	1.0E-03	F	O	556-80-0	6.1E+01	nc	8.8E+02	nc	3.7E+00	nc	3.6E+01	nc
3.0E-04	F	3.0E-04	F	O	95-94-3	1.8E+01	nc	2.6E+02	nc	1.1E+00	nc	1.1E+01	nc
2.6E-02	F	3.0E-02	F	O	633-20-1	3.0E+00	ca	7.0E+00	ca	2.6E-01	ca	4.3E-01	ca
2.0E-01	F	6.0E-02	F	O	75-35-5	3.8E-01	ca	9.0E-01	ca	3.3E-02	ca	5.5E-02	ca
5.2E-02	nc	1.1E-01	nc	O	11-19-4	5.7E+00	ca*	1.9E+01	ca*	3.3E+00	ca	1.1E+00	ca
					"CAL-Modified PRG" (PEA, 1994)								
3.0E-03	F	3.0E-02	F	O	118-06-2	1.8E+03	nc	2.6E+04	nc	1.1E+02	nc	1.1E+03	nc
2.0E+01	h	2.0E+01	h	O	91-08-1	2.4E-02	ca	1.2E-01	ca	3.4E-04	ca	3.4E-03	ca
2.4E-02	h	3.0E-02	h	O	901-11-5	2.0E+01	ca*	1.0E+02	ca	2.8E-01	ca	2.8E+00	ca
3.0E-04	nc	3.0E-04	nc	O	3845-24-5	3.1E+01	nc	4.4E+02	nc	1.8E+00	nc	1.8E+01	nc
7.6E-03	nc	8.8E-03	nc	O	105-69-5	6.4E+01	ca	3.2E+02	ca	9.9E-01	ca	8.8E+00	ca
6.6E-05	nc	7.4E-05	nc	O	7449-98-3	5.2E+00	nc	1.3E+02	nc	2.4E+00	nc	2.4E+00	nc
1.7E-02	nc	1.0E-02	nc	O	282-68-7	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc
1.0E-01	nc	1.0E-01	nc	O	N/A	6.1E+03	nc	1.0E+05	max	3.7E+02	nc	3.6E+03	nc
3.0E-04	nc	3.0E-04	nc	O	347-96-1	1.8E+01	nc	2.6E+02	nc	1.1E+00	nc	1.1E+01	nc
4.0E-02	nc	4.0E-02	nc	O	250-43-6	4.9E+03	nc	7.0E+04	nc	2.9E+02	nc	2.9E+03	nc
5.0E-03	nc	5.0E-03	nc	O	133-20-8	3.1E+02	nc	4.4E+03	nc	1.8E+01	nc	1.8E+02	nc
6.0E-01	h	6.0E-01	h	O		4.7E+04	nc	1.0E+05	max	2.2E+04	nc	2.2E+04	nc
2.0E-01	h	1.1E-01	h	O	109-68-7	5.2E+02	sat	5.2E+02	sat	4.0E+02	nc	7.2E+02	nc
3.2E+00	h	9.5E+00	h	O	95-80-7	1.5E-01	ca	7.7E-01	ca	2.1E-03	ca	2.1E-02	ca
5.0E-01	h	6.0E-01	h	O	95-70-5	3.7E+04	nc	1.0E+05	max	2.2E+03	nc	2.2E+04	nc
2.0E-01	h	2.0E-01	h	O	623-40-5	1.2E+04	nc	1.0E+05	max	7.3E+02	nc	7.3E+03	nc
1.9E-01	nc	1.9E-01	nc	O	106-49-0	2.6E+00	ca	1.3E+01	ca	3.5E-02	ca	3.5E-01	ca
1.1E+00	nc	1.1E+00	nc	O	8001-35-2	4.4E-01	ca	2.2E+00	ca	6.0E-03	ca	6.1E-02	ca
7.5E-03	nc	7.5E-03	nc	O	69-84-7	4.6E+02	nc	6.6E+03	nc	2.7E+01	nc	2.7E+02	nc
1.3E-02	nc	1.3E-02	nc	O	330-12-9	7.9E+02	nc	1.1E+04	nc	4.7E+01	nc	4.7E+02	nc
1.0E-02	nc	1.0E-02	nc	O	8209-74-9	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc
6.0E-03	nc	6.0E-03	nc	O	815-54-3	3.1E+02	nc	4.4E+03	nc	1.8E+01	nc	1.8E+02	nc
2.0E-04	nc	2.0E-04	nc	O	55-35-9	1.8E+01	nc	2.6E+02	nc	1.1E+01	nc	1.1E+01	nc
3.4E-02	h	3.4E-02	h	O	634-93-5	1.4E+01	ca	7.3E+01	ca	2.0E-01	ca	2.0E+00	ca
2.9E-02	h	2.9E-02	h	O	33685-80-2	1.7E+01	ca	8.5E+01	ca	2.3E-01	ca	2.3E+00	ca
1.0E-02	nc	1.0E-02	nc	O	120-62-1	6.5E+02	nc	3.0E+03	sat	2.1E+02	nc	1.9E+02	nc
2.0E-02	nc	2.0E-01	nc	O	71-55-6	6.3E+02	nc	1.4E+03	sat	1.0E+03	nc	5.4E+02	nc
5.0E-02	nc	4.0E-03	nc	O	79-00-5	8.4E-01	ca*	1.9E+00	ca*	1.2E-01	ca	2.0E-01	ca
1.1E-01	nc	1.0E-03	nc	O	79-01-1	2.8E+00	ca*	6.1E+00	ca*	1.1E+00	ca*	1.6E+00	ca*
3.0E-01	nc	2.0E-01	nc	O	75-10-4	3.9E+02	nc	2.0E+03	sat	7.3E+02	nc	1.3E+03	nc
1.0E-01	nc	1.0E-01	nc	O	95-05-4	6.1E+03	nc	8.8E+04	nc	3.7E+02	nc	3.6E+03	nc
1.1E-02	nc	1.1E-02	nc	O	88-06-2	4.4E+01	ca	2.2E+02	ca	6.2E-01	ca	6.1E+00	ca
1.0E-02	nc	1.0E-02	nc	O	93-75-5	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc
8.0E-03	nc	8.0E-03	nc	O	93-72-1	4.9E+02	nc	7.0E+03	nc	2.9E+01	nc	2.9E+02	nc
5.0E-03	nc	5.0E-03	nc	O	598-77-8	1.5E+01	nc	5.1E+01	nc	1.8E+01	nc	3.0E+01	nc
7.0E-02	nc	8.0E-03	nc	O	96-18-4	1.4E-03	ca	3.1E-03	ca	9.6E-04	ca	1.6E-03	ca
5.0E-03	nc	5.0E-03	nc	O	96-19-5	1.2E+01	nc	3.9E+01	nc	1.8E+01	nc	3.0E+01	nc
2.0E+01	nc	6.5E+00	nc	O	76-13-1	5.6E+03	sat	5.6E+03	sat	3.1E+04	nc	5.9E+04	nc
2.0E-01	nc	2.0E-03	nc	O	68135-09-1	1.8E+02	nc	2.6E+03	nc	1.1E+01	nc	1.1E+02	nc
5.0E-03	nc	2.0E-03	nc	O	121-44-8	2.3E+01	nc	8.8E+01	nc	7.3E+00	nc	1.2E+01	nc
2.0E-03	nc	2.0E-03	nc	O	1282-25-8	6.3E+01	ca*	3.2E+02	ca*	8.7E-01	ca*	8.7E+00	ca*
1.4E-04	nc	1.4E-04	nc	O	542-53-7	8.6E+00	nc	1.2E+02	nc	5.1E-01	nc	5.1E+00	nc
5.0E-02	nc	1.7E-03	nc	O	95-03-0	5.2E+01	nc	1.7E+02	nc	6.2E+00	nc	1.2E+01	nc
5.0E-02	nc	1.7E-03	nc	O	128-57-9	2.1E+01	nc	7.0E+01	nc	6.2E+00	nc	1.2E+01	nc
3.4E-02	nc	3.4E-02	nc	O	512-56-7	1.3E+01	ca	6.7E+01	ca	1.8E-01	ca	1.8E+00	ca
3.0E-02	nc	3.0E-02	nc	O	95-35-4	1.8E+03	nc	2.6E+04	nc	1.1E+02	nc	1.1E+03	nc
1.0E-02	nc	1.0E-02	nc	O	479-45-8	6.1E+02	nc	8.8E+03	nc	3.7E+01	nc	3.6E+02	nc



Key: I=IRIS; R=REST; N=NCEA; X=WITHDRAWN; O=Other EPA DOCUMENTS; E=ROUTE EXTRAPOLATION; CA=CANCER PRG; NC=NONCANCER PRG; SAT=SOIL SATURATION; MAX=CEILING LIMIT; \*where nc < 100X ca; \*\*where nc < 10X ca

## FOR PLANNING PURPOSES

TOXICITY INFORMATION					CONTAMINANT	PRELIMINARY REMEDIATION GOALS (PRGs)				SOIL SCREENING LEVELS						
SFO 1/(mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V skin O abs C soils		CAS No.	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (ug/m³)	Tap Water (ug/l)	Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)				
3.0E-07	5.0E-04	3.0E-02	5.0E-04	r 0 0 1	115-96-7	2,4,6-Trinitrotoluene	1.6E+01	ca**	8.2E+01	ca**	2.2E-01	ca**	2.2E+00	ca**		
	1.0E-01	n	1.0E-01	r 0 0 1	791-28-6	Triphenylphosphine oxide	6.1E+03	nc	8.8E+04	nc	3.7E+02	nc	3.6E+03	nc		
1.4E-02	3.0E-01	n	1.4E-02	r 0 0 1	115-96-8	Tris(2-chloroethyl) phosphate	3.5E+01	ca	1.8E+02	ca	4.8E-01	ca	4.8E+00	ca		
	2.0E-04	n			7440-61-0	Uranium (chemical toxicity only)	1.6E+01	nc	4.1E+02	nc			7.3E+00	nc		
	7.0E-03	n			7440-62-2	Vanadium and compounds	5.5E+02	nc	1.4E+04	nc			2.6E+02	nc	6.0E+03	3.0E+02
	1.0E-03	i	1.0E-03	a 0 0 1	35-96-7	Vernam	6.1E+01	nc	8.8E+02	nc	3.7E+00	nc	3.6E+01	nc		
	2.5E-02	i	2.5E-02	i 0 0 1	69471-44-8	Vinclozolin	1.5E+03	nc	2.2E+04	nc	9.1E+01	nc	9.1E+02	nc		
	1.0E+00	n	1.0E+00	i 0 0 1	107-06-4	Vinyl acetate	4.3E+02	nc	1.4E+03	nc	2.1E+02	nc	4.1E+02	nc	1.7E+03	8.0E+00
1.1E-01	5.6E-04	r	1.1E-01	i 0 0 1	593-63-2	Vinyl bromide (bromoethene)	1.9E-01	ca*	4.2E-01	ca*	6.1E-02	ca*	1.0E-01	ca*		
1.0E+00	3.0E-03	i	3.0E-02	i 0 0 1	75-01-4	Vinyl chloride (child/adult)	1.5E-01	ca			2.2E-01	ca	4.1E-02	ca	1.0E-02	7.0E-04
7.5E-01	3.0E-03	i	1.8E-02	i 0 0 1	75-01-4	Vinyl chloride (adult)			8.3E-01	ca						
	3.0E-04	i	3.0E-04	x 0 0 1	81-81-2	Warfarin	1.8E+01	nc	2.6E+02	nc	1.1E+00	nc	1.1E+01	nc		
	2.0E+00	i	2.0E-01	x 0 0 1	1330-20-7	Xylenes	2.1E+02	sat	2.1E+02	sat	7.3E+02	nc	1.4E+03	nc	2.1E+02	1.0E+01
	3.0E-01	i			7440-66-6	Zinc	2.3E+04	nc	1.0E+05	max			1.1E+04	nc	1.2E+04	6.2E+02
	3.0E-04	i			1314-84-7	Zinc phosphide	2.3E+01	nc	6.1E+02	nc			1.1E+01	nc		
	5.0E-02	i	5.0E-02	r 0 0 1	14102-67-7	Zineb	3.1E+03	nc	4.4E+04	nc	1.8E+02	nc	1.8E+03	nc		

**From:** Eileen Mohr  
**To:** Brancato, David J LRL02; Brian Tucker; Ferguson, Elizabeth A LRL02; Jent, John P LRL02; 'lawrence.tannenbaum@apg.amedd.army.mil'; 'matthew.bazar@apg.amedd.army.mil'; 'melanie.hawkins@apg.amedd.army.mil'; 'morgant@ioc.army.mil'; 'pattersonm@ioc.army.mil'; 'tadsenta@oh-arng.ngb.army.mil'; 'whelover@ioc.army.mil'; Zorko, Paul L LRL02  
**Date:** 01/18/00 1:56PM  
**Subject:** Re: costing estimates

Hi team:

Thanks for the estimates Elizabeth - that is a lot of hard work.

One question: during the eco truthing meetings I thought that Brian had asked for cost estimates regarding removal of soils at the "hot" pads? Am I correct on this point, and if so, is it forthcoming?

Thanks.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Ferguson, Elizabeth A LRL02" <Elizabeth.A.Ferguson@lrl02.usace.army.mil> 01/18/00 12:50PM  
>>>

Hey team,

Please find attached a costing scheme that I think is based in reality. Larry and Barney have provided initial estimates for some of the subcontracted lab work which still fit into our budget pretty well. We did go over budget by 18,000 which is not too good, but there are ways to reduce some of our costs.

I will be sending the initial scope of work later today it will still be in draft form, however, it should help explain some of the budgeting items.

Thanks for the input I have been getting, it has been really helpful

Elizabeth



**Mail Envelope Properties** (3884B75A.CE7 : 5 : 52863)**Subject:** Re: costing estimates**Creation Date:** 1/18/00 1:56PM**From:** Eileen Mohr**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
apg.amedd.army.mil lawrence.tannenbaum ('lawrence.tannenbaum matthew.bazar ('matthew.bazar@apg.amedd.a melanie.hawkins ('melanie.hawkins@apg.ame	Transferred	01/18/00 01:56PM
epa.state.oh.us DERR.Central-Office Btucker (Brian Tucker)	Delivered	01/18/00 01:56PM
epa.state.oh.us NEDO.Central-Office Emohr BC (Eileen Mohr)	Delivered Opened	01/18/00 01:56PM 01/18/00 01:58PM
ioc.army.mil morgant ('morgant@ioc.army.mil' ) pattersonm ('pattersonm@ioc.army.mil' ) whelover ('whelover@ioc.army.mil' )	Transferred	01/18/00 01:56PM
lrl02.usace.army.mil David.J.Brancato (Brancato, David J LRL02 Elizabeth.A.Ferguson (Ferguson, Elizabeth John.P.Jent (Jent, John P LRL02) Paul.L.Zorko (Zorko, Paul L LRL02)	Transferred	01/18/00 01:56PM
oh-arng.ngb.army.mil tadsenta ('tadsenta@oh-arng.ngb.army.mil'	Transferred	01/18/00 01:56PM
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DERR.Central-Office	01/18/00 01:56PM	apg.amedd.army.mil
NEDO.Central-Office	01/18/00 01:56PM	epa.state.oh.us
		epa.state.oh.us
		ioc.army.mil
		lrl02.usace.army.mil
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MESSAGE

2755

01/18/00 01:56PM

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**Reply Requested:** No  
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State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

January 24, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
ECOLOGICAL FIELD TRUTHING  
COST ESTIMATES

Mr. John Jent  
U.S. Army Corps of Engineers  
ATTN: CELRL-ED-E  
600 Martin Luther King Jr. Place  
P.O. Box 59  
Louisville, KY 40201-0059

Dear Mr. Jent:

Personnel from the Ohio Environmental Protection Agency (Ohio EPA), Division of Emergency and Remedial Response (DERR), have received and reviewed the various e-mails regarding the cost estimates for the ecological field-truthing techniques. The Agency appreciates all the hard work and energy that has gone into this effort. In addition, the Agency is aware of the fact that the ecological field-truthing efforts will necessarily need to be approached in a phased manner, due to budget considerations/constraints.

However, as discussed during the meetings held at the Ravenna Army Ammunition Plant (RVAAP) on December 14-16, 1999, Ohio EPA reiterates the position that outgrowths of this new initiative should also include cost estimates for soil removal at selected **Winklepeck Burning Ground (WBG)** pads, as well as the development of Preliminary Remediation Goals (PRGs). It is our understanding that the U.S. Army Corps of Engineers (USACE) is in the process of developing these cost estimates.

Ohio EPA offers the following rationale for continuing to support the development of PRGs and the generation of cost estimates for soil removal as part of the on-going ecological efforts:

1. The current plan for assessing risk to ecological receptors based on field measurements is not complete. Additional work will be required to define the process and to assure that the results will be meaningful and aid in the determination of potential ecological risk. As such, additional meetings are required and the cost of those meetings was not included in the current evaluation. The recently received cost estimates only addressed the immediate cost of the exploratory field sampling effort that would aid in the determination of the variability and uncertainty of the background plant abundance and diversity. For long-term cost evaluations and to ensure that sound management decisions are made, it is imperative that all potential cost, within reason, be included in this effort.



2. Although the Agency is supportive of developing and evaluating this innovative approach, presently, no approval of the ground truthing efforts has been given by Ohio EPA. The Agency has expressed some concern with the effort during scoping meetings and conference calls, and has stated that remedial decisions may be made on the basis of the screening level risk assessment hazard quotients (HQ) results, if no conclusive results were generated from the field-truthing effort. The field activities being discussed for WBG are within the accepted USEPA ecological risk assessment guidelines, however, the methods being evaluated are not proven nor are there enough details available at this time to make a decision on potential future approval by Ohio EPA.

Issues such as scale and the magnitude of ecological impacts are still unresolved with the current level of understanding of the field-truthing study. Without resolution of these and other issues, the Agency may be forced to rely solely upon the HQ values and implement the appropriate remedies to protect ecological receptors found at risk to site-related contaminants.

3. It was made clear to all stakeholders, during the above-referenced meetings, that soils will be removed during future unexploded ordinance (UXO) recovery/disposal operations at WBG, as well as in other areas of the RVAAP. If contaminated soils are removed, then soil contaminant concentration (remedial goals) values must eventually be generated. This information supports the generation of PRGs for contaminants identified for the RVAAP.
4. Currently, the areas of the WBG that are devoid of plant cover are considered to be impacted. This is based on the absence of plant cover, high detections of explosives and metals, and unacceptable HQs for plants and small mammals. Some of these areas also have been demonstrated to pose potential risks to human health. These areas will need to be addressed. The field-truthing efforts have not, at this point, demonstrated how these bare areas are to be addressed. There are concerns that the field-truthing effort, as designed, will lessen the importance of the bare areas (i.e., "dilute" them out). The concern of the current plant study is the issue of scale, as stated above, and needs to be resolved before a sampling plan can be approved.

The issues detailed above are to be considered when developing the proposed study. It is important that all pertinent information be assembled before risk management decisions are made. The field-truthing effort is a valuable undertaking for the determination of expressed ecological risks at the WBG, however, the current plan is not complete and will require much time and expense to finalize and implement. It needs to be kept in mind that there is also a reasonable chance that the results will be inconclusive.



MR. JOHN JENT  
JANUARY 24, 2000  
PAGE 3

Again, the purpose of this correspondence is to reiterate Ohio EPA's position that outgrowths of this new initiative should also include cost estimates for soil removal at selected WBG pads, as well as the development of PRGs.

If you have any questions concerning this correspondence, please do not hesitate to contact either Eileen Mohr at 330-963-1221 or Brian Tucker at 614-644-3120.

Sincerely



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response



Brian Tucker  
Risk Assessor  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
Laurie Moore, OFFO, SWDO  
Mark Patterson, RVAAP  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
David Brancato, USACE Louisville  
Bob Whelove, IOC  
Larry Tannenbaum, USACHPPM  
David Seeley, USEPA Region V

**From:** "Morgan, Timothy" <MorganT@ioc.army.mil>  
**To:** "Ferguson, Elizabeth A LRL02" <Elizabeth.A.Ferguson@lrl02.usace.army.mil>, "matthew.bazar@apg.amedd.army.mil" <matthew.bazar@apg.amedd.army.mil>, "eileen.mohr@epa.state.oh.us" <eileen.mohr@epa.state.oh.us>, "laurie.moore@epa.state.oh.us" <laurie.moore@epa.state.oh.us>, "morgant@ioc.army.mil" <morgant@ioc.army.mil>, "PattersonM@ioc.army.mil" <PattersonM@ioc.army.mil>, "tadsenta@oh-arng.ngb.army.mil" <tadsenta@oh-arng.ngb.army.mil>, "lawrence.tannenbaum@apg.amedd.army.mil" <lawrence.tannenbaum@apg.amedd.army.mil>, "brian.tucker@epa.state.oh.us" <brian.tucker@epa.state.oh.us>, "whelover@ioc.army.mil" <whelover@ioc.army.mil>, "Jent, John P LRL02" <John.P.Jent@lrl02.usace.army.mil>, "Brancato, David J LRL02" <David.J.Brancato@lrl02.usace.army.mil>, "Zorko, Paul L LRL02" <Paul.L.Zorko@lrl02.usace.army.mil>, "Melanie.Hawkins@apg.amedd.army.mil" <Melanie.Hawkins@apg.amedd.army.mil>, "barney.w.cornaby@saic.com" <barney.w.cornaby@saic.com>  
**Date:** 2/10/00 11:15AM  
**Subject:** RE: conference call minutes

I don't know anything about P450 or VAM, and therefore don't see any glaring problems with this except the timing of the photographs. I recommend taking them in late spring/early summer when vegetation is in full leaf. Early June would probably be good.

Tim

-----Original Message-----

**From:** Ferguson, Elizabeth A LRL02  
[mailto:Elizabeth.A.Ferguson@lrl02.usace.army.mil]  
**Sent:** Thursday, February 10, 2000 8:43 AM  
**To:** 'matthew.bazar@apg.amedd.army.mil'; 'eileen.mohr@epa.state.oh.us'; 'laurie.moore@epa.state.oh.us'; 'morgant@ioc.army.mil'; 'PattersonM@ioc.army.mil'; 'tadsenta@oh-arng.ngb.army.mil'; 'lawrence.tannenbaum@apg.amedd.army.mil'; 'brian.tucker@epa.state.oh.us'; 'whelover@ioc.army.mil'; Jent, John P LRL02; Brancato, David J LRL02; Zorko, Paul L LRL02; 'Melanie.Hawkins@apg.amedd.army.mil'; 'barney.w.cornaby@saic.com'  
**Subject:** conference call minutes

Hey team,

Thanks to everyone who was available to participate in the call. I have gotten John Jent and Barney Cornaby to give the minutes of the call a once over, and have incorporated their remarks. I am willing to make any other changes if you see any glaring deficiencies.

Barney brought up a point of discussion that we did not have time for the other day on the call. If you recall from our December meeting, I was very against P450 measures because they are simply a showing of exposure not risk or effect (because the scientific community jury is split big-time on this one). We did not screen the vegetation methods with quite the same intensity. What he has brought to my attention is that the VAM method (vesicular arbuscular mycorrhizae) is similar. It is a measure of exposure but will not tell us anything about risk or effect. We know from the soil chemistry already performed that the pads are likely exposing the plants to



some interesting mixtures, so of course they are being exposed but our goal is to see if they are being effected.

This is the proposal we would like to put forward to the group. We are working on having arial photos taken of the areas (ref. and Winklepeck), this will allow for much less subjective measures of percent cover. Can we substitute percent cover as one of our measures and drop VAM. This would leave the following measures as our experimental methods.

Percent cover from arial photography  
biomass  
Community composition  
    density  
    frequency  
    species counts

Just off the cuff, these are what I expect to get from the various measures. Effects on vegetation can be evidenced by lack of vegetation (shown by %cover, biomass, community counts), smaller and weaker plants (% cover, biomass, density), intrusion of opportunistic species (community composition measures).

If any team member feels this should go to a conference call let me know otherwise email your approval or disapproval at your earliest convenience please.

Thanks

Elizabeth

<<RVAAP Conf Call 2 8 00.doc>>

**From:** Todd Fisher  
**To:** 'Barney Cornaby'; 'Bob Whelove'; Brian Tucker; 'Chantelle Carroll'; Eileen Mohr; Jent, John P LRL02; 'Jimmy Groton'; 'Larry Tannenbaum'; Laurie Moore; 'Mark Patterson'; 'Mat Bazar'; 'Melanie Hawkins'; 'Steve Selecman'; 'Tim Morgan'; 'Tom Tadsen'  
**Date:** 4/3/00 2:28PM  
**Subject:** Re: RVAAP- Eco Final Reference Sites

First of all, thanks for giving me the opportunity to participate in the eco reference site evaluation. I truly enjoyed working with the group!

I have only a few comments on the draft version of the meeting minutes:

Comment #1: Both cons and pros should be listed for each reference site evaluated. If the site has neither cons or pros, than the word "NONE" should be inserted respectively under the title heading. No Pros were listed for Site F, therefore a "NONE" response would be warranted under Pros.

Comment #2: Site S - This site was visited several times, and is being evaluated again by Jimmy (Section 10A) It appears that the east side has only one drawback - "size." In general, the group like this site, so there should be some "pros" listed under Section 7C, Site S.

Comment #3: Section 11 - Pad "58" was repeated twice in the text. Please change the second occurrence to "59".

Thanks!

Todd

\*\*\*\*\*

---

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

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

>>> "Jent, John P LRL02" <John.P.Jent@lrl02.usace.army.mil> 3/31/00 4:04:26 PM >>>  
To ALL,



Attached is the text of the Draft version of the minutes of the meetings to select the final reference sites.

Usually prefer to have meeting participants approve before distribute, but there are some major issues out there, mostly possible additional work.

Meeting participants- please review and give feed back.

Have fed-exed Draft minutes with figures (real drawings) out.

Will be gone next week, but leave messages if you want.

<<RVAAP ECO REFERENCE AREAS30March.doc>>

JJ

**From:** Eileen Mohr  
**To:** David.J.Brancato@lrl102@usace.army.mil;  
Elizabeth.A.Ferguson@lrl102.usace.army.mil; JJ  
**Date:** 4/21/00 10:06AM  
**Subject:** Revised Small Mammal Protocol for RVAAP

Elizabeth, JJ and David:

I reviewed the revised Sampling and Analysis Plan and Health and Safety Plan for Wild Rodent Field Truthing Effort at Winklepeck Burning Grounds, Ravenna Army Ammunition Plant, Ravenna, OH. The document is dated March 2000 and was received via email on April 19, 2000. I reviewed the document with respect to the draft workplan that was received on March 28, 2000 and Ohio EPA NEDO DERR comments dated April 3, 2000 (and sent out via email).

1. Please be aware of previous comments in meetings and via email, that it was unlikely, given the compressed time schedules, that Ohio EPA risk assessment personnel would be able to review and approve the workplan prior to field work commencing. (The comments here solely reflect my review of the document).
2. Several previous Ohio EPA comments from the email dated April 3, 2000 on the draft workplan were not addressed in the revised document, specifically... #3, #4, #5, #6 (informational purposes only), #8, and, #9.
3. A new addition to the revised text on page 4 in the introduction section regarding the use of hazard quotients (HQs) indicates the following: "In having made this recommendation, it has given way to the proposed study, and plays no additional role." The Ohio EPA does not agree with this statement. USACHPPM is requested to refer to Ohio EPA correspondence dated January 24, 2000, item #2, for the Agency's position regarding HQs.

Call me at 330-963-1221 if you have any questions. Thanks.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

**CC:** Bonnie Buthker; Moore, Laurie; Tucker, Brian





State of Ohio Environmental Protection Agency

TO	5/12/00
<input checked="" type="checkbox"/>	CR-COR
<input checked="" type="checkbox"/>	ENV
<input checked="" type="checkbox"/>	LAND MGR
<input checked="" type="checkbox"/>	IND SPEC
<input checked="" type="checkbox"/>	CONTRACTOR
<input checked="" type="checkbox"/>	RETURN FOR FILE

STREET ADDRESS:

Lazarus Government Center  
122 South Front St.  
Columbus, OH 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

Lazarus Government Center  
P. O. Box 1049  
Columbus, OH 43216-1049

**Certified Mail**

**May 8, 2000**

Ravenna Army Ammunition Plant  
Attn: Mr. Mark Patterson  
8451 State Route 5  
Ravenna, Ohio 44266-9297

**Re: Emergency Hazardous Waste Permit**  
**Ohio ID No.: 02-67-785E**

Dear Mr. Patterson:

Although verbal approval has already been granted to you for the emergency hazardous waste activity described in the attachment, the Ohio EPA is also sending you a permit in written form to meet the requirements of Rule 3745-50-57 and Chapter 3745-19 of the Ohio Administrative Code (OAC).

Please note Special Condition G, Required Notices, of this permit requires that you notify the Ohio EPA, Division of Hazardous Waste Management upon completion of this emergency treatment. Notification should be sent to: Ohio EPA, Lazarus Government Center, Division of Hazardous Waste Management, Attn: Data Management Section, 122 South Front Street, Columbus, Ohio 43215.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission ("ERAC") pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with ERAC within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of the filing with ERAC. An appeal may be filed with ERAC at the following address: Environmental Review Appeals Commission, 236 E. Town St., Room 300, Columbus, Ohio 43215.

Sincerely yours,

Thomas E. Crepeau, Manager  
Data Management Section  
Division of Hazardous Waste Management

cc: Gretchen Fickle, Ohio EPA, DHWM  
Alan Lloyd, Ohio EPA, DAPC  
Harry Courtright, DHWM, NEDO  
Ohio EPA File, DAPC, NEDO  
Lynn M. Malcolm, Akron Regional Air Quality

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
RAVENNA ARMY AMMUNITION PLANT  
8451 STATE ROUTE 5  
RAVENNA, OHIO 44266-9297

TO	5/24/00
✓	CR-COR
	ENV
	LAND MGR
	CONTRACTOR
	RETURN FOR FILE

May 22, 2000

SOSRV-CR

Subject: Emergency Hazardous Waste Permit  
Ravenna Army Ammunition Plant  
Ohio ID No.: 02-67-785E

Thomas E. Crepeau, Manager  
Ohio Environmental Protection Agency  
Division of Hazardous Waste Management  
Attn: Data Management Section  
122 South Front Street  
Columbus, Ohio 43215

Dear Mr. Crepeau,

In accordance with Special Condition G, Required Notices, in the Ravenna Army Ammunition Plant (RVAAP) Permit Emergency Hazardous Waste Permit (Ohio ID No.: 02-67-785E) received from you on May 12, 2000, this letter serves as official notification that all demolition work under the subject permit was successfully completed on November 9, 1999.

The Explosive Ordnance Disposal (EOD) Team from Wright Patterson Airforce Base in Dayton, Ohio detonated one 40 millimeter projectile and five 20mm fuzes using 1 pound of C-4 explosive. The work was done at **Winklepeck Burning Grounds** adjacent to pad 45.

If you have any questions concerning this matter, you may call Mr. Mark Patterson, RVAAP Environmental Coordinator, at 330-358-7311. Thank you for your assistance with this project.

Sincerely

John A. Cicero, Jr.  
Commander's Representative



Mailed  
in 72



Copies Furnished:

Mr. William Ingold, Operations Support Command

Mr. Greg Orr, Ohio EPA, Division of Hazardous Waste Management

Ms. Eileen Mohr, Ohio EPA, Division of Emergency and Remedial Response

Mr. Mark Patterson, RVAAP Environmental Coordinator

Mr. John Jent, U.S. Army Corps of Engineers, Louisville

**Northeast District Office**

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

October 3, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
**Winklepeck Burning Grounds**  
Feasibility Study

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

TO	10/3/00
CR-GOP	A
ENV	
CONTRACTOR	
RETURN FOR FILE	

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the documents entitled; "Draft, Sampling and Analysis Plan, Addendum No. 1 for the Winklepeck Burning Grounds Feasibility Study, Ravenna Army Ammunition Plant, Ravenna, Ohio" and "Draft, Site Safety and Health Plan, Addendum No. 1 for the Winklepeck Burning Grounds Feasibility Study, Ravenna Army Ammunition Plant, Ravenna, Ohio." These documents, dated August 2000, and received at Ohio EPA, NEDO, DERR on September 5, 2000, were generated by Science Applications International Corporation (SAIC) for the US Army Corps of Engineers (USACE) - Louisville District under contract number DACA62-00-D-0001, delivery order CY08.

The comments in this correspondence solely reflect the review of the Ohio EPA, NEDO, DERR project coordinator. Comments from the Ohio EPA, Central Office (CO), DERR, risk assessment personnel will be forwarded to your attention under separate cover.

The Ohio EPA, NEDO, DERR has the following comments on the submitted documents:

**Sampling and Analysis Plan (SAP):**

1. Attached to this correspondence, you will find the most recent version of the complete list of State of Ohio, Ohio Revised Code (ORC), applicable or relevant and appropriate requirements (ARARs). From this list we need to ensure that the chemical and location-specific ARARs have been accurately determined during the Remedial Investigation (RI) phase, and that the action-specific ARARs are





accurately identified during the Feasibility Study (FS). A list of potential Federal ARARs will be forthcoming. (No text change required).

2. Please provide information as to the projected date of issue of the final Winklepeck Burning Grounds (WBG) RI report. (No text change required).
3. Please provide additional information in the Response to Comments (RTC) document regarding the analyses that are being conducted for hexavalent chromium during the WBG FS, and the Phase II RI being conducted at Load Line 1 as well as at Load Line 12. Please provide the rationale for conducting these analyses and whether or not they are to consistently become a part of investigative activities at the Ravenna Army Ammunition Plant (RVAAP). (No text change is required).
4. On page 1-5, line 6, please provide additional information in the revised workplan regarding the burn pits that are referenced in this portion of the text.
5. Please provide additional clarification in the draft workplan regarding the use of a  $10^{-4}$  cut-off value for risk assessment purposes. (Page 3-2, lines 17 and 39). The threshold limit utilized for the projects conducted at the Ravenna Army Ammunition Plant (RVAAP) is  $10^{-6}$ , with the risk management range being between  $10^{-6}$  to  $10^{-4}$ , and greater than  $10^{-4}$  being unacceptable. Please revise the text accordingly.
6. The Remedial Action Objectives (RAOs) detailed on page 3-4 (lines 11-17) would more accurately be described as general response actions or remedial technology types. A RAO would be more general in nature, for example, prevention of ingestion of groundwater within a certain risk range, etc. Please adjust the text, such that the terminology utilized is consistent with relevant US Environmental Protection Agency (USEPA) terminology used in "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", Interim Final, EPA/540/G-89/004, OSWER Directive 9355.3-01, October 1988.
7. On Table 3-1 (page 3-6), please specify whether the second criterion (source areas with identified COCs greater than risk-based criteria) are for the human health scenarios, ecological scenarios, or both.
8. On page 3-6, lines 17-18, please revise the text to indicate that the facility-wide background criteria and the processes used to generate them have already been reviewed by the Ohio EPA and USACE.

9. Please remove lines 20-21 (page 3-6) from the text of the workplan, as this section specifically deals with the facility-wide background.
10. Please revise the headings for Tables 3-2, 3-3, 3-4, 3-5, and 3-6, such that they clearly indicate that the background criteria listed for each medium is the installation-wide or facility-wide background.
11. Please revise the text on page 3-13, line 9 to read as follows: "... ongoing biological measurements study at WBG *may* be used to adjust soil RGOs...", as it is unclear as to what conclusions may be drawn from the ecological truthing effort.
12. Please provide additional information in the workplan, as to how it was determined that the WBG FS will carry up to three of the most promising alternatives forward for detailed analysis. The target number of alternatives (in addition to the No Action alternative) to be carried through the screening is to be set by the project manager and lead regulatory agency on an AOC-specific basis. Please adjust the text accordingly. (Pages 3-18, line 48 and 3-20, line 3)
13. At an appropriate place in Section 3.0, please add in a discussion of proposed community relations activities as part of the field investigation and FS processes.
14. Please define the seven functional areas that are referenced on page 4-1 (lines 4-5) and in Table 4-1 found on pages 4-2 and 4-3. A description and/or map of the functional areas would be helpful.
15. Please ensure that the pad numbers listed in Table 4-1 are consistent with the pads that were identified during the WBG RI as requiring additional work due to human health and ecological concerns. (Pages 4-2 and 4-3)
16. Please revise the text on page 4-4 (lines 19-21) to indicate that filtered groundwater samples will be obtained solely for Target Analyte List (TAL) metals, and that all of the other analyses will be conducted on unfiltered samples.
17. Please provide information in section 4.1.2.7 that indicates that turbidity measurements will be taken as part of the development procedure for monitoring wells. (Page 4-7)
18. In section 4.1.9, please provide additional text in the report that indicates that during intrusive activities, screening for ordnance and explosives (OE)/unexploded ordnance (UXO) will be conducted at two foot intervals, until



drilling/augering is below the interface between disturbed and native material.  
(Page 4-9)

19. On page 4-11, lines 4-5, please revise the text to indicate that x-ray fluorescence (XRF) metals screening will be conducted in-situ and ex-situ, in addition to being analyzed at the contract laboratory.
20. The text on page 4-14 (lines 3-7) indicates that the 0-1 foot environmental sample obtained at Pad 67 will be collected by OE technicians due to the fact that this pad had the highest concentration of explosives, and may be an area containing raw explosives. The Ohio EPA concurs that the safety of on-site personnel is of the utmost importance. However, it is requested that the OE technicians that are utilized to obtain the samples are trained in the sampling techniques used on this project, and that there are no resulting chain of custody (COC) issues if the personnel are employed by a different contractor.
21. Please revise the text on page 4-15, line 10 to read: "However, if colorimetry shows explosives  $\geq 1$  ppm (TNT....).
22. Please revise the text on page 4-15 (line 40) to read: "Surface soils to be analyzed for metals, cyanide, SVOCs, and pesticides/PCBs..."
23. Please resolve the discrepancy on page 4-18 between lines 6-8 with line 14. As Table 5-1 (page 5-9) also indicates that sediment samples will be analyzed for field explosives and XRF metals, it is assumed that lines 6-8 are correct and that line 14 should be deleted from the text.
24. Please revise footnotes "a" and "b" to Table 5-1 (page 5-9) to indicate that the cut-off for determining whether or not a sample is automatically submitted to the laboratory for explosives and propellant analyses is whether or not TNT or RDX are determined to be  $\geq 1$  mg/kg using the Jenkins methodology.

**Health and Safety Plan (HASP):**

The Ohio EPA NEDO DERR does not have comments on the draft HASP as presented.

Mark Patterson

Page 5

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr

Project Coordinator

Division of Emergency and Remedial Response

attachment

cc: Bob Princic, NEDO DERR  
Todd Fisher, NEDO DERR  
Diane Kurlich, NEDO DDAGW  
Bonnie Buthker, OFFO SWDO  
David Seely, USEPA Region V  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
Bob Whelove, OSC  
Kevin Jago, SAIC (with attachment)  
Steve Selecman, SAIC  
Kathy Dominic, SAIC





State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

October 13, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**WINKLEPECK BURNING GROUNDS**  
FEASIBILITY STUDY

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the documents entitled: "Final, Sampling and Analysis Plan, Addendum No. 1 for the Winklepeck Burning Grounds Feasibility Study, Ravenna Army Ammunition Plant, Ravenna, Ohio" and "Final, Site Safety and Health Plan, Addendum No. 1 for the Winklepeck Burning Grounds Feasibility Study, Ravenna Army Ammunition Plant, Ravenna, Ohio." These documents, dated October 2000 and received at Ohio EPA, NEDO, DERR on October 12, 2000, were generated by Science Applications International Corporation (SAIC) for the US Army Corps of Engineers (USACE) - Louisville District, under contract number DACA62-00-D-0001, delivery order CY08.

The revised documents were reviewed with respect to the draft documents and the comment resolution response matrix that was received via e-mail on October 5, 2000. The final documents were modified/revised in accordance with the comment resolution matrix. However, please provide clarification in terms of the random samples that are to be obtained as part of the investigative activities to be conducted at Winklepeck Burning Grounds (WBG). The text on page 4-16 indicates that "a restriction was placed on the assignment of the sample," and it is unclear as to the meaning of this statement.

Ohio EPA concurs that mobilization to the field may commence on October 16, 2000.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Diane Kurlich, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
John Cicero, RVAAP  
John Jent, USACE Louisville  
Steve Selecman, SAIC Oak Ridge  
Kathy Dominic, SAIC Tulsa

Todd Fisher, NEDO, DERR  
Brian Tucker, CO, DERR  
Bob Whelove, OSC  
LTC Tom Tadsen, RVAAP  
David Seely, USEPA Region V  
Kevin Jago, SAIC Oak Ridge



**From:** Eileen Mohr  
**To:** JJ; Patterson, Mark; Stephen.B.Selecman@cpmx.saic.com  
**Date:** 1/24/00 1:54PM  
**Subject:** Sampling of Potential Disposal Areas at Load **Line 1 and Load Line 2**

Steve, Mark, and John:

I have completed a review of the data and accompanying letter report for the sampling of the potential disposal areas at Load **Lines 1 and 2**. Steve - thanks for a nice concise report and the resulting ease of review and comparison to the installation background and Region IX (X0.1) screening criteria. Nice job.

I do have a few questions though:

1. Can you provide details on why some of the mercury, pesticide/PCB, and SVOC sample results were rejected?
2. A few samples were analyzed for nitrocellulose and nitroguanidine, while most were not. Please provide an explanation.
3. Can you provide clarification as to how it was determined that only concentrations that are greater than the residential PRGs (X0.1) and greater than the determined background are considered to be site-related impacts?

Thanks!

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us



**Mail Envelope Properties** (388C9FD7.CE7 : 5 : 52863)

**Subject:** Sampling of Potential Disposal Areas at Load Line 1 and Load Line 2  
**Creation Date:** 1/24/00 1:54PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

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INTERNET.CENTRAL-OFFICE	Transferred	01/24/00 01:54PM
" <u>john.p.jent@lr102.usacc.army.mil</u> " (JJ)		
" <u>Stephen.B.Selecman@cpmx.saic.com</u> " (Steph		
epa.state.oh.us		
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**From:** Eileen Mohr  
**To:** mkmcercla@yahoo.com; Patterson, Mark  
**Date:** 3/17/00 11:17AM  
**Subject:** Change House Excavations

TO: Mark Patterson, RVAAP  
Rick Callahan, MKM

On March 16, 2000, Todd Fisher and I inspected the voluntary removal of soil at change house CB-12 located at **Load Line 1**. The minimal soil that was present was scraped from the area surrounding the change house and was staged with appropriate erosion and sedimentation controls (i.e. placed on visqueen, covered with plastic, surrounded by hay bales, seeded etc.) near the change house excavation. The location of the soil pile is not near any surface water body or identified drainage area.

The above-referenced work and manner of staging the soil is acceptable to the Agency and the same protocol should be utilized at the other change house excavations that will be used for clean hard fill (CHF). In addition, the same procedures should be utilized for the north-south trending "passage areas" that are connected to the change house proper excavations. In this event the "passageways" can also be utilized for the receipt of CHF.

The Agency requests that RVAAP and MKM notify the Agency (NEDO DERR in particular) as each change house excavation is prepared to receive CHF. However, inspection of the preparation of the excavation by the Agency is not a requirement prior to utilizing it to receive CHF, provided that the appropriate documentation of how the excavation was prepared (and the soil staged) is received by the Agency.

The soil that was voluntarily excavated will be staged until such a time as the PRGs are developed and agreed upon by all stakeholders. At that time, a decision will be made as to whether or not the soil can be used as backfill material, or if it needs to be handled in another appropriate manner.

I trust that this adequately conveys the Agency's position regarding the change house excavation preparations and subsequent handling of the soil. The acceptability of the CHF protocol will be determined by the Portage County Health Department and OEPA DSIWM.

Please call me at 330-963-1221 if you have any questions.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

**CC:** Bob Princic; Bonnie Buthker; Jarnal Singh; Todd Fisher



**Mail Envelope Properties** (38D2708F.CE7 : 5 : 52863)

**Subject:** Clean Hard Fill  
**Creation Date:** 3/17/00 12:51PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

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Tfisher CC (Todd Fisher)		
epa.state.oh.us SWDO.Central-Office Bbuthker CC (Bonnie Buthker)	Delivered	03/17/00 12:51PM
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State of Ohio Environmental Protection Agency

**Northeast District Office**

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

**August 14, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**LOAD LINE 1 DRAFT WORKPLAN**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Draft, Sampling and Analysis Plan Addendum No. 2 for the Phase II Remedial Investigation of Load Line 1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." The document, dated August 2000 and received at Ohio EPA, NEDO on August 7, 2000, was generated for the U.S. Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC), under contract number DACA27-97-D-0025, delivery order number 0003.

Due to the expedited time-frames detailed in the cover letter and in the draft project schedule, the comments in this correspondence solely reflect the review of Ohio EPA, NEDO, DERR, i.e., the document will not be reviewed by Ohio EPA risk assessment personnel. As a result, there are several places within this correspondence where Ohio EPA, NEDO, DERR will be requesting that SAIC and the USACE ensure that the risk assessment assumptions, methodologies, exposure factors, etc., are consistent with previously-reached agreements between the Ravenna Army Ammunition Plant (RVAAP) stakeholders. This can be accomplished through the formal Response to Comments (RTC) process. In addition, Ohio EPA risk assessment personnel will be reviewing the draft Phase II report, and the Agency reserves the right to question the methodologies, exposure factors, etc., at that time.

Given the above caveat, Ohio EPA, NEDO, DERR has the following comments on the Load Line 1 draft workplan:

1. As a point of information, the draft and final health and safety plans (HASP) for this area of concern (AOC) were previously received and reviewed by Ohio EPA, NEDO, DERR (correspondence dated August 12 and 18, 1999). In both the draft and final workplans, Ohio EPA, NEDO, DERR did not request any text changes.
2. The legend for figure 1-3 (page 1-5) indicates that the monitoring wells for the Phase II Remedial Investigation (RI) are proposed. As these wells were installed in Fall of 1999, the designation should be changed to existing Phase II monitoring wells.
3. On page 1-6 in the section describing the measures taken during demolition work in order to minimize the spread of contaminants:



- A. Please revise the second bullet to read, "disposing dust and debris according to state and federal rules, laws, and regulations; and
  - B. Add an additional bullet to indicate that the lead-based bolts were removed and collected, as well as the explosives-contaminated "plugs" of material that occur in the spacings between the floor slabs and the transite siding.
- 4. The text should clearly indicate that the Phase I RI data was screened against the background data set for process-related metals that was generated during the Phase I RI effort, and not the installation-wide background data set generated as part of the Winklepeck Burning Ground (WBG) effort. (Page 1-6)
- 5. As a point of information, all groundwater samples are to be analyzed for the full-suite of constituents as defined in the facility-wide sampling and analysis plan. (Pages 1-7 and 4-1)
- 6. The text indicates that although several metals were detected in the Phase II monitoring wells, none of the concentrations exceeded the Maximum Contaminant Levels (MCLs). In the revised text, please indicate how the Phase II groundwater data also compared to the determined site-wide background. (Page 1-7)
- 7. The text on page 1-7 indicates that some excavation of demolition debris will be required, in order to clear specific catch basins for the use of the video monitoring system. If known, please indicate in the revised text when and why these catch basins were filled in with debris. (Page 1-7)
- 8. The text on page 1-7 indicates that during the course of Load Line 1 demolition activities that some minor damage was done to the protective posts and pads at some wells, but it is unknown whether or not the integrity of the monitoring wells has been impacted. It is the position of this Agency that the integrity of the wells needs to be determined prior to the sampling of the wells during this proposed phase of field activities.
- 9. The titles for Tables 3-1, 3-2, 3-3, 3-4, 3-5, and 3-6 should clearly indicate that the criteria detailed in these tables represents installation-wide, or facility-wide background.
- 10. With respect to the last bullet on page 3-7, the following is noted regarding the use of field screening:
  - A. For the metals screening using XRF technology, greater than 10% of the samples need to be submitted to the laboratory for analysis. As Load Line 1 is the "test case" for the continued use of XRF technology, there needs to be a 1:1 correspondence between field and laboratory samples; and



- B. At a minimum, 15% of the non-detects for explosives must be sent to the laboratory for corresponding analyses, in order to be consistent with other work being conducted at the installation. In addition, if any explosives are detected in the random grid sampling, additional contingency samples will need to be utilized in this area, and if an adequate number of contingency samples are not available, an additional phase of work will need to be conducted.
- 11. The sampling depths used at the installation have been 0-1', 1-3', 3-5', etc., below ground surface (bgs). Please explain the discrepancy between these depths and the text in the proposed workplan, and describe any impact that this will have on the use of the data for risk assessment purposes. (Page 3-7)
- 12. Please refer to the introductory portion of this correspondence as it pertains to ensuring that this workplan is consistent with the decisions reached between all the major stakeholders regarding the human health and ecological risk assessment pathways, processes and assumptions, etc. This comment is pertinent to section 3.4 (human health risk assessment), section 3.5 (screening ecological risk assessment), and Appendix C.
- 13. On Table 3-7 (page 3-18), please revise the section under "sediment" to indicate that there may be incidental sediment ingestion or dermal contact with sediment.
- 14. Please revise the portion of text on page 3-23 to read: "The following sub-sections describe the process to be employed for the Load Line 1 ERA."
- 15. Please re-evaluate Figure 3-1 (exposure pathways for terrestrial and aquatic receptors) with respect to the text found on page 3-23. The figure indicates that the surface water/sediment is not a complete pathway, while the text on page 3-23 indicates that the pathway is complete. Please resolve the discrepancy.
- 16. On page 3-32, please revise the text to read: "This will provide estimated contaminant concentrations in prey based on measured soil, sediment, and water concentrations at Load Line 1."
- 17. Please provide an explanation for collecting both filtered and unfiltered groundwater samples for Target Analyte List (TAL) metals. In correspondence to USACE, dated December 7, 1998 (with an attached memorandum), it was decided that filtered groundwater samples would be utilized for risk assessment purposes at the CERCLA AOCs. (Page 4-1)
- 18. On Table 4-1 (sample summary):
  - A. Please provide an explanation for the variance in the number of samples to be obtained as defined in this table between the August 1999 health and safety plan, as well as the June 20, 2000 scoping meeting. Although these numbers are fairly

consistent with the modifications to the sampling plans (received on July 7, 2000), it is also unknown as to how and why these modifications were generated.

- B. Please ensure that all sediment samples will be analyzed for grain size and total organic carbon (TOC). The chart, as presented, is confusing.
  - C. Groundwater samples should be analyzed for the full suite of constituents as defined in the facility-wide sampling plans. Revise the chart accordingly. In addition, please refer to previous comments regarding the use of filtered metals groundwater samples for risk assessment purposes, i.e., unfiltered samples for TAL metals do not need to be collected.
  - D. There should be a remark on the table that indicates that the number of subsurface samples to be obtained is estimated.
  - E. Please revise the number of explosives samples to be obtained based upon previous comments in this correspondence.
  - F. Based upon the above-comments, the quality assurance/quality control (QA/QC) sample numbers and the total project numbers need to be revised.
- 19. Please cross-reference Figure 4-1 with Table 4-2, to ensure that the number of samples to be obtained are consistent between these two portions of the document. For example, Table 4-2 indicates that at building CB-14, ten samples will be obtained, however, Figure 4-1 only details nine sampling locations. Ensuring consistency will make the sampling effort easier for the field crew(s). In addition, please change the designation on Table 4-2 for CA-17 to CB-17.
  - 20. Please revise item # 2 on page 4-10 (rationale section) to read: "(2) define extent of surface and subsurface soil contamination; and"
  - 21. Please compare, and revise accordingly, the number of surface soil sampling locations presented on page 4-10 with the number presented on Table 4-1.
  - 22. In the text on page 4-11, please add in a description regarding the analyses for which the grid samples will be analyzed.
  - 23. On Figure 4-4, please use a different symbol or color to represent the Phase I sediment sampling locations that will be re-sampled versus the new sampling locations.
  - 24. Please add text to page 4-16 that indicates that all sediment samples will also be analyzed for grain size and TOC.
  - 25. If the intent is to potentially utilize the railroad track cuts for the disposal of clean hard fill (CHF), then 10% of the obtained samples needs to be analyzed for the full suite of constituents. (Table 5-1, page 5-9 and 5-10)



MR. MARK PATTERSON  
AUGUST 14, 2000  
PAGE 5

26. Please cross-reference Table 5-2 with Table 4-1, to ensure consistency. For example, Table 5-2 indicates that the surface water samples will be analyzed for the full suite of constituents, while Table 4-1 does not.
27. On Table 5-3, monitoring wells are to be analyzed for the full suite of constituents. Please adjust the table accordingly. In addition, please refer to previous comments in this correspondence regarding the use of filtered vs. unfiltered groundwater samples and adjust the table.
28. Please cross-reference Table 1-1 (Appendix B) with Table 4-1 (in the main text), to ensure that all discrepancies are corrected.

If you have any questions concerning this correspondence, please do not hesitate to contact me at (330) 963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Todd Fisher, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Bonnie Buthker, OFFO, SWDO  
Brian Tucker, CO, DERR  
LTC Tom Tadsen, RVAAP  
John Cicero, RVAAP  
Bob Whelove, OSC  
John Jent, USACE Louisville  
David Seely, U.S. EPA Region V  
Steve Selecman, SAIC  
Kevin Jago, SAIC  
Kathy Dominic, SAIC



State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

September 8, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
Load line 1 Final Workplan

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Final, Sampling and Analysis Plan Addendum No. 2 for the Phase II Remedial Investigation of Load Line 1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated September 2000 and received at Ohio EPA NEDO on September 7, 2000 was generated for the U.S. Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC) under contract number DACA27-97-D-0025, delivery order number 0003.

The Ohio EPA NEDO DERR has the following comments on the final Load line 1 workplan:

1. Due to the expedited time frames detailed in the cover letter and in the project schedule, the comments in this letter and in correspondence dated August 14, 2000 solely reflect the review of Ohio EPA NEDO DERR personnel, i.e. the documents were not reviewed by Ohio EPA risk assessment personnel. Ohio EPA risk assessment personnel will be reviewing the draft Phase II report, and the Agency reserves the right to question the risk assessment assumptions and methodologies, exposure factors, etc., at that time.
2. The last bullet on page 3-7 should indicate that 100% of the samples field analyzed for metals using x-ray fluorescence (XRF) technology will also have corresponding laboratory analyses. Ten percent of the total number of samples will be submitted to the laboratory for the defined full suite of analyses. Fifteen percent of the samples that field test non-detect for explosives will be submitted





Mark Patterson

Page 2

to the laboratory for analysis. The text is correct when it indicates that all samples showing field detections of explosives will be subject to laboratory analyses for explosives.

3. Figure 3-1 should indicate that the surface water/sediment pathway is complete for terrestrial and aquatic receptors. This would make the figure consistent with the corresponding text.
4. The Agency agrees that further discussion is warranted regarding the proposed analyses for the soils located in the railroad track cuts. It is the position of the Ohio EPA that if the intent is to potentially utilize the railroad track cuts for the disposal of clean hard fill (CHF), then 10% of the obtained samples need to be analyzed for the full suite of constituents.
5. In previous correspondence the Ohio EPA had requested that Table 5-2 be cross-referenced with Table 4-1 to ensure consistency. It appears that in the revised workplan that the wrong table was revised, as it is Ohio EPA's understanding that the obtained surface water samples will be analyzed for the full suite of constituents. Please clarify.
6. In a telephone conversation with the USACE Louisville project manager on September 7, 2000, it was agreed that due to budget constraints, that the sediments obtained from the sanitary and storm sewer lines do not need to be analyzed for grain size and total organic carbon (TOC). This will preserve a number of contingency samples that had been scoped into this study. The field sampling strategy will need to be adjusted accordingly.

Revisions to the final workplan do not need to be made based upon this comment letter. However, a copy of this correspondence will be attached to the final workplan to memorialize the needed changes. Mobilization to the field may commence as planned on September 11, 2000.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr

Project Coordinator

Division of Emergency and Remedial Response

Mark Patterson

Page 3

cc: Bob Princic, NEDO DERR  
Todd Fisher, NEDO DERR  
Diane Kurlich, NEDO DERR  
Brian Tucker, CO DERR  
Bonnie Buthker OFFO SWDO  
LTC Tom Tadsen, RVAAP  
John Cicero, RVAAP  
John Jent, USACE Louisville  
David Seely, USEPA Region V  
Steve Selecman, SAIC  
Kevin Jago, SAIC  
Kathy Dominic, SAIC





## SAFETY AND HEALTH FORMS

### SHF-8. WEEKLY WASTE STORAGE INSPECTION RECORD

Project Location: RVAAP

Project Site: LL01

Project No.:

#### INSTRUCTIONS:

1. Inspector to enter "yes" or "no" response for each item.
2. Sign, enter date/time of inspection, and return to Site Safety Officer at MKM project site office.
3. Report any deficiency, in person, to Site Safety Officer immediately.

Item No.	Item	Date: <u>10/3/00</u> Time: <u>1430</u>	Date: <u>10/11/00</u> Time: <u>1500</u>	Date: Time:	Date: Time:	Date: Time:
1.	Are all containers closed?	<u>YES</u>	<u>YES</u>			
2.	Are all containers in good condition?	<u>YES</u>	<u>YES</u>			
3.	Are any containers leaking or is there evidence of a spill? If contingency plan implemented, note in corrective action section below.	<u>NO</u>	<u>NO</u>			
4.	Are containers stored/handled in a manner that would prevent spills?	<u>YES</u>	<u>YES</u>			
5.	Are containers compatible with wastes stored in them?	<u>YES</u>	<u>YES</u>			
6.	Are containers labeled with accumulation and the words "Hazardous Wastes"?	<u>NA - No haz. waste in storage</u>	<u>NA</u>			
7.	Have any containers been stored for more than 180 days?	<u>NO</u>	<u>NO</u>			
8.	Have any containers been stored for more than 90 days?	<u>NO</u>	<u>NO</u>			
9.	Is aisle space adequate for passage of emergency equipment and for inspections?	<u>YES</u>	<u>YES</u>			
10.	Are incompatible wastes stored separately?	<u>YES</u>	<u>YES</u>			
11.	Are containers that hold ignitable or reactive wastes stored at least 50 feet from the property line?	<u>NA - No ignit. or reactive waste in storage</u>	<u>NA</u>			
	Inspectors Signature	<u>Brian A. Stockwell</u>	<u>Brian A. Stockwell</u>			
	Printed Name	<u>Brian A. Stockwell</u>	<u>Brian A. Stockwell</u>			

NOTE: See reverse for Deficiency Response Actions



## SAFETY AND HEALTH FORMS

### WEEKLY WASTE STORAGE INSPECTION RECORD - EMERGENCY EQUIPMENT INSPECTION LOG

Project Location: RVAAP

Project Site: LL01

Project No.:

#### INSTRUCTIONS:

1. Inspector to enter "yes" or "no" response for each item.
2. Sign, enter date/time of inspection, and return to Site Safety Officer at MKM project site office.
3. Report any deficiency, in person, to Site Safety Officer immediately.

Item No.	Item	Date: 10/3/00 Time: 1430	Date: 10/11/00 Time: 1500	Date: Time:	Date: Time:	Date: Time:
1.	Internal Alarm/Intercom operational?	Yes Emerg. A.C. Horn	Yes			
2.	Phone, radio, or other summoning device present and working?	Yes	Yes			
3.	Fire extinguishers/other fire protection equip. in order?	Yes	Yes			
4.	Spill/Decon equipment fully stocked?	Yes	Yes			
5.	Water of adequate volume & pressure?	Yes - as needed in portable pot tanks	Yes			
6.	ER Equipment consistent with contingency plan and easily accessible?	Yes	Yes			
7.	Other:	None	None			
	Inspectors Signature	B.A. Stedwell	B.A. Stedwell			
	Printed Name	Brian A. Stedwell	Brian A. Stedwell			

NOTE: See reverse for Deficiency Response Actions



## MEMORANDUM

**To:** Eileen Mohr, Jarnal Singh – OEPA, Steve Uecke - PCHD  
**From:** Ernie Neal, Neal Environmental Services, LLC  
**Re:** Sampling and Analysis Report Summary – Clean Hard Fill from  
Load Line 12 & George Road Fill Site  
**Date:** February 21, 2000

---

This memo is in follow-up to the 2/10/00 meeting regarding the above referenced report. During the meeting, it was agreed by Ohio Environmental Protection Agency (OEPA)/Ravenna Army Ammunition Plant (RVAAP)/MKM Engineers, Inc. (MKM)/Neal Environmental Services, LLC, (NES) that NES would develop a summary and conclusions of the report and that the information would be directed to the environmental agencies. The following text provides a summary and technical conclusions of the report.

### INTRODUCTION

The Sampling and Analyses Report (SAR) of January 2000 was provided to the participants during the 2/10/00 meeting. The SAR presents sampling results of clean hard fill material at Load Line 12 and sampling of surface soils at the George Road clean hard fill site of the RVAAP located near Ravenna, Portage County, Ohio. The document was prepared by MKM for the United States Army, Industrial Operations Command (IOC).

### PURPOSE AND SCOPE

The general purpose of the study was two fold:

- To verify that decontamination activities performed at LL 12 prior to demolition resulted in a determination that the resultant clean hard fill materials from LL 12 were acceptable for disposal at the George Road legitimate fill site. This extensive exercise has assisted in establishing baseline data for demolition of other load lines that were constructed at the same time with like materials, which will minimize the analytical need for disposal of demolition debris.
- To verify that the George Road fill site has not been impacted by past operational practices at RVAAP thus determining the suitability of the site for clean hard fill disposal.

The SAR defines the sampling frequency, sampling techniques, methodology and analytical parameters used to support an evaluation of both LL 12 materials and the George Road fill area.

## **SAMPLING AND ANALYSES**

### **Load Line 12**

Field sampling activities were conducted in October 1999. In total, thirty (30) composite samples were collected from both undemolished buildings and from demolition debris stockpiles. The 30 composite samples were submitted for the following laboratory analyses:

- Explosives
- TCLP metals

Six of the 30 samples were also evaluated for the following additional analyses:

- |                   |           |
|-------------------|-----------|
| - TCLP VOCs       | - PCBs    |
| - TCLP SVOCs      | - TPH-GRO |
| - TCLP Pesticides | - TPH-DRO |
| - Cyanide         |           |

Exact sample collection methods and analyses preparation of both undemolished and demolition debris stockpiles was the watchword for the SAR. Table 1 of the SAR presents detailed sample description, time and date of collection and references applicable collection photographs in Appendix D for observation. At LL 12, representative portions of each material type from all building and structures was placed on clean 6-mil reinforced plastic, covered with a like piece of plastic, and crushed with hammers to a powder. Although there is little doubt that this type sample preparation would have enhanced the solubility of constituents in the clean hard fill media, MKM was intent on making a thorough determination of construction materials at LL 12.

### **George Road Fill Site**

In similar fashion, field soil sampling activities at the George Road Fill Site were also conducted in October 1999. MKM established six (6) 100-foot grids in the planned excavation area. Six hand auger samples were collected for analytical evaluation of:

- Explosives
- TCLP Metals



One of the six samples was also analyzed for:

- |   |                 |   |         |   |         |
|---|-----------------|---|---------|---|---------|
| - | TCLP VOCs       | - | PCBs    | - | Cyanide |
| - | TCLP SVOCs      | - | TPH-GRO |   |         |
| - | TCLP Pesticides | - | TPH-DRO |   |         |

The soil sampling locations were selected based on the purpose of the investigation and the site conditions as observed in the field. MKM established the latitude and longitude for each sample by utilizing GPS readings. Soil samples were obtained by using a stainless steel hand auger. The soil samples included surface soil as well as soils to a depth of one-foot or bedrock refusal. Sample log information included soil type, color, relative moisture content, as well as any unusual visual or olfactory characteristics. Final soil sample preparation followed documented acceptable procedures for subsequent analytical evaluation.

## **ANALYTICAL EVALUATION**

The analytical evaluation of the SAR was completed through the joint efforts of MKM and NES.

### **Load Line 12**

Detailed information of sample collection observations, methods and laboratory analyses are recorded in The SAR Table 1 and Table 3 of the report. A summary of the presence of chemical constituents reported in the Load Line 12 samples is presented in Attachment 1 of this report. Following is an explanation regarding the sample analyses reported in Attachment 1.

#### **Sample - LL-12-009-CS-CHF**

Results of this sample reported a lead concentration of 9.47 mg/L. However, a review of the sample collection information in Table 1 relates that the sample material was gathered from three sub-samples of refractory brick in the south, middle and north boilers in Bldg. FE-17. Further, the two LL-12-009-CS-CHF photographs in Appendix D of the SAR clearly reflect that all sample contents were collected utilizing air hammers for sample collection on the inner most portions of the boilers. Based on the fact that OAC 3745-400-01 specifically states that clean hard fill includes "refractory brick and mortar" there is little doubt that the presence of lead in this case, is a result of the common constituents of the refractory brick matrix. Also, sample preparation procedure of crushing the materials to a powdery media most likely enhanced the solubility of the lead material in the TCLP test. Further review of the clean hard fill definition indicates that CHF cannot be contaminated with solid, infectious or hazardous waste.

However, the agency has made in abundantly clear in prior rule clarifications that these contaminants refer to gross contamination of municipal solid waste, infectious waste or readily observable or containerized hazardous waste materials. Thus, we believe that the demolition material in the above referenced sample is clean hard fill and acceptable for like disposal.

Six Load Line 12 samples reported concentrations of explosives - Note Attachment 1.

The reported explosive concentrations for these samples were extremely low. It is our belief that the results clearly reflected the success of the pre-demolition decontaminating efforts. Also, it is note worthy to observe that 5 of the 6 explosive sample concentrations are well below the residential Preliminary Remediation Goals (PRGs) standards set by Region IX of U.S. EPA. In addition, it should be noted all 6 samples reflecting explosive concentrations were below the industrial PRGs. In short, these standards represent acceptable exposure concentration of explosives for residential and industrial use. We have presented the PRG information for comparison purposes.

Samples - LL12-027-CS-CHF, LL12-028-CS-CHF, LL12-029-CS-CHF

The results of the three samples, presented in Appendix 1, reflect the presence of cyanide. The specific content of these three samples consists of concrete material gathered from debris stockpiles of LL 12. In comparing the reported concentrations of all three samples to the established standard, we observed that they are exceptionally low and would classify as clean hard fill.

### **George Road Fill Site**

Detailed information of sample collection observations, sampling methods and laboratory analyses are recorded in Table 2 and Table 4 of the report. A summary of the presence of chemical constituents reported in the George Road fill area is presented in Attachment 2 of this report. Following is an explanation regarding the sample analyses reported in Attachment 2.

Three of the George Road grid soil samples indicated constituent concentrations above the RVAAP metal background levels as established during the completion of Phase II Remedial Investigation at the Winklepeck Burning Grounds.

Samples - CHFL-GRID1-001-GS-SO (Grid #1)  
CHFL-GRID2-001-GS-SO (Grid #2)  
CHFL-GRID6-001-GS-SO (Grid #6)

It is important to note that six of the seven reported elevated metal analyses in the three samples were ambient metals commonly present in facility soils. The



reported elevated concentration of iron, copper, potassium and zinc above background criteria were within a range that would generally be acceptable considering expected common area variation.

The seventh reported elevated metal analysis reflected a concentration of 0.58 mg/Kg of total mercury. This analysis was recorded in the 6<sup>th</sup> grid sample. The established background level for the RVAAP site is 0.04 mg/Kg. The visual description of the # 6 grid sample in Table 2 of the report does not reveal any unordinary observations. Although at this point the results initially appear to be an anomaly, MKM will be reviewing the laboratory quality assurance/quality control procedures to determine the reliability of the result.

## SUMMARY

*The Sampling and Analysis Report - Clean Hard Fill from Load Line 12 and the George Road Fill Site* provided significant information in regard to technically evaluating the demolition and decommissioning of the RVAAP LL 12 and the George Road fill site. Considering these data, the following conclusions can be drawn:

### Load Line 12

1. The data and analyses results of the SAR for LL 12 indicate that the expected contaminants at the load line were properly evaluated and successfully removed during the decontamination process.
2. The SAR also reveals that:
  - a. An individual sample reporting an elevated concentration of TCLP lead clearly reflects that the reported constituent was derived from the inter-matrix of refractory brick and accompanying mortar. Considering the applicable regulatory definition, this material is clean hard fill.
  - b. The concentration and presence of explosives in six of the clean hard fill samples are well within acceptability levels for disposal as clean hard fill.
  - c. The three samples reporting cyanide concentrations are well within the established and acceptable reactive cyanide levels for waste characterization.
3. The resultant debris materials from the LL 12 demolition process can readily and safely be disposed as clean hard fill.

4. In consideration of the detailed evaluation of the SAR for LL 12, and taking into account that a reliable technical baseline has been established for other similar load line demolition projects, a practical, technical and regulatorily acceptable sampling and analyses protocol will be developed.

#### **George Road Fill Site**

1. The data and analytical results of the SAR for the George Road Fill Site indicate that the fill area was not impacted by former production and/or disposal operations.
2. The SAR also reveals that:
  - a. The six samples indicating elevated concentration of ambient metals in three of the grid samples were well within an analytical range generally acceptable for background variation.
  - b. An individual soil analysis reporting an elevated concentration of mercury in Grid #6 will further be evaluated by review of the laboratory quality assurance and quality control procedure. However, until this exercise is complete, Grid #6 will not be scheduled to receive clean hard fill.
3. The evaluation of the George Road site indicates that 5 of the six grids are acceptable for the receipt of clean hard fill materials.
4. Considering the presentation of the SAR in regard to the George Road fill site and in recognition of the development of a reliable, technical data base for evaluating other potential legitimate fill sites, a practical, technical and regulatorily acceptable sampling and analyses protocol will be developed to expand the George Road fill site and to evaluate future CHF disposal areas at RVAAP.



## ATTACHMENT 1

### CLEAN HARD FILL SAMPLING SUMMARY FOR LL 12

Refractory brick sampling result.

SAMPLE	METAL	CONC.	STANDARD - TCLP
LL-12-009-CS-CHF	Lead	9.47 mg/L	5.0 mg/L

The following samples were reported to have minimal concentrations of explosives:

SAMPLE	EXPLOSIVE	CONC.	STANDARD-R/I
LL12-012-CS-CHF	Tetryl	0.9 mg/Kg	54.5/1070 mg/Kg
LL12-013-CS-CHF	Tetryl	2.0 mg/Kg	54.5/1070 mg/Kg
LL12-014-CS-CHF	2-amino-4,6-dinitrotoluene 4-amino-2,6-dinitrotoluene	1.0 mg/Kg	NA
		1.5 mg/Kg	NA
LL12-018-CS-CHF	2,4,6-trinitrotoluene	2.2 mg/Kg	1.48/9.98 mg/Kg
LL12-030-CS-CHF	2-nitrotoluene	0.58 mg/Kg	54.5/1070 mg/Kg
LL12-032-CS-CHF	Nitrobenzene	0.19J mg/Kg	1.61/10.4 mg/Kg

The following samples were reported to have Cyanide:

SAMPLE	METAL	CONC.	STANDARD
LL12-027-CS-CHF	Cyanide	1.5 mg/Kg	250 mg/Kg
LL12-028-CS-CHF	Cyanide	1.3 mg/Kg	250 mg/Kg
LL12-029-CS-CHF	Cyanide	3.4 mg/Kg	250 mg/Kg

## ATTACHMENT 2

### SOIL SAMPLING RESULTS OF GEORGE ROAD FILL SITE

SAMPLE	METAL	CONC.	BACKGROUND
CHFL-GRID1-001 GS-SO (Grid # 1)	Iron	23,800 mg/Kg	23,100 mg/Kg
CHFL-GRID2-001 GS-SO (Grid # 2)	Copper	20.2 mg/Kg	17.7 mg/Kg
	Iron	26,600 mg/Kg	23,100 mg/Kg
	Potassium	933 mg/Kg	927 mg/Kg
	Zinc	80.1 mg/Kg	61.8 mg/Kg
CHFL-GRID6-001 GS-SO (Grid # 6)	Mercury	0.580 mg/Kg	0.04 mg/Kg
	Zinc	76.6 mg/Kg	61.8 mg/Kg



## NEAL ENVIRONMENTAL SERVICES, LLC

---

February 22, 2000

Ms. Eileen Mohr, Ohio EPA-NEDO  
Mr. Jarnal Singh, Ohio EPA-NEDO  
2110 E. Aurora Road  
Twinsburg, OH 44087

Mr. Steve Uecke, Portage County Health Dept.  
449 S. Meridian Street  
Ravenna, OH 44266

Dear Ms. Mohr/Mr. Singh/Mr. Uecke:

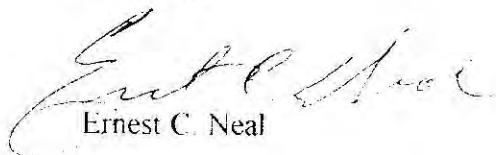
The purpose of this letter is two fold:

1. Document the Neal Environmental Services, LLC presentation to OEPA of 2/10/00 and subsequent discussion with Mr. Uecke of 2/15 and 2/22 regarding the *Sampling and Analysis Report - Clean Hard Fill From Load Line 12 & The George Road Fill Site*.
2. Confirm OEPA's and Portage County Health Dept.'s approval to transport and dispose the remaining clean hard fill material from Load Line 12 to Grids 1-5 of the George Road fill site.

Enclosed for your information is the summary of the above referenced report. The memo tracks my presentation to both agencies and provides appropriate information regarding the technical evaluation of clean hard fill materials from Load Line 12 and the George Road fill site.

In regard to item 2 above and as of 2/22/00, MKM Engineers, Inc. began transporting the remaining clean hard fill materials from Load Line 12 to Grids 1-5 of the George Road fill site. It is also noted the regulatory agencies' approval of this activity requires that the analytical information regarding Grid #6 of the George Road fill site as presented in the Sampling and Analysis Plan be further evaluated.

Sincerely,



Ernest C. Neal

Enclosure

cc: Rick Callahan, MKM Engineers, Inc.  
Mark Patterson, Ravenna Army Ammunition Plant





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

April 14, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
PILOT BIOREMEDIATION PROJECT

Mr. Mark Patterson  
Environmental Program Manager  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9297

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) has received and reviewed the revised document entitled: "Work Plan and Sampling and Analysis Plan for the Bioremediation Study for Soils from Former Building FJ 904 at **Load Line 12 (AOC 12)**, Ravenna Army Ammunition Plant." The document, dated March 2000 and received on April 3, 2000, was prepared by the contractor (MKM Engineers, Inc.) for the U.S. Army Industrial Operations Command (IOC).

The draft version of the bioremediation pilot study workplan was received and reviewed by Ohio EPA, NEDO, in May 1999. However, due to the significant changes between the May 1999 document and the revised document, dated March 2000, the revised document was reviewed solely with respect to conversations held between Ohio EPA and MKM personnel on April 3, 2000; April 10, 2000; April 12, 2000 and the comment resolution document (CRD) that was received on April 6, 2000.

It is Ohio EPA, NEDO's understanding that a copy of the revised document will be submitted directly to Ohio EPA, Central Office (CO), DERR risk assessment personnel for review and comment. As such, any comments generated by risk assessment personnel will be submitted to your attention under separate cover.

Comments on the Health and Safety Plan (HASP) that was received on April 10, 2000, will also be forwarded to your attention under separate cover.

Ohio EPA, NEDO, DERR has the following comments on the above-referenced bioremediation project:

**GENERAL COMMENTS**

1. A. The need for the Department of Defense (DOD) to acquire permits and/or exemptions from the Director of Ohio EPA to conduct the proposed study has been previously discussed at meetings and during telephone conversations. It is Ohio EPA's understanding that Mr. Ernest Neal of Neal Environmental Services (NES) is currently completing a bioremediation position paper that would address the permit/exemption issue, and that a meeting is tentatively scheduled for the week of April 17, 2000. Representatives that are scheduled to attend the meeting



include personnel from: the Ravenna Army Ammunition Plant (RVAAP); Ohio EPA Divisions of Emergency and Remedial Response, Solid and Infectious Waste Management (DSIWM) and Hazardous Waste Management (DHW); Portage County Health Department (PCHD); Akron Regional Air Quality Management District; MKM Engineers, Inc.; and, NES.

- B. In a telephone conversation that I had with personnel in Ohio EPA's Legal Section on April 5, 2000, it was determined that, in order to conduct the proposed activities, RVAAP must submit a request for authorization under Ohio Administrative Code (OAC) 3745-27-13 (hereinafter referred to as a "Rule 13") to the Director of Ohio EPA. Please refer to the revised "Rule 13" received at Ohio EPA, NEDO, DERR on May 6, 1999, and the generated comments from Ohio EPA, dated May 7, 1999. Please revise the request for authorization and submit a draft copy of the document to Ohio EPA, NEDO, DERR for review and comment prior to sending the final document to the Director.
  - C. Ohio EPA, NEDO, DSIWM is currently in the process of confirming with CO, DSIWM staff as to whether or not the proposed project would require registration and licensing as a Class II composting facility. As soon as this determination is made, I will forward that decision to your attention.
2. Detailed conversations between Ohio EPA and MKM personnel regarding sampling frequencies for various portions of the pilot composting project were held on April 10, 2000, at MKM's RVAAP office and on April 11, 2000, at the Principles of Environmental Restoration (PER) workshop. Rather than providing specific comments on the sampling portion of the documents, provided below is a summary of the agreed upon sampling:
- A. During the Site Investigation (SI) portion of the project:
    - i. Up to 48 samples will be obtained for Jenkins analyses (TNT and RDX methodologies). The actual number cannot not be specified, due to the uncertainty as to the current depth of groundwater. However, six samples will be taken from each one foot lift, which is to be excavated. If the depth to groundwater is greater than eight feet, excavation will be discontinued at this depth, and a total of 48 samples for Jenkins field testing will be obtained.
    - ii. A total of (up to ) eight samples from the excavated area (which is estimated to be 100' X 60') will be submitted to the laboratory for explosives and Target Analyte List (TAL) metals analyses. The (potential) eight samples will be obtained from compositing the six samples per each one foot lift. Ten percent of the obtained samples will be submitted for the full suite of analyses (volatile organic compound - VOC - samples should not be homogenized), as described in the workplan.



- B. During the Contaminated Windrow Composting Pilot Test (CWCPT) portion of the project, samples will be obtained as follows:
  - i. The amendments utilized during the project will be submitted to the laboratory for the full suite of analyses, as described in the workplan.
  - ii. On "Day 0" - prior to adding any amendments, samples of the contaminated soil will be analyzed at a frequency of one sample per 50 cubic yards. This will result in three samples per windrow, consisting of the following analyses: explosives and TAL metals. (After the amendments are added, each windrow will increase in volume from approximately 150 cubic yards to 450 cubic yards). As such, a total of six laboratory samples will be obtained.
  - iii. On "Day 1" - after adding the amendments, three samples will be obtained from each windrow for explosives and TAL metals. In addition, one of these samples from each windrow will be analyzed for the full suite of constituents as described in the workplan. As such, a total of six laboratory samples will be obtained.
  - iv. On "Day 16" - three samples for laboratory analyses will be obtained from each windrow for explosives and TAL metals.
  - v. On "Day 28" - three samples will be obtained from each windrow for explosives and TAL metals. In addition, one of these samples from each windrow will be analyzed for the full suite of constituents as described in the workplan. As such, a total of six laboratory samples will be obtained. In addition, three additional samples will be collected from each windrow for analyses utilizing the Jenkins methodologies for TNT and RDX.
- 3. During the meeting held between MKM and Ohio EPA on April 3, 2000, it was agreed that the following documents would be received at a later date:
  - A. The project schedule;
  - B. Sisk, Wayne E., 1992, *Reactivity Testing and Handling Explosive -Contaminated Soil*, Proceedings of 1992 Federal Environmental Restoration Conference, April 1992, Hazardous Materials Control Resources Institute; and
  - C. Weston, August 1993, *Windrow Composting Demonstration for Explosives-Contaminated Soils at the Umatilla Depot Activity, Hermiston, Oregon*, CETHA-TS-CR-93043.
- 4. Previous Ohio EPA comments indicated the need to screen the excavated soil in order to remove stones, large chunks, potential unexploded ordnance (UXO), etc., that may pose

safety hazards to project personnel. Although the CRD indicated that a sifter will be utilized on the bioremediation project, this information should also be presented in the revised workplan.

5. The objective of the pilot study is to determine the feasibility of utilizing bioremediation technology on the explosives-contaminated soils that are known to be present at various Areas of Concern (AOCs) at the RVAAP installation. Given the potential impact of this pilot project on future remedial technologies utilized at the RVAAP, Ohio EPA will be split sampling the composted materials, from both windrows, with RVAAP's contractor on days one and 28 of the study. As such, please provide Ohio EPA with project schedule referenced in item 3(A) detailed above, such that arrangements can be made with the contract laboratory.
6. Ohio EPA requests that in future work conducted on the RVAAP installation, that the Response to Comment (RTC) document be submitted to the Agency for review and comment, prior to the workplans and/or reports being revised. In the event that there isn't agreement on the RTC between the contractor and the Agency, the issues can be resolved prior to the revision and re-publication of the document. This approach has resulted in fewer drafts of a document needing to be produced, less review time expended, and the stream-lining of project schedules.
7. Subsequent to reviewing the details of the Bench-Scale Composting Study (BSCS) detailed in this workplan, and given that uncontaminated soils will be utilized for the BSCS, Ohio EPA does not object to this portion of the project commencing prior to final review and comment on all pertinent documents.

#### **SPECIFIC COMMENTS**

##### **Workplan and Sampling and Analysis Plan Addendum:**

8. In the text of the workplan, please refer to this project consistently as a bioremediation pilot study, not as an interim removal action (IRA). Please adjust the text accordingly. (Pages 1-1 and 7-1)
9. Please adjust the text on page 1-2 to indicate that the National Pollution Discharge and Elimination System (NPDES) permit is scheduled to be revoked on May 1, 2000. This information was contained in correspondence dated March 23, 2000, from the Director of Ohio EPA to R&R International, Inc.
10. The text on page 3-2 indicates that the Remedial Composting Pilot Test (RCPT) will "... attempt to treat explosives-contaminated soils to clean levels." Please provide an explanation as to what is meant by the term "clean." Currently, Remedial Goal Options (RGOs) have not been established and agreed-upon for the RVAAP installation and, as such, the term "clean" is interpreted by the Agency to mean non-detect (ND).



11. Please adjust the text on page 3-2 to read as follows: "...if contamination is less than the acceptable risk-based ( $10^{-6}$  risk level....)."
12. The text on page 4-1 indicates that floor sweepings from Building G-1A may be utilized as an amendment to the compost pile and that wash fluids may be sprayed on the compost windrows for moisture control. Ohio EPA does not object to the usage of these materials as indicated, subject to the following conditions:
  - A. The floor sweepings should be analyzed and the composition known (so that it can be determined whether or not they should be utilized as an amendment); and
  - B. the analytical composition of the wash fluids must be known and must not contain decontamination fluids that follow the facility-wide decontamination procedure (i.e., that contain acid or pesticide-grade solvent rinses). (See also pages 4-6, 4-10, 4-14, and 4-19)

As this is the pilot composting project which will provide the basis for potential remedial activities at the RVAAP on an installation-wide basis, it is imperative that the most strict quality assurance/quality control (QA/QC) is utilized, so that the effectiveness and appropriateness of using this remedial technology can be effectively evaluated.

13. Potable water, which is brought on-site for use in this project, must be analyzed for the full suite of analyses as described in the facility-wide sampling and analysis plan. If the same source is utilized, a sample from each subsequent shipment of water will not be required. (Page 4-1)
14. The text, in several portions of the document, indicates that daily mixing of the compost piles is a standard operating protocol. The text should clearly indicate when mixing is to occur, i.e., prior to or subsequent to the measurement of the appropriate field parameters. (Pages 4-4, 4-5, and 4-15)
15. Please indicate on page 4-5, whether or not respirator usage will be required during the mixing of the composting units.
16. The section describing the soil excavation and sampling (page 4-7) should clearly indicate that the depth of excavation of contaminated soils will be terminated prior to reaching groundwater. (See also pages 4-10 and 4-11). In addition, there should be text in this portion of the workplan that describes the source of the soils (and the analytical testing that will be conducted on these soils) that will be utilized to fill in the excavated area.
17. Please ensure that samples obtained for VOC analyses will not be homogenized. (Page 4-7)
18. Please remove the references to the use of olfactory characteristics from the text of the workplan. (Pages 4-8 and 4-9)

MR. MARK PATTERSON

APRIL 14, 2000

PAGE 6

19. Please provide confirmation that the laboratory analyses for propellants will include nitroguanidine, nitrocellulose, and nitroglycerine. (Pages 4-8, and 4-12)
20. Please strike the text on the top of revised page 4-10 that was received on April 10, 2000.
21. As non-dedicated sampling equipment will be utilized during at least two phases of the pilot bioremediation project, equipment blanks must be obtained at the specified frequency. (Pages 4-10 and 4-20)
22. Please revise the text on page 4-10 to reflect the discussions that were held on April 3, 2000. Specifically, it was indicated during that meeting that the procedure for removing the soil will be to achieve a safe concentration of eight percent or less before the soil is moved.
23. The text on page 4-11 indicates that: "If the concentration of the sample is above 12 (now 8) percent, additional soil will be disturbed below the removal action area and will be mixed again." Again, the workplan must clearly indicate that soil disturbance/removal will be terminated prior to encountering groundwater.
24. Please provide an explanation in the text of the workplan as to how the optimum numbers and locations of field measurements was determined. (Pages 4-15 through 4-17). In addition, please provide the Standard Operating Procedure (SOP) for the field determination of moisture levels in the Quality Assurance Project Plan (QAPP).
25. In addition to the monthly reports that will be submitted to Ohio EPA as part of this project, Section 5.7 should also indicate that draft and final reports summarizing the results of the pilot composting project will be submitted to the Agency for review and comment. (Page 5-2)
26. In Section 7.0, please strike the following two sentences from the text of the report: "Water generated during purging and sampling will be placed in a poly storage tank. Management of this type of IDW will be based on the analytical results for groundwater samples." Groundwater is not to be encountered during the pilot composting project.
27. Section 10.1 refers to QA surveillance being performed for each media. Please provide a description in the revised text as to what is entailed in the QA surveillance. (Page 10-1)

**Quality Assurance Project Plan (QAPP) Addendum:**

28. If non-dedicated equipment is to be utilized during this study, equipment rinsate blanks must be collected at the appropriate frequency. (Page 9?)
29. One hundred percent of the obtained data must be verified. (Page 9)



MR. MARK PATTERSON

APRIL 14, 2000

PAGE 7

30. Section 10 refers to QA surveillance being performed for each media. Please provide a description in the revised QAPP as to what is entailed in the QA surveillance. (Page 10)
31. Provide information as to whether or not additional references to the QAPP will be provided. (Page 15)
32. On Table 4-1, please provide the sample container requirements for propellant analyses for the RCPT and site investigation (SI) studies.

**Figures:**

33. Figure 4-12 indicates that exhaust fans will be utilized in Building G-1A during the composting operations. There should be corresponding information regarding the use of fans in the appropriate portion of the text of the workplan.

**Tables:**

34. Table 4-2 indicates that temperature and moisture will not be monitored and mixing will not occur on the weekends and during the BSCS. Please provide a discussion as to whether or not this will have an impact on the results of the BSCS.
35. On Table 4-3:
  - A. Please remove references in the footnotes to the uncontaminated windrow study, as this is no longer a part of the pilot composting project.
  - B. Please revise the footnotes to read: "Temperature sampling during BSCS based on measuring 15 compost units....."
  - C. Please revise the footnote that details the number of samples obtained during the SI for field analyses utilizing the Jenkins methodology. Based upon the text of the workplan, samples will be collected on a foot by foot interval.
  - D. Please refer to previous comments in this correspondence regarding sampling frequency.
36. On Table 4-5, please include propellants as a constituent that will be analyzed for during both the SI and the CWCPT. In addition, please indicate that during the SI soil samples will also be analyzed for explosives, TAL metals, VOCs, SVOCs, pesticides/PCBs, and cyanide.
37. Table 4-6 indicates that temperature, moisture, pH, oxygen, and other field analyses will not be monitored, and mixing will not occur on the weekends during the CWCPT. Please provide a discussion as to whether or not this will have an impact on the results of the CWCPT.

MR. MARK PATTERSON  
APRIL 14, 2000  
PAGE 8

**Appendix A:**

38. Please refer to previous Ohio EPA comments on the facility-wide sampling and analysis plan, if applicable.

**Appendix B:**

Ohio EPA does not have any comments on this appendix.

**Appendix C:**

Ohio EPA does not have any comments on this appendix.

**Appendix D:**

39. In a telephone conversation that I had with personnel in Ohio EPA's Legal Section on April 5, 2000, it was determined that in order to conduct the proposed activities, RVAAP must submit a request for authorization under Ohio Administrative Code (OAC) 3745-27-13 (hereinafter referred to as a "Rule 13") to the Director of Ohio EPA. Please refer to the revised "Rule 13" received at Ohio EPA, NEDO, DERR on May 6, 1999, and the generated comments dated May 7, 1999. Please revise the request for authorization and submit a draft copy of the document to Ohio EPA, NEDO, DERR for review and comment, prior to sending the final document to the Director.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Jamal Singh, NEDO, DSIWM  
John Curtin, NEDO, DAPC  
Brian Tucker, CO, DERR, EAU  
LTC Tom Tadsen, RVAAP  
Bob Whelove, IOC  
David Seely, U.S. EPA, Region V  
Rick Callahan, MKM

Greg Orr, NEDO, DHWM  
Diane Kurlich, NEDO, DDAGW  
Bonnie Buthker, OFFO, SWDO  
John Cicero, RVAAP  
John Jent, USACE Louisville  
Bill Ingold, IOC  
Srini Neralla, MKM  
Ernie Neal, NES





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

April 17, 2000

RE: RAVENNA ARMY AMMUNITION  
PLANT, PORTAGE/TRUMBUL  
COUNTIES, BIOREMEDIATION PILOT  
PROJECT - HASP

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) has received and reviewed the document entitled, "Site Safety and Health Plan for the Bioremediation Pilot Study for Soils from Former Building FJ 904 at **Load Line 12 (AOC 12)**, Ravenna Army Ammunition Plant, Ravenna, OH." The document, dated March 2000 and received by Ohio EPA on April 10, 2000, was prepared for the Industrial Operations Command (IOC) by the contractor (MKM Engineers, Inc.).

Although Ohio EPA does not have regulatory authority over health and safety plans (HASPs), the following comments are offered for your consideration:

1. Please adjust the acronym on page six to indicate that mg/m<sup>3</sup> is the correct designation for milligrams/cubic meter.
2. Please adjust the text in two places to indicate that the procedure for removing the soil will be to achieve a safe concentration of eight percent or less before the soil is removed. This was verbally discussed between MKM and Ohio EPA personnel in meetings held on April 3, 2000 and April 10, 2000, and is memorialized in correspondence from Ohio EPA, dated April 14, 2000. (Pages 2-1, and 2-2)
3. Please cross-reference Ohio EPA comments on the sampling plan that were detailed in correspondence from Ohio EPA, dated April 14, 2000. (Pages 2-2 and 2-3). In addition, please ensure that total petroleum hydrocarbons (TPH) is removed from the list of chemical constituents that will be monitored during the Contaminated Windrow Composting Pilot Test (CWCPT). (Page 2-3)
4. Please revise the text on page 2-2 to indicate that 15 composting recipes will be utilized during the bench-scale composting study.



MR. MARK PATTERSON

APRIL 17, 2000

PAGE 2

5. Please adjust the sixth bullet in section 2.4.3 to indicate that contaminated soil will be added to the treatment cell. (Page 2-3)
6. Please revise the text on page 2-3 to read as follows: "It is anticipated that the composted soils will have greatly reduced levels of explosives, but may contain lead and other metals." At this point in time, it is premature to indicate that the composted soils will be free of explosives and that any metals present will be in "trace" amounts.
7. Please adjust the list of anticipated chemical hazards to include all the potential contaminants of concern (PCOCs), as the current listing is not all inclusive. (Page 5-1) This comment is also applicable to Table 5.1 (page 5-2), pages 9-1 and 9-2 and Appendix D (the Material Safety Data Sheets).
8. On Table 5.1, please provide an explanation on the table for the meaning of a question mark. (Page 5-3)
9. On Table 5.2 (Task Safety and Health Risk Analysis Summary), please indicate whether or not any activities specific to the cooler studies which will be conducted need to be added to this table. (Pages 5-5 through 5-6)
10. In section 6.1, please revise the text to read: "Recognition of symptoms and signs that may indicate over-exposure." In addition, escape routes should be a separate topic. (Page 6-1)
11. The text in section 7.0 should clearly cross-reference Safety and Health Procedure (SHP) 31 (located in Appendix B) that outlines the procedures for the doffing of personal protective equipment (PPE) and the decontamination of personnel.
12. Please contact Ohio EPA prior to utilizing any materials other than potable water for dust control purposes. (Page 10-2)
13. Please revise the text in section 10.2 to read as follows: "...waste and will be removed from the site and disposed of in accordance with all federal, and state rules, laws, and regulations."
14. Please add text in section 11 to indicate that all decontamination fluids will be containerized, properly characterized, and disposed of in accordance with all applicable federal and state rules, laws, and regulations. (Page 11-1)



MR. MARK PATTERSON

APRIL 17, 2000

PAGE 3

15. In section 12.0, please remove the language from the text that refers to the Building T5301 project. (Page 12-1)
16. Appendix B:
  - A. In SHP 09, please add symptoms and treatment requirements for the various cold stress emergencies that may be encountered.
  - B. Please confirm whether or not SHP 11 has been modified, i.e., it appears that the previous references to contact lens usage have been removed. If this is the case, the revision date on this SHP should be modified.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr

Project Coordinator

Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Greg Orr, NEDO, DHWM  
Jarnal Singh, NEDO, DSIWM  
Brian Tucker, CO, DERR  
Bonnie Buthker, OFFO, SWDO  
John Cicero, RVAAP  
LTC Tadsen, RVAAP  
Bob Whelove, IOC  
Bill Ingold, IOC  
David Seely, U.S. EPA Region V  
Rick Callahan, MKM  
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State of Ohio Environmental Protection Agency

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TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

**August 22, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**LOAD LINE 12 WORKPLAN**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the documents entitled: "Draft, Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 12 at the Ravenna Army Ammunition Plant, Ravenna, Ohio" and "Draft, Site Safety and Health Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 12 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." The documents, dated August 2000 and received at Ohio EPA, NEDO, on August 14, 2000, were generated for the U.S. Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC), under contract number DACA62-00-D-0021, delivery order number CY06.

Due to the expedited time-frames detailed in the cover letter and in the draft project schedule, the comments in this correspondence solely reflect the review of Ohio EPA, NEDO, DERR, i.e., the documents will not be reviewed by Ohio EPA risk personnel. As a result, there are several places within this correspondence where Ohio EPA, NEDO, DERR, will be requesting that SAIC and the USACE ensure that the risk assessment assumptions, methodologies, exposure factors, etc., are consistent with previously-reached agreements between the Ravenna Army Ammunition Plant (RVAAP) stakeholders. This can be accomplished through the formal Response to Comments (RTC) process. In addition, Ohio EPA risk assessment personnel will be reviewing the draft Phase II report, and the Agency reserves the right to questions the methodologies, exposure factors, etc., at that time.

Given the above caveat, Ohio EPA, NEDO, DERR, has the following comments on the draft Load Line 12 documents:

**Sampling and Analysis Plan:**

1. The text on page 1-5 (line 41), page 1-9 (line 15), and page 4-21 (line 16) indicate that no above-grade structures remain at Load Line 12. Please clarify whether this





includes floor slabs, as the text on page 4-15 (lines 23-25) indicates that there will be difficulty in obtaining soil samples from beneath the slabs. If there are floor slabs in place, the text should be revised on page 1-5 to indicate that there is the potential for contamination beneath the floor slabs, if the integrity of the concrete is not intact (i.e., cracks in the floor etc.). In addition, will cores of the floor slabs be obtained?

2. Please revise the text on page 1-5, line 45, to read: "The potential for surface and subsurface contamination exists..."
3. Please refer to previous Ohio EPA comments regarding the use of the U.S. Geological Survey (USGS) Ohio reference values for soil. The reference numbers are of limited value given the minimal number of soil samples, especially in the northeast quadrant of the state. Inorganic constituents should be compared to the installation background that was determined as part of the Winklepeck Burning Grounds (WBG) Remedial Investigation (RI). (Page 1-7 lines 38-39 and page 1-9 lines 1-2)
4. On Figure 1-4, please revise the caption to read: "Load Line 12 Phase I RI Sampling Location Map." (Page 1-8)
5. Please revise the text on page 3-2, lines 7 through 9, to indicate that during the Phase I RI, most samples obtained for metals analyses included only process-related metals, i.e., target analyte list (TAL) metals were not analyzed for in each sample. This may have an impact upon the number of metals that were determined to be above background. In addition, please revise the text to indicate that the "background" determined during the Phase I RI does not represent the installation-wide background.
6. The text on page 3-2 (lines 36-37) indicates that the metals contaminants were concentrated at levels above risk-based screening criteria, primarily around former process areas and in the tributary to upper Cobbs Pond. Please specify what risk-based screening criteria were utilized.
7. Please provide additional details regarding the source of information for the groundwater flow divide that may exist at the southern portion of this AOC. (Page 3-3, lines 18-19)
8. The text on page 3-3 (line 33) indicates that storm sewers were not installed at Load Line 12. This contradicts text on page 4-21, line 47, and page 4-22, lines 14, 16, and 37. Please explain/correct the discrepancies.

9. Please revise the text on page 3-4 (line 12) to indicate that the current stage of work being conducted at Load Line 12 is a Phase II RI.
10. Please provide further information in the text of the workplan as to the generation of the 35 mg/kg chromium cut-off concentration. (Page 3-5, line 14)
11. Please provide additional details in the text as to the source of the aggregate number of 20 samples. (Page 3-6 line 43)
12. Please refer to the introductory portion of this correspondence as it pertains to ensuring that this workplan is consistent with the decisions reached between all major stakeholders regarding the human health and ecological risk assessment pathways, processes, and assumptions, etc. This comment is pertinent to sections 3.4 (human health risk assessment) and 3.5 screening ecological risk assessment) and Appendix C.
13. The titles for Tables 3-1, 3-2, 3-3, 3-4, 3-5, and 3-6 should clearly indicate that the criteria detailed in these tables represents installation-wide, or facility-wide background.
14. Please correct the spelling of Trumbull County. (Page 3-14, lines 33 and 35)
15. On Table 3-7: Conceptual Exposure Model for Load Line 12 at RVAAP (page 3-16):
  - A. Is there the potential for an industrial worker to encounter perched groundwater? If so, please adjust the chart accordingly.
  - B. Please revise the section under "sediment" to indicate that there may be incidental sediment ingestion or dermal contact with sediment.
16. On Figure 3-1: Exposure Pathways for Terrestrial and Aquatic Receptors (page 3-23):
  - A. Please re-evaluate this figure with respect to the text found on page 3-22. The figure indicates that the surface water/sediment is not a complete pathway, while the text on page 3-22 indicates that the pathway is complete. Please resolve the discrepancy.
  - B. Please confirm that there isn't the potential for burrowing animals to be in contact with shallow perched groundwater.



17. In the introductory text for Section 4.0, please provide some text which details what impact the demolition activities may have had on the Phase I RI sampling locations and data, and how the Phase I data will be used (if it is) in the Phase II report. (Page 4-1, introduction section)
18. On Table 4-1 (pages 4-2 through 4-3), please provide an explanation for the discrepancy between the number of samples detailed on this table with the number of samples that were initially projected during the April 2000 scoping meetings. In most instances, the number of samples projected during the meetings, as being necessary to adequately characterize the AOC, has been decreased for each sub-area. In some cases, the number of samples in the workplan substantially differ from the numbers scoped in April.
19. Please provide an explanation for collecting both filtered and unfiltered groundwater samples for TAL metals. In correspondence to USACE, dated December 7, 1998 (with an attached memorandum), it was decided that filtered groundwater samples would be utilized for risk assessment purposes at the CERCLA AOCs. In addition, this statement in the text contradicts Table 5-3 found on page 5-15. (Page 4-4, lines 20-21)
20. Please remove line 31 (page 4-5) from the workplan that indicates that core samples may be transferred to Ohio EPA, NEDO, for storage.
21. On page 4-12, lines 26, 29, and 31, the word "surface" should be changed to "sub-surface," as this section deals with sub-surface soil collection.
22. Please provide the rationale for substantially decreasing the number of contingency samples scoped for this phase of work from the initial scoping meetings to the generation of this workplan. (Page 4-13, line 38) What course of action will be pursued if the number of contingency samples are not adequate to evaluate the horizontal extent of surface soil contamination?
23. Please revise the text on page 4-14 (line 26) to read: "...explosives  $\geq$  1 mg/kg (TNT or RDX)...."
24. Please revise the text on page 4-18, line 39, to indicate that a 2% acid rinse will be utilized in the decontamination procedure.
25. The text on page 4-23 (section 4.7) should detail how the excavated soils will be managed. In addition, a location map showing the approximate location of the proposed trenches should be added to the workplan.

MR. MARK PATTERSON  
AUGUST 22, 2000  
PAGE 5

**Health and Safety Plan:**

Although Ohio EPA does not have regulatory jurisdiction over health and safety plans, it was reviewed by this Agency. Ohio EPA does not have any comments on the health and safety plan addendum for this AOC.

If you have any questions concerning this correspondence, please do not hesitate to contact me at (330) 963-1221.

Sincerely,

A handwritten signature in cursive script, reading "Eileen T. Mohr". The signature is written in dark ink and includes a stylized flourish at the end.

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Todd Fisher, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Bonnie Buthker, OFFO, SWDO  
Brian Tucker, DERR, CO  
LTC Tom Tadsen, RVAAP  
John Cicero, RVAAP  
Bob Whelove, OSC  
John Jent, USACE Louisville  
David Seely, USEPA Region V  
Steve Selecman, SAIC  
Kevin Jago, SAIC  
Kathy Dominic, SAIC



MARR'S COPY  
1112



Ohio Environmental Protection Agency  
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Please Deliver These Faxed Copies To:

Name: Dr. Srinu Neralla  
Company: MKM Engineers  
FAX No.: 330-358-2924  
Date: 2/22/00  
Pages: 5 (Including Cover Sheet)



DIVISION OF SOLID AND  
INFECTIOUS WASTE MANAGEMENT

Angel Arroyo-Rodriguez  
Infectious Waste/Composting Specialist

Sender: \_\_\_\_\_

Phone: \_\_\_\_\_

(614) 728-5336 Phone

(614) 728-5315 Fax

angel-arroyo-rodriguez@epa.state.oh.us

http://www.epa.state.oh.us/dsiwm/dsiwmain.html

P.O. Box 1049

Columbus, Ohio

43216-1049

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you do not receive all of the pages and/or any problems arise during transmission, please call 614-644-2621 for assistance



State of Ohio Environmental Protection Agency

## STREET ADDRESS:

1800 WaterMark Drive  
Columbus, OH 43215-1099

TELE: (614) 644-3020 FAX: (614) 644-2329

## MAILING ADDRESS:

P.O. Box 1049  
Columbus, OH 43216-1049

Mr. Ernie Neal  
Neal Environmental Services, LLC  
172 East Street, Suite 312  
Columbus, Ohio 43215-4321

Dear Mr. Neal:

This letter is in response to the *Environmental Permitting Position Paper on the Bioremediation of Explosive-Contaminated Soils* submitted to the Ohio Environmental Protection Agency, Division of Solid and Infectious Waste Management (DSIWM), during our meeting on June 28, 2000. In addition, the meeting was attended by Dr. Srinu Neralla, Ms. Alison Shockley, and Mr. Jarnal Singh (via conference call). In the following paragraphs, I would like to reiterate and/or further clarify the topics discussed during our meeting.

In accordance with DSIWM's Fact Sheet Number 0610, which serves as policy for managing contaminated soils, if the bioremediation project is a voluntary action, and the soil is not a hazardous nor a radioactive waste, and is not contaminated with PCB's, then the soil is considered not to be a waste. The position paper explains that most of the soil is expected to be non-hazardous (less than ten percent TNT or ammonium nitrate), and that soil deemed hazardous (more than ten percent TNT or ammonium nitrate) will be mixed to achieve non-hazardous levels for these contaminants. DSIWM concurs with the Division of Hazardous Waste Management that the soil conditions and the treatment/handling plan explained in the position paper satisfies the requirements of the policy and the soil can be considered a non-waste.

Regarding the specific composting activities described in the referenced proposal document entitled *Work Plan & Sampling & Analysis Plan Addendum for Site Investigation and Bioremediation Pilot Study for Explosives - Ravenna Army Ammunition Plant, Ravenna, Ohio*, DSIWM has the following recommendations:

Section 4.2.1.1 specifies that the compost recipe will consist of 15% potatoes. DSIWM advises against using potatoes as a carbon source because it may attract vectors and wild animals.



Mr. Ernie Neal  
Neal Environmental Services, LLC  
Page 2

Section 4.3.1.1 describes that the windrows will be constructed over a sheet of 40 mil plastic liner. DSIWM strongly advises against the use of the plastic liner. The additional protection provided by the liner is negligible given that the building has a concrete floor and its design allows for collection of leachates. Given that the building has a roof and rainfall will not reach the windrows, very little leachate production is expected. It is recommended that any leachate produced be collected and re-introduced into the windrows, or absorbed with bulking agents and then incorporated into the windrows. Please be aware that any pieces of plastic liner left in the compost are considered foreign matter, i.e. non-compostable solid waste. Compost containing foreign matter must either be screened to remove foreign matter contaminants prior to use or be disposed as solid waste in a licensed landfill.

In addition, it is strongly recommended that the compost is tested for fecal coliforms and *Salmonella*, since chicken or other animal manures will be used in the recipe. Please find below the recommended testing analysis and sample collection methodology.

Parameter	Microbial count	Preparation method	Analytical method
Fecal coliforms	Preparation and analytical methods with a limit of less than 1000 <u>most probable number</u> per gram of total solids (dry weight)(1000 <u>mpn/gts</u> ).	Standard methods part 9221e or part 9222d	Standard methods 9260d and either 9222d or 9221e
<i>Salmonella</i> spp.	Preparation and analytical methods with a limit of less than 3 <u>most probable number</u> per 4 grams of total solids (3 <u>mpn/4gts</u> )	Standard method part 9260d	

#### Frequency of sampling and sample collection methodology.

Sample collection and preservation shall ensure valid and representative results.

For sampling from a windrow:

1. Use Table A below to determine the number of grab samples required as a multiple of the cured compost volume in the windrow;

Mr. Ernie Neal  
 Neal Environmental Services, LLC  
 Page 3

**TABLE A**

<b>CURED COMPOST VOLUME</b>				
Cubic yards	$\leq 10,000$	10,001-20,000	20,001-30,000	30,001-40,000*
Number of sample locations (cross-sections)	3	6	9	12
Number of grab samples per location	3	3	3	3
Total number of samples in composite	9	18	27	36
Total number of samples from composite to be tested	1	2	3	4

\* greater volumes shall be sampled at three (3) additional locations for each increment of ten thousand (10,000) cubic yards.

2. Choose three locations along the horizontal length of the windrow for each ten thousand (10,000) cubic yards of cured compost that will divide the windrow in equal quarter sections. These three locations are the sampling cross-sections;
3. Use a clean container to extract a minimum of three grab samples of five hundred cubic centimeters each, at each cross-section;
4. Determine sampling locations along the vertical height, from the ground or composting pad to the top of the windrow, randomly at each cross-section;
5. Extract the grab samples from each cross-section at depths measured from the windrow's outer surface equal to:
  - (a) one-half the horizontal width of the windrow;
  - (b) one-fourth the horizontal width of windrow; and
  - (c) one-fourth the horizontal width of windrow on the opposite side of the cross-section where the first two grab samples were collected.



Neal Environmental Services, LLC

Page 4

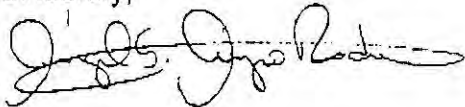
6. Combine a total of nine grab samples per ten thousand (10,000) cubic yards of cured compost, in a clean container, to form one composite sample;
7. Mix the composite sample thoroughly to ensure a valid and representative sample;

[Comment: a "clean container" includes, but is not limited to, a suitable size plastic or paper bag or bucket that contains no other material.]

8. Extract a sub-sample of a minimum of two thousand cubic centimeters in volume from the composite sample and place in an adequately sized, appropriate, clean container, and seal and label to reflect the collection date and time ; and
9. Implement any additional requirements for sampling consistent with microbial testing.

If I may be of further assistance or if you wish to discuss our comments, please contact me by telephone at (614) 728-5336 or by e-mail at [angel.arroyo-rodriguez@epa.state.oh.us](mailto:angel.arroyo-rodriguez@epa.state.oh.us)

Sincerely,



Angel S. Arroyo-Rodríguez  
Composting and Infectious Waste Specialist  
Division of Solid and Infectious Waste Management

ASAR/dk

cc: Srimi Neralla, MKM Engineers, Inc.  
Eileen Mohr, NEDO-DERR  
Jarnal Singh, NEDO-DSIWM



State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

September 22, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**LOAD LINE 12** PHASE II WORKPLAN

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the two-volume document entitled: "Final, Sampling and Analysis Plan, Addendum No. 1 for the Phase II Remedial Investigation of Load Line 12 at the Ravenna Army Ammunition Plant, Ravenna, Ohio"; and, "Final, Site Safety and Health Plan, Addendum No. 1 for the Phase II Remedial Investigation of Load Line 12 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." These documents, dated September 2000 and received at the Ravenna Army Ammunition Plant (RVAAP) on September 21, 2000, were generated for the U.S. Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC) under contract number DACA62-00-D-0001, delivery order number CY06.

The final documents were reviewed with respect to the draft documents, the Response to Comments (RTC) matrix and the comment resolution conference call held on September 20, 2000.

Ohio EPA, NEDO, DERR, has the following comments on the final Load Line 12 workplan:

1. Due to the expedited time frames detailed in the cover letter and in the project schedule, the comments in this letter and in correspondence dated August 22, 2000 solely reflect the review of Ohio EPA, NEDO, DERR, personnel, i.e., the documents were not reviewed by Ohio EPA risk assessment personnel. Ohio EPA risk assessment personnel will be reviewing the draft Phase II report, and the Agency reserves the right to question the risk assessment assumptions, methodologies, exposure factors, etc., at that time.
2. As indicated during the September 20, 2000 conference call, the 35 mg/kg criterion for chromium will be researched further. However, this does not have an impact upon the work proposed for Load Line 12. (Page 3-5)





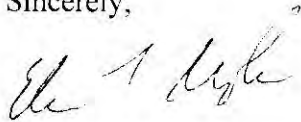
MR. MARK PATTERSON  
SEPTEMBER 22, 2000  
PAGE 2

3. On Figure 3-1 (page 3-23), based upon the RTC document, shouldn't dermal contact for surface water and sediments for aquatic receptors be considered a completed pathway?

Revisions to the final workplan do not need to be made based upon this comment letter. Mobilization to the field may commence as planned on September 25, 2000.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Todd Fisher, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Brian Tucker, CO, DERR  
Bonnie Buthker, OFFO, SWDO  
LTC Tom Tadsen, RVAAP  
John Cicero, RVAAP  
David Seely, USEPA Region V  
Steve Selecman, SAIC  
Kevin Jago, SAIC  
Bob Whelove, OSC

RVAAP-37



State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

June 13, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
OH5-210-020-736  
PORTAGE/TRUMBULL COUNTIES  
DRAFT PESTICIDE BUILDING CLOSURE  
REPORT

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

Dear Mr. Patterson:

On May 2, 2000, the Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the document entitled: "Draft, Closure Activities Report, **Pesticide Building T-4452**, Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated May 2000, was prepared by the contractor for the U.S. Army Corps of Engineers (USACE) - Louisville District, under contract number DACA27-97-D-0005, for the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio.

Ohio EPA, Division of Hazardous Waste Management (DHWM), and Division of Emergency and Remedial Response (DERR) have conducted a review of the above referenced draft closure plan, and outlined the deficiencies outlined on the attached document.

Please provide a revised closure plan addressing all areas indicated in the deficiency comments. Ohio Administrative Code (OAC) Rule(s) 3745-66-12 requires that such a revised closure plan be submitted to the director of Ohio EPA for approval within thirty (30) days of the receipt of this letter.

DHWM requests that the revised closure plan shall be prepared in accordance with the following editorial protocol or convention:

1. Old Language is over-struck, but not obliterated.
2. New Language is capitalized.
3. Page headers should indicate date of submission.
4. If significant changes are necessary, pages should be re-numbered, table of contents revised, and complete sections provided as required.





RAVENNA ARMY AMMUNITION PLANT

JUNE 13, 2000


PAGE - 2 -

The revised closure plan should be submitted to: Ohio Environmental Protection Agency, Division of Hazardous Waste Management, Attn: Tom Crepeau, Manager, Data Management Section, P.O. Box 1049, Columbus, Ohio 43216-1049. A copy should also be sent to: Gregory Orr (DHWM) and Eileen Mohr (DERR), Ohio EPA, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087.

If you wish to arrange a meeting to discuss your responses to this Notice of Deficiency, please contact Gregory Orr at (330) 963-1189, or Eileen Mohr at (330) 963-1221.

Ohio EPA, DHWM, strongly encourages you to consider pollution prevention options for any processes at your facility that generate waste. While implementation of pollution prevention options is not required by Ohio laws and regulations, the application of waste minimization practices may help reduce the expense of remedial activities. Additionally, implementation of pollution prevention options may prevent the creation of new units and as a result eliminate the requirement to submit a closure plan in the future. For assistance in identifying and implementing pollution prevention options, contact Gregory Orr.

Sincerely,



Gregory Orr  
Environmental Specialist  
Division of Hazardous Waste Management

GO:ddb

cc: Natalie Oryshkewych, DHWM, NEDO  
Eileen Mohr, DHWM, NEDO  
Bob Princic, DERR, NEDO  
Todd Fisher, DERR, NEDO  
Greg Orr, DHWM, NEDO  
Jarnal Singh, DSIWM, NEDO  
Bonnie Buthker, OFFO, SWDO  
Bill Ingold, IOC  
John Cicero, RVAAP  
LTC Tadsen, RVAAP  
John Jent, USACE  
David Seely, USEPA, Region V

## **ATTACHMENT**

1. The text should be revised on page 2 to incorporate the correct spelling of "fuzes."
2. The text on page 2 should be revised to accurately reflect the current status of the Ravenna Army Ammunition Plant (RVAAP).
3. Please provide confirmation as to whether or not pesticides were also mixed outside of Building T-4452. (Page 2)
4. Please provide an explanation in the text on page 3 as to what constitutes the "approved site clearance performance standards", and the applicability to this project.
5. The Ohio EPA has consistently utilized on the various RVAAP projects, one-tenth the Region 9 Preliminary Remediation Goals (PRGs) solely as a screening tool to determine whether or not a potential contaminant of concern is carried into the risk assessment process. As such, it is unclear as to why the Region 9 PRGs for tap water were used for comparison to the rain water that collected in the open excavation. (Pages 6-7 and Table 3-4). In addition, on Table 3-4, it should be clearly noted that Remedial Goal Options (RGOs) for the RVAAP installation have not yet been agreed-upon.
6. Please put the sample identifications on the following charts: Table 3-2 and Appendix A.
7. Provide a list of laboratory qualifiers for the following charts: Table 3-4, Appendix A, Appendix D, and Appendix F.
8. Provide an updated Figure 2-2 that identifies the current 51 Areas of Concern (AOCs) at the RVAAP installation.
9. Proper protocol should be followed when making corrections to the chain of custody (COC) forms. That is, one line should be drawn through the item to be corrected, and initialed by the person making the correction. This comment is applicable to COC numbers: 16080, 16081, 38926, and 38526.
10. Please provide an explanation for the consistently elevated detection limits for two of the herbicides (MCPA and MCPP) reported in Appendix F.
11. In Appendix G (page 7), in section 6.2.1, please confirm that the text should read that the Inductively Coupled Plasma (ICP) instrument was properly calibrated. (A portion of the sentence in the text is missing.)
12. Provide an explanation for the 90 ug/kg of methylene chloride that was reported to exist in the backfill material. Based upon the other analytical results for the backfill material, it is assumed that the methylene chloride is a laboratory artifact.



The soil under and in the vicinity of the pesticide storage and mixing building was excavated until the pesticide and herbicide laboratory analyses indicated that these constituents were non-detect. The excavation was subsequently back-filled with clean fill material obtained from an off-site source. In addition, all of the demolition debris (hazardous and non-hazardous), excavated soil (non-hazardous) and concrete (non-hazardous) were disposed of in accordance with all applicable State and Federal rules, laws and regulations, as evidenced by the hazardous waste manifests (Appendix H) and non-hazardous waste bills of lading (Appendix I). As such, subsequent to the resolution of the above-referenced comments, and the submission of the applicable replacement pages for the report, the Ohio EPA will consider the Pesticide Building T-4452 to be properly closed.



State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

September 19, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
OH5-210-020-736  
PORTAGE/TRUMBULL COUNTIES  
FINAL CLOSURE REPORT  
PESTICIDE BUILDING T-4452

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

TO	9/22/00
<input checked="" type="checkbox"/>	CR-COR
<input checked="" type="checkbox"/>	ENV
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	CONTRACTOR
<input type="checkbox"/>	RETURN FOR FILE

Dear Mr. Patterson:

On August 17, 2000, the Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the document entitled: "Final Closure Activities Report for Pesticide **Building T-4452**, Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated August 2000, was prepared by the contractor for the U.S. Army Corps of Engineers (USACE) - Louisville District, under contract number DACA27-97-D-0005, for the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio.

Building T-4452 housed the pest control shop from the early 1970's until 1993. The plan describes the closure action of this unit, which included removal/decontamination of building contents, asbestos removal, demolition, excavation, and disposal of waste soils and construction debris.

The plan appears to meet with the performance standards of OAC rule 3745-66-11 & 14. Since "generator" closure requires no approval from the OEPA, no approval letter will be issued. However, RVAAP shall keep all closure documentation on-site which meets the generator closure performance standards of OAC rule 3745-66-11 & 14 for this unit, until closure of the facility.

In the future, plan submittals should be addressed to the Ohio EPA. The Agency should not be carbon copied on submittals that RVAAP needs to have reviewed.

Should you have any questions or concerns, please do not hesitate to contact me at (330) 963-1189.

Sincerely,

Gregory Orr  
Environmental Specialist  
Division of Hazardous Waste Management

GO:ddw

cc: Natalie Oryshkewych, DHWM, NEDO  
Bob Princic, DERR, NEDO  
Greg Orr, NEDO DHWM  
Bill Ingold, IOC  
LTC Tadsen, RVAAP  
David Seely, USEPA Region V

Eileen Mohr, DHWM, NEDO  
Todd Fisher, DERR, NEDO  
Jarnal Singh, DSIWM, NEDO  
John Cicero, RVAAP  
John Jent, USACE  
John Palmer, DHWM, NEDO







State of Ohio Environmental Protection Agency

**Northeast District Office**

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

**August 15, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**NACA TEST AREA PHASE I**  
DRAFT RI REPORT

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Draft, Phase I Remedial Investigation Report for the NACA Test Area at the Ravenna Army Ammunition Plant, Ravenna, Ohio." The document, dated June 2000 and received at Ohio EPA, NEDO, on July 3, 2000, was generated for the U.S. Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC), under contract number DACA62-94-D-0029, delivery order 0077.

The comments in this correspondence solely reflect the review of Ohio EPA, NEDO, DERR. Comments from Ohio EPA, Central Office (CO), DERR, Ecological Assessment Unit (EAU), will be submitted to your attention under separate cover as soon as they are received by this office.

**General Comments:**

1. Please refer to Demolition Area # 1 Ohio EPA comments (August 10, 2000 letter) regarding nature and extent of contamination in surface water and sediment.
2. Any changes made to the body of the text should also be reflected in the Executive Summary.

**Specific Comments:**

3. Page 1-9, lines 10-11, states that: "No groundwater sampling has been conducted in the past," however, the text on page 1-5, lines 23-24, states that Geoprobe techniques were employed to obtain one groundwater screening sample for qualitative evaluation of groundwater quality conditions. Please remove the statement, "No groundwater sampling has been conducted in the past" from the text on page 1-9.



MR. MARK PATTERSON

AUGUST 15, 2000

PAGE 2

4. The Executive Summary, page xvii, lines 10-12 (as well as page xxi, lines 46-47 and page 6-8, lines 3-4), also states that shallow groundwater screening data, collected in the vicinity of station NTA-038, shows no impact from operations at the former NACA Test Area. Ohio EPA does not make conclusions regarding impact of groundwater solely on groundwater screening results. Ohio EPA treats groundwater screening results in the following fashion: if the concentration of a particular contaminant is reported as non-detect (ND), that is not conclusive proof that no contamination exists; and any concentration of a particular contaminant that is reported from a screening sample is considered to represent a minimum concentration.
5. Please remove the statements on: Page xvii, lines 10-12; page xxi, lines 46-47; and page 6-8, lines 3-4; from the text, given that only one screening sample of groundwater has been obtained from this AOC. If it is not removed, the text should be modified to indicate that there is no clear evidence to indicate that leaching to groundwater has not occurred.
6. Page 2-6, Section 2.3.2.1, line 23-25: The text states that "soils of the Sebring series silt loams are dominant." This statement is incorrect. According to the Portage County Soil Survey (USDA, 1978), the predominant soil is of the Mahoning Series. Please correct the text and add: "The Mahoning series consists of deep, somewhat poorly drained, nearly level to gently sloping soils that formed in silty clay loam or clay loam glacial till."
7. According to the Sampling and Analysis Plan, Addendum No. 1 (October 1999), Section 3.1, page 3-1, data generated from the concurrent Phase I RI at the adjacent Demolition Area 1 will be used to help define the nature and extent of contamination, and to achieve other primary project objectives. Have data gathered from Demolition Area 1 been used to formulate Conclusions and Recommendations in Section 6.0 of this report? Why was mention of Demolition Area # 1 omitted from this section?
8. Page 6-9, lines 10-11, and page xxiii, lines 4-5: Please include purging and sampling of production well prior to its abandonment. Water sample should be submitted to laboratory for VOC, SVOC, TAL metals, cyanide, explosives, and propellant analyses.
9. In Appendix D (page D-10), please remove the reference to toluene as being a common laboratory artifact.



MR. MARK PATTERSON

AUGUST 15, 2000

PAGE 3

10. In Appendix D (Tables), please provide a key at the end of each table that indicates what the various abbreviations represent.
11. In Appendix E, please provide the project chain of custody (COC) forms.
12. Please refer to a previous email, dated December 10, 1999, from Ohio EPA to SAIC that specifically responds to the investigation-derived waste (IDW) report (Appendix H). The Agency had concurred with the conclusions of the characterization report and had no objection to the disposal of the IDW, as proposed in the plan.

If you have any questions concerning this correspondence, please do not hesitate to contact me at (330) 963-1148.

Sincerely,



Todd R. Fisher

Project Coordinator

Division of Emergency and Remedial Response

[Todd.Fisher@epa.state.oh.us](mailto:Todd.Fisher@epa.state.oh.us)

TRF/kss

cc: Bob Princic, NEDO, DERR  
Eileen Mohr, NEDO, DERR  
Diane Kurlich, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
Brian Tucker, CO, DERR  
LTC Tom Tadsen, RVAAP, Ohio Army National Guard  
John Cicero, RVAAP  
Bob Whelove, OSC  
John Jent, USACE, Louisville  
David Seely, USEPA Region V  
Steve Selecmann, SAIC, Oak Ridge  
Kevin Jago, SAIC, Oak Ridge  
Kathy Dominic, SAIC, Oak Ridge

**From:** Eileen Mohr  
**To:** Brancato, David J LRL02; Brian Tucker; Jent, John P LRL02; 'Khodi G. Irani'; 'Mark Patterson'; 'Robert Whelove'; Zorko, Paul L LRL02  
**Date:** 1/21/00 12:56PM  
**Subject:** Re: GRID/Artillery Primer Line # 11

Hi David

Thanks for following up on this. Quick question: how were the dimensions of the short and long axes determined? Thanks!  
Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Brancato, David J LRL02" <David.J.Brancato@lrl02.usace.army.mil> 01/21/00 11:38AM >>>  
As promised, please find attached my GRID calculations for subject area.

<<GRID SPACING CALCULATIONS.doc>>

Dr. Dave

Robert mandated 1/21/00 for  
D. Brancato indicated that the  
long & short axes were determined based on  
professional judgment, and how he envisions a  
hot spot to occur -- specific to the chemical physical properties  
of the tanks & size & booster charges. As these are heterogeneous  
in soil, you want an area that takes these into  
account. The spec would allow for a 15% conf. interval  
level in finding a hot spot.  
S. High 1/21/00



**Mail Envelope Properties** (38889DC3.CE7 : 5 : 52863)

**Subject:** Re: GRID/Artillery Primer Line # 11  
**Creation Date:** 1/21/00 12:56PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
epa.state.oh.us DERR.Central-Office Btucker (Brian Tucker)	Delivered	01/21/00 12:56PM
epa.state.oh.us NEDO.Central-Office Emohr BC (Eileen Mohr)	Delivered Opened	01/21/00 12:56PM 01/21/00 01:04PM
flash.net iranik ('Khodi G. Irani')	Transferred	01/21/00 12:56PM
ioc.army.mil pattersonm ('Mark Patterson') whelover ('Robert Whelove')	Transferred	01/21/00 12:56PM
lrl02.usace.army.mil David.J.Brancato (Brancato, David J LRL02) John.P.Jent (Jent, John P LRL02) Paul.L.Zorko (Zorko, Paul L LRL02)	Transferred	01/21/00 12:56PM
<b>Post Office</b> DERR.Central-Office NEDO.Central-Office	<b>Delivered</b> 01/21/00 12:56PM 01/21/00 12:56PM	<b>Route</b> epa.state.oh.us epa.state.oh.us flash.net ioc.army.mil lrl02.usace.army.mil

Files	Size	Date & Time
MESSAGE	1675	01/21/00 12:56PM

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<b>Concealed Subject:</b>	No
<b>Security:</b>	Standard
<b>To Be Delivered:</b>	Immediate
<b>Status Tracking:</b>	Delivered & Opened



**From:** Eileen Mohr  
**To:** Patterson, Mark  
**Date:** 2/29/00 11:15AM  
**Subject:** RE: Perchlorate Sampling at Load Line 11

That sounds great to me Mark!!

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Patterson, Mark" <PattersonM@ioc.army.mil> 02/29/00 08:09AM >>>  
Eileen,

I think there will be some extra money on Load Line 11 work; i.e. the proposal will not take the entire 2000 obligation. I think we should plan on taking a few perchlorate samples even if Ziggy does not feel it is necessary. I think it would show to the public our intention to be thorough and rule out all possible contaminants. If we got nothing, then we wouldn't test any further unless there was information to suggest the presence of perchlorate at other sites. What do you think?

Mark

-----Original Message-----

**From:** Eileen Mohr [mailto:[eileen.mohr@epa.state.oh.us](mailto:eileen.mohr@epa.state.oh.us)]  
**Sent:** Friday, February 18, 2000 3:06 PM  
**To:** [john.p.jent@lrl02.usace.army.mil](mailto:john.p.jent@lrl02.usace.army.mil); [MKMCERCLA@yahoo.com](mailto:MKMCERCLA@yahoo.com)  
**Cc:** Bob Prinic; Bonnie Buthker; [PattersonM@ioc.army.mil](mailto:PattersonM@ioc.army.mil)  
**Subject:** Perchlorate Sampling at Load Line 11

Rick -

On 02/15/00 you contacted me regarding the issue of sampling for perchlorate at Load Line 11. The issue arose due to the necessity for MKM to prepare Statements of Work (SOWs) for the proposed Remedial Investigation (RI) and Interim Removal Action (IRA). These SOWs would include estimates for numbers and types of samples as well as the constituents for which each sample would be analyzed.

In an email dated 01/26/00 from Francis (Ziggy) Zigmund (USACE), he indicated that the specific compound that was discussed with respect to Load Line 11 was potassium chlorate. Ziggy's email indicated that there may be a possible equilibrium reaction in aqueous media, where the chlorate ion might be converted to the perchlorate ion. Ziggy indicated that he would investigate this possible equilibrium reaction and report back to us with the findings. At this point in time, I have heard nothing further.

I do know that perchlorate is being sampled for at another Ohio federal facility - the Scioto Ordnance Plant. I do not have any details regarding the methodology utilized, nor do I have any information on the analytical results.

At this point in time, I think it would be premature to summarily dismiss perchlorate as a potential constituent to be analyzed for at Load Line 11. I would recommend that we wait until we hear from Ziggy on this issue and/or MKM could independently research this topic. After reviewing the pertinent information, the RVAAP environmental team would be in a better position to evaluate whether or not perchlorate should be analyzed as a potential constituent of concern (PCOC) at Load Line 11.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: [Eileen.Mohr@epa.state.oh.us](mailto:Eileen.Mohr@epa.state.oh.us)



I presently have a method for doing higher concentrations of perchlorates, chlorates, chlorites, hypochlorites and chlorides via Ion Chromatography, which can be applied to soil and water samples.

More to come.

Francis (Ziggy) Zigmund  
Chemist, USACE

-----Original Message-----

From: Jent, John P LRL02  
Sent: Wednesday, January 26, 2000 6:53 AM  
To: 'Mark Patterson'; 'Bob Whelove'; Brancato, David J LRL02; Ferguson, Elizabeth A LRL02; Mansy, Samir A LRL02; Karem, Christopher R LRL02; Zigmund, Francis NWK  
Cc: Jasper, Kevin L LRL02  
Subject: FW: Perchlorate Issues

To All,

Please check into the need and ability to start testing for this constituent.

JJ

-----Original Message-----

From: Eileen Mohr [mailto:eileen.mohr@epa.state.oh.us]  
Sent: Tuesday, January 25, 2000 1:23 PM  
To: Bonnie Buthker; Graham Mitchell  
Cc: Bob Prinic; Brian Tucker; Laurie Moore; Nancy Zikmanis; Rod Beals; Todd Fisher  
Subject: Perchlorate Issues

Bonnie and Graham

When I went to Reno in November for the IRP meeting, the Army passed out a memorandum for distribution regarding interim guidance for perchlorate sampling. Recently, this topic was briefly discussed during scoping meetings for Load Line 11 at the RVAAP.

USEPA has placed perchlorate on the Contaminant Candidate List (CCL) as a compound needing more research to determine if it requires regulation. Several states, i.e. CA, TX, and NV have set provisional action levels for perchlorate and have requested that DOD installations sample groundwater for this constituent.

Perchlorate is a human-made salt used in rocket fuel, munitions, and fireworks. Manufacturers of perchlorate have estimated that 90% of the substance is used in solid rocket fuel. All branches of the services have

been involved in the use of ammonium perchlorate (AP), so there is the potential for contamination at number of installations and FUDs.

Perchlorate is soluble and can last for decades in the environment, and has been detected in groundwater wells/surface water in 14 states. Currently there isn't a MCL for perchlorate, and there is some debate regarding the accuracy of the various lab methods that exist. Basic information from a conference held last Fall indicates that no data exists regarding chronic effects of ammonium perchlorate on terrestrial or aquatic plants; and limited effects for potassium perchlorate were noted (two studies on the thyroids of lampreys and one study on the growth and productivity of soybeans).

Several questions:

1. is this a constituent of concern at other Ohio federal facilities?
2. if so, have we required sampling and in what media using what lab methodology(ies)?
3. are there other states in Region V that you are aware of that have dealt with this issue? Or ATSWMO?

Right now we are in the beginning phases of looking at this issue. Any guidance or information would be greatly appreciated!

As always, thanks!

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

CC: "Jasper, Kevin L LRL02" <Kevin.L.Jasper@lrl02.usace.army.mil>, "Callahan, Rick"  
<MKMCERCLA@yahoo.com>





State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

September 18, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
WORK PLAN, SAMPLING AND ANALYSIS  
PLAN, AND SAFETY AND HEALTH PLAN  
**FOR LL-11 INTERIM REMOVAL ACTION**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the following documents entitled: "Draft, Work Plan for the Interim Removal Action at **Load Line 11 (AOC44)**"; "Draft, Sampling and Analysis Plan Addendum for the Interim Removal Action at Load Line 11 (AOC 44)"; and "Draft, Site Specific Safety and Health Plan for the Interim Removal Action at Load Line 11 (AOC 44)." These documents, dated August 2000 and received at Ohio EPA on August 14, 2000, were prepared by MKM Engineers, Inc. for the U.S. Army Corps of Engineers (USACE)-Louisville District under contract number DAAA 09-98-G-001.

Ohio EPA, NEDO, DERR, has the following comments on draft LL-11 documents referenced above:

**Sampling and Analysis Plan:**

1. Page 1-2, 1<sup>st</sup> paragraph, 2<sup>nd</sup> and 3<sup>rd</sup> sentences: Please combine both sentences into one sentence that reads, "The facility is jointly operated by the Army Operations Support Command (OSC) and the Ohio Army National Guard Bureau."
2. Page 1-2, Section 1.3, 1<sup>st</sup> paragraph, last sentence: Please replace "T-5301" with "LL-11."
3. Figure 1.3: Please locate building AP-2 on this figure and provide a label. Also, please remove the circled label "AP-11" towards the bottom of the figure.
4. 3-2, Section 3.1.2, 2<sup>nd</sup> sentence: Please replace the word "blanked" with the word "blocked."
5. Page 3-3, 2<sup>nd</sup> paragraph: Please add text to this section stating that 10% of the samples collected from the midpoint of the three samples will be analyzed for propellants.
6. A reference to the Facility Wide Sampling and Analyses Plan should be made in Sections 3.1.4, 3.1.5, and 3.1.6.
7. Figure 3.1: Please locate building AP-2 on this figure and provide a label. Also, please remove the circled label "AP-11" towards the bottom of the figure.



8. Page 4-2, Section 4.3: Please provide an explanation as to why the hydrochloric acid rinse (as specified in the Facility Wide SAP) will be replaced with a nitric acid rinse.
9. Page 5-1, Section 5.1, 1<sup>st</sup> sentence: Please replace the text "Section 6.0" with "Section 5.1."
10. Page 7-1, Section 7.1: A reference should be made to Section 7.1 of the Facility Wide SAP for reporting limits and meeting project quantitation levels.
11. Page 7-2, Section 7.2, 1<sup>st</sup> sentence: Please replace the text "Section 6.0" with "Section 7.2."

**Site-Specific Safety and Health Plan:**

12. Page iv, 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence: Please add the text, "Site-Specific Safety and Health Plan" before the text "SSHP" and put "SSHP" in parentheses.
13. Page 1-2, Section 1.2: Please add the following reference, "Facility-Wide Safety and Health Plan, July 2000, RVAAP.
14. Page 2-1, Section 2.0 Background: Please change all occurrences of the word "Fuzzes" to "Fuzes" throughout the entire document.
15. Page 5-2, Table 5.1: A reference to fungal spores was made on Page 5-1, Section 5.1 but was not included in this table. Please include fungal spores in the table.
16. Pages 5-5 and 5-6, Table 5.2: Biological hazards were not identified in this table. Please modify this table to include biological hazards.
17. Appendix B, SHP 06: A reference should be made to the following biological hazards (and resulting conditions) which may be encountered at the site: hystoplasmosis (from bird and animal droppings), West Nile virus (recently discovered in Lake County) (carried by American Crow, transmitted by mosquito), and Hunta virus (carried by white-footed mice and other rodents).

**Work Plan:**

18. Page 1-6, Figure 1-3: Figure 1-3 was not provided. Please remove this figure and delete its reference to, on Page 1-4 adjacent to RVAAP 47 (Building-5301) bulleted item.
19. Page 2-3, 2<sup>nd</sup> paragraph: Please change the "Table 1" to "Table 2-1" in the text.
20. Page 2-3, Section 2.1.2, 3<sup>rd</sup> sentence: Please replace the word "blanked" with the word "blocked".
21. Pages 2-3 and 2-4, Section 2.1.3 Excavation: Please make a reference to the Facility-Wide Rule 13 Authorization.

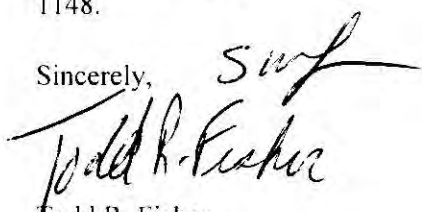


MR. MARK PATTERSON  
SEPTEMBER 18, 2000  
PAGE 3

22. Figure 2-1: Please locate building AP-2 on this figure and provide a label. Also, please remove the circled label "AP-11" towards the bottom of the figure.
23. Page 2-9, Table 2-1: There appears to be a discrepancy on the number of sewer system confirmation samples to be collected. On page 2-7, the text states that 8 sewer system confirmation samples will be collected, whereas on Table 2-1, 30 sewer system confirmation samples will be collected. Please clarify the number of sewer system confirmation samples to be collected and correct the text and tables accordingly.
24. Page 3-5, Section 3.5 Explosive Field Screening, last sentence: Please change "Appendix C" to "Appendix A."
25. Page 4-2, Section 4.10 Wastewater: Please add sentence, "Direct discharge to any surface water body will require prior approval from Ohio EPA's Division of Surface Water (DSW)." Any unauthorized releases to surface water will need to be reported to Ohio EPA / DSW.
26. Page 4-3, Section 4.11 Protection of Air Resources, 2<sup>nd</sup> sentence: Please add the words "State, and Local" between the words "Federal" and "emission."
27. Cleanup level for explosives is non-detect. Please make the appropriate changes to the text to reflect this.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1148.

Sincerely,



Todd R. Fisher  
Project Coordinator  
Division of Emergency and Remedial Response  
[Todd.Fisher@epa.state.oh.us](mailto:Todd.Fisher@epa.state.oh.us)

TRF/kss

cc: Bob Princic, NEDO, DERR  
John Jent, USACE, Louisville  
Rick Callahan, MKM  
Bonnie Buthker, OFFO, SWDO  
LTC Tom Tadsen, RVAAP

John Cicero, RVAAP  
David Seely, U.S. EPA Region 5  
Stan Levenger, MKM  
Brian Tucker, CO, DERR  
Eileen Mohr, NEDO, DERR



State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

## FAX Transmittal Sheet

To: MARK PATTERSON  
Fax Number: (330) 358-7314  
Subject: LL-11 RI WP/SAP/ASP  
Comments

From:

T. Fisher

Date:

09/22/2000

Pages to Follow:

7

(Include Cover Sheet)

If you have any questions, call (330) 963-1200, ask for sender

Return Fax number (330)487-0769





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

September 25, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES WORK  
PLAN, SAMPLING AND ANALYSIS PLAN,  
AND SAFETY AND HEALTH PLAN FOR  
**LL-11 REMEDIAL INVESTIGATION**

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

Dear Mr. Patterson:

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Ohio EPA, NEDO, DERR, has the following comments on draft LL-11 documents referenced above:

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1. Page 1-1, Section 1.2, Facility Background, 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence: The Industrial Operations Command (IOC) is now called Operations Support Command (OSC). Please correct the text in this Section, and throughout the document, to reflect this name change.
2. Page 1-2, 1<sup>st</sup> paragraph, 2<sup>nd</sup> and 3<sup>rd</sup> sentences: Please combine both sentences into one sentence that reads, "The facility is jointly operated by the Army Operations Support Command (OSC) and the Ohio Army National Guard Bureau.
3. Figures 1.3 and 3.1: Please locate building AP-2 on this figure and provide a label. Also, please remove the circled label "AP-11" towards the bottom of the figure.
4. Page 3-1, Section 3.1.1, Soil Boring and Sampling, 1<sup>st</sup> paragraph, 4th sentence: The text states, "Auger size will be selected to both minimize the volume of drilling cuttings, yet still be of sufficient size to obtain sufficient soil volumes for laboratory analysis." It should also be noted that the borehole drilled must be of sufficient diameter to permit at least a two inch diameter annular space between the borehole and all sides of the well (centered screen and casing). Please make the appropriate changes to the text to reflect this.
5. Page 3-1, Section 3.1.1, Soil Boring and Sampling, 1<sup>st</sup> paragraph: Please indicate in this paragraph that two soil samples will be collected from each of the ten soil borings.



6. Page 3-2, Section 3.1.5, Sediment Sampling, 1<sup>st</sup> sentence: Please change the text to read “a total of **twenty-seven (27)** sediment samples will be collected.”
7. Page 3-2, Section 3.1.6, Shallow Soil Sampling: Please state in this section that **two (2)** samples from each of the 25 locations will be collected (50 total).
8. Page 3-3, Section 3.1.8, Sump Soil Sampling, 1<sup>st</sup> sentence: Please correct this sentence to indicate that **two (2)** soil samples from each of the five sump locations will be collected (ten total).
9. Page 3-4, Section 3.2, Data Quality Objectives, 6<sup>th</sup> bullet item: Please change “Collect 22 sediment samples” to “Collect 27 sediment samples” in the text.
10. Page 3-4, Section 3.2, Data Quality Objectives, 9<sup>th</sup> bullet item: Please change “Collect one soil sample at each of the five sump locations” to “Collect **two (2)** soil samples at each of the five sump locations” in the text.
11. Page 3-5, Section 3.3, Conceptual Site Model, Sediment: Please change “Samples will be collected from 22 locations” to “Samples will be collected from 27 locations” in the text.
12. Page 4-7, Section 4.6, Sediment Sampling, 1<sup>st</sup> paragraph, 1<sup>st</sup> sentence: Please correct the first sentence to read, “Sediment samples will be collected from twenty-seven (27) separate proposed locations within the drainage ways as shown in Figure 3.2”
13. Page 4-10, Section 4.9, Decontamination Procedures: Please provide an explanation as to why the hydrochloric acid rinse (as specified in the Facility Wide SAP) will be replaced with a nitric acid rinse.

**Site-Specific Safety and Health Plan:**

14. Page iv, 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence: Please add the text, “Site-Specific Safety and Health Plan” before the text “SSHP” and put “SSHP” in parentheses.
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18. Pages 5-5 and 5-6, Table 5.2: Biological hazards were not identified in this table. Please modify this table to include biological hazards.



19. Appendix B, SHP 06: A reference should be made to the following biological hazards (and resulting conditions) which may be encountered at the site: hystoplasmosis (from bird and animal droppings), West Nile virus (recently discovered in Lake County) (carried by American Crow, transmitted by mosquito), and Hanta virus (carried by white-footed mice and other rodents).

**Work Plan:**

20. Page 1-5, Section 1.1, 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence: The text states, "The CHPPM report identifies surface soil and sediments to be potential media for contaminant migration due to lack of any physical barriers/fence around the site." Please confirm that a fence does not exist around the perimeter of the site.
21. Figures 1-3 and 2-1: Please locate building AP-2 on this figure and provide a label. Also, please remove the circled label "AP-11" towards the bottom of the figure.
22. Page 2-4, Section 2.1.1, Soil Boring and Sampling, 1<sup>st</sup> paragraph: Please indicate in this paragraph that two soil samples will be collected from each of the ten soil borings.
23. Page 2-4, Section 2.1.1, Soil Boring and Sampling, 1<sup>st</sup> paragraph, 4th sentence: The text states, "Auger size will be selected to both minimize the volume of drilling cuttings, yet still be of sufficient size to obtain sufficient soil volumes for laboratory analysis." It should also be noted that the borehole drilled must be of sufficient diameter to permit at least a two inch diameter annular space between the borehole and all sides of the well (centered screen and casing). Please make the appropriate changes to the text to reflect this.
24. Page 2-5, Section 2.1.5, Sediment Sampling, 1<sup>st</sup> sentence: To be consistent with Table 1 on page 2-9, please change the text to read, "a total of **twenty-seven (27)** sediment samples will be collected."
25. Page 2-5, Section 2.1.6, Shallow Soil Sampling: Please state in this section that **two (2)** samples from each of the 25 locations will be collected (50 total).
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28. Page 2-10, Section 2.2, Data Quality Objectives, 9<sup>th</sup> bullet item: Please change "Collect one soil sample at each of the five sump locations" to "Collect **two (2)** soil samples at each of the five sump locations" in the text.

29. Page 3-7, Section 3.11, Risk Assessment: Please indicate in this section that the data gathered from the LL-11 Interim Removal Action (IRA) will be "folded" into the RI risk assessment.
30. Page 3-5, Section 3.5, Explosive Field Screening, last sentence: Please change "Appendix C" to "Appendix A."
31. Page 4-3, Section 4.10, Wastewater: Please add sentence, "Direct discharge to any surface water body will require prior approval from Ohio EPA's Division of Surface Water (DSW)." Any unauthorized releases to surface water will need to be reported to Ohio EPA / DSW.
32. Page 4-3, Section 4.11, Protection of Air Resources, 2<sup>nd</sup> sentence: Please add the words "State, and Local" between the words "Federal" and "emission."
33. Page 7-1, Data Review and Evaluation: Please add to this section the following data screens to identify what are the site related contaminants:
  - A detailed assessment of the quality of the RI analytical results will take place. Data that are rejected during the data quality assessment should not be evaluated further in the screening process.
  - Each chemical within each environmental medium (aggregate) will be evaluated to determine its frequency of detection. Chemicals that are never detected will be eliminated as site related contaminants. For sample aggregations with greater than 20 samples and a frequency of detection of less than 5%, a weight-of-evidence approach will be used to determine if the chemical is a site related contaminant. The magnitudes and locations (clustering) of the detected values will be evaluated. Additionally, the occurrence of the constituent in other environmental media will be considered as part of the weight of evidence. If the detected results for a chemical show no clustering, concentrations are not substantially elevated relative to the detection limit, and the constituent is not a site related contaminant in another aggregate, it will be considered spurious and the chemical will be eliminated as a site related contaminant.
  - For each inorganic constituent passing the frequency of detection screen, concentrations will be screened against available naturally occurring background levels. If the maximum concentration of a constituent exceeds the background value, the constituent will be considered a site related contaminant. If groundwater samples collected from wells installed into bedrock, the RVAAP background values for this groundwater zone will be employed for data screening. Note that in the event a constituent was never detected in the background data set, its background level is assigned a zero value. This process ensures that a particular chemical detected at Load Line 11 in a particular medium cannot be eliminated simply because the chemical was never detected in background. All detected organic



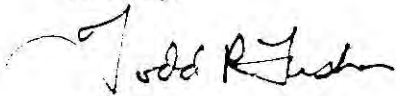
MR. MARK PATTERSON  
SEPTEMBER 25, 2000  
PAGE 5

compounds will be considered site related contaminants, evaluated as to their nature and extent, and screened using the risk evaluation.

- Chemicals that are considered as essential nutrients (calcium, chloride, iodine, iron, magnesium, potassium, phosphorous, and sodium) will not be evaluated as site related contaminants, unless grossly elevated relative to background. These chemicals are an integral part of the country's food supply, and are often added to foods as supplements; thus, these constituents are not generally addressed as contaminants. Data on essential elements, however, will be used to evaluate the subsurface geochemistry.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1148.

Sincerely,



Todd R. Fisher  
Project Coordinator  
Division of Emergency and Remedial Response

TRF/kss

cc: Bob Princic, NEDO, DERR  
John Cicero, RVAAP  
John Jent, USACE, Louisville  
David Seely, U.S. EPA Region 5  
Rick Callahan, MKM  
Stan Levenger, MKM  
Bonnie Buthker, OFFO, SWDO  
Brian Tucker, CO, DERR  
LTC Tom Tadsen, RVAAP  
Eileen Mohr, NEDO, DERR



State of Ohio Environmental Protection Agency

**Northeast District Office**

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

**September 25, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES WORK  
PLAN, SAMPLING AND ANALYSIS PLAN,  
AND SAFETY AND HEALTH PLAN FOR  
**LL-11 REMEDIAL INVESTIGATION**

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

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3. Figures 1.3 and 3.1: Please locate building AP-2 on this figure and provide a label. Also, please remove the circled label "AP-11" towards the bottom of the figure.
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5. Page 3-1, Section 3.1.1, Soil Boring and Sampling, 1<sup>st</sup> paragraph: Please indicate in this paragraph that two soil samples will be collected from each of the ten soil borings.



6. Page 3-2, Section 3.1.5, Sediment Sampling, 1<sup>st</sup> sentence: Please change the text to read “a total of **twenty-seven (27)** sediment samples will be collected.”
7. Page 3-2, Section 3.1.6, Shallow Soil Sampling: Please state in this section that **two (2)** samples from each of the 25 locations will be collected (50 total).
8. Page 3-3, Section 3.1.8, Sump Soil Sampling, 1<sup>st</sup> sentence: Please correct this sentence to indicate that **two (2)** soil samples from each of the five sump locations will be collected (ten total).
9. Page 3-4, Section 3.2, Data Quality Objectives, 6<sup>th</sup> bullet item: Please change “Collect 22 sediment samples” to “Collect 27 sediment samples” in the text.
10. Page 3-4, Section 3.2, Data Quality Objectives, 9<sup>th</sup> bullet item: Please change “Collect one soil sample at each of the five sump locations” to “Collect **two (2)** soil samples at each of the five sump locations” in the text.
11. Page 3-5, Section 3.3, Conceptual Site Model, Sediment: Please change “Samples will be collected from 22 locations” to “Samples will be collected from 27 locations” in the text.
12. Page 4-7, Section 4.6, Sediment Sampling, 1<sup>st</sup> paragraph, 1<sup>st</sup> sentence: Please correct the first sentence to read, “Sediment samples will be collected from twenty-seven (27) separate proposed locations within the drainage ways as shown in Figure 3.2”
13. Page 4-10, Section 4.9, Decontamination Procedures: Please provide an explanation as to why the hydrochloric acid rinse (as specified in the Facility Wide SAP) will be replaced with a nitric acid rinse.

**Site-Specific Safety and Health Plan:**

14. Page iv, 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence: Please add the text, “Site-Specific Safety and Health Plan” before the text “SSHP” and put “SSHP” in parentheses.
15. Page 1-2, Section 1.2: Please add the following reference, “Facility-Wide Safety and Health Plan, July 2000, RVAAP.
16. Page 2-1, Section 2.0, Background: Please change all occurrences of the word “Fuzzes” to “Fuzes” throughout the entire document.
17. Page 5-2, Table 5.1: A reference to fungal spores was made on Page 5-1, Section 5.1, but was not included in this table. Please include fungal spores in the table.
18. Pages 5-5 and 5-6, Table 5.2: Biological hazards were not identified in this table. Please modify this table to include biological hazards.

19. Appendix B, SHP 06: A reference should be made to the following biological hazards (and resulting conditions) which may be encountered at the site: histoplasmosis (from bird and animal droppings), West Nile virus (recently discovered in Lake County) (carried by American Crow, transmitted by mosquito), and Hanta virus (carried by white-footed mice and other rodents).

**Work Plan:**

20. Page 1-5, Section 1.1, 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence: The text states, "The CHPPM report identifies surface soil and sediments to be potential media for contaminant migration due to lack of any physical barriers/fence around the site." Please confirm that a fence does not exist around the perimeter of the site.
21. Figures 1-3 and 2-1: Please locate building AP-2 on this figure and provide a label. Also, please remove the circled label "AP-11" towards the bottom of the figure.
22. Page 2-4, Section 2.1.1, Soil Boring and Sampling, 1<sup>st</sup> paragraph: Please indicate in this paragraph that two soil samples will be collected from each of the ten soil borings.
23. Page 2-4, Section 2.1.1, Soil Boring and Sampling, 1<sup>st</sup> paragraph, 4<sup>th</sup> sentence: The text states, "Auger size will be selected to both minimize the volume of drilling cuttings, yet still be of sufficient size to obtain sufficient soil volumes for laboratory analysis." It should also be noted that the borehole drilled must be of sufficient diameter to permit at least a two inch diameter annular space between the borehole and all sides of the well (centered screen and casing). Please make the appropriate changes to the text to reflect this.
24. Page 2-5, Section 2.1.5, Sediment Sampling, 1<sup>st</sup> sentence: To be consistent with Table 1 on page 2-9, please change the text to read, "a total of **twenty-seven (27)** sediment samples will be collected."
25. Page 2-5, Section 2.1.6, Shallow Soil Sampling: Please state in this section that **two (2)** samples from each of the 25 locations will be collected (50 total).
26. Page 2-6, Section 2.1.8, Sump Soil Sampling, 1<sup>st</sup> sentence: Please correct this sentence to indicate that **two (2)** soil samples from each of the five sump locations will be collected (ten total).
27. Page 2-10, Section 2.2, Data Quality Objectives, 6<sup>th</sup> bullet item: Please change "Collect 22 sediment samples" to "Collect 27 sediment samples" in the text.
28. Page 2-10, Section 2.2, Data Quality Objectives, 9<sup>th</sup> bullet item: Please change "Collect one soil sample at each of the five sump locations" to "Collect **two (2)** soil samples at each of the five sump locations" in the text.



29. Page 3-7, Section 3.11, Risk Assessment: Please indicate in this section that the data gathered from the LL-11 Interim Removal Action (IRA) will be "folded" into the RI risk assessment.
30. Page 3-5, Section 3.5, Explosive Field Screening, last sentence: Please change "Appendix C" to "Appendix A."
31. Page 4-3, Section 4.10, Wastewater: Please add sentence, "Direct discharge to any surface water body will require prior approval from Ohio EPA's Division of Surface Water (DSW)." Any unauthorized releases to surface water will need to be reported to Ohio EPA / DSW.
32. Page 4-3, Section 4.11, Protection of Air Resources, 2<sup>nd</sup> sentence: Please add the words "State, and Local" between the words "Federal" and "emission."
33. Page 7-1, Data Review and Evaluation: Please add to this section the following data screens to identify what are the site related contaminants:
  - A detailed assessment of the quality of the RI analytical results will take place. Data that are rejected during the data quality assessment should not be evaluated further in the screening process.
  - Each chemical within each environmental medium (aggregate) will be evaluated to determine its frequency of detection. Chemicals that are never detected will be eliminated as site related contaminants. For sample aggregations with greater than 20 samples and a frequency of detection of less than 5%, a weight-of-evidence approach will be used to determine if the chemical is a site related contaminant. The magnitudes and locations (clustering) of the detected values will be evaluated. Additionally, the occurrence of the constituent in other environmental media will be considered as part of the weight of evidence. If the detected results for a chemical show no clustering, concentrations are not substantially elevated relative to the detection limit, and the constituent is not a site related contaminant in another aggregate, it will be considered spurious and the chemical will be eliminated as a site related contaminant.
  - For each inorganic constituent passing the frequency of detection screen, concentrations will be screened against available naturally occurring background levels. If the maximum concentration of a constituent exceeds the background value, the constituent will be considered a site related contaminant. If groundwater samples collected from wells installed into bedrock, the RVAAP background values for this groundwater zone will be employed for data screening. Note that in the event a constituent was never detected in the background data set, its background level is assigned a zero value. This process ensures that a particular chemical detected at Load Line 11 in a particular medium cannot be eliminated simply because the chemical was never detected in background. All detected organic

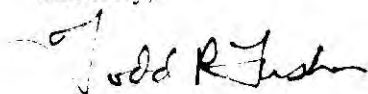
MR. MARK PATTERSON  
SEPTEMBER 25, 2000  
PAGE 5

compounds will be considered site related contaminants, evaluated as to their nature and extent, and screened using the risk evaluation.

- Chemicals that are considered as essential nutrients (calcium, chloride, iodine, iron, magnesium, potassium, phosphorous, and sodium) will not be evaluated as site related contaminants, unless grossly elevated relative to background. These chemicals are an integral part of the country's food supply, and are often added to foods as supplements; thus, these constituents are not generally addressed as contaminants. Data on essential elements, however, will be used to evaluate the subsurface geochemistry.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1148.

Sincerely,



Todd R. Fisher  
Project Coordinator  
Division of Emergency and Remedial Response

TRF/kss

cc: Bob Princic, NEDO, DERR  
John Cicero, RVAAP  
John Jent, USACE, Louisville  
David Seely, U.S. EPA Region 5  
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State of Ohio Environmental Protection Agency

Northeast District Office

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Bob Taft, Governor  
Christopher Jones, Director

October 31, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**LOAD LINE 11 RI FINAL WORKPLAN**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the following documents: "Work Plan for the Remedial Investigation at Load Line 11 (AOC 44), Ravenna Army Ammunition Plant, Ravenna, Ohio", "Sampling and Analysis Plan Addendum for the Remedial Investigation at Load Line 11 (AOC 44), Ravenna Army Ammunition Plant, Ravenna, Ohio"; and "Site Specific Safety and Health Plan for the Remedial Investigation at Load Line 11 (AOC 44), Ravenna Army Ammunition Plant, Ravenna, Ohio." These documents, dated October 2000 and received at Ohio EPA, NEDO, DERR, on October 27, 2000, were prepared by MKM Engineers, Inc. for the U.S. Army Operational Support Command (OSC) under contract number DAAA09-98-G-0001.

The revised documents were reviewed with respect to the draft documents, the Response to Comments (RTC) matrix, and the conference call held on October 23, 2000. The Agency has the following comments on the above-referenced documents:

**GENERAL COMMENTS - (These two comments are not required to be addressed prior to the commencement of field investigative activities):**

1. At some point in time, subsequent to the commencement of Load Line 11 investigative activities, but prior to the generation of additional workplans, Ohio EPA requests that a meeting between Ravenna Army Ammunition Plant (RVAAP), MKM Engineers, Inc. and Ohio EPA personnel be held, in order to discuss the general format and contents of the generated workplans. Specifically, discussion points would include such items as the contents of each of the individual submissions (there is significant redundant information in each volume), expectations with respect to the generation of a conceptual site model (CSM), the need to expand the rationale section for sample locations, etc. The Agency is of the opinion that the documents could not only be stream-lined, but could also contain additional supporting information/documentation.
2. In several sections of the three-volume document, there is conflicting information regarding the Remedial Investigation (RI) that is to be undertaken at Load Line 11. In several areas, it is referenced that this effort will "complete" the RI and that it will be a "thorough" investigation. However, in other areas, there are references made to this effort constituting a Phase I RI. The documents should clearly indicate the scope and goal of the project. It

is the position of Ohio EPA that the investigative efforts presented in the three-volume submission represent a Phase I RI. Clearly, without conducting slug tests on the monitoring wells (a part of all RI investigations at the RVAAP and referenced in the facility-wide documents) and the lack of contingency samples (soil and sediment) to determine the vertical and horizontal extent of contamination, etc., the endpoint of a complete RI will not be reached.

**SPECIFIC COMMENTS - (These issues need to be addressed during the course of the RI):**

**Sampling and Analysis Plan (SAP)**

3. Please clarify the depths at which samples will be taken at the borings (later converted to monitoring wells) and the direct push samples at the sumps. It is recommended that some of the sampling depths coincide with the established depths of soil samples (ex. 0-1', 1'-3', 3'-5' etc.), as this will result in more data that can be utilized in the risk assessments. (SAP pgs. 4-2 and 4-3)
4. The text of the documents should clearly indicate that soil samples will be homogenized with the exception of the volatile organic compound (VOC) fraction. (SAP pg. 4-5)
5. In several sections of the SAP, there needs to be clarification regarding the total depths (TD) of the monitoring wells that are to be installed. The documents consistently indicate a TD of 40 feet below ground surface (BGS); however, that is the linear depth of the well *scoped* for this project, not necessarily the final depth of the well. The TD and screened interval of the monitor wells will be determined based upon the depth to water. It was previously requested in several reviewers comments that this issue be clarified in the revised text, and it is noted that revisions to the text were not made.
6. In several sections of the SAP (ex. pg. 4-9 - not all inclusive), there is the statement that reads as follows: "At locations where standing water is not present, a shallow soil sample will be collected instead to evaluate the area immediately surrounding the sediment sample point." Please provide additional clarification with respect to this statement, i.e., the sample location should be the same, whether or not there is standing water present.
7. The text on page 4-11 (section 4.9), should clearly indicate that all non-dedicated sampling equipment will be decontaminated in accordance with the established facility-wide procedure.
8. Please provide clarification as to whether or not a 1:1 correlation between x-ray fluorescence (XRF) and laboratory data for metals is proposed. In addition, please clarify whether both in-situ and ex-situ XRF sampling will be conducted. (SAP pg. 4-12)
9. All investigation-derived waste (IDW) must be containerized and characterized prior to disposal in accordance with all applicable State and Federal rules, laws, and regulations. Soil cuttings and excess sediment may not be stockpiled at the Area of Concern (AOC). Additional discussion regarding MKM's interpretation of Ohio EPA correspondence, dated



MR. MARK PATTERSON  
OCTOBER 31, 2000  
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November 3, 1997, is warranted. The Agency's position on this issue was transmitted to the MKM program manager via telephone on October 30, 2000.

### **Health and Safety Plan (HASP)**

Although Ohio EPA does not have regulatory authority over health and safety plans, the following comments are offered for your consideration:

10. It appears that the hazard analysis was solely based upon the United States Army Center for Health Promotion and Preventive Medicine (USACHPPM) report (page 5-1). Please be advised that this data is, at best, minimal (due to the nature of a Relative Risk Site Evaluation - RRSE), and that there may be more constituents of concern (COCs) at the AOC than are presented in the document.
11. The HASP on page 7-13 references welding, however, this task does not appear in the Job Safety Analysis (JSA). Please clarify whether or not welding operations will be conducted at this AOC.
12. Please provide clarification as to whether or not there are plans to have back-up safety equipment on site (ex. HNus, PIDs, CGI/LEL meters, etc.).
13. The HASP should have clearly defined sections that discuss heat/cold stress; directions and maps to the hospital; procedures for notifications in the event of an emergency, etc. Important information such as this should not be "buried" in the standard operating procedures (SOPs) in the back of the HASP.
14. The HASP only contains two Material Safety Data Sheets (MSDSs). What about MSDSs for other potential COCs, materials brought on site for decontamination of equipment, etc.?

### **MKM RESPONSE TO OHIO EPA COMMENTS SEPTEMBER 15, 2000**

#### **Sampling and Analysis Plan**

15. Items 1 through 2 responses to comments are acceptable to Ohio EPA.
16. Item 3 response to comments is acceptable as written, however, building AP-2 still has not been identified on the figures.
17. Items 4 through 13 responses to comments are acceptable to Ohio EPA.

#### **Site Specific Health and Safety Plan**

18. Items 14 through 19 responses to comments are acceptable to Ohio EPA.

MR. MARK PATTERSON  
OCTOBER 31, 2000  
PAGE 4


**Work Plan**

19. Items 20, 22 through 28, and Item 31 responses to comments are acceptable to Ohio EPA.
20. Item 29 response to comments is acceptable as written, however, changes were not made to the text as indicated.
21. Item 30 response to comments is acceptable as written, however, changes were not made to the text as indicated. Why was Section 3.5 Explosive Field Screening removed from the document?

A copy of this correspondence will be affixed to the three volume submission for the Load Line 11 Phase 1 RI. As previously stated, the two general comments in this correspondence do not need to be addressed prior to the commencement of intrusive activities, however, the specific comments need to be addressed prior to the commencement of work.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1148.

Sincerely,



Todd R. Fisher  
Project Coordinator  
Division of Emergency and Remedial Response

TRF/kss

cc: Eileen Mohr, DERR, NEDO  
Bonnie Buthker, OFFO, SWDO  
Bob Princic, DERR, NEDO  
John Jent, USACE, Louisville District  
Rick Callahan, MKM Engineers, Ravenna Office  
LTC Tom Tadsen, RVAAP, Ohio Army National Guard  
John Cicero, RVAAP  
Bob Whelove, OSC  
David Seely, USEPA Region V  
Stan Levenger, MKM Engineers, Ravenna Office  
Dave Brancato, USACE, Louisville District





State of Ohio Environmental Protection Agency

Northeast District Office

RVAAP-47

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Bob Taft, Governor  
Christopher Jones, Director

**January 18, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**BUILDING T-5301**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (OEPA) has received and reviewed the document entitled "Final, Scope of Work for the Interim Removal Action and Decontamination and Demolition of Building T-5301 (RVAAP 47), Ravenna Army Ammunition Plant." This document, dated December 1999, was prepared by the contractor for the Industrial Operations Command (IOC) and was received at OEPA on January 7, 2000.

The final Scope of Work (SOW) was reviewed by the Division of Emergency and Remedial Response (DERR) Project Coordinator for the Ravenna Army Ammunition Plant (RVAAP). Comments on the draft SOW were transmitted to RVAAP personnel and the contractor on December 2, 1999 during the Installation Action Plan (IAP) meeting.

The final SOW was reviewed with respect to previous OEPA comments and discussions held at the RVAAP installation during meetings on January 10-12, 2000. OEPA recommends that the following comments be addressed during the workplan development phase of the proposed activities, rather than revising the existing SOW:

1. OEPA is currently planning on collecting the quality assurance/quality control (QA/QC) samples that will be needed for this project. In the workplan, please delineate the needed sample containers, i.e., number and size of containers, any appropriate preservatives, etc., such that adequate supplies can be ordered from Quanterra. If the Agency is unable to collect the QA/QC samples, I will inform you, as soon as possible, and various alternatives can be discussed.
2. The Ohio National Guard (ONG) has signed for the existing buildings at this Area of Concern (AOC), and, as such, will not be demolished. The workplan should delineate how the buildings will be decontaminated, so that they can be utilized by ONG personnel.

In addition, the workplan should specify the order of activities, i.e., building inspection and decontamination; and subsequent to removal of the building by ONG, how the floor slab(s) and soil beneath the slab(s) will be addressed.

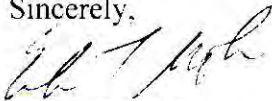


MR. MARK PATTERSON  
JANUARY 18, 2000  
PAGE 2

3. The workplan should indicate that the contaminated soils from this project are proposed to be utilized in the pilot composting project.
4. Is any testing of the wooden pallets proposed for this removal activity? If so, and they are determined to be clean (i.e., not treated), couldn't the pallets be utilized as one of the necessary amendments in the composting process? This would save costs related to the proper disposal of the pallets.
5. The workplan should delineate the "random biased" and "random" samples that will be collected as part of the confirmation sampling event.
6. The workplan should detail the proposed method(s) for the sump decommissioning, i.e., will the sumps and associated soils be removed or is it proposed that the sumps will be collapsed in on themselves?
7. Remove Total Petroleum Hydrocarbons (TPH) from the list of analytical constituents.
8. Please be advised, that the Region IX Preliminary Remediation Goals (PRGs) are not equivalent to clean-up levels, as indicated by the cover page of Appendix B. The goal of this project is clean closure, i.e., explosives to non detect and metals concentrations to less than the background levels determined for the installation.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Greg Orr, NEDO, DHWM  
Diane Kurlich, NEDO, DDAGW  
Jarnal Singh, NEDO, DSIWM  
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John Jent, USACE Louisville  
LTC Tom Tadsen, RVAAP  
John Cicero, RVAAP  
David Seeley, USEPA Region V  
Rick Callahan, MKM Engineers





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Bob Taft, Governor  
Christopher Jones, Director

February 18, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**BUILDING T-5301**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the following documents related to the proposed activities at Building T-5301, located at the Ravenna Army Ammunition Plant (RVAAP):

1. "Work Plan for the Interim Removal Action and Decontamination and Demolition of Building T-5301 (AOC 47), Ravenna Army Ammunition Plant, Ravenna OH 44266";
2. "Sampling and Analysis Plan Addendum for the Interim Removal Action and Decontamination and Demolition of Building T-5301 (AOC 47), Ravenna Army Ammunition Plant, Ravenna OH 44266"; and
3. "Site Specific Safety and Health Plan for the Interim Removal Action and Decontamination and Demolition of Building T-5301 (AOC 47), Ravenna Army Ammunition Plant, Ravenna OH 44266".

The documents were prepared by the contractor for the Industrial Operations Command (IOC) AMSIO-ACE-D Procurement Directorate, are dated February 2000, and were received by Ohio EPA on February 10, 2000.

Comments on the documents will follow the same general format as the three volumes comprising the submission.

**GENERAL COMMENTS**

1. In meetings held during 1995-1996 between representatives of the IOC, RVAAP, United States Army Corps of Engineers (USACE), and Ohio EPA, it was decided that site-wide workplans, sampling and analysis plans (SAPs), quality assurance



project plans (QAPPs) and health and safety plans (HASPs) would be generated. The purposes for, and results from, generating site-wide documents were several-fold:

- a. The site-wide plans would contain information and procedures that would be consistently utilized during the performance of work at the RVAAP. For example, the procedures for monitoring well drilling, installation, construction, development, purging, and sampling (etc.), since they would remain consistent throughout work conducted at the various Areas of Concern (AOCs) on the installation, would be specified in the site-wide plan. Any potential deviations to the procedures detailed in the site-wide plan would be specified in the AOC-specific addendum, which is designed to be utilized in conjunction with the site-wide plan.
- b. Subsequent to the development of the site-wide plans and the negotiation of and agreement to the procedures and techniques specified within the documents, issues that would be common to numerous AOCs at the installation would not need to be re-visited every time investigations were proposed at a new AOC. The only issues that would need to be negotiated and agreed-upon would be specific to the AOC in question (ex. sampling numbers, constituents, locations, etc.), which would be detailed in the AOC-specific document. This has saved considerable amounts of time in the scoping process for new AOCs.
- c. The use of site-wide documents in conjunction with AOC-specific documents has saved time, not only in the scoping process, but in the document development and review process as well. It has saved paper resources, in addition to time, has assisted in keeping projects moving smoothly, and has ultimately resulted in a cost savings to the Army.
- d. Given that there is more than one contractor working at the installation, it is imperative that the fundamental procedures that are utilized on-site are consistent.

I do not see any value in generating documents that do not provide reference to, and tier under, the site-wide plans, as they will ultimately result in adding considerable preparation and review time to documents. This will result in a less-efficient and more costly process. Granted, there have been certain methodologies that have been changed since the inception of the site-wide documents, however, these changes will be reflected in the revised site-wide documents that are in the process of being prepared.



Additional discussion of this issue is warranted.

2. Appendix B of the workplan and Appendix D of the sampling and analysis plan contain draft Remedial Goal Options (RGOs) and present these numbers as "cleanup levels." The clean-up levels that have been agreed-upon for this Interim Remedial Action (IRA) are as follows: non-detect for explosives compounds and below the installation background for Target Analyte List (TAL) metals. As such, it is unclear as to why the draft RGOs, which are currently being reviewed by Ohio EPA, are presented in these documents. If the agreed-upon cleanup levels cannot be achieved and, if work on this AOC is completed before final resolution is reached on the proposed RGOs, please be advised that it is the position of Ohio EPA that the Army may be required to conduct additional cleanup activities in the future.

#### **WORKPLAN COMMENTS**

3. Throughout the workplan, the discussions regarding the disposition of the two on-site buildings should be consistent. Specifically, it should be indicated that the guard shack (Building T-3402) will be decontaminated and demolished, while Building T-5301 will be decontaminated, dismantled, and moved for future use by the Ohio National Guard (ONG).
4. Section 3 should include a sub-section that details the abandonment procedures for the on-site water well.
5. Section 5.2.1 indicates that: "The 12 random samples will be analyzed by the Modified Jenkins Method for explosives in the on-site field laboratory. Fifteen percent of the non-detect samples will be sent to an off-site laboratory for explosives analyses." If explosives are detected in any of the 12 random samples, will these be submitted to a laboratory for analysis? Clarification of this issue should be added to the text on page 5-2.
6. In Section 5.2.2, please provide further details on the source of the off-site backfill, and the laboratory analyses that will be conducted in order to ensure that the backfill source is not contaminated. (Page 5-3)
7. The text on page 5-4 states the following: "All samples for the above analyses will be selected based on the results of the three field analyses described in section 4.4.1." In attempting to cross-reference the specified section, it was noted that there isn't a section 4.4.1 in this workplan. Please revise the text accordingly.

### **SAMPLING AND ANALYSIS PLAN ADDENDUM**

8. Please revise the definition of "site investigation" that is presented in the definition list to more accurately reflect the purpose and scope of a site investigation. (Page iv)
9. Section 3.1.4 assesses the suitability of utilizing x-ray fluorescence (XRF) techniques for metals screening at the RVAAP. In future site-related work, will metals (in addition to lead) be evaluated? (Page 3-2)
10. Please refer to comment # 2 detailed-above with respect to the use of the draft RVAAP ONG scenario screening levels. (Page 3-4)
11. In two places in section 3.2.6, please revise the text to indicate that the cancer risk point of departure is  $1 \times 10^{-6}$ , not  $10^{-6}$ . In addition, please revise the text to indicate that the risk management range falls between " $1 \times 10^{-4}$  and  $1 \times 10^{-6}$ ", and not " $10^{-6}$  to  $10^{-4}$ ". (Page 3-5)
12. In section 3.1.1, please revise the text to indicate that initially 100% of the data will be verified, and 10% of the data will be validated. However, if the 10% validation process indicates that there are concerns with the data, additional validation (in accordance with the procedures specified in the site-wide plans) must be conducted. (Page 3-6)
13. The purpose of section 4.4 is to present soil screening and sampling techniques. However, it is noted that soil sampling techniques are not presented, nor is reference made to the site-wide plans. Please revise the text to reference the appropriate sampling section(s) in the facility-wide plans. (Page 4-2 or 4-3)
14. In Section 4.4.3, please provide further details on the source of the off-site backfill, and the laboratory analyses that will be conducted in order to ensure that the backfill source is not contaminated. (Page 4-4)
15. In section 4.5 (page 4-7), please make the following modifications to the text:
  - a. "If the well is determined to be acceptable (i.e. not collapsed, has a measurable water level),....."



- b. "The groundwater well behind T-5301 will be sampled for chemical analyses to characterize the nature of contamination in groundwater, if any." Analytical results from one well cannot determine the potential extent of contamination.
  - c. Samples obtained for metals analyses should be filtered. This is consistent with decisions previously made on a site-wide basis, i.e., that filtered groundwater samples will be utilized for risk assessment purposes.
16. In section 4.5.2, the third bullet should be modified to read, "the volume purged will be 5 casing volumes and stabilization of water quality indicators such as *pH*, *temperature*, and *specific conductance*." In addition, if dissolved oxygen (DO) is a parameter that is to be measured, the procedures for measuring DO should be included in the text. (Page 4-9)
17. With respect to the abandonment of the on-site well (pages 4-10 through 4-11):
- a. The procedure utilized for the abandonment of the water well should be specified in section 4.7. Although the text of the report indicates that the well abandonment will follow procedures detailed in Chapter 9 of the Ohio EPA "Technical Guidance Manual for Hydrogeologic Investigations", there are several different methodologies presented in this document.
  - b. Please note that Ohio Revised Code (ORC) 1521.05(B) requires that a well abandonment report be filed with the Ohio Department of Natural Resources (ODNR), Division of Water. In addition, please submit a copy of the abandonment report to Ohio EPA, NEDO, DERR.
  - c. The text indicates that Appendix D of this sampling plan contains a copy of Chapter 9 of Ohio EPA's technical guidance manual. However, in actuality, this appendix contains information on cleanup levels. Please adjust the text or the appendix accordingly.
18. In section 4.3.3.2, please adjust the text to reads as follows: "The sample conductivity will be recorded to the nearest 10 *umhos/cm* and the temperature....." (Page 4-12)
19. In section 7.0, please clarify how many poly tanks will be on-site to containerize the liquid investigation-derived wastes (IDW) that will be generated. (Page 7-1)

20. The text of the sampling plan references the use of the Modified Jenkins Methodology during the course of the IRA at Building T-5301. However, Appendix B contains the original Jenkins methodology, without discussion of the modifications made to the RDX test during previous installation activities. Please advise the Agency what methodology is to be utilized during this IRA.

### HEALTH AND SAFETY PLAN

Although Ohio EPA does not have regulatory jurisdiction over health and safety plans, the following comments are offered for your consideration:

21. In the acronym table, please adjust the following acronyms and associated meanings:
  - a. "EZ" - Exclusion Zone
  - b. "HTRW" - Hazardous, Toxic, and Radioactive Waste
  - c. "ml" - milliliter
  - d. "OSHA" - Occupational Safety and Health Administration
  - e. "ppm" - parts per million
  - f. "pH" - (definition can remain the same)
  - g. "TPH" - Total Petroleum Hydrocarbons
  - h. "ug/kg" - micrograms per kilogram

In addition, please provide clarification for the acronym designated as "DAAA", and the rationale behind having one acronym designating two different realities (i.e., PM equals project manager and program manager).

22. Please revise the text in section 2.3.4 to read, "Excavated soil will be stockpiled *off the AOC* and bioremediated at a later date." (Page 2-2)
23. In section 5.1, how was it determined that the listed explosives and metals are the only chemical hazards that may be encountered? (Page 5-1 and Table 5.2)




24. In Table 5.2 in the column entitled "Starting PPE", a footnote should be added to the chart which indicates that Level C protection does not solely consist of a respirator and a saranax or tyvek suit.
25. In section 6.10.2, please indicate who will act as MKM's or IOC's Resident Officer. (Page 6-3)
26. Please provide information as to whether or not on-site workers will be quantitatively FIT tested in addition to being qualitatively FIT tested. (Page 7-4 Appendix B)
27. Please revise section 10.1.5 to read, "If required by the SSHO, dust abatement, consisting of a *potable* water spray, will be used to control the dispersion of contaminated soil during excavation activities." (Page 10-2)
28. Please provide information in the text of section 10.2 that describes what constitutes a "Building T-5301 regulation." (Page 10-2)
29. In the body of the HASP, there should be discussion of cold-related emergencies, symptoms and first-aid.
30. In Appendix B:
  - a. In Form 02 please add Ohio EPA spill number (1-800-282-9378) to the contact list.
  - b. Please confirm whether or not, in the event of fire and related emergencies, the RVAAP Guard Post contacts the Ravenna Fire Department and related safety forces. (Form 02)
  - c. In Safety and Health Procedure (SHP) 11, please clarify whether or not contact lenses can be worn with respiratory protection. It was my understanding that OSHA has recently allowed the use of contacts with a full-face respirator.
  - d. In SHP 31 (Personal Decontamination), please revise step # 5 (SCBA Back Pack Removal), as it appears to discuss disposable coverall removal instead of SCBA removal.
31. Please run Appendix C (Job Safety Analysis) through spell-check.

MR. MARK PATTERSON  
FEBRUARY 18, 2000  
PAGE 8

32. In addition to the Material Data Safety Sheets (MSDSs) presented in Appendix D, please add the MSDSs for any fuels or decontamination materials bought on-site, as well as any additional contaminants that may be encountered (refer to comment # 23).

If you have any questions or concerns regarding this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Bonnie Buthker, OFFO, SWDO  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
Bob Whelove, IOC  
John Jent, USACE Louisville  
Rick Callahan, MKM  
Srini Neralla, MKM





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

March 27, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
Revised Workplans - Building T-  
5301

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the **revised** documents related to the proposed activities at Building T-5301, located at the Ravenna Army Ammunition Plant (RVAAP):

1. "Work Plan for the Interim Removal Action and Decontamination and Demolition of Building T-5301 (AOC 47), Ravenna Army Ammunition Plant, Ravenna OH 44266";
2. "Sampling and Analysis Plan for the Interim Removal Action and Decontamination and Demolition of Building T-5301 (AOC 47), Ravenna Army Ammunition Plant, Ravenna OH 44266"; and,
3. "Site Specific Safety and Health Plan for the Interim Removal Action and Decontamination and Demolition of Building T-5301 (AOC 47), Ravenna Army Ammunition Plant, Ravenna OH 44266".

The documents were prepared by the contractor for the Industrial Operations Command (IOC) AMSIO-ACE-D Procurement Directorate, are dated February 2000 and were received by the Ohio EPA on March 14, 2000.

The revised documents were reviewed compared to the comment resolution matrix (also received on March 14, 2000) and the draft documents. Comments on the revised document will follow the same format as the comment resolution matrix (after a few general comments):



### **GENERAL COMMENTS**

1. The Ohio EPA recommends that the proposed comment resolution matrix be submitted to the Agency prior to the documents being revised/finalized. This will insure that the Ohio EPA, RVAAP, and the contractor are in agreement with the proposed revisions prior to the documents being revised and re-submitted.
2. During future projects conducted at the installation, the Ohio EPA requests that the revised documents contain the revision date (not the draft document date) on all of the submissions. This includes not only the cover and title pages but also the individual pages of the report which are dated (if the contractor is planning on re-submitting the entire report). For this project only, the Ohio EPA will accept the individual pages of the revised report as dated (i.e. February 3, 2000), but has corrected the cover pages and binder strips to read the revised date of March, 2000.
3. Further discussion between the RVAAP, Ohio EPA, and contractor is warranted regarding what is meant by the use of "replacement pages." Given the relatively low volume of changes requested in the draft report, only the pages that were revised should have been submitted to the Ohio EPA for review and comment. If found to be acceptable, the pages would be inserted into the initial document and the draft pages removed. This will save both the contractor and the Agency resources - especially with respect to Agency personnel review time.
4. Please advise the Agency as soon as possible, if Ohio EPA will be collecting (or causing to collect) the QC samples. Arrangements will need to be made with the lab to ensure that the appropriate sample containers/preservatives are ordered and obtained and that the samples can be run within the appropriate holding times.

### **SPECIFIC COMMENTS - COMMENT RESOLUTION MATRIX**

1. Item #1: This item was not addressed in the comment resolution matrix and further discussion is warranted.
2. Item #2: This item was not addressed in the comment resolution matrix and further discussion is warranted.
3. Item #3: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
4. Item #4: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.



5. Item #5: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
6. Item #6: The response to comment and change to the text is partially acceptable. It is noted that the revised text does not include sampling the off-site backfill material for either Target Analyte List (TAL) or Toxicity Characteristic Leaching Procedure (TCLP) metals analyses. The potential backfill materials should also be analyzed for metals (preferably TAL, but TCLP is acceptable). Revise this page accordingly.
7. Item #7: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
8. Item #8: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
9. Item #9: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
10. Item #10: The response to comment and change to the text is partially acceptable. The second bullet on page 3-4 still references DRAFT Ohio National Guard (ONG) Remedial Goal Options (RGOs) that have not been approved by the Ohio EPA. Remove this bullet from the text.
11. Item #11: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
12. Item #12: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
13. Item #13: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
14. Item #14: The response to comment and change to the text is partially acceptable. It is noted that the revised text does not include sampling the off-site backfill material for either TAL or TCLP metals analyses. The potential backfill materials should also be analyzed for metals (preferably TAL, but TCLP is acceptable). Revise this page accordingly.
15. Item #15: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.

16. Item #16: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
17. Item #17: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
18. Item #18: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
19. Item #19: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
20. Item #20: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
21. Item #21: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
22. Item #22: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
23. Item #23: The response to comment and change to the text is partially acceptable. Please be advised that the data received from the studies conducted at the Winklepeck Burning Grounds (WBG) indicate that more than the listed explosives and metals may be encountered during the implementation of the field tasks at Building T-5301. The appropriate health and safety precautions should be implemented. Revise this page accordingly.
24. Item #24: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
25. Item #25: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
26. Item #26: The response to comment is acceptable and the appropriate change(s) has/have been made to the text. However, please confirm that employees have also been quantitatively FIT tested.
27. Item #27: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.



Mark Patterson

Page 5

28. Item #28: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
29. Item #29: The response to comment and change to the text is partially acceptable. In addition to providing a reference to cold stress/emergencies, the text should also contain a discussion of the symptoms and appropriate first aid for the various cold-related emergencies. In addition, since the Safety and Health Procedure (SHP) was modified, there should be an appropriate revision date on the bottom of the SHP. Revise the pages accordingly.
30. Item #30: The response to comment and change to the text is partially acceptable. Since the various SHPs were modified, there should be appropriate revision dates on the bottom of each of the SHPs. Revise the pages accordingly.
31. Item #31: The response to comment is acceptable and the appropriate change(s) has/have been made to the text.
32. Item #32: The response to comment is acceptable, however, the appropriate Material Safety Data Sheets (MSDSs) were not added to the revised document. Please submit the additional MSDSs.

Subsequent to the receipt and review of the requested revisions in the above referenced pages (item #s 2, 6, 10, 14, 23, 29, and 30, and receipt of the MSDSs cited in item #32), as well as the signing of the Action Memorandum for Building T-5301, the interim removal action may commence.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr

Project Coordinator

Division of Emergency and Remedial Response

cc: Bob Princic, NEDO DERR  
Diane Kurlich, NEDO DDAGW  
Bonnie Buthker, OFFO SWDO  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP

Bill Ingold, IOC  
John Jent, USACE Louisville  
Rick Callahan, MKM  
Srini Neralla, MKM

**From:** Eileen Mohr  
**To:** JJ; Patterson, Mark  
**Date:** 3/3/00 10:39AM  
**Subject:** Split Sampling at T5301

JJ and Mark

It looks like we have the "go-ahead" for Ohio EPA to pay for the QA samples at Building T-5301.

What I need from MKM (Srini) is how many/size/preservatives etc. bottles I need for the QA samples so that I can order them from Quanterra. Then if you could give me lead time so I can be there for the sampling and to transport the samples to the lab....

Sorry for the delay in getting this response to you!

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

**CC:** mkmcercla@yahoo.com





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

April 14, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
BUILDING T-5301

Mr. Mark Patterson  
Environmental Program Manager  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9297

Dear Mr. Patterson:

The purpose of this correspondence is to provide clarification on the Ohio Environmental Protection Agency's (Ohio EPA's) position regarding the Interim Removal Action (IRA) proposed for Building T-5301 at the Ravenna Army Ammunition Plant (RVAAP).

One of the goals of the IRA is to "excavate soils until they test non-detect for explosives and are consistent with the background metals concentrations." This concept has been stated in both the action memorandum and in the sampling and analysis plans that have been reviewed and commented on by Ohio EPA.

With respect to this goal, Ohio EPA's position is as follows:

- a. If the above-referenced goal cannot be achieved as a result of this IRA, then additional work may be required subsequent to the generation of installation Remedial Goal Objectives (RGOs); and
- b. Ohio EPA recognizes that this goal is specific to the Building T-5301 IRA project, and may or may not be utilized as cleanup levels on other portions of the RVAAP project, as agreed upon by the Project Management Team.

I trust this clarifies Ohio EPA's position regarding the IRA that is scheduled to commence at Building T-5301 on April 17, 2000. If you have any questions, please don't hesitate to call me at (330) 963-1221.

Sincerely,

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
John Cicero, RVAAP

Todd Fisher, NEDO, DERR  
LTC Tom Tadsen, RTLS, RVAAP  
David Seeley, USEPA Region V

Robert Whelove, IOC  
Rick Callahan, MKM  
Srini Neralla, MKM





State of Ohio Environmental Protection Agency

**Northeast District Office**

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

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Bob Taft, Governor  
Christopher Jones, Director

**STATEMENT OF BASIS FOR THE FINAL DECISION  
FOR THE BUILDING T- 5301 INTERIM REMOVAL ACTION  
RAVENNA ARMY AMMUNITION PLANT  
RAVENNA, OHIO**

**Statement of Basis:**

This document presents the rationale for and activities undertaken during the Interim Removal Action (IRA) conducted at the Building T-5301 Area of Concern (AOC) at the Ravenna Army Ammunition Plant (RVAAP), located in Ravenna, Ohio. The IRA was selected in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Re-authorization Act of 1985 (SARA), 42 U.S.C. 9601 et. Seq., the National Contingency Plan (NCP), and Army Regulation AR200-1, as applicable. The Operations Support Command (OSC) is the lead Agency for the Department of Defense Environmental Restoration Program - Installation Restoration Program (DERP-IRP) for the RVAAP, and initiated the IRA at Building T-5301. The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) provided the regulatory review and oversight of the IRA at Building T-5301 under the Defense-State Memorandum of Agreement (DSMOA).

**Background:**

The RVAAP is located in northeastern Ohio in Portage and Trumbull Counties and is situated approximately 10 miles east of Ravenna, Ohio. The installation encompasses 21,419 acres in a tract of land approximately 3.5 miles wide and 11 miles long and is currently jointly operated by the OSC of the U.S. Army and the National Guard Bureau (NGB). Operations at the installation date to 1940 and include the storage, handling, loading, assembly, and packing of military ammunition and explosives. The industrial operations at the RVAAP consisted of 12 munitions assembly facilities referred to as "load lines." In addition, RVAAP also had several areas used for burning, demolition and testing of munitions, and buildings/areas designated for clean up and decontamination activities for production equipment. In May, 1999, the NGB assumed operational control of 16,614 acres of the installation and licensed the Ohio Army National Guard (OHARNG) to use the acreage for training and other activities. The OSC retained control of the environmental AOCs and the bulk explosives areas.



Building T-5301 (designated as RVAAP-47) was located on the east side of George Road at the entrance to the Winklepeck Burning Grounds (WBG). A small Guard Post (Building T-3402) was located adjacent to George Road and the gravel driveway that led up to Building T-5301.

Originally built as a smokehouse, Building T-5301 was utilized to decontaminate and steam clean small miscellaneous production equipment of explosives and propellants as the equipment left the WBG. The quantity of decontamination fluids/wastes produced is unknown. In addition, the dates of usage of this building are unknown, but would roughly correspond to dates of production occurring at the installation, i.e., intermittently from World War II to Vietnam. The building was essentially a 25-foot by 25-foot sheet-metal structure with a concrete block wall extending approximately three (3) feet above ground surface. Transite asbestos sheets were used to partition the building into two separate areas - a larger cleaning area and a small area for boilers. Within the interior of the building there was a floor drain that exited out of the southern wall of the building and materials would have discharged into two concrete sedimentation basins that drained, via a ditch, towards Sand Creek located to the southeast.

The dimensions of this AOC are approximately 150 feet north-south by 250 feet east-west and is situated approximately 1030 feet above mean sea level (MSL). The topography drops off sharply to the east and south towards Sand Creek, approximately 25 feet behind the former building T-5301. Sand Creek is located approximately 30 feet below the former floor elevation of Building T-5301 and has a bedrock bottom. This suggests that the overburden thickness at this AOC ranges between 10 to 15 feet. Underlying the overburden is the Pennsylvanian age Pottsville Formation. The Sharon Member of the Pottsville Formation outcrops in the immediate vicinity of this AOC.

#### **Summary of AOC Risk:**

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) conducted a Relative Risk Site Evaluation (RRSE) for newly added AOCs at the RVAAP installation in October, 1998 (Hazardous and Medical Waste Study No. 37-EF-5360-99). The USACHPPM effort included a minimal number of samples that were analyzed for explosives compounds, as well as Target Analyte List (TAL) metals. Of the 13 AOCs that were evaluated, 5 were classified as high-priority AOCs, including Building T-5301.

The USACHPPM report identified surface soil and sediments to be potential media for contaminant migration due to the lack of any physical barriers/fencing around the AOC. Although Building T-5301 was neither used for production, nor was populated with

workers, the report concluded that hunters, trappers, and OHARNG personnel could be potential receptors of the observed contamination. In addition, Sand Creek is the habitat for a state-endangered species (Mountain Brook Lamprey) that could be a potential receptor (due to runoff) of the observed contamination.

#### **Summary of Remedial Alternatives:**

Two alternatives were evaluated for this AOC: 1) no further action (NFA), and 2) an IRA. The first alternative, no further action, did not address the ecological risk to the endangered species, as identified in the USACHPPM report. In addition, given the potential receptors at the AOC, combined with the potential availability of the contaminants, a response was needed to mitigate the residual explosives and metals contamination. Alternative 2 provided such a response. An IRA consisting of the decontamination and dismantling of the buildings and the adjoining structures to gain access to the contaminated soil, followed by excavation and disposal according to all state and federal rules, laws, and regulations provided a two-fold result: 1) prevention of the migration of contaminants into the adjacent soils and groundwater by removing the source; and, 2) mitigation of the risk to human and ecological receptors both on and off the AOC.

#### **Summary of the IRA:**

The main objectives of the IRA were: to plug and abandon the existing groundwater well; decontaminate and demolish the existing on-site structures; and, excavate the contaminated soils. Soils were to be excavated until they were non-detect for explosives compounds and TAL metals were consistent with the installation-wide background determined during the Phase II Remedial Investigation (RI) at the WBG.

Two major technical changes related to the overall IRA objectives occurred. Firstly, it was decided to evaluate the existing groundwater well for use as a non-potable construction/decontamination water supply. Subsequent to the review of the analytical data from the groundwater sample and subject to certain conditions, the Ohio EPA, in correspondence dated August 28, 2000, concurred that the well could remain open and be utilized in the IRP program as a construction/decontamination water supply. Secondly, Building T-5301 was decontaminated and dismantled for future use by the OHARNG.

The IRA at Building T-5301 consisted of the following major activities:

- The decontamination and dismantling of the contents of Building T-5301 for future use by the OHARNG, and the decontamination and demolition of Guard



Post T-3402 and the structures adjoining T-5301. The buildings were decontaminated by pressure washing in accordance with IOCP 385-1 ("Classification and Remediation of Explosive Contamination"). Structures that had lead-based paint were handled with care, and precautions were taken to prevent paint chips from contaminating the surrounding soil.

- Field screening of the soil for explosives utilizing the Jenkins methodology in order to determine the preliminary depth and extent of the excavation required.
- The excavation and transportation of the excavated soil to the bioremediation treatment facility for the remediation of explosives-contaminated soils.
- Obtaining confirmatory samples for laboratory analyses following field screening (using both the Jenkins method for explosives and the x-ray fluorescence (XRF) methodology for metals), following excavation to ensure that the remediation goals were met.
- The assessment of the existing groundwater well for use as a non-potable water construction/decontamination source during future IRP activities.
- The back-filling of the excavation with soil that was approved for use by the Ohio EPA subsequent to testing for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/PCBs, explosives, and propellants.
- Stabilization and restoration of the site to its original grade and mulching/seeding. Erosion controls will be maintained until the vegetation cover is complete.
- All work was conducted in accordance with local, state, and federal rules, laws, and regulations. In addition, all work was conducted only subsequent to the review of all applicable work plans, health and safety plans, and sampling and plans by personnel from the OSC and Ohio EPA.
- All investigation-derived wastes (IDW) were managed in accordance with the facility-wide Field Sampling plan (FSP) and correspondence (dated November 3, 1997) from Ohio EPA. All IDW was managed and disposed of in accordance with all applicable state and federal rules, laws, and regulations.

**Conclusions and Recommendations:**

Contaminant detections in the soil medium were excavated to non-detect for explosives and organics, and to concentrations consistent with the installation-specific background for TAL metals. In some instances, bedrock was encountered and the excavation was halted. Groundwater and sediments were non-detect for explosives and consistent with the installation-wide background for TAL metals. On the flood plain to Sand Creek, low concentrations of lead (61.4 mg/kg) were left in place in order to avoid the disruption of the ecological environment. This was done only subsequent to discussion with and concurrence by the Ohio EPA. If, in the future, it is determined that the excavation of some sediment would be required, this would be done in conjunction with the installation-wide surface water and sediment endeavor that is planned for the future.

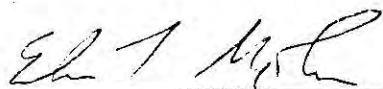
Based upon the results of the IRA, the Ohio EPA concurs that a No Further Action (NFA) status is warranted for the AOC designated as RVAAP-47, Building T-5301.



Mark Patterson  
Environmental Program Manager  
Ravenna Army Ammunition Plant

07 December 2000

Date



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
Ohio EPA

02 NOVEMBER 2000

Date

cc: Bob Prinic, NEDO DERR  
Bonnie Buthker, SWDO OFFO  
Todd Fisher, NEDO DERR  
David Seely, USEPA Region V  
John Cicero, RVAAP  
Catherine Stroup, CO Legal

Bob Whelove, OSC  
LTC Tom Tadsen, RVAAP  
Khodi Irani, MKM Engineers Inc.  
Srini Neralla, MKM Engineers, Inc.  
John Jent, USACE Louisville





State of Ohio Environmental Protection Agency  
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2110 E. Aurora Road  
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TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

**August 15, 2000**

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**BUILDING T-5301 REPORT**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the three-volume document entitled: "Draft-Final, Closure Report for the Interim Removal Action, Decontamination and Demolition of Building T-5301 (RVAAP 47), Ravenna Army Ammunition Plant, Ravenna, Ohio." The document, dated August 2000 and received at Ohio EPA, NEDO, on August 4, 2000, was generated for the U.S. Army Industrial Operations Command (IOC) by MKM Engineers, Inc.

Ohio EPA, NEDO, DERR, has the following comments on the three-volume document:

1. Please ensure that any changes made to the main text of the report are reflected in the Executive Summary (ES), if applicable. In addition, copies of the revised ES should be inserted into each volume of the document.
2. Throughout the ES and the text of the report there are references made to evaluating this Area of Concern (AOC) for "clean closure." The use of this term has implications under the Resource Conservation and Recovery Act (RCRA), specifically, that the AOC is a RCRA unit and that cleanup will be conducted in accordance with one of the following criteria:
  - A. Complete removal of waste material and contaminated soil to non-detect except for naturally occurring constituents (metals) that must be cleaned-up to below background levels (assuming groundwater has not been impacted); or
  - B. Complete removal of waste materials and decontamination of environmental media (soil, water) to health-based standards.



This AOC is not a RCRA-regulated unit, nor has cleanup been conducted in accordance with either of the methodologies described above. As such, Ohio EPA would request a change in terminology, using suggested language, such as "the installation representatives (or Department of the Army) are requesting concurrence with a 'No Further Action' (NFA) status."

This comment is applicable to pages vi, vii, 2-1, 2-3, and 8-1.

3. Revise the sequence of activities on pages vii and 2-1 to indicate the following:
  - A. Backfilling of excavated pits with approved soil material will be conducted following the approval by Ohio EPA.
  - B. The production well located at Building T-5301 was sampled and results are being evaluated in anticipation of using this well for non-potable uses (i.e., decontamination, pressure washing).
4. In several places in the text of the report there are references to decontaminated scrap, structural wood, etc., being sent off-site for disposal. Please provide information in the text as to which off-site disposal areas were utilized, or add an appendix to the report which contains copies of the waste disposal tickets. (Pages 2-1, 2-2, 3-3, 4-1, and 4-2)
5. The text of the report should clearly indicate that all generated decontamination water was containerized and characterized for proper disposal, in accordance with all applicable state and federal rules, laws, and regulations, or for use in the bioremediation pilot project. (Pages 2-1, 3-2, and 6-1)
6. Discussions should be held with the laboratory (prior to the commencement of future projects at the installation) regarding the presence of laboratory artifacts in numerous samples. (Pages 6-2 and 6-3, and Table 6-4). No text change is required.
7. Please revise the text on page 6-3 to indicate the following: "Ohio EPA supports the recommendation to use this well as a non-potable production well, subject to certain conditions, such as signage indicating the restricted usage and sampling requirements."
8. On page 6-3, the text should clearly indicate whether the concentrations of metals detected during the random grid sampling were above or below the determined installation-wide background.



9. The heading for Table 6-2 (both the April 27, 2000 and April 28, 2000 results summary) should clearly indicate that this chart contains the x-ray fluorescence (XRF) data for lead.
10. Please indicate on Tables 6-3, 6-4, 6-5, and 7-2 that the Region IX Preliminary Remediation Goals (PRGs) are solely being utilized for comparison purposes, as they have not been used on any portion of the Ravenna Army Ammunition Plant (RVAAP) project as cleanup goals; or remove this column from the charts. Currently, the only site use of the Region IX PRGs is to utilize 0.1 x the PRG as a preliminary screen for risk assessment purposes. (This is also applicable to several tables in the appendices, however, the correction is not required for volumes two and three of the report).
11. In the final document, please revise Tables 6-3, 6-4, 7-1, and 7-2 to include the reporting limits (rather than listing a constituent as below a reporting level), as that would greatly aid in the decision-making process, i.e., not having to consult the various appendices to reference the various detection limits.
12. On Table 6-3:
  - A. Please confirm the units listed for bis(2-ethylhexyl)phthalate on page 2 of 9;
  - B. On pages 3 of 9, 6 of 9, and 9 of 9, please adjust the legends, such that it is clear to the reader that a shaded area represents a concentration greater than background; and
  - C. Ensure that all appropriate reported concentrations that are greater than the determined background are shaded (for example, see the sample result listed for mercury on page 4 of 9).
13. On page 7-1, the text indicates that the wooden pallets removed from the Building T-5301 area were to be used in the bioremediation pilot project. As this is no longer the case, please provide Ohio EPA with information regarding the disposition of the pallets.
14. It is Ohio EPA's understanding that an additional figure detailing the excavated area, the confirmation sampling locations, and corresponding analytical results, will be received shortly. This type of graphical data display will be an appropriate and positive addition to the revised report.

MR. MARK PATTERSON

AUGUST 15, 2000

PAGE 4

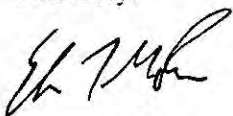
15. Please remove the draft Remedial Goal Options (RGOs) presented in Appendix B, as they are not currently in use at the RVAAP.
16. In Appendix G, it is noted that, in at least one instance, the corrections in the field sampling report were not made in accordance with protocol (i.e., one line through the corrected information and initialed). In addition, it is noted that many of the field sampling reports were not reviewed and dated. Please ensure that this occurs in future investigative efforts at the RVAAP.

In order to expedite the completion of this interim removal action, Ohio EPA requests that replacement pages reflecting the comments detailed above be submitted for review. This would include submitting two extra copies of the revised ES, such that they can be inserted into volumes two and three, however, the complete re-submission of volumes two and three is not required. If the replacement pages are found to be acceptable, subsequent to the receipt and review of the above revisions, Ohio EPA will concur with a NFA status, as the soils have been excavated until they test non-detect for explosives and the metals concentrations are consistent with background. At that time, the excavation can be filled in with clean soil material obtained from an approved source.

In the unlikely event that additional remediation work would need to be conducted on the flood plain of Sand Creek, that issue would be addressed under an installation-wide surface water and sediment program.

If you have any questions concerning this correspondence, please do not hesitate to contact me at (330) 963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
LTC Tom Tadsen, RVAAP  
Bob Whelove, OSC  
Srini Neralla, MKM

Todd Fisher, NEDO, DERR  
Brian Tucker, CO, DERR  
John Cicero, RVAAP  
John Jent, USACE Louisville  
Rick Callahan, MKM





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

August 28, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
WATER WELL RE-COMPLETION

Mr. Stan Levenger  
MKM Engineers, Inc.  
Ravenna Army Ammunition Plant  
Building 1038  
8451 State Route 5  
Ravenna, OH 44266

Dear Mr. Levenger:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the information entitled: "Water Well Re-Completion at the Ravenna Army Ammunition Plant, Revisions to Comments Dated 10 August 2000." The revisions and supporting documentation, dated August 16, 2000, were received at Ohio EPA, NEDO, DERR, on August 21, 2000.

The methodology for ensuring that the well is solely utilized for non-potable purposes is acceptable to the Agency, as well as the sampling schedule that was presented in the August 16, 2000 correspondence. In addition, subsequent to reviewing the analytical data presented in the supporting documentation, the Agency concurs that the groundwater obtained from this water well has not been impacted by previous operations conducted at Building T-5301.

Given the above, Ohio EPA does not object to the use of this well solely for non-potable construction/decontamination water at the Ravenna Army Ammunition Plant (RVAAP) as part of the Installation Restoration Program (IRP), subject to the following conditions:

1. The methodology for restricting the well for non-potable use is strictly adhered to;
2. The sampling schedule presented in the August 16, 2000 correspondence is adhered to;
3. If contamination is detected in environmental samples obtained from the equipment that utilizes this water well as a source of decon/pressure washing water, Ohio EPA will not entertain any proposals that would indicate that the non-potable water source is the source of observed contamination. The assumption will be made that the sampled media is contaminated; and



MR. STAN LEVINGER

AUGUST 28, 2000

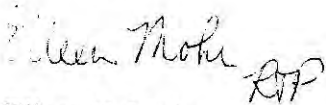
PAGE 2

4. If at some point in the future, this water source indicates any detectable contamination, it cannot continue to be utilized as a water source, and must be abandoned in accordance with all applicable rules, laws, and regulations.

I trust that this clarifies Ohio EPA's position regarding the use of the water well located at Building T-5301.

If you have any questions, please do not hesitate to contact me at 330-963-1221.

Sincerely,

Handwritten signature of Eileen T. Mohr in cursive, with the initials "ETM" written below it.

Eileen T. Mohr

Project Coordinator

Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Nancy Rice, NEDO, DDAGW  
Leslie Otten, NEDO, DDAGW  
Catherine Stroup, Legal, CO  
Bonnie Buthker, OFFO, SWDO  
Mark Patterson, RVAAP  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
John Jent, USACE Louisville  
Bob Whelove, OSC  
Rick Callahan, MKM  
David Seely, USEPA Region V





State of Ohio Environmental Protection Agency

Northeast District Office

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Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

September 17, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
**Building T-5301**

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the replacement pages for the three-volume revised document entitled: "Closure Report for the Interim Removal Action, Decontamination and Demolition of Building T-5301 (RVAAP-47), Ravenna Army Ammunition Plant, Ravenna, Ohio." The revised pages were received at Ohio EPA NEDO on September 5, 2000, and were generated for the U.S. Army Industrial Operations Command (IOC) by MKM Engineers, Inc.

The revisions were reviewed with respect to the draft document dated August 2000 and the comment resolution document dated August 30, 2000. In addition, the analytical results for the proposed fill material was reviewed by NEDO DERR personnel.

The document was revised consistent with the comments previously made by Ohio EPA, and is acceptable to the Agency. The proposed fill material is suitable for use as backfill. As previously verbally transmitted to the MKM project manager on September 13, 2000, the excavation may now be filled in utilizing the proposed fill material.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.



Mark Patterson  
Page 2

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

cc: Bob Princic, NEDO DERR  
Todd Fisher, NEDO DERR  
Bonnie Buthker, OFFO SWDO  
Brian Tucker, CO DERR  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
Bob Whelove, OSC  
John Jent, USACE Louisville  
Srini Neralla, MKM  
Rick Callahan, MKM





State of Ohio Environmental Protection Agency  
Northeast District Office

11/2/00  
2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

RVAAP-47  
Building T-5301  
Closure  
Bob Taft, Governor  
Christopher Jones, Director

STATEMENT OF BASIS FOR THE FINAL DECISION  
FOR THE **BUILDING T-5301** INTERIM REMOVAL ACTION  
RAVENNA ARMY AMMUNITION PLANT  
RAVENNA, OHIO

TO	
<input checked="" type="checkbox"/>	CR-COR
<input checked="" type="checkbox"/>	ENV
<input checked="" type="checkbox"/>	LAND MGR
<input checked="" type="checkbox"/>	CS
<input checked="" type="checkbox"/>	CONTRACTOR
<input checked="" type="checkbox"/>	RETURN FOR FILE

Statement of Basis:

This document presents the rationale for and activities undertaken during the Interim Removal Action (IRA) conducted at the Building T-5301 Area of Concern (AOC) at the Ravenna Army Ammunition Plant (RVAAP), located in Ravenna, Ohio. The IRA was selected in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Re-authorization Act of 1985 (SARA), 42 U.S.C. 9601 et. Seq., the National Contingency Plan (NCP), and Army Regulation AR200-1, as applicable. The Operations Support Command (OSC) is the lead Agency for the Department of Defense Environmental Restoration Program - Installation Restoration Program (DERP-IRP) for the RVAAP, and initiated the IRA at Building T-5301. The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) provided the regulatory review and oversight of the IRA at Building T-5301 under the Defense-State Memorandum of Agreement (DSMOA).

Background:

The RVAAP is located in northeastern Ohio in Portage and Trumbull Counties and is situated approximately 10 miles east of Ravenna, Ohio. The installation encompasses 21,419 acres in a tract of land approximately 3.5 miles wide and 11 miles long and is currently jointly operated by the OSC of the U.S. Army and the National Guard Bureau (NGB). Operations at the installation date to 1940 and include the storage, handling, loading, assembly, and packing of military ammunition and explosives. The industrial operations at the RVAAP consisted of 12 munitions assembly facilities referred to as "load lines." In addition, RVAAP also had several areas used for burning, demolition and testing of munitions, and buildings/areas designated for clean up and decontamination activities for production equipment. In May, 1999, the NGB assumed operational control of 16,614 acres of the installation and licensed the Ohio Army National Guard (OHARNG) to use the acreage for training and other activities. The OSC retained control of the environmental AOCs and the bulk explosives areas.



Building T-5301 (designated as RVAAP-47) was located on the east side of George Road at the entrance to the Winklepeck Burning Grounds (WBG). A small Guard Post (Building T-3402) was located adjacent to George Road and the gravel driveway that led up to Building T-5301.

Originally built as a smokehouse, Building T-5301 was utilized to decontaminate and steam clean small miscellaneous production equipment of explosives and propellants as the equipment left the WBG. The quantity of decontamination fluids/wastes produced is unknown. In addition, the dates of usage of this building are unknown, but would roughly correspond to dates of production occurring at the installation, i.e., intermittently from World War II to Vietnam. The building was essentially a 25-foot by 25-foot sheet-metal structure with a concrete block wall extending approximately three (3) feet above ground surface. Transite asbestos sheets were used to partition the building into two separate areas - a larger cleaning area and a small area for boilers. Within the interior of the building there was a floor drain that exited out of the southern wall of the building and materials would have discharged into two concrete sedimentation basins that drained, via a ditch, towards Sand Creek located to the southeast.

The dimensions of this AOC are approximately 150 feet north-south by 250 feet east-west and is situated approximately 1030 feet above mean sea level (MSL). The topography drops off sharply to the east and south towards Sand Creek, approximately 25 feet behind the former building T-5301. Sand Creek is located approximately 30 feet below the former floor elevation of Building T-5301 and has a bedrock bottom. This suggests that the overburden thickness at this AOC ranges between 10 to 15 feet. Underlying the overburden is the Pennsylvanian age Pottsville Formation. The Sharon Member of the Pottsville Formation outcrops in the immediate vicinity of this AOC.

#### **Summary of AOC Risk:**

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) conducted a Relative Risk Site Evaluation (RRSE) for newly added AOCs at the RVAAP installation in October, 1998 (Hazardous and Medical Waste Study No. 37-EF-5360-99). The USACHPPM effort included a minimal number of samples that were analyzed for explosives compounds, as well as Target Analyte List (TAL) metals. Of the 13 AOCs that were evaluated, 5 were classified as high-priority AOCs, including Building T-5301.

The USACHPPM report identified surface soil and sediments to be potential media for contaminant migration due to the lack of any physical barriers/fencing around the AOC. Although Building T-5301 was neither used for production, nor was populated with



workers, the report concluded that hunters, trappers, and OHARNG personnel could be potential receptors of the observed contamination. In addition, Sand Creek is the habitat for a state-endangered species (Mountain Brook Lamprey) that could be a potential receptor (due to runoff) of the observed contamination.

### **Summary of Remedial Alternatives:**

Two alternatives were evaluated for this AOC: 1) no further action (NFA), and 2) an IRA. The first alternative, no further action, did not address the ecological risk to the endangered species, as identified in the USACHPPM report. In addition, given the potential receptors at the AOC, combined with the potential availability of the contaminants, a response was needed to mitigate the residual explosives and metals contamination. Alternative 2 provided such a response. An IRA consisting of the decontamination and dismantling of the buildings and the adjoining structures to gain access to the contaminated soil, followed by excavation and disposal according to all state and federal rules, laws, and regulations provided a two-fold result: 1) prevention of the migration of contaminants into the adjacent soils and groundwater by removing the source; and, 2) mitigation of the risk to human and ecological receptors both on and off the AOC.

### **Summary of the IRA:**

The main objectives of the IRA were: to plug and abandon the existing groundwater well; decontaminate and demolish the existing on-site structures; and, excavate the contaminated soils. Soils were to be excavated until they were non-detect for explosives compounds and TAL metals were consistent with the installation-wide background determined during the Phase II Remedial Investigation (RI) at the WBG.

Two major technical changes related to the overall IRA objectives occurred. Firstly, it was decided to evaluate the existing groundwater well for use as a non-potable construction/decontamination water supply. Subsequent to the review of the analytical data from the groundwater sample and subject to certain conditions, the Ohio EPA, in correspondence dated August 28, 2000, concurred that the well could remain open and be utilized in the IRP program as a construction/decontamination water supply. Secondly, Building T-5301 was decontaminated and dismantled for future use by the OHARNG.

The IRA at Building T-5301 consisted of the following major activities:

- The decontamination and dismantling of the contents of Building T-5301 for future use by the OHARNG, and the decontamination and demolition of Guard

Post T-3402 and the structures adjoining T-5301. The buildings were decontaminated by pressure washing in accordance with IOCP 385-1 ("Classification and Remediation of Explosive Contamination"). Structures that had lead-based paint were handled with care, and precautions were taken to prevent paint chips from contaminating the surrounding soil.

- Field screening of the soil for explosives utilizing the Jenkins methodology in order to determine the preliminary depth and extent of the excavation required.
- The excavation and transportation of the excavated soil to the bioremediation treatment facility for the remediation of explosives-contaminated soils.
- Obtaining confirmatory samples for laboratory analyses following field screening (using both the Jenkins method for explosives and the x-ray fluorescence (XRF) methodology for metals), following excavation to ensure that the remediation goals were met.
- The assessment of the existing groundwater well for use as a non-potable water construction/decontamination source during future IRP activities.
- The back-filling of the excavation with soil that was approved for use by the Ohio EPA subsequent to testing for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/PCBs, explosives, and propellants.
- Stabilization and restoration of the site to its original grade and mulching/seeding. Erosion controls will be maintained until the vegetation cover is complete.
- All work was conducted in accordance with local, state, and federal rules, laws, and regulations. In addition, all work was conducted only subsequent to the review of all applicable work plans, health and safety plans, and sampling and plans by personnel from the OSC and Ohio EPA.
- All investigation-derived wastes (IDW) were managed in accordance with the facility-wide Field Sampling plan (FSP) and correspondence (dated November 3, 1997) from Ohio EPA. All IDW was managed and disposed of in accordance with all applicable state and federal rules, laws, and regulations.



**Conclusions and Recommendations:**

Contaminant detections in the soil medium were excavated to non-detect for explosives and organics, and to concentrations consistent with the installation-specific background for TAL metals. In some instances, bedrock was encountered and the excavation was halted. Groundwater and sediments were non-detect for explosives and consistent with the installation-wide background for TAL metals. On the flood plain to Sand Creek, low concentrations of lead (61.4 mg/kg) were left in place in order to avoid the disruption of the ecological environment. This was done only subsequent to discussion with and concurrence by the Ohio EPA. If, in the future, it is determined that the excavation of some sediment would be required, this would be done in conjunction with the installation-wide surface water and sediment endeavor that is planned for the future.

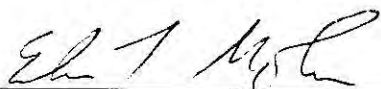
Based upon the results of the IRA, the Ohio EPA concurs that a No Further Action (NFA) status is warranted for the AOC designated as RVAAP-47, Building T-5301.



Mark Patterson  
Environmental Program Manager  
Ravenna Army Ammunition Plant

07 December 2000

Date



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
Ohio EPA

02 November 2000

Date

cc: Bob Princic, NEDO DERR  
Bonnie Buthker, SWDO OFFO  
Todd Fisher, NEDO DERR  
David Seely, USEPA Region V  
John Cicero, RVAAP  
Catherine Stroup, CO Legal

Bob Whelove, OSC  
LTC Tom Tadsen, RVAAP  
Khodi Irani, MKM Engineers Inc.  
Srini Neralla, MKM Engineers, Inc.  
John Jent, USACE Louisville



State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

July 10, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
OH5-210-020-736  
PORTAGE/TRUMBULL COUNTIES  
FINAL CLOSURE REPORT  
**BUILDINGS W-221 AND X-232**

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

Dear Mr. Patterson:

On July 7, 2000, the Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the document entitled: "Final Closure Report for Buildings W-221 and X-232, Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated June 2000, was prepared by the contractor for the U.S. Army Corps of Engineers (USACE) - Louisville District, under contract number DACA27-97-D-0005, for the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio.

Buildings W-221 and X-232 were located in what is known as Area 5, a high-explosive storage area. The buildings are "igloo"-type structures, constructed of reinforced concrete. Explosive wastes were thought to have been temporarily stored in Building X-232, while solvents were thought to have been stored in Building W-221. Both buildings were <90 day storage areas.

The plan appears to meet with the performance standards of OAC rule 3745-66-11 & 14. Since "generator" closure requires no approval from the OEPA, no approval letter will be issued. However, RVAAP shall keep all closure documentation on-site which meets the generator closure performance standards of OAC rule 3745-66-11 & 14 for these units, until closure of the facility.

In the future, plan submittals should be addressed to the Ohio EPA. The Agency should not be carbon copied on submittals that RVAAP needs to have reviewed.

Should you have any questions or concerns, please do not hesitate to contact me at (330) 963-1189.

Sincerely,

Gregory Orr  
Environmental Specialist  
Division of Hazardous Waste Management

GO:ddb

cc: Natalie Oryshkewych, DHWM, NEDO  
Bob Princic, DERR, NEDO  
Greg Orr, NEDO DHWM  
Bill Ingold, IOC  
LTC Tadsen, RVAAP  
David Seely, USEPA Region V

Eileen Mohr, DHWM, NEDO  
Todd Fisher, DERR, NEDO  
Jarnal Singh, DSIWM, NEDO  
John Cicero, RVAAP  
John Jent, USACE  
John Palmer, DHWM, NEDO





**From:** Eileen Mohr  
**To:** 'Bob Whelove'; Chisholm, Gary L LRL02; Jasper, Kevin L LRL02; Jent, John P LRL02; 'Mark Patterson'; 'Pat Ryan'; 'Steve Selecman'  
**Date:** 2/4/00 11:35AM  
**Subject:** Re: RVAAP EIMS SOW

Hi all. Thanks for sending the revised SOW. Makes sense to phase the work. eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Jent, John P LRL02" <John.P.Jent@lrl02.usace.army.mil> 01/28/00 11:28AM >>>  
To ALL,

Have revised Draft SOW, mostly according to the SAIC suggestions for a two stage process.  
(Also added in the current Installation Action Plan to get scanned).

Please review, especially for Contracting considerations.

Will check with our Contracting people on Monday.

Would like to ship out Monday afternoon.

<<EIMSSOW SAIC.doc>> JJ

**CC:** Todd Fisher

**From:** Eileen Mohr  
**To:** 'Bob Whelove'; Brancato, David J LRL02; Heintz, Christopher J LRL02; Jasper, Kevin L LRL02; Jent, John P LRL02; 'Kathy Dominic'; 'Kevin Jago'; 'Larry Tannenbaum'; Mansy, Samir A LRL02; 'Mark Patterson'; McClellan, Boyd K LRL02; 'Pat Ryan'; 'Steve Selecman'; 'Tom Daugherty'; 'Tom Tadsen'; Zorko, Paul L LRL02  
**Date:** 1/14/00 1:57PM  
**Subject:** Re: RVAAP Environmental Information Management System (EIMS) Draft SOW

Hi John

Thanks for the great job on the SOW for the EIMS - I have no comments/additions to what you have prepared. When the document gets drafted, OEPA will need only two copies of the draft workplan. I have asked Todd Fisher to take the lead on reviewing any documents that may come in, and I will have peripheral involvement in the development process. If you have any questions, please don't hesitate to call.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Jent, John P LRL02" <John.P.Jent@lrl02.usace.army.mil> 01/08/00 10:47AM >>>  
To All,

Finally, the long awaited SOW for EIMS at Ravenna.

Many thanks to Pat Ryan for his help.

Please review the attached Draft SOW for EIMS at Ravenna.

By 14 Jan if you can.

<<EIMSSOW.doc>> Have at it.

JJ

**CC:** Todd Fisher



**Mail Envelope Properties** (387F719E.CE7 : 5 : 52863)

**Subject:** Re: RVAAP Environmental Information Management System (EIMS)  
Draft SOW

**Creation Date:** 1/14/00 1:57PM

**From:** Eilcen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
amedd.army.mil lawrence.tannenbaum ('Larry Tannenbaum')	Transferred	01/14/00 01:57PM
cpmx.saic.com patrick.f.ryan ('Pat Ryan') stephen.b.selecman ('Steve Selecman') william.k.jago ('Kevin Jago')	Transferred	01/14/00 01:57PM
epa.state.oh.us NEDO.Central-Office Tfisher CC (Todd Fisher)	Delivered	01/14/00 01:57PM
ioc.army.mil pattersonm ('Mark Patterson') whelover ('Bob Whelove')	Transferred	01/14/00 01:57PM
lrl02.usace.army.mil Boyd.K.McClellan (McClellan, Boyd K LRL02) Christopher.J.Heintz (Heintz, Christopher) David.J.Brancato (Brancato, David J LRL02) John.P.Jent (Jent, John P LRL02) Kevin.L.Jasper (Jasper, Kevin L LRL02) Paul.L.Zorko (Zorko, Paul L LRL02) Samir.A.Mansy (Mansy, Samir A LRL02)	Transferred	01/14/00 01:57PM
OH-ARNG.ngb.army.mil daughertyt ('Tom Daugherty') rtlsmgr ('Tom Tadsen')	Transferred	01/14/00 01:57PM
US-DUBLIN-AT.mail.saic.com DominicK ('Kathy Dominic')	Transferred	01/14/00 01:57PM
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**Options****Auto Delete:**

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**Expiration Date:**

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**Notify Recipients:**

Yes

**Priority:**

Standard

**Reply Requested:**

No

**Return Notification:**

None

**Concealed Subject:**

No

**Security:**

Standard

**To Be Delivered:**

Immediate

**Status Tracking:**

Delivered &amp; Opened



**From:** Todd Fisher  
**To:** Eileen Mohr; john.p.jent@lrl02.usace.army.mil; PattersonM@ioc.army.mil  
**Date:** 2/4/00 3:10PM  
**Subject:** RVAAP EIMS SOW

Here are my comments

Comments:

Comment #1, EIMS SOW:

I agree with the Phased approach outlined in the EIMS SOW. It appears that all the "bottle neck" tasks have been identified, and the task sequence was well thought out.

Comment #2, Phase 1, Task 1:

The EIMP should be based on information provided by all parties through the EIMS Needs Survey, as reiterated on page 4 of the EIMS SOW.

Comment #3, Phase 1, Task 1, page 4, item 4:

What constitutes a "dynamic template?" Will this template have real time updates?

Comment #4, Phase 1, Task 2, page 4, last paragraph:

The PDF format lends well to viewing documents using an internet browser and a browser plug-in such as Adobe Acrobat viewer. However, what query capabilities will the system have? Will the table of contents be the only linked portion of the pdf document?

Comment #5, Phase II, Task 3, page 6:

How will Ohio EPA access the server? Will it be through an internet browser or can our LAN be connected directly to the EIMS server?

Comment #5, Phase II, Task 3 and Task 7:

Currently, Ohio EPA uses IE 5.01. 40-bit encryption. Will Ohio EPA need to have 128-bit encryption security on Internet Explorer?

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

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

CC: Bob Princic, Bonnie Buthker



**From:** Eileen Mohr  
**To:** 'Bob Whelove'; Brancato, David J LRL02; Jent, John P LRL02; Mansy, Samir A LRL02; 'Mark Patterson'; 'Steve Selecman'; Zorko, Paul L LRL02  
**Date:** 1/4/00 12:05PM  
**Subject:** Re: RVAAP; DRAFT SOW for Facility-Wide Updates

John

Nice job. The only things I can think of are as follows:

1. we changed the decon procedure in the middle of doing the Phase 1 RI work at the 11 high priority AOCs, i.e. the acid rinse was changed from 10% to 2%. The facility-wide plan should be revised to reflect this.

2. I wouldn't change the QAPP just yet re: the OEPA QA lab. As a FYI... our contract lab is Quanterra (for federal facilities)... so lets talk about this more and see if we can work everything out before we change the QAPP.

I'm all for proceeding on this route, but would hate to get a bit down the road and have it be determined that the State can't spend DSMOA funds this way. I'll keep asking.

Thanks.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
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email: Eileen.Mohr@epa.state.oh.us

>>> "Jent, John P LRL02" <John.P.Jent@lrl02.usace.army.mil> 01/03/00 04:01PM >>>  
Mark, et all

Please review the attached Draft SOW for updating the Facility-Wide SAP and Health & Safety Plans.

Need reviews fairly quickly, as much work is to begin soon.

<<Facility-Wide.doc>> JJ

**CC:** Jasper, Kevin L LRL02

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**Subject:** Re: RVAAP; DRAFT SOW for Facility-Wide Updates  
**Creation Date:** 1/4/00 12:05PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL.-OFFICE@cpa.state.oh.us

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cpmx.saic.com stephen.b.selecman ('Steve Selecman')	Transferred	01/04/00 12:05PM
epa.state.oh.us NEDO.Central-Office Emohr BC (Eileen Mohr)	Delivered Opened	01/04/00 12:05PM 01/04/00 12:05PM
ioc.army.mil pattersonm ('Mark Patterson') whelover ('Bob Whelove')	Transferred	01/04/00 12:05PM
lrl02.usace.army.mil David.J.Brancato (Brancato, David J LRL02) John.P.Jent (Jent, John P LRL02) Kevin.L.Jasper CC (Jasper, Kevin L LRL02) Paul.L.Zorko (Zorko, Paul L LRL02) Samir.A.Mansy (Mansy, Samir A LRL02)	Transferred	01/04/00 12:05PM

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State of Ohio Environmental Protection Agency

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Lazarus Government Center  
122 S. Front Street  
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

P.O. Box 1049  
Columbus, OH 43216-1049

Re: Ohio EPA Permit No. 3IO00000\*GD  
Application No. OH0010936  
County: Portage  
Facility Name: Ravenna Army  
Ammunition Plant

Date of Issue: **March 23, 2000**  
Effective Date: May 1, 2000

R & R International, Inc.  
Ravenna Army Ammunition Plant  
Attn: Stan Levenger  
8451 State Route 5  
Ravenna, OH 44266

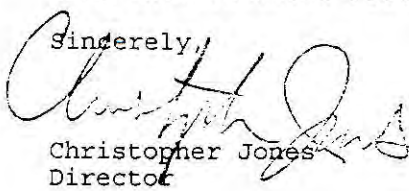
Ladies and Gentlemen:

The National Pollutant Discharge Elimination System (NPDES) permit referenced above became effective on April 1, 2008. Since that time, the discharge has been eliminated. In view of this, it is proposed that the referenced permit be revoked on the effective date shown above.

An NPDES permit application must be submitted at least 180 days prior to any change in your operation which would result in a permit being required under Chapter 3745-33 of the Ohio Administrative Code. You should also be aware that Chapter 3745-31 of the Ohio Administrative Code requires a permit to install be obtained prior to commencing any construction that would modify a treatment works to allow it to process waste in materially increased quantities or of a materially different character.

If you wish to challenge this proposed action, you may request an adjudication hearing within thirty (30) days of the mailing of this proposed action. At such hearing, you may appear in person or be represented by an attorney or such other representative as is permitted to practice before this agency, or you may present your position, arguments, or contentions in writing; you may also present evidence at the hearing and examine witnesses appearing for and against you. Requests for hearing shall specify the issues of fact and law to be contested. Any such request for hearing must be sent to the Hearing Clerk, Ohio Environmental Protection Agency.

Sincerely,

  
Christopher Jones  
Director

CJ/kep

**CERTIFIED MAIL**

cc: Dennis Lee, NEDO  
Northeast District Office  
Sandy Kemper, DSW  
Journal Room  
File

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director



**From:** Eileen Mohr  
**To:** Callahan, 'Rick; Dominic', 'Kathy; Fisher, Todd; Jago', 'Kevin; LRL02, Brancato, David J; LRL02, Jefferson, Kevin R; LRL02, Jent, John P; LRL02, Mansy, Samir A; LRL02, Thompson, Melody A; LRL02, Zorko, Paul L; Luedtke', 'Nile; Patterson', 'Mark; Selecman', 'Steve; Tadsen', 'Tom; Whelove', 'Bob  
**Date:** 4/24/00 1:38PM  
**Subject:** Re: RVAAP- 2nd Draft SOW for Facility-Wide SOPs

Hi John:

I looked at the SOW for the facility-wide revisions and have only a couple of comments:

1. In the QAPP (pg 4 of the SOW).... I would recommend leaving the language a little more flexible with respect to who (Ohio EPA or USACE) will be doing the QA analyses.
2. In the HASP, is there a good discussion of Lyme Disease? If there isn't an in-depth one, I'd say lets add more information on this given that there have been documented case(s) here.

Thanks for all your work.

Eileen

Eileen T. Mohr  
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Division of Emergency and Remedial Response  
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Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Jent, John P LRL02" <John.P.Jent@lrl02.usace.army.mil> 04/21/00 02:06PM >>>  
To ALL,

Attached is the 2nd attempt at the SOW for the facility-wide updates.

Tried to incorporate everyone's previous responses.

Would like to get fairly quick turn around if possible. Won't be back in until next Friday, though.

Environmental Data Assurance Guideline will be out shortly.

Hard copies are being fed-exed.

JJ <<Facility-Wide.doc>>

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**Subject:** Re: RVAAP- 2nd Draft SOW for Facility-Wide SOPs  
**Creation Date:** 4/24/00 1:38PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

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stephen.b.selecman ('Steve Selecman')		
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Melody.A.Thompson (Thompson, Melody A LRL)		
Paul.L.Zorko (Zorko, Paul L LRL02)		
Samir.A.Mansy (Mansy, Samir A LRL02)		
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US Army Corps of Engineers  
Louisville District

F-W

# OAC Rule 13 Authorization

Ravenna Army Ammunition Plant  
Ravenna, Ohio

Prepared by:  
U.S. Army Corps of Engineers

July 2000



## **1. INTRODUCTION**

This is a generic request for authorization from the Ohio Environmental Protection Agency (Ohio EPA) to conduct investigative activities at known and to-be-discovered Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Areas of Concern (AOCs) at Ravenna Army Ammunition Plant (RVAAP) that are regulated under the Ohio Administrative Code (OAC) 3745-27-13 (Authorization to Engage in Filling, Grading, Excavating, Building, Drilling, or Mining on Land Where a Hazardous Waste Facility or Solid Waste Facility Was Operated), hereinafter referred to as OAC Rule 13. An agreement between RVAAP and the Ohio EPA Northeast District, dated January 4, 1996, stipulates that a generic OAC Rule 13 authorization request be developed according to the requirements of the rule and presented in the Facility-wide Sampling and Analysis Plan (SAP). The original Facility-wide SAP (USACE 1996a) contained a request for authorization for only four AOCs. This document supercedes the 1996 request with more current site knowledge and more generalized requirements for conducting investigations at RVAAP.

Investigation activities at RVAAP commonly include processes such as those named in the OAC statute, i.e., filling, grading, excavating, and drilling. The request for authorization under OAC Rule 13 addresses measures required to ensure that investigative activities necessary to characterize individual AOCs under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) are protective of human health and the environment.

This generic request for OAC Rule 13 authorization applies only to AOCs being addressed under CERCLA at RVAAP. Where there is no reasonable expectation that solid or hazardous wastes have been deposited, AOCs will not require OAC Rule 13 authorization. At this writing, there are 36 known CERCLA AOCs at RVAAP. It is possible that several more remain to be identified. Should it be determined by Ohio EPA and RVAAP that additional AOCs require Rule 13 authorization, a formal request for authorization under this generic request will be submitted to the Ohio EPA. Additional safeguards, if necessary, will be addressed in the supplemental request for an individual AOC. The status, plans, and schedules for current characterization and removal activities at RVAAP AOCs are presented in the Installation Action Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio (Operations Support Command [OSC], March 2000). The Action Plan is revised annually to reflect current, planned, and completed environmental activities at RVAAP.

Table 1-1 lists all the current CERCLA AOCs at RVAAP. It is possible that several more remain to be identified.

The following sections provide the information required under OAC Rule 13. Much of the information required under the provisions of OAC Rule 13 is contained in existing facility documents and CERCLA work plans. Therefore, references to existing documentation are used where appropriate to meet the requirements of the rule.

## **2. OAC 3745-27-13(C)(1) – LOCATION AND DESCRIPTION**

The location of RVAAP on a 7.5-minute USGS topographic quadrangle map is provided in the Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio (USACE 1996b). The locations, descriptions, and operating histories of individual AOCs are also included in the Preliminary Assessment, the 1998 USACHPPM RRSE report, and the 2000 Installation Action Plan.

RVAAP is located in northeastern Ohio, within Portage and Trumbull Counties. The facility lies 4.8km (3 mi) east-northeast of the Town of Ravenna and approximately 1.61 km (1 mi) northwest of the Town of Newton Falls. The installation consists of 8,668 ha (21,419 acres) bounded by State Route 5 and the CSX System Railroad on the south; State Route 534 on the east; Garrettsville and Berry Roads on the west; and the CONRAIL Railroad on the north. The Michael J. Kirwan Reservoir is located immediately south of the facility. Land use surrounding the installation is primarily agricultural, open space, and residential.

**TABLE 1-1. CERCLA AOCs at RVAAP**

RVAAP-02	Erie Burning Grounds	RVAAP-34	Sand Creek Disposal Road Landfill
RVAAP-03	Demolition Area #1	RVAAP-36	Pistol Range
RVAAP-04	Demolition Area #2	RVAAP-38	NACA Test Area
RVAAP-05	Winklepeck Burning Grounds	RVAAP-39	Load Line 5 Fuze Line 1
RVAAP-06	C Block Quarry	RVAAP-40	Load Line 7 Booster Line 1
RVAAP-08	Load Line 1 and Settling Pond	RVAAP-41	Load Line 8 Booster Line 2
RVAAP-09	Load Line 2 and Settling Pond	RVAAP-42	Load Line 9 Detonator Line
RVAAP-10	Load Line 3 and Settling Pond	RVAAP-43	Load Line 10 Percussion Element
RVAAP-11	Load Line 4 and Settling Pond	RVAAP-44	Load Line 11 Artillery Primer
RVAAP-12	Load Line 12 and Settling Pond	RVAAP-45	Wet Storage Area
RVAAP-13	Building 1200 and Settling Pond	RVAAP-46	Buildings F-15 and F-16
RVAAP-16	Quarry Landfill	RVAAP-47	Building T-5301
RVAAP-19	Landfill North of Winklepeck	RVAAP-48	Anchor Test Area
RVAAP-28	Mustard Agent Burial Site	RVAAP-49	Central Burn Pits
RVAAP-29	Upper and Lower Cobbs Ponds	RVAAP-50	Atlas Scrap Yard
RVAAP-32	40- and 60-mm Firing Range	RVAAP-51	Dump Along Paris-Windham Road
RVAAP-33	Firestone Test Facility		

RVAAP is a government-owned, contractor-operated U.S. Army Operations Support Command (OSC) facility. Currently, RVAAP is an inactive facility maintained by a contracted caretaker, TolTest, Inc. Table 2-1 provides the RVAAP Command Organization, Department of Defense (DoD) Installation Restoration Program (IRP) executing agency, and lead regulatory agencies.

**TABLE 2-1 RVAAP Organizational Responsibilities**

<b>Command Organization</b>
Major Command: U.S. Army Materiel Command
Major Subordinate Command: U.S. Army OSC
Installation: RVAAP, Commander's Representative
Installation Contractor: TolTest, Inc.
<b>Installation Restoration Program Executing Agency</b>
U.S. Army Corps of Engineers, Louisville District
U.S. Army Operations Support Command
<b>Regulatory Agencies</b>
Ohio Environmental Protection Agency, Northeast District
U.S. Environmental Protection Agency, Region 5

RVAAP had the capabilities to load, assemble, and pack military ammunition. These operations have been inactive since 1992. As part of RVAAP's mission, the inactive facilities were maintained in standby status for a number of years, by keeping equipment in a condition



sufficient to permit resumption of production. Over the years, RVAAP also handled and stored strategic and critical materials for various government agencies. The facility also received, stored, maintained, transported, and demilitarized military ammunition and explosive items. The only activities still being carried out are the storage of bulk explosives and the infrequent demolition of unexploded ordnance (UXO) and ordnance explosive waste (OE) found at the installation. The Army is also overseeing the reclamation of railroad track, telephone line, and steel for reuse or recycling. The Army has begun the demolition of excess buildings at Load Lines 1, 2, and 12, which includes the removal of friable and non-friable asbestos.

In 1998, much of the land at RVAAP was transferred from the Army to the National Guard Bureau. Roughly 6,544 ha (16,164 acres) of land is now under the administrative control of the Ohio Army National Guard (OHARNG). The Guard uses RVAAP land and facilities for training, maintenance, and storage of heavy equipment.

### **3. OAC 3745-27-13(C)(2) – INVESTIGATION ACTIVITIES**

The planned investigation activities for which authorization is requested are as follows:

- Drilling
- Trenching
- Monitoring well installation
- Piezometer and well point installation
- Surface water and sediment sampling
- Excavation
- Surgical removal/other removal of UXO and suspected UXO
- Grading
- Placement of clean fill material.

These activities are necessary to characterize the AOCs under CERCLA and effect their restoration under the IRP. The approach to implementing CERCLA under the IRP is described in Section 1 of the Facility-wide SAP (USACE 2000a) and in the Installation Action Plan. The characterization of the AOCs under this generic authorization request is expected to include investigations to evaluate the nature of buried solid waste materials and the potential impact from leaching of contaminants on adjacent soils, groundwater, surface water, and sediment. The specific investigation activities for each AOC will be defined in an investigation-specific addendum to the Facility-wide SAP. The addendum will be submitted in draft form for Ohio EPA review and comment, and as a final document for Ohio EPA review, prior to the commencement of any investigative activities at an AOC.

Table 2-2 presents the descriptions of the planned investigation activities listed above.

**TABLE 2-2. Descriptions of Planned Investigation Activities for AOCs at RVAAP**

<b>ACTIVITY</b>	<b>DESCRIPTION</b>
Drilling	Soil borings may be drilled in and adjacent to former disposal areas in order to collect surface and subsurface soil samples for laboratory analysis to characterize potential contaminants, or to characterize lithology.
Monitoring well installation	Boreholes may be drilled to install monitoring wells in and adjacent to an AOC to collect groundwater samples for characterization of contaminants and subsurface geology.
Piezometer and well point installation	Piezometer and well points may be installed to determine the depth to shallow groundwater and the potentiometric surface at an AOC, and to collect screening groundwater samples. This information will be used to locate monitoring wells in the correct orientation to monitor downgradient water quality and flow. It may also be used to determine the maximum allowable depths of trenches and other excavations so that the water table is not penetrated during these operations. This will mitigate the potential for cross-media contamination and creation of preferential flow paths.
Trenching	Trenches may be excavated in some disposal areas to evaluate the nature of buried waste in former landfills for which records are limited or unavailable. Samples of waste materials and adjacent subsurface soils may be collected for laboratory analysis to characterize potential source materials and any contamination resulting from leaching. Trenches will not penetrate groundwater zones (perched or water table).
Surface water and sediment sampling	Samples may be collected from streams and other drainage features (culverts, ponds, sumps, and pits) adjacent to former disposal areas and submitted for laboratory analysis to characterize the potential impact of disposal practices on these media.
Excavation and removal of UXO and suspected UXO	Interim and emergency removals of hazardous or solid waste materials (including UXO and OE) in soils may require the excavation and disposal of contaminated soils and associated materials. UXO and suspected UXO may represent a significant safety hazard requiring surgical removals as well.
Placement of clean fill	Removals of contaminated soils and/or UXO may require the placement of clean soil (fill) in order to restore the site.
Grading	Removal of contaminated soils during interim or emergency actions will require the proper grading of the ground surface.

#### **4. OAC 3745-27-13(C)(3) – PREVIOUS AND EXISTING PERMITS, APPROVALS, AND ORDERS**

There are no previous or existing permits, approvals, or orders pertaining to the CERCLA AOCs at RVAAP for which authorization under this rule is being requested. The regulatory history of RVAAP is presented in the Preliminary Assessment; additionally, the Installation Action Plan contains information on the installation's regulatory history.



**5. OAC 3745-27-13(C)(4) – LETTERS OF ACKNOWLEDGEMENT**

All parcels of land to which this generic request for authorization pertains are owned by the U.S. Army. Because of the interior locations of the CERCLA AOCs within the boundaries of the facility, all adjacent parcels are similarly the property of the Army. Consequently, no letters of acknowledgement are included in this request for authorization under OAC Rule 13.

**6. OAC 3745-27-13(C)(5) – LETTERS OF NOTICE**

Letters of notice of this generic request for authorization are required, under the provisions of OAC Rule 13, to be sent to the board of health for the health district and the local zoning authority for the area where the facility is located. The Departments of Health for both Trumbull and Portage Counties, Ohio, were notified in 1996 and 1998. Additional notification of these agencies will be required for this generic request for authorization. Because the federal government owns RVAAP, local zoning authorities do not have jurisdiction over the facility. Therefore, notices of this revised request were not sent to these agencies. The Boards of Health for Trumbull and Portage Counties will be notified of this generic request.

**7. OAC 3745-27-13(C)(6) – HISTORY OF HAZARDOUS WASTE OR SOLID WASTE TREATMENT, STORAGE, OR DISPOSAL OPERATIONS**

A summary of all known hazardous and solid waste treatment, storage, and disposal facilities at RVAAP was presented in the Preliminary Assessment in 1996. Since that time, several additional CERCLA AOCs have been added to the original list of 23, resulting in a total of 36 CERCLA AOCs. The additional 13 AOCs and their histories are described in the Installation Action Plan or the Relative Risk Site Evaluation (RRSE) Report (USACHPPM 1998).

**8. OAC 3745-27-13(C)(7) – CLOSURE ACTIVITIES**

Hazardous waste and solid waste TSD operations have ceased at all AOCs at RVAAP. Formal closure activities have been conducted at selected AOCs in conjunction with RCRA-regulated portions of the AOCs. Section 1 of the Facility-wide SAP (USACE 2000) shows that the investigation of potential contamination is the first step in the remediation process, which leads to eventual closure. A summary of all known previous closure activities for AOCs at RVAAP is presented in the Preliminary Assessment, with additional information in the Annual Installation Action Plan for RVAAP.

**9. OAC 3745-27-13(C)(8) – INVESTIGATION METHODS AND PROCEDURES**

The investigation of CERCLA AOCs at RVAAP will be conducted in accordance with the Facility-wide SAP, HASP, and QAPP, as well as the investigation-specific SAP addenda developed to meet the CERCLA requirements. These plans contain detailed methods and procedures for performing the described investigation activities. The intent of the facility-wide documents is to guide the investigation activities, to the extent practical, expected to be common to the investigation of all CERCLA AOCs at RVAAP. For each AOC-specific investigation, addenda to the facility-wide plans will be developed that will contain additional project-specific information regarding activities, methods, and procedures. The investigation of an AOC cannot be implemented without the Facility-wide SAP, HASP, and investigation-specific addenda. The contents and relationship of the facility-wide plans and investigation-specific addenda are addressed in greater detail in Section 1 of the Facility-wide SAP. The facility-wide plans and



their addenda will be reviewed and commented on by the Ohio EPA before the commencement of field activities.

Detailed procedures describing the investigative methods are contained in the Sampling and Analysis Plan (SAP) portion of either the Facility-wide SAP, or the investigation-specific addenda for drilling, monitoring well installation, piezometer and well point installation, trenching, surface water and sediment sampling, excavating, UXO removal, placing clean fill, and grading.

**10. OAC 3745-27-13(C)(9) – ENVIRONMENTAL PROTECTION**

As previously described in Section 9 of this generic request for authorization, the investigation of CERCLA AOCs at RVAAP will be conducted in accordance with facility-wide work plans and investigation-specific work plan addenda developed to meet the requirements developed by the Ohio EPA and the Army, under CERCLA. These plans contain detailed methods and procedures for performing the described work. The primary focus of these documents is to produce legally defensible investigation results and ensure protection of human health and the environment in the process. Consequently, the investigation methods and procedures cited in Section 9 are in compliance with applicable state and federal rules, laws, and regulations for conducting CERCLA investigations. These procedures contain provisions for protection of the environment during and as a consequence of field activities. In addition, the Facility-wide SAP and its addenda contain provisions (Section 7, Facility-wide SAP) for the management of Investigation-Derived Waste (IDW) in accordance with applicable state and federal rules, laws, and regulations. Provisions are included for the temporary storage or disposal of IDW in accordance with rules, laws, and regulations.

**11. OAC 3745-27-13(C)(10) – REMOVAL OF SOLID OR HAZARDOUS WASTE, OR POTENTIALLY CONTAMINATED SOILS**

During the investigation of CERCLA AOCs at RVAAP, it is expected that IDW will be generated as a result of characterization activities. Excess soil and drill cuttings from soil borings, purged groundwater, and equipment decontamination water could be removed from an individual AOC. These materials may be hazardous, contaminated but non-hazardous, or not contaminated. Section 7 of the Facility-wide SAP and the investigation-specific addenda contain provisions for representative sampling and analysis of IDW in accordance with applicable state and federal rules, laws, and regulations. The Facility-wide SAP also requires submittal of a copy of a letter of acceptance from a permitted disposal facility to the Ohio EPA prior to removal of IDW from an AOC for off-site disposal. IDW management is accomplished in conjunction with the RVAAP Environmental Coordinator.

**12. OAC 3745-27-13(C)(11) – CLOSURE PROCEDURES**

The formal process for completing regulatory closure of AOCs at RVAAP regulated under CERCLA is described in Section 1 of the Facility-wide SAP, and additional information is provided in the Installation Action Plan (OSC, March 2000). Because the CERCLA process is iterative and therefore requires a considerable amount of time in which to implement a remediation, the Facility-wide SAP and investigation-specific addenda contain provisions for reestablishing AOC conditions following completion of characterization activities. This is done in order to mitigate the impact on human health and the environment from these activities until such time as the AOC can be remediated (if necessary) under the CERCLA process. These



reestablishment measures are described for each investigative activity presented in the Facility-wide SAP and investigation-specific addenda.

**13. OAC 3745-27-13(C)(12) – GENERIC AUTHORIZATION REQUEST SIGNATURES**

The statements and assertions of fact made in this application are true and complete to my knowledge and comply fully with the applicable state requirements as stated in OAC Rule 3745-27-13

---

John A. Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant

---

Notary Public

## **REFERENCES**

Operations Support Command, March 2000. Installation Action Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio.

USACE 1996a. Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio.

USACE 1996b. Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio.

USACHPPM 1998. Relative Risk Site Evaluation Report, Ravenna Army Ammunition Plant, Ravenna, Ohio.

USACE 2000. Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio (in prep.).





State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center  
122 S. Front Street  
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

P.O. Box 1049  
Columbus, OH 43216-1049

**Certified Mail**

AUG 14 2000

Mark Patterson  
Ravenna Arsenal  
8451 St. Rt. 5  
Ravenna, Ohio 44266

**Re: Emergency Hazardous Waste Permit  
Ohio ID No.: 02-67-800E**

Dear Mr. Patterson;

Although verbal approval has already been granted to you for the emergency hazardous waste activity described in the attachment, Ohio EPA is also sending you a permit in written form to meet the requirements of Rule 3745-50-57 and Chapter 3745-19 of the Ohio Administrative Code (OAC).

Please note Special Condition G, Required Notices, of this permit requires that you notify Ohio EPA, Division of Hazardous Waste Management, upon completion of this emergency treatment. Notification should be sent to: Ohio EPA, Lazarus Government Center, Division of Hazardous Waste Management, Attn: Data Management Section, 122 South Front Street, Columbus, Ohio 43215.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission (ERAC) pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of, and the grounds upon which the appeal is based. It must be filed with ERAC within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of the filing with ERAC. An appeal may be filed with ERAC at the following address: Environmental Review Appeals Commission, 236 E. Town St., Room 300, Columbus, Ohio 43215.

Sincerely yours,

Thomas E. Crepeau, Manager  
Data Management Section  
Division of Hazardous Waste Management

cc: Gretchen Fickle, Ohio EPA, DHWM  
Alan Lloyd, Ohio EPA, DAPC  
Harry Courtright, DHWM, NEDO  
Dennis Bush, DAPC, NEDO

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director

## Ohio Environmental Protection Agency

## Emergency Hazardous Waste Permit

OHIO E.P.A.

AUG 14 2000

ENTERED DIRECTOR'S JOURNAL

<b>Name of Applicant:</b>	Mark Patterson, Ravenna Arsenal
<b>Mailing Address:</b>	Ravenna Arsenal 8451 St. Rt. 5 Ravenna, Ohio 44266
<b>Facility Location:</b>	8451 St. Rt. 5 Ravenna, Ohio 44266
<b>Treatment Location:</b>	8451 St. Rt. 5 Ravenna, Ohio 44266
<b>Ohio ID Number:</b>	02-67-800E
<b>Effective Date:</b>	May 17, 2000
<b>Expiration Date:</b>	May 23, 2000

**Authorized Activities**

Pursuant to Ohio Revised Code Section 3734.02(J) and rules promulgated thereunder (Ohio Administrative Code Rule 3745-50-57) and Ohio Revised Code Section 3704.03(E) and rules promulgated thereunder (Ohio Administrative Code Chapter 3745-19), an emergency permit is issued to the applicant indicated above (hereinafter "Permittee") to operate a hazardous waste treatment facility and cause or allow detonation at the location indicated in the terms and conditions of this permit. The conditions of this permit were developed in accordance with applicable provisions of Ohio Administrative Code Chapter 3745-19, Chapter 3745-50 and the Hazardous Waste Facility Standards Chapters 3745-50 et seq. Verbal approval to conduct this activity was authorized by the Director of the Ohio EPA on May 17, 2000.

I certify this to be a true and accurate copy of the  
original as filed in the records of the Ohio  
Environmental Protection Agency.

By James K. Clement Date 8-14-00



## Permit Approval

The Permittee shall comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any attachments) and the applicable rules specified in the permit. Applicable rules are those which are in effect on the date of the issuance of this permit. This permit may be revoked at any time without process, if the Director determines that revocation is appropriate to protect public health, safety, or the environment. The terms and conditions of this permit may be revised in the interim, if the Director determines that revision is necessary to protect public health, safety, or the environment.

By: Christopher Jones  
Christopher Jones, Director

Date: AUG 14 2000

- I. Standard Conditions. The Permittee shall comply with Rule 3745-50-58, of the Ohio Administrative Code (OAC) "Conditions applicable to all permits", which conditions are incorporated herein by reference.
- II. General Facility Conditions. The Permittee shall comply with the following rules of the Ohio Administrative Code which are incorporated herein by reference:

3745-54-14(A), (B)	- Security
3745-54-15(A)	- General Inspection Requirements
3745-54-17(A), (B)	- General Requirements for Ignitable, Reactive or Incompatible Waste
3745-54-31	- Design and Operation of Facility
3745-54-32	- Required Equipment
3745-54-33	- Testing and Maintenance of Equipment
3745-54-34	- Access to Communications or Alarm System
3745-54-37	- Arrangements with Local Authorities
3745-54-55	- Emergency Coordinator
3745-54-56	- Emergency Procedures
3745-54-73(A), (B)(1), (B)(2)	- Operating Record
3745-54-74	- Availability, Retention and Disposal of Records
3745-55-11	- Closure Performance Standards
3745-55-14	- Disposal or Decontamination of Equipment
3745-55-47	- Liability Requirements
3745-55-48	- Incapacity of Owners or Operators, Generators, or Financial Institutions

III. Special Conditions.

- a) Waste Identification. The Permittee may treat 1 40mm grenade.
- b) Method of Treatment. Authorized treatment under this permit shall be detonation of the hazardous waste cited above.
- c) Location. Treatment shall occur at 8451 St. Rt. 5, Ravenna, Ohio 44266. Selection of the treatment area shall be made on the basis of topography, wind direction, proximity to utility lines and/or other man-made constructions and any other factors, so as to minimize any deleterious effect on the public and the environment. The Permittee shall take all appropriate measures to minimize noise occasioned by the detonation, and to minimize the emissions of air contaminations.



Isolation distances shall be at least those required by OAC Rule 3745-68-82.

Pounds of waste, explosives or propellants	Minimum distance from open burning or detonation to the property of others
0 - 100	204 meters (670 feet)
101 - 1,000	300 meters (1,250 feet)
1,001 - 10,000	530 meters (1,730 feet)
10,001 - 30,000	690 meters (2,260 feet)

- d) Preparedness and Prevention. Detonations shall occur in an area capable of withstanding a blast. Adequate security shall be provided by the Permittee, to prevent the entry of persons into dangerous areas surrounding the detonation zone. Adequate firefighting and first aid equipment shall be provided by the Permittee and/or by the local fire department.

Handling and transportation of the waste to the treatment area shall be accomplished by persons with experience and/or training in the handling of reactive and ignitable materials. All wastes shall be properly packed and stabilized prior to transportation.

The detonation shall take place under the direct supervision of Mark Patterson or his authorized designee.

- e) Inspection/Disposal of Residues. The Permittee shall inspect the treatment area after each detonation for undetonated waste. The Permittee shall determine whether detonation residues are hazardous wastes pursuant to the OAC Rules 3745-50-01 et seq. with such determination subject to confirmation by Ohio EPA personnel. All residues determined to be hazardous waste shall be managed as such pursuant to the OAC Chapters 3745-50 et seq.
- f) Other Approvals. Prior to treatment under this permit, the Permittee shall obtain all necessary federal and local approvals, permits, and/or licenses.

- g) Required Notices. Mark Patterson shall notify the Ohio EPA, Division of Hazardous Waste Management, within 30 days of the expiration date of this permit upon receipt of this letter. The information to be supplied in this report should be a brief summary of the activity authorized by this permit, and should include the following elements:
- 1) The type and quantity of hazardous waste involved;
  - 2) The specific location of the activity authorized by this permit;
  - 3) The name of the authorized designee (if one is so appointed);
  - 4) The method of treatment (detonation); and
  - 5) A description of any unusual circumstances involved in the management of the hazardous waste described in this permit.

**Send the notification to: Ohio EPA, Lazarus Government Center, Division of Hazardous Waste Management, Attn: Data Management Section, 122 South Front Street, Columbus, Ohio 43215.**





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

September 7, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
~~FACILITY-WIDE WORKPLAN~~  
~~FACILITY-WIDE HEALTH AND SAFETY PLAN~~  
EXPLOSIVES SOP

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the following documents entitled: "Draft, Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio"; Draft, Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio"; and "Standard Operating Procedure for Field Colorimetric Analysis of Explosives for Ravenna Army Ammunition Plant, Ravenna, Ohio." These documents, dated July 2000 and received at Ohio EPA on July 19, 2000, were prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE) - Louisville District under contract number DACA 62-00-D-0001, delivery order CY02.

The draft documents were cross-referenced to the previous facility-wide workplans which were finalized in 1996, as well as previous correspondence and other documents that memorialized changes agreed to and made in the investigative procedures/programs.

Ohio EPA, NEDO, DERR, has the following comments on the draft facility-wide documents:

**Sampling and Analysis Plan:**

1. On page ix, please confirm that the acronym listing for "NSF" is correct, if not, please revise the list accordingly.
2. Please revise the text on page xi to read as follows: "However, the CERCLA model will continue to be used in this FSAP update for all environmental data collection and analysis at RVAAP, for all *currently identified* 51 AOCs...."
3. On page xiii, please revise the entries in the table for Areas of Concern (AOCs) 4 and 5, to indicate that they are regulated by both RCRA and CERCLA.

MR. MARK PATTERSON

SEPTEMBER 7, 2000

PAGE 2

4. Please correct the spelling for fuze on page 1-1 (second paragraph) and page 1-3 (last paragraph).
5. On page 1-3, please revise the list of potential contaminants of concern (COCs) at Load Lines 5-11 to include mercury fulminate and, possibly, perchlorate.
6. On page 1-5, in the first, second and fourth paragraphs, please remove or provide further explanation in the text to differentiate between "metals" and "heavy metals."
7. On page 1-5 (third paragraph), please provide additional information on the explosives compound listed as RCX, or please insert the correct explosive (i.e., should this be HMX?).
8. On page 1-7, in the discussion of unconsolidated sediments, should the text read Lavery and Hiram tills?
9. Please revise the surface water text to indicate that the Ravenna Army Ammunition Plant (RVAAP) installation is located within the Mahoning River Basin. (Page 1-8)
10. In an appropriate portion of the groundwater text, there should be a notation to the effect that many of the local residential wells surrounding the RVAAP installation are completed in the unconsolidated unit. (Page 1-8 or 1-9)
11. Please revise the text on page 1-9 to indicate that the RVAAP installation has recently re-instituted a catch and release program for fishing.
12. On page 1-10, please review the species listed and revise the text, if necessary. For instance, at a minimum, the river otter should be added to the animal list.
13. On page 1-12, please make the following revisions/additions to the text:
  - A. The Relative Risk Site Evaluation (RRSE) was conducted by USACHPPM;
  - B. An Interim Removal Action (IRA) is also scheduled for Load Line 11 during 2000;
  - C. Only a portion of Open Demolition Area (ODA) # 2 had unexploded ordnance (UXO) removal and site restoration; and



- D. An IRA of Building T-5301 was conducted and the pesticide building was closed during 2000.
14. Please revise the text on page 3-1 (third paragraph) to indicate that Ohio EPA has review and comment authority on all documents submitted under the Defense-State Memorandum of Agreement (DSMOA).
  15. On page 3-3 (second last bullet), please revise the text to include additional metals and explosives potential COCs at the RVAAP, as this listing is not complete. This comment is also applicable to Table 3-2 found on page 3-8.
  16. In the last bullet on page 3-3, please include the exact acreage that the Ohio National Guard (ONG) controls, and that they are currently negotiating for the rest of the acreage.
  17. Please revise the last bullet on page 3-6 to indicate that the range of risk from  $10^{-6}$  to  $10^{-4}$  is the risk management range, and that cost is only one factor to be considered in the process.
  18. On page 3-9 (last bullet), please remove the reference to metals, as the x-ray fluorescence (XRF) technology has not currently been demonstrated to be as reliable as the field methodology for explosives.
  19. Please strike the sentence from the text on page 4-14 that indicates that the analytical results from the potable water source are submitted to Ohio EPA for approval prior to the commencement of field activities, as this normally does not occur.
  20. Please revise the text on pages 4-20 and 4-28 to read, "US Army Program Manager" rather than "USACE - Louisville District."
  21. Please confirm, on page 4-23 (first bullet), that a turbidity meter will be utilized during development procedures (not just visually checking to see if the water is clear to the unaided eye).
  22. Please revise Table 7-2 on page 7-8 regarding the disposition of investigation-derived wastes (IDW) to indicate that it is likely that all decontamination fluids and laboratory reagents and residues will be sent off-site for proper disposal.

**Quality Assurance Project Plan:**

23. On Tables 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 and 3.9, please remove the footnote that reads: "Due to the high inaccuracy and imprecision of values observed between the laboratory method detection levels and these project quantitation levels, values estimated below these levels will not be reported." During a conference call on September 5, 2000 between Ohio EPA and USACE personnel, it was decided that these values should continue to be reported, as has been done on all previous portions of the RVAAP project. I apologize for any confusion on this issue, as the new footnote undoubtedly arose from a comment that I had made in a previous discussion regarding this issue.
24. Please cross-reference the project quantitation levels for explosives in soil/sediment on Table 3.7 with the corresponding chart from the 1996 facility-wide Quality Assurance Project Plan (QAPP). Please confirm that the 1996 QAPP was in error, and that we are now, in fact, obtaining lower project quantitation levels.
25. On page 9-5, the text should read: "Analytical method blanks should be 2x their laboratory detection limits." Please revise accordingly.

**Health and Safety Plan:**

Although Ohio EPA does not have regulatory authority over health and safety plans, the following comments are offered for your consideration:

26. Please revise the text on page 1-1 to indicate that TolTest is the contracted caretaker of RVAAP.
27. In the second paragraph on page 1-1, please also reference the USACHPPM report for the newly-added AOCs and the 2000 Installation Action Plan (IAP).
28. Please expand the list of potential COCs found on the bottom of page 1-1, as the current list is not all-inclusive. This comment is also applicable to Table 2-3 (pages 2-12 and 2-13).
29. In the first paragraph on page 2-1, please remove the redundant reference to surface water. In addition, please add (in the same paragraph), two additional expected tasks: trenching and piezometer installation.



MR. MARK PATTERSON  
SEPTEMBER 7, 2000  
PAGE 5

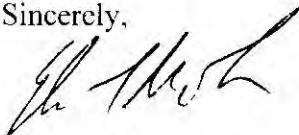
30. On Table 2-2 (Hazards Analysis), please add in an additional section that discusses surface water and sediment sampling in deeper water.
31. In Section 9.0, please consider adding in some additional information that indicates that the number of occurrences of Rocky Mountain Spotted Fever in Ohio has increased according to the Ohio Department of Health (ODH).
32. The text should clearly indicate that in the event of potential emergencies (fire, spills, medical), that the first number to call would be the RVAAP security, who in turn would notify the proper authorities. (Page 12-1)
33. Please revise the directions to the hospital found on page 12-2, as the directions (as presented) are not the shortest route to the hospital (i.e., there is no need to travel on SR 76).

**Standard Operating Procedure for Field Colorimetric Analysis of Explosives:**

Ohio EPA has no comments on this standard operating procedure as written.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Laurie Moore, OFFO, SWDO  
John Cicero, RVAAP  
John Jent, USACE Louisville  
David Seely, USEPA Region 5  
Kathy Dominic, SAIC

Todd Fisher, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
Brian Tucker, CO, DERR  
LTC Tom Tadsen, RVAAP  
David Brancato, USACE Louisville  
Steve Selecman, SAIC

FW



State of Ohio Environmental Protection Agency

9/10/00

STREET ADDRESS:

Lazarus Government Center  
122 South Front St.  
Columbus, OH 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

Lazarus Government Center  
P. O. Box 1049  
Columbus, OH 43216-1049

Mr. John Cicero  
Commander's Representative  
Department of the Army  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna OH 44266-9279

TO	9/10/00
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**RE: RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES,  
FACILITY WIDE REQUEST FOR AUTHORIZATION**

Dear Mr. Cicero:

By written submissions, dated July 07, 2000 and revised July 24, 2000, the Ravenna Army Ammunition Plant (RVAAP) has requested authorization, pursuant to Ohio Administrative Code (OAC) 3745-27-13, to fill, grade, excavate, drill, build, or mine at the following Areas of Concern (AOCs) on the installation property:

- RVAAP-02 Erie Burning Grounds
- RVAAP-03 Demolition Area # 1
- RVAAP-04 Demolition Area # 2
- RVAAP-05 Winklepeck Burning Grounds
- RVAAP-06 C Block Quarry
- RVAAP-08 Load Line 1 and Settling Pond
- RVAAP-09 Load Line 2 and Settling Pond
- RVAAP-10 Load Line 3 and Settling Pond
- RVAAP-11 Load Line 4 and Settling Pond
- RVAAP-12 Load Line 12 and Settling Pond
- RVAAP-13 Building 1200 and Settling Pond
- RVAAP-16 Quarry Landfill
- RVAAP-19 Landfill North of Winklepeck
- RVAAP-28 Mustard Agent Burial Site
- RVAAP-29 Upper and Lower Cobbs Pond
- RVAAP-32 40- and 60- mm Firing Range
- RVAAP-33 Firestone Test Facility
- RVAAP-34 Sand Creek Disposal Road Landfill
- RVAAP-36 Pistol Range

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director



RVAAP-38	NACA Test Area
RVAAP-39	Load Line 5 Fuze Line 1
RVAAP-40	Load Line 7 Booster Line 1
RVAAP-41	Load Line 8 Booster Line 2
RVAAP-42	Load Line 9 Detonator Line
RVAAP-43	Load Line 10 Percussion Element
RVAAP-44	Load Line 11 Artillery Primer
RVAAP-45	Wet Storage Area
RVAAP-46	Buildings F-15 and F-16
RVAAP-47	Building T-5301
RVAAP-48	Anchor Test Area
RVAAP-49	Central Burn Pits
RVAAP-50	Atlas Scrap Yard
RVAAP-51	Dump Along Paris-Windham Road

The activities to be undertaken at the AOCs include: drilling, trenching, monitoring well installation, piezometer and well point installation, surface water and sediment sampling, excavation, surgical removal/other removal of unexploded ordnance (UXO) and suspected UXO, grading, and placement of clean fill material. These activities are being conducted under the Department of Defense (DOD) Installation Restoration Program (IRP). The Ohio Environmental Protection Agency (Ohio EPA), Division of Emergency Response (DERR), is providing technical assistance to the Department of the Army (DA), as specified under the Defense - State Memorandum of Agreement (DSMOA).

As part of the technical assistance provided by Ohio EPA, DERR, the following documents prepared by various contractors and the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), on behalf of the U.S. Army Corps of Engineers (USACE), have been reviewed and found to be acceptable submissions:

1. Final (March, 1996), "Action Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio"
2. Final (February, 1996), "Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio"
3. Final (April, 1996), "Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio"
4. Final (February, 1996), "Facility-Wide Safety and Health Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio"

5. (March 2000) Installation Action Plan for the Ravenna Army Ammunition Plant

Based upon the review of the above-referenced documents submitted to the DERR, Northeast District Office (NEDO), I have determined that the proposed investigative activities will not result in violation of applicable laws and regulations, will not create a nuisance, and are unlikely to adversely affect the public safety, human health, or the environment. Therefore, you are hereby authorized to perform the above actions in accordance with the above-referenced documents and the Area of Concern (AOC) specific documents that are to be received and reviewed by Ohio EPA, DERR, prior to the commencement of any intrusive activities. This action does not relieve you of any obligation under other state/federal requirements.

This approval is subject to the following conditions:

1. Any activities conducted at the above-referenced AOCs must be accomplished in compliance with all applicable state and federal rules, laws and regulations pertaining to environmental protection, including, but not limited to, control of air emissions, control of leachate, surface water run-on and run-off, and protection of groundwater.
2. Any activities undertaken shall not create a nuisance and shall not adversely affect public safety, human health, or the environment.
3. OEPA, NEDO, DERR, must be given seventy-two (72) hours notice, prior to any work commencing on-site.
4. All solid and/or hazardous wastes removed during intrusive activities shall be containerized and securely stored, until such time as these materials are properly characterized and disposed of in accordance with Chapter 3734 of the Ohio Revised Code (ORC) and regulations promulgated thereunder.
5. All liquids, semi-solids, industrial wastes and other wastes regulated by ORC Chapter 6111 removed during intrusive activities shall be containerized and securely stored, until such time as these materials are characterized and disposed of in accordance with ORC Chapter 6111 and regulations promulgated thereunder.
6. As per Section C(10) of OAC 3745-27-13, upon selection of appropriate disposal facility(ies), the RVAAP must submit to Ohio EPA a copy of a letter of acceptance from the disposal facility(ies).

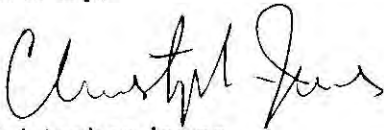


7. This approval shall allow the RVAAP to conduct the described investigative activities in accordance with the above-referenced documents and the AOC specific documents/workplans. The RVAAP must obtain prior approval from Ohio EPA to perform any other additional activities at the above-referenced AOCs beyond those being approved under this authorization, and prior to commencing intrusive activities at the other AOCs identified at the installation.

You are hereby notified that this action of the Director is final, and may be appealed to the Environmental Review Appeals Commission, pursuant to ORC Section 3745.04. The appeal must be in writing and set forth the action complained of and the ground upon which the appeal is based. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of Environmental Protection within three (3) days of filing with the Board. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission  
236 East Town Street  
Room 300  
Columbus OH 43215

Sincerely,



Christopher Jones  
Director

CJ:EM/kss

cc: Bonnie Buthker, Ohio EPA, SWDO/OFFO  
Catherine Stroup, Ohio EPA, CO/Legal  
Bob Princic, Ohio EPA, NEDO/DERR  
Eileen T. Mohr, Ohio EPA, NEDO/DERR  
John Jent, USACE Louisville

*NKM - 7/10/00*



State of Ohio Environmental Protection Agency

STREET ADDRESS:

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122 South Front St.  
Columbus, OH 43215

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Columbus, OH 43216-1049

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Mr. John Cicero  
Commander's Representative  
Department of the Army  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna OH 44266-9279

RE: **RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES,**  
**FACILITY WIDE REQUEST FOR AUTHORIZATION**

Dear Mr. Cicero:

By written submissions, dated July 07, 2000 and revised July 24, 2000, the Ravenna Army Ammunition Plant (RVAAP) has requested authorization, pursuant to Ohio Administrative Code (OAC) 3745-27-13, to fill, grade, excavate, drill, build, or mine at the following Areas of Concern (AOCs) on the installation property:

RVAAP-02	Erie Burning Grounds
RVAAP-03	Demolition Area # 1
RVAAP-04	Demolition Area # 2
RVAAP-05	Winklepeck Burning Grounds
RVAAP-06	C Block Quarry
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RVAAP-09	Load Line 2 and Settling Pond
RVAAP-10	Load Line 3 and Settling Pond
RVAAP-11	Load Line 4 and Settling Pond
RVAAP-12	Load Line 12 and Settling Pond
RVAAP-13	Building 1200 and Settling Pond
RVAAP-16	Quarry Landfill
RVAAP-19	Landfill North of Winklepeck
RVAAP-28	Mustard Agent Burial Site
RVAAP-29	Upper and Lower Cobbs Pond
RVAAP-32	40- and 60- mm Firing Range
RVAAP-33	Firestone Test Facility
RVAAP-34	Sand Creek Disposal Road Landfill
RVAAP-36	Pistol Range

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director



RVAAP-38	NACA Test Area
RVAAP-39	Load Line 5 Fuze Line 1
RVAAP-40	Load Line 7 Booster Line 1
RVAAP-41	Load Line 8 Booster Line 2
RVAAP-42	Load Line 9 Detonator Line
RVAAP-43	Load Line 10 Percussion Element
RVAAP-44	Load Line 11 Artillery Primer
RVAAP-45	Wet Storage Area
RVAAP-46	Buildings F-15 and F-16
RVAAP-47	Building T-5301
RVAAP-48	Anchor Test Area
RVAAP-49	Central Burn Pits
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The activities to be undertaken at the AOCs include: drilling, trenching, monitoring well installation, piezometer and well point installation, surface water and sediment sampling, excavation, surgical removal/other removal of unexploded ordnance (UXO) and suspected UXO, grading, and placement of clean fill material. These activities are being conducted under the Department of Defense (DOD) Installation Restoration Program (IRP). The Ohio Environmental Protection Agency (Ohio EPA), Division of Emergency Response (DERR), is providing technical assistance to the Department of the Army (DA), as specified under the Defense - State Memorandum of Agreement (DSMOA).

As part of the technical assistance provided by Ohio EPA, DERR, the following documents prepared by various contractors and the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), on behalf of the U.S. Army Corps of Engineers (USACE), have been reviewed and found to be acceptable submissions:

1. Final (March, 1996), "Action Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio"
2. Final (February, 1996), "Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio"
3. Final (April, 1996), "Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio"
4. Final (February, 1996), "Facility-Wide Safety and Health Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio"

5. (March 2000) Installation Action Plan for the Ravenna Army Ammunition Plant

Based upon the review of the above-referenced documents submitted to the DERR, Northeast District Office (NEDO), I have determined that the proposed investigative activities will not result in violation of applicable laws and regulations, will not create a nuisance, and are unlikely to adversely affect the public safety, human health, or the environment. Therefore, you are hereby authorized to perform the above actions in accordance with the above-referenced documents and the Area of Concern (AOC) specific documents that are to be received and reviewed by Ohio EPA, DERR, prior to the commencement of any intrusive activities. This action does not relieve you of any obligation under other state/federal requirements.

This approval is subject to the following conditions:

1. Any activities conducted at the above-referenced AOCs must be accomplished in compliance with all applicable state and federal rules, laws and regulations pertaining to environmental protection, including, but not limited to, control of air emissions, control of leachate, surface water run-on and run-off, and protection of groundwater.
2. Any activities undertaken shall not create a nuisance and shall not adversely affect public safety, human health, or the environment.
3. OEPA, NEDO, DERR, must be given seventy-two (72) hours notice, prior to any work commencing on-site.
4. All solid and/or hazardous wastes removed during intrusive activities shall be containerized and securely stored, until such time as these materials are properly characterized and disposed of in accordance with Chapter 3734 of the Ohio Revised Code (ORC) and regulations promulgated thereunder.
5. All liquids, semi-solids, industrial wastes and other wastes regulated by ORC Chapter 6111 removed during intrusive activities shall be containerized and securely stored, until such time as these materials are characterized and disposed of in accordance with ORC Chapter 6111 and regulations promulgated thereunder.
6. As per Section C(10) of OAC 3745-27-13, upon selection of appropriate disposal facility(ies), the RVAAP must submit to Ohio EPA a copy of a letter of acceptance from the disposal facility(ies).

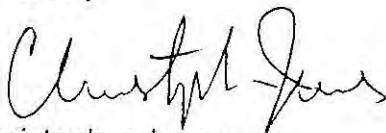


7. This approval shall allow the RVAAP to conduct the described investigative activities in accordance with the above-referenced documents and the AOC specific documents/workplans. The RVAAP must obtain prior approval from Ohio EPA to perform any other additional activities at the above-referenced AOCs beyond those being approved under this authorization, and prior to commencing intrusive activities at the other AOCs identified at the installation.

You are hereby notified that this action of the Director is final, and may be appealed to the Environmental Review Appeals Commission, pursuant to ORC Section 3745.04. The appeal must be in writing and set forth the action complained of and the ground upon which the appeal is based. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of Environmental Protection within three (3) days of filing with the Board. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission  
236 East Town Street  
Room 300  
Columbus OH 43215

Sincerely,



Christopher Jones  
Director

CJ:EM/kss

cc: Bonnie Buthker, Ohio EPA, SWDO/OFFO  
Catherine Stroup, Ohio EPA, CO/Legal  
Bob Princic, Ohio EPA, NEDO/DERR  
Eileen T. Mohr, Ohio EPA, NEDO/DERR  
John Jent, USACE Louisville

*MKM - 9/10/00*

**ENVIRONMENTAL PERMITTING  
POSITION PAPER  
ON EDE FLASHING FURNACE**

**FOR THE**

**Ravenna Army Ammunition Plant**

**On behalf of**

**MKM Engineers, Inc.**

**Completed by Neal Environmental Services, LLC  
January 2000**



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## ABSTRACT

RVAAP is reviewing the opportunity to purchase and install flashing furnace technology manufactured by Eldorado Engineering, Inc. The facility proposes to utilize the Flashing Furnace (FF) for decontaminating metal demolition materials that may contain residuals of various explosives. The technology is based upon proven technology that has been used for many years. The U.S. Army constructed several contaminated waste processors (CWP) that were used to flash metal parts and burn combustible materials. The proposed Flashing Furnace is similar to the CWP but is scaled back to only flash metal parts. This position paper provides that the FF will be constructed and operated in such a manner that will not warrant the requirement for obtaining hazardous waste, air pollution control or solid waste permits.

### General Comments

The proposed installation and operation of the FF involves the review of several OEPA environmental regulations including RCRA, Air Pollution Control, Solid Waste and CERCLA. Considering these regulations, information regarding applicability and compliance is presented in this document to express how the permitting requirements will be met.

#### I. RCRA

##### Use of the FF for Decontamination

Upon installation, the FF will be utilized to flash trace quantities of explosive contaminants from the surface of various metal material and structures. This activity should not imply that this operation involves the "treatment" of hazardous waste and thus require a RCRA permit. The metal parts are being treated prior to recycling to comply with Army Regulations TB700-4 before they are salvaged. Explosives, by nature, are considered a "reactive" hazardous waste and as a result are characteristically hazardous - OAC 3745-51-23 (6). This definition indicates that a reactive waste has the following properties: "it is capable of detonating or explosive reaction if it is subjected to a strong initiating source or if heated under confinement." However, if explosive contaminants were of such a low concentration that explosive or reactive characteristics would not be expressed, the material would then not be a characteristic hazardous waste and thus would not be recognized as a hazardous waste.

**Background.** It is anticipated that explosives in this flashing operation will not be present in sufficient quantity, concentration, or confinement to exhibit the reactivity characteristic. A test for the characteristic of reactivity is a zero gap card test where the suspect material is exposed to an explosive charge. The explosive process piping and other structural equipment that had direct contact with explosives will first have been prepared for the flashing furnace by cutting into sections with explosive charges prior to processing at the demolition site. In fact, if the materials were reactive, they would have reacted during the cutting or decommissioning process. In addition to the explosive charge activities, MKM Engineers, Inc. will visibly inspect all other demolition debris materials for explosive residuals. If explosive residuals are observed, MKM will decontaminate the materials through a rinsing process and collect the resultant rinseate. The rinseate will be tested and properly disposed in accordance with applicable environmental requirements. All decontamination activity will be completed at the demolition site.

Further, the DoD Explosive Safety Board has accepted that explosives (TNT and RDX) in concentrations of less than 10% by weight in soil are not reactive. Considering this fact, all metal building structural elements resulting from decommissioning at RVAAP would not contain explosives in excess of 10% by weight. This fact is further evidenced by experience of the CWP at the Iowa Army Ammunition Plant. It is our understanding that other state regulatory agencies have adopted the same position in regard to a non-hazardous waste activity classification for the CWP and have approved the operation of the CWP in Arkansas, Kansas, Wisconsin and Utah.

Based on the above referenced points, the metal materials resulting from the demolition process at RVAAP would not be a hazardous waste and the temporary storage of such material would not be regulated under the hazardous waste provisions.

The final point to be made on this issue is that all materials processed through the FF will be reclaimed for further use.

## II. Air Pollution Control

Two exemption options were reviewed in regard to proposed emissions emanating from the CWP. Considering previous evaluation of emission test and calculated information on the unit, we propose that either exemption option would be appropriate.



1. Under OAC 3745-15-05 (B), a facility may claim a "De minimis" air contaminant source exemption. This exemption is premised on the facility complying with several regulatory provisions. In following, I have summarized the applicable provisions for review.
  - Potential emissions of any one contaminant of the following contaminants must not exceed ten pounds per day; particulate matter, sulfur dioxide, nitrogen oxides, organic compounds, carbon monoxide, lead or any other air contaminant.
  - "Potential to emit" means the amount of emissions of an air contaminant source which would be emitted from a source during a twenty-four hour calendar day or calendar year.
  - total calculated or measured emissions must be evaluated from the unit without any additional emission or pollution controls. All existing air emission controls must be an integral part of the CWP apparatus and vital to the operation of the equipment.

However, this exemption shall not apply if:

- Federal Air Act regulations limit emissions of an air pollutant from the source to less than 10 pounds per day or restricts the operation of the source in a manner equivalent to an emission limit of less than ten pounds per day;
- The source is subject to limits adopted by the Director in regard to compliance of the national ambient air quality standards;
- The source emits radionuclides;
- The source alone or in combination with similar sources at the same facility would result in potential emissions of any air pollutant in excess of 25 tons per year;
- The source emits more than one ton per year of any hazardous air pollutants or combination of hazardous air pollutants.

In order to take advantage of this exemption, the facility is required to maintain records that are adequate to demonstrate that actual emissions from the source did not exceed ten pounds per day (or one ton per year) of the respective air

contaminants. A narrative description of how the emissions from the source were determined and maintained at or below the required levels must be submitted to the agency. Details on record keeping are delineated in OAC 3745-15-05 (E) and (F).

2. The second option falls under OAC 3745-31-03 Permit to install exemptions. 3745-31-03(A)(2) – **Federal Based exemptions**, provide that the exemption applies regardless of the applicability of the “National Emissions Standards for Hazardous Air Pollutants” and/or the New Source Performance Standards.” This exemption is applicable at cleanup activities associated with the removal or remedial action conducted entirely on site, where such remedial action is selected and carried out in compliance with CERCLA section 121(e) and where such action meets all applicable air pollution limits and policies.

In consideration of the FF, it appears that both of the provisions noted above would be an appropriate exemption option. At this point, we are confident that the installation and operation of the FF meets the Ohio air permitting requirements for a De minimis air pollution source. Based on this fact, RVAAP will proceed with the use of the FF under the applicable De minimis provision.

### III. CERCLA

As mentioned earlier in this paper, the FF will be utilized for decontamination of metal materials, including piping, fixtures and related metal parts. Based on the fact that these materials may or may not have evolved from a CERCLA remedial action, any activity in regard to the decommissioning of these materials would be carried out in regard to the applicable environmental regulations for the specific remediation area. Thus, CERCLA compliance is not an issue with the operation of the FF.

### IV. SOLID WASTE

A review of Ohio solid waste requirements readily indicates that the proposed use of the FF would not involve solid waste activity. The structural material that would be treated in the FF is not a solid waste. OAC 3745-27-01(B)(43) clearly indicates that “material from construction, mining or demolition operations...” is excluded from the solid waste definition. Based on this fact, the material that will be reclaimed through the heat treating process would be classified as “Construction and demolition debris” under ORC 3714.01(C). Also, the construction material can readily be reclaimed or recycled for further use.



## V. ACTION ITEMS

This environmental permitting position paper is presented to OEPA and associated environmental regulatory agencies for review, comment and concurrence. We request that the review process be completed expeditiously in order that any changes can be completed prior to construction and operation of the FF.

## SUMMARY

The proposed use of flashing furnace technology for treating explosive contaminated metal parts and materials resulting from the decommissioning activities at the RVAAP appears both environmentally compliant and prudent. The use of the FF will also provide the opportunity to readily treat and reclaim metal material in an expeditious manner.

# APPENDIX A

## Flashing Furnace Technical Information



## THE EDE TRANSPORTABLE FLASHING FURNACE FOR TREATING 3X METAL TO 5X AT THE RVAAP

In many UXO remediation projects, there are often large quantities of inert materials, such as metal piping and brackets, associated with the UXO disposal activities that may be contaminated with explosives (3X). On military facilities, the disposition of these 3X materials is closely controlled. Material that is 3X, if heated to temperatures above 1000F, can be thermally decontaminated, destroying the trace quantities of explosive contamination, which reclassifies the metal as 5X. These metal parts can then be freely sold, recycled or given to industry as scrap metal with no restrictive controls. El Dorado Engineering (EDE) has over 20 years of experience in the design, installation and operation of furnace applications used to achieve the 5X rating of these materials. This furnace design is called a Flashing Furnace, which is used to "flash" or burn off the trace explosive residuals on the metal parts and is recommended for the load line demolition activities at the RVAAP.

EDE has designed a small, transportable flashing furnace, which employs a carbottom to load and unload the furnace, for the RVAAP application. The portability of this flashing furnace provides the ability to re-mobilize the unit to other sites with the RVAAP with ease. Sketches 1 and 2 present the plan and cross-sectional view of the furnace design. Figure 1 is a photograph of the flashing furnace. Due to the inert nature of the metal and trace quantities of residual explosive contaminants being flashed, the emissions resulting from the furnace operation are well with the De minimis air emission criteria established by Ohio EPA.

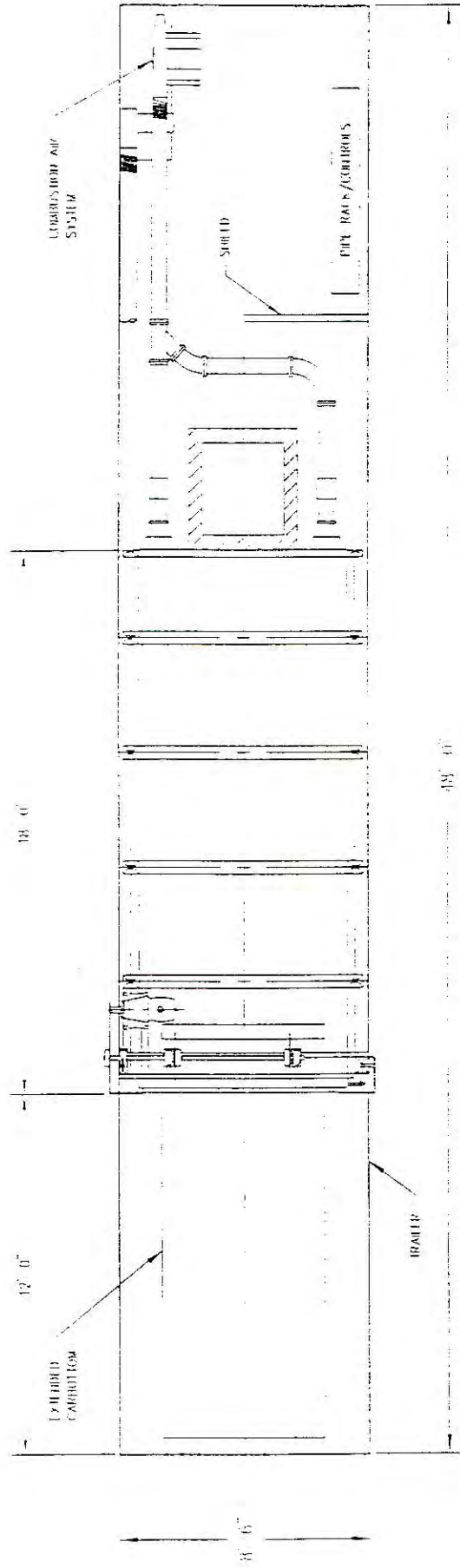
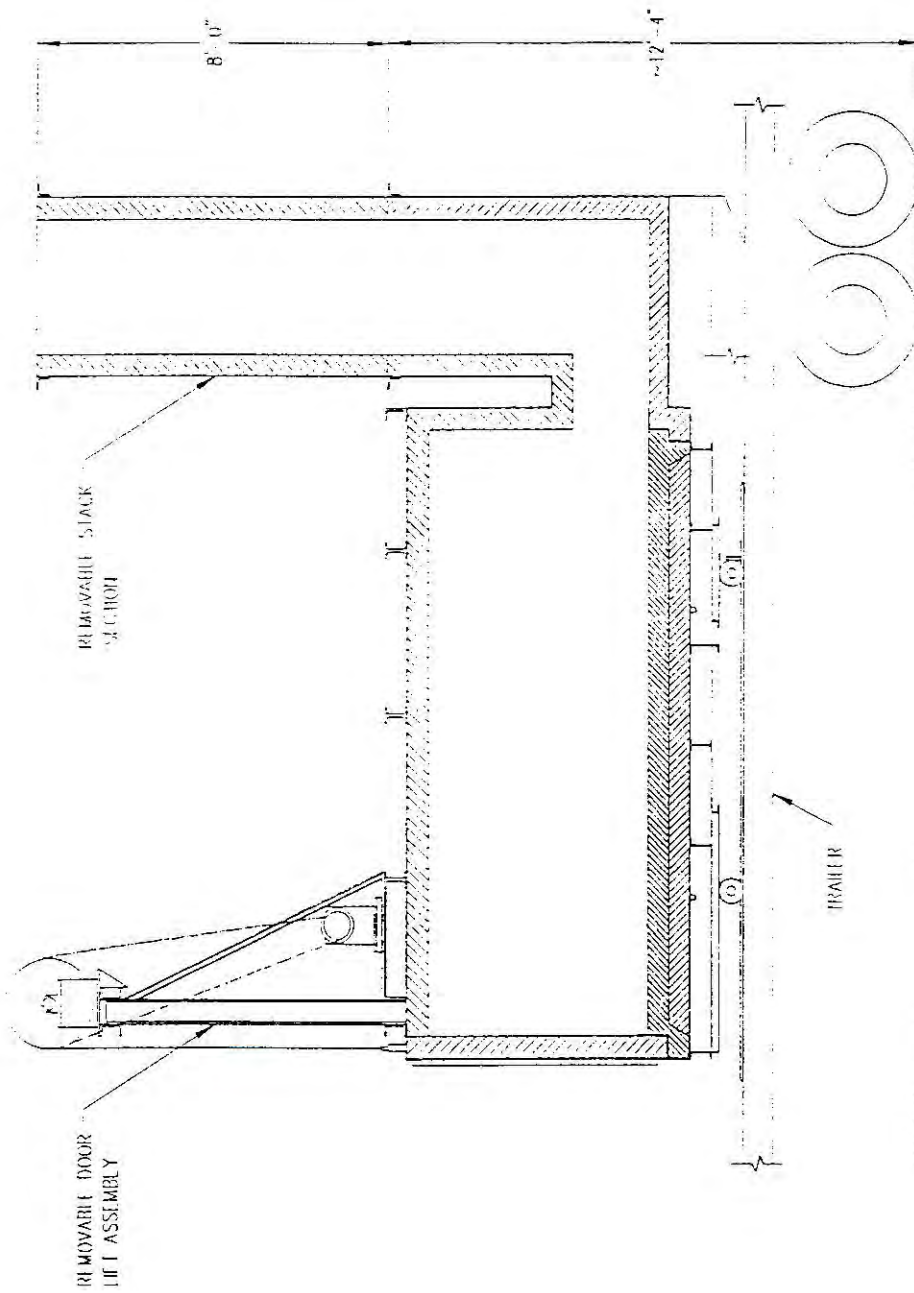


PLATE VII W  
(001) 10' 10' 10'

# TRANSPORTABLE FLARING FURNACE

Sketch 1





SECTION VIEW  
(NOT TO SCALE)

# TRANSPORTABLE FLASHING FURNACE

Sketch 2





## APPENDIX B

*Air Emission Calculations and Test Data  
on the Operation of the Flashing Furnace*

## APPENDIX B

The Contaminated Waste Processor (CWP), when flashing explosive contaminated metal will have only minimal emissions to the environment. The estimated emission numbers shown in Table 1 are based on past operating experience and test data. At this time two De minimis permitting exemption options are possible.

1. The estimated emissions are less than 10 pounds per day in all areas except on sulfur dioxide when operating on #2 fuel oil. In order to comply with the De minimis exemption (emissions to be maintained under 10 pounds per day per OAC 3745-15-05 (b)) the first option would be to simply limit operations to 2 shifts per day (16 hours). This is a viable option since at this time only a single shift operation is anticipated.
2. If production should ever warrant a three shift operation, another option would be to convert the CWP over to a fuel with a lower sulfur content such as #1 fuel oil. This would allow for 24-hour operation.

Irrespective of the option pursued, the anticipated emissions from the CWP are extremely low.

OAC 3745-15-5(E) also requires that records be maintained to indicate that emissions do not exceed the 10 pounds per day limit. Since all emissions will be less than 10 pounds based on a maximum 16 hour operating day, the operators logs relating the hours of operation should be sufficient. The other option is to monitor fuel usage since the only emission to possibly exceed the De minimis level is sulfur dioxide, and this is based on fuel usage and sulfur content. This could be accomplished either by monitoring fuel purchases or daily measurements of fuel levels.

**TABLE 1. ESTIMATED EMISSIONS RATES FROM CWP**

Emission/Rate	Pounds/Hour	Pounds/8 Hours	Pounds/24 Hours
Particulate	0.33	2.6	7.9
Sulfur Dioxide (#2 Fuel Oil)	0.6	4.8	14.4
Sulfur Dioxide (#1 Fuel Oil)	0.4	3.0	9.1
Nitrogen Oxides	0.22	1.8	5.4
Organics	N/D	N/D	N/D
Carbon Monoxide	0.05	0.4	1.2
Lead	N/D	N/D	N/D
Other	N/D	N/D	N/D

N/D - Non-detectable



## ESTIMATED EMISSION LEVELS FROM A CONTAMINATED WASTE PROCESSOR (CWP)

### 1. Particulate

Based on attached test report, particulate emission levels on a CWP burning wastes was less than 0.032 gr/scf. For a natural draft system, exhaust rate is estimated at <1200 cfm. For flashing metal, emissions will be less than 25% that of combustibles.

$$\dot{m} = 0.0032 \frac{\text{gr}}{\text{scf}} \times 1200 \frac{\text{ft}^3}{\text{min}} \times 60 \frac{\text{min}}{\text{hr}} \times \frac{1 \text{ lb}}{7000 \text{ gr}}$$

$$\text{Particulate: } \dot{m} = 0.33 \text{ lb/hr}$$

$$\dot{m}_8 = 2.6 \text{ lb/8-hr}$$

$$\dot{m}_{24} = 7.9 \text{ lbs/24-hr}$$

Note: The actual emissions are generally 25% of listed values.

### 2. Carbon Monoxide

During above reference testing, CO emissions were "below detectable limits". Based on past experience on similar furnaces, the CO emissions are anticipated to be less than 10 ppm (or 11.6 mg/m<sup>3</sup>).

$$\dot{m} = 11.6 \frac{\text{mg}}{\text{m}^3} \times 1200 \frac{\text{ft}^3}{\text{min}} \times 0.0283 \frac{\text{m}^3}{\text{ft}^3} \times 60 \frac{\text{min}}{\text{hr}} \times \frac{1 \text{ lb}}{454,000 \text{ mg}}$$

$$\text{CO Emissions: } \dot{m} = 0.05 \text{ lb/hr}$$

$$\dot{m}_8 = 0.4 \text{ lb/8-hr}$$

$$\dot{m}_{24} = 1.2 \text{ lbs/24-hr}$$

### 3. Nitrogen Oxides

The NO<sub>x</sub> levels measured during the test averaged 20-30 ppm and at no time did the peak exceed 40 ppm (or 50 mg/m<sup>3</sup>).

$$\dot{m} = 50.0 \frac{\text{mg}}{\text{m}^3} \times 1200 \frac{\text{ft}^3}{\text{min}} \times 0.0283 \frac{\text{m}^3}{\text{ft}^3} \times 60 \frac{\text{min}}{\text{hr}} \times \frac{1 \text{ lb}}{454,000 \text{ mg}}$$

NO<sub>x</sub> Emissions:

$$\dot{m} = 0.22 \text{ lb/hr}$$

$$\dot{m}_8 = 1.8 \text{ lb/8-hr}$$

$$\dot{m}_{24} = 5.4 \text{ lbs/24-hr}$$

#### 4. Sulfur Dioxide

The only sulfur for SO<sub>2</sub> emissions will come from the fuel oil being used. Typical fuel usage for this size system is 20 gal/hr.

(a) #2 Fuel Oil has sulfur content of 0.21%

$$\dot{m}_{S(\#2)} = 0.0021 \times 20 \frac{\text{gal}}{\text{hr}} \times 7.21 \frac{\text{lb}}{\text{gal}} = 0.30 \text{ lbs/hr}$$

$$\begin{aligned} \dot{m}_{\text{SO}_2} &= \dot{m}_S \times \text{MW}_{\text{SO}_2} / \text{MW}_S = 0.3 \text{ lbs/hr} \times 64/32 \\ &= 0.6 \text{ lbs/hr} \end{aligned}$$

#2 Fuel Oil:

$$\dot{m} = 0.6 \text{ lb/hr}$$

$$\dot{m}_8 = 4.8 \text{ lb/8-hr}$$

$$\dot{m}_{24} = 14.4 \text{ lbs/24-hr}$$

(b) #1 Fuel Oil has sulfur content 0.14%

$$\dot{m}_{S(\#1)} = 0.0014 \times 20 \frac{\text{gal}}{\text{hr}} \times 6.79 \frac{\text{lb}}{\text{gal}} = 0.19 \text{ lbs/hr}$$

$$\begin{aligned} \dot{m}_{\text{SO}_2} &= \dot{m}_S \times \text{MW}_{\text{SO}_2} / \text{MW}_S = 0.19 \text{ lbs/hr} \times 64/32 \\ &= 0.38 \text{ lbs/hr} \end{aligned}$$

#1 Fuel Oil:

$$\dot{m} = 0.38 \text{ lb/hr}$$

$$\dot{m}_8 = 3.0 \text{ lb/8-hr}$$

$$\dot{m}_{24} = 9.1 \text{ lbs/24-hr}$$



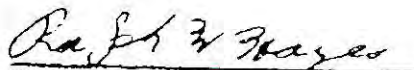
AMMUNITION EQUIPMENT OFFICE  
TOOELE ARMY DEPOT  
TOOELE, UTAH 84074

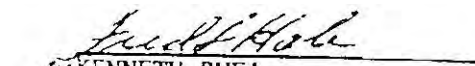
TEST REPORT  
USE OF A MODIFIED APE 2048 FLASHING FURNACE  
AS A CONTAMINATED WASTE INCINERATOR

3 NOVEMBER 1978

PREPARED BY:

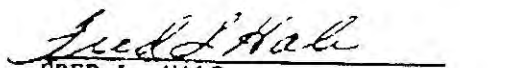
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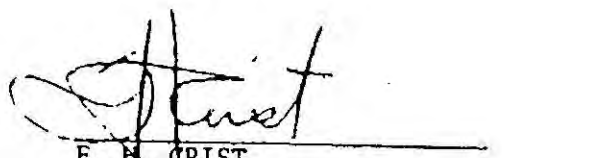
  
RALPH W. HAYES  
Ch, Chem Sys Engr Br

  
KENNETH RHEA  
Equipment Specialist

REVIEWED BY:

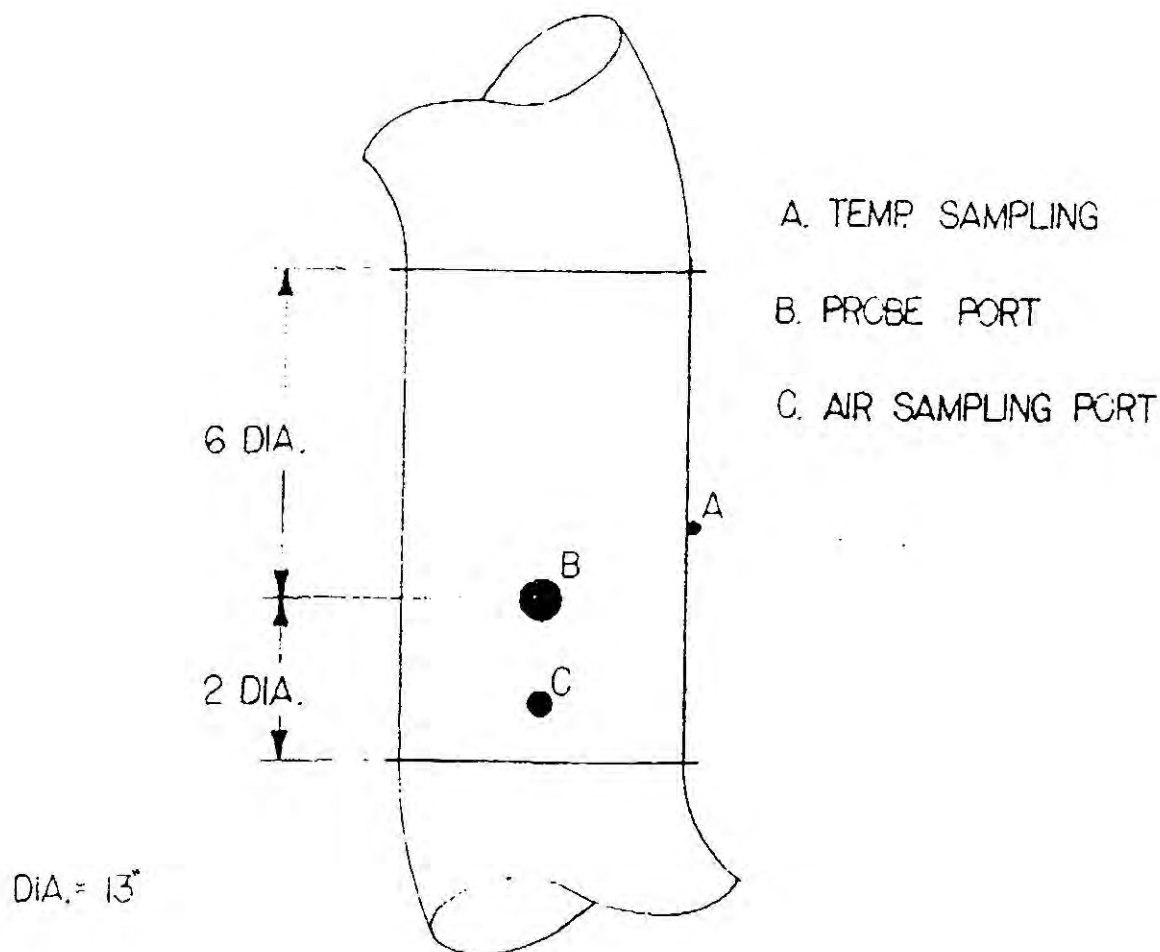
APPROVED:

  
FRED L. HALE  
Ch, Research Test & Manuals Br

  
F. H. CRIST  
Chief, Ammunition Equipment Office

APPENDIX C  
TEST RESULTS

EPA Method 5 was used for particulate sampling, with some variations dictated by the specific situation. The construction of the exhaust duct and blower would now allow two traverses at right angles. Time restrictions did not allow modification of the ductwork to allow two traverses so a single eight point traverse was used. The temperature probe was not mounted on the probe itself but was located at a point one foot upstream of the sampling ports. Air samples for effluent analysis were drawn from a point one foot downstream of the probe sampling port. (See Figure C-1).





Gas analyses were also at variance with requirements. An ORSAT was not available during the tests so a Hamilton-Fisher Gas Partitioner was used for air analysis. During the course of early test runs, the helium carrier gas was exhausted and the gas partitioner was not operating during the period of the actual sampling runs. In order to adjust the calculated particulate emissions to a 12% CO<sub>2</sub> value, it was, therefore, necessary to assume the same CO<sub>2</sub> values as previous runs. Earlier tests had given CO<sub>2</sub> concentrations ranging from 1.1 to 1.6%; therefore, the calculations show the range of 12% CO<sub>2</sub> adjusted emission values based on these test figures (see Table C-1). These are a reasonable range of values and representative of the CO<sub>2</sub> exhaust from the furnace during the particulate sampling runs since the loads which were analyzed for CO<sub>2</sub> are very similar to those runs which were sampled for particulate and the readings were consistent over a small range.

The Hamilton-Fisher Gas Partitioner was used to analyze for O<sub>2</sub>, N<sub>2</sub>, CO<sub>2</sub> and CO levels with Calibration for CO<sub>2</sub> was against a standard gas containing 10.3% CO<sub>2</sub>; for CO, a gas containing 0.99% CO; and for O<sub>2</sub> and N<sub>2</sub>, ambient air (assumed 20% O<sub>2</sub>, 79% N<sub>2</sub>). Results are given in Table C-1.

TABLE C-1

Sample	% O <sub>2</sub>	% N <sub>2</sub>	% CO <sub>2</sub>	% CO
100 lb. rags				
80 lb. fibers (paper drums)	17	76	1.16	Below Detectable Limits
20 lb. rubber				
100 lb. coveralls				
100 lb. fiber tubes	17	81	1.52	Below Detectable Limits
100 lb. coveralls				
100 lb. fiber tubes (paper drums)	16.5	81	1.6	Below Detectable Limits
(cloth filters)				

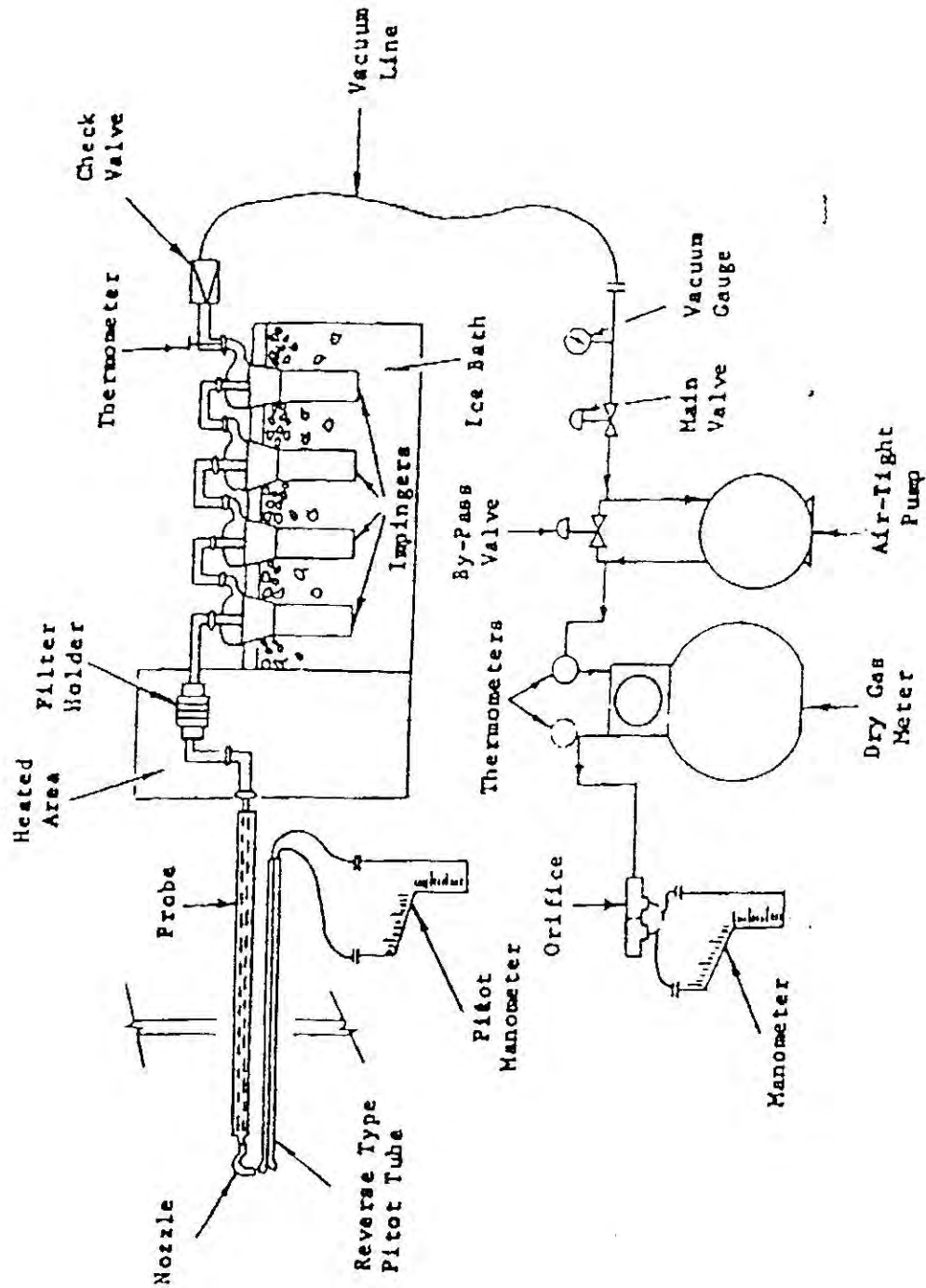


Figure C-2  
Particulate Sampling Train



The stack sampling equipment used was a Research Appliance Company Model 2343 Staksampler. It was used without any modifications to the recommended manual procedures (see Table C-2).

TABLE C-2  
PARTICULATE SAMPLING DATA

Run	%H <sub>2</sub> O	Stack Flow (SCFM dry)	Particulate (gr/SCF)	Particulate Adv to 12% CO <sub>2</sub>	Particulate lb/hr	Isokinetic %
#1 <sup>a</sup>	3.6	2995	0.029	0.32 <sup>1</sup> -0.22 <sup>2</sup>	0.75	105
#2 <sup>b</sup>	2.8	3120	0.031	0.34-0.23	0.80	109
#3 <sup>c</sup>	3.0	3021	0.032	0.35-0.24	0.82	108

a, b 100 lb. fiber tubes, 100 lb. rags, coveralls

c 100 lb. oily rags

1 at 1.1% CO<sub>2</sub>

2 at 1.6% CO<sub>2</sub>

NO<sub>x</sub> Data: A Beckman Model 951 Chemiluminescent NO<sub>x</sub> Analyzer was used for nitrogen oxide analysis. The instrument was calibrated against an analyzed gas of 300 ppm NO<sub>x</sub>. During our test burns the average NO<sub>x</sub> values were from 20-30 ppm and at no time did the level exceed 40 ppm peak concentration.

The following chart lists the various loads, their compositions, burn times and relevant remarks. A total of fifty-seven loads were burned or tested for a total weight of 9,708 lbs. plus 8,000 lbs. of metal parts (see Table C-3). Much of this testing was to determine proper methods for loading and operating the furnace. When test burns were conducted for one whole work day, a single operator was able to burn 1,080 lbs. in 5½ hours one day and 1,250 lbs. in 6 hours another day. Ash from loads totaling 7,775 lbs. weighed 149 lbs not including metal parts remaining (max. 150 lbs.) thus it is anticipated that approximately 20 lbs of ash per 1,000 pounds of combustible waste are produced.

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## NORTH AMERICAN COMBUSTION HANDBOOK

Table 2.1a. Comparative data (by weight) for some typical fuels

Analysis, in % by weight		C, available/total available		H, available	Constituents			Ash	Moisture
					S	O	N		
Blast furnace gas	56	1.02	5.6/15.8	0.1	5	27.3	56.8	5	5
Coke oven gas	1.81	0.40	41.1/48.3	22.7	5	16.0	13.0	5	5
Producer gas <sup>1</sup>	4.94	0.86	8.4/17.1	1.7	5	23.3	57.9	5	5
Natural gas <sup>2</sup>	3.08	0.60	69.4/69.4	22.5	11	0	8.1	0	0
Propane, natural <sup>13</sup>	4.43	1.55 <sup>8</sup>	81.6/81.6	18.4	0	0	0	0	0
Butane, refinery <sup>12</sup>	5.10	2.00 <sup>8</sup>	83.6/83.6	16.4	0	0	0	0	0
Methanol	1.50	0.791	18.8/37.5	12.5	—	50.0	—	—	—
Gasoline, motor <sup>8</sup>	5.94	0.733	85.5/85.5	14.4	0.1	0	0	0	0
#1 Distillate oil, 6.79#/USgal	6.51	0.814	86.6/86.6	13.3	0.14	—	—	—	—
#2 Distillate oil, 7.21#/USgal	6.98	0.865	87.3/87.3	12.5	0.21	—	—	—	—
#4 Fuel oil, 7.59#/USgal	7.45	0.910	86.4/86.4	11.6	1.99	—	—	0.018	0.2 <sup>12</sup>
#5 Residual oil, 7.93#/USgal	8.29	0.951	88.7/88.7	10.7	0.57 <sup>7</sup>	—	—	0.02	0.4 <sup>12</sup>
#6 Residual oil, 8.45#/USgal	9.49	1.013	88.3/88.6	9.3	0.85 <sup>7</sup>	0.7	0.3	0.04	0.2 <sup>12</sup>
Wood, non-resinous	5.26	.4-.8	/37.9	7.2	0	53.8	0.1	1.0	9
Coal, bituminous	16.0	.6-.9	/80.1	5.0	1.0	5.2	0	7.2	3.1
Coal, anthracite	33.6	.7-.9	/80.6	2.4	1.1	5.9	0	9.5	5.2 <sup>12</sup>
Coke	106	.4-.5	/85.0	0.8	1.0	1.2	1.3	10.7	0.8

<sup>1</sup> From a Wellman-Gatasha producer using bituminous coal.

<sup>2</sup> Birmingham AI

<sup>1</sup> From a Wellman-Galusha producer using bituminous coal.  
<sup>2</sup> Birmingham, AL.

<sup>3</sup> Multiply this figure by 0.0785 to obtain lb/ft<sup>3</sup>, by 1.226 to obtain kg/m<sup>3</sup>.  
<sup>4</sup> Multiply this figure by 62.43 to obtain lb/ft<sup>3</sup>, by 8.34 to obtain pound/gallon, by 1000 to obtain kg/m<sup>3</sup>.

<sup>5</sup> Varies with type of coal or coke used, equipment and process.  
<sup>6</sup> From page 269 of Reference 2.f. See list of references at end of Part 2.

<sup>7</sup> Sulfur content may vary from 0.4 to 3.5%, depending on source, refining, and blending.

<sup>8</sup> In the liquid state, specific gravity relative to water is 0.509 for propane, 0.582 for butane.

<sup>9</sup> Seasoned.

<sup>10</sup> Multiply gross Btu/scf air by 8.90 to obtain gross kcal/m<sup>3</sup> of standard air.

<sup>11</sup> Sulfur content may be 1 to 2 percent at the gas well, but this is usually reduced to less than 8 ppm by weight before distribution.

<sup>12</sup> See bottom sediment and water, Table 2.11.

<sup>13</sup> Typical liquid propane weighs 4.24#/USgal; typical liquid butane, 4.84#/USgal. See Table 2.12a and Reference 2.g at end of Part 2.



NEAL ENVIRONMENTAL SERVICES, LLC

---

January 24, 2000

Ms. Eileen Mohr/Mr. Greg Orr  
Ohio EPA-NEDO  
2110 East Aurora Road  
Twinsburg, OH 44087

Re: EDE Flashing Furnace Position Paper

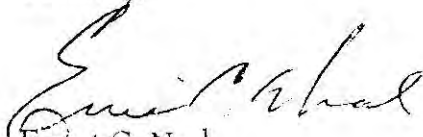
Dear Ms. Mohr/Mr. Orr

On behalf of MKM Engineers, Inc. and Neal Environmental Services, LLC, please find enclosed The Environmental Permitting Position Paper regarding the EDE Flashing Furnace. As you are aware, MKM Engineers, Inc. is proposing the utilization of the technology for treating metal waste at the U.S. Army Ravenna Ammunition Plant near Ravenna, Ohio.

We appreciate your assistance in review of the position paper and are available for conference or discussion regarding the proposal.

In addition, we are interesting in scheduling a meeting with the Akron Regional Air Quality Management District to discuss our proposal in regard to applicable air issues. I will contact you by phone to gain your involvement and guidance on scheduling and participating in local air agency meeting.

Sincerely,



Ernest C. Neal

cc: Khodi Irani, MKM  
Mark Patterson, RVAAP  
Rick Callahan, MKM  
Shahrukh Kanga, MKM  
Ralph Hays, Eldorado Engineering, Inc.



State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

January 25, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
Flashing Furnace Position Paper

Mr. Frank Markunas  
Chief Engineer  
Akron Regional Air Quality Management District  
CitiCenter, Suite 904  
146 South High Street  
Akron, OH 44308

Dear Mr. Markunas:

Attached to this correspondence is a copy of a document entitled "Environmental Permitting Position Paper on EDE Flashing Furnace for the Ravenna Army Ammunition Plant." This position paper was generated by Mr. Ernest Neal of Neal Environmental Services, LLC on behalf of MKM Engineers, Inc.

I have transmitted copies of this position paper to the appropriate divisions within the Ohio Environmental Protection Agency (OEPA) for review and comment. As the delegated authority for the implementation of state and federal air pollution regulations in Portage County, I am respectfully requesting your Agency's review and input on this position paper.

Mr. Neal has indicated that he is interested in scheduling a meeting with representatives from the OEPA and Akron Regional Air Quality Management District to discuss the enclosed proposal with respect to any potential applicable air issues. At this point in time, February 8, 2000 or February 10, 2000 are two possible dates for the proposed meeting. Please let me know if either of these dates are convenient for you and other staff of your Agency.

Thank you for your assistance in this matter. If you have any questions, please do not hesitate to contact me at 330-963-1221.

Sincerely,

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response





**From:** Eileen Mohr  
**To:** Patterson, Mark  
**Date:** 1/26/00 10:51AM  
**Subject:** Flashing Furnace/Clean Hard Fill Meeting

Mark:

Can you please forward this to Ernie Neal (I don't have his email address).

Regarding meetings on flashing furnace technology and clean hard fill issues Jarnal and I are available the 8th and 10th of Feb. Greg is only available the 10th. Jarnal is contacting Steve Uecke regarding his availability. The position paper on flashing furnace technology was sent to Akron Air and OFFO SWDO yesterday. Not sure as to Akron Air's availability yet or if OFFO SWDO wants to be tied in via conference phone.

More later when I have an idea of what is happening.

Thanks.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

**CC:** Greg Orr; Jarnal Singh

*FAY To:  
Ernie Neal  
614 224 5334  
Date: 1/26/00*

*Ernie - what is your email  
address?  
Eileen*



State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

February 14, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
FLASHING FURNACE TECHNOLOGY

Mr. Mark Patterson  
Environmental Program Manager  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9297

Dear Mr. Patterson:

The purpose of this correspondence is to summarize the conclusions reached during the meeting held to discuss the potential use of a flashing furnace at the Ravenna Army Ammunition Plant (RVAAP). The meeting was held on February 10, 2000, at the RVAAP, and included representatives from the RVAAP, Ohio Environmental Protection Agency (Ohio EPA), Akron Regional Air Quality Management District (Akron Air), MKM Engineers, Neal Environmental Services, LLC, and El Dorado Engineering (via conference phone).

The installation proposes to utilize the flashing furnace (FF) for decontaminating metal demolition materials that may contain residuals of various explosives (denoted as "3X"). Materials that are designated as 3X, if heated to temperatures above 1000°F (for a certain residence time), can be thermally decontaminated by destroying the trace quantity of explosive contamination, which reclassifies the material as 5X. These metal parts can then be freely sold, recycled, or given to industry as scrap metal with no restrictive control. In addition to the benefit of being able to recycle the metal materials, the use of FF technology significantly increases the safety factor involved in dealing with such materials. It is important to note that the FF proposed for use at the RVAAP will solely be utilized as a flashing furnace, i.e., it will not be utilized as a contaminated waste processor (CWP). The proposed location for the FF is at Load Line 2 (Portage County) between the bunkers designated as DB27 and DB27A.

Ohio EPA has reviewed the information presented in the document entitled, "Environmental Permitting Position Paper on EDE Flashing Furnace for the Ravenna Army Ammunition Plant." This document, dated January, 2000, and received at Ohio EPA on January 25, 2000, was prepared on behalf of MKM Engineers by Neal Environmental Services. Personnel from Ohio EPA's Division of Hazardous Waste Management (DHW) and Division of Solid and Infectious Waste Management (DSIWM) have verbally indicated that permits are not required from their respective divisions to install and utilize a FF at the RVAAP. Subsequent to the discussion of several technical issues at the February 10, 2000 meeting, representatives from Akron Air concurred that the FF would be considered a de minimis source under Ohio Administrative Code (OAC) 3745-15-05(B). However, it is incumbent upon the installation to keep the necessary records (ex. fuel consumption, operating hours, etc.), in order to demonstrate that the FF is truly a de minimis





MR. MARK PATTERSON  
FEBRUARY 14, 2000  
PAGE 2

source, and not a source operating without a permit. In addition, Akron Air requested RVAAP representatives to provide additional information regarding the paint that might be on the metal parts (i.e., ensure that the paint does not contain asbestos).

I trust this correspondence accurately summarizes and reflects the discussions that have been held regarding the use of FF technology at the RVAAP.

If you have any questions or concerns, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Rod Beals, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
Greg Orr, NEDO, DHWM  
Jarnal Singh, NEDO, DSIWM  
John Curtin, NEDO, DAPC  
Sean Vadas, Akron Air  
Mark Davis, Akron Air  
John Cicero, RVAAP  
Bill Ingold, IOC  
Bob Whelove, IOC  
Rick Callahan, MKM Engineers  
Ernie Neal, Neal Environmental Services



State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

January 19, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**SLAG ISSUES**

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

Dear Mr. Patterson:

During recent meetings held at the Ravenna Army Ammunition Plant (RVAAP), discussions have ensued regarding the potential release of contaminants from slag that was historically used at the installation. Although samples of slag have been tested during various portions of the on-going CERCLA and RCRA projects, the necessity of conducting additional testing on the slag (and leaching of metals to underlying soils) was discussed during the ecological field truthing meetings held in December, 1999.

Attached to this correspondence, you will find Ohio-specific information on slag, as well as general industry and environmental documents related to slag. It is anticipated that this information will assist the project team in designing an effective sampling program to evaluate the potential impact of slag on the environment.

Please note, Ohio Administrative Code (OAC) 3745-27-01(B)(40) specifically exempts slag as a solid waste. The Division of Surface Water (DSW) issued a policy on June 6, 1994 on the use of slag that defines the storage and testing procedures, in order to ensure the proper use and management of the material. This policy was re-issued on June 1, 1995, and although the policy expired on May 31, 1996, it is still used as a guidance document by various entities to mitigate potential environmental impacts.

The Ohio Environmental Protection Agency (OEPA) has documented several cases of surface water contamination, due to the use of unweathered slag in construction projects where the slag material was in the presence of water. I have included some of this analytical data and bioassay information with this correspondence. DSW personnel have indicated to me that OEPA has required remediation of slag sites only if the slag material has been demonstrated to adversely impact water quality. Currently, I am unaware of any Division of Emergency and Remedial Response (DERR) sites in which the Potentially Responsible Party (PRP) or entity was required to remediate a site based upon the past use of slag.





MR. MARK PATTERSON  
JANUARY 19, 2000  
PAGE 2

I trust that this correspondence and enclosed information will assist the project team in designing an effective sampling program.

If you have any questions, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

Enclosures

cc: Bob Princic, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Greg Orr, NEDO, DHWM  
Jarnal Singh, NEDO, DSIWM  
Bonnie Buthker, OFFO, SWDO  
Brian Tucker, CO, DERR  
John Cicero, RVAAP  
Bob Whelove, IOC  
John Jent, USACE Louisville  
David Seeley, USEPA Region V



State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

January 20, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
**RESIDENTIAL WELL SAMPLING**

Mr. Ellice Thompson  
10724 Holcomb Rd.  
Newton Falls, OH 44444

Dear Mr. Thompson:

During the Ravenna Army Ammunition Plant (RVAAP) Restoration Advisory Board (RAB) meeting held at Paris Township Hall on January 19, 2000, you requested information regarding the residential well sampling conducted by personnel from the Ohio Environmental Protection Agency (OEPA) in November 1997.

Twenty-five groundwater samples were collected in the vicinity of the RVAAP and analyzed for the following constituents: chloride, nitrate/nitrite, sulfate, total alkalinity, total dissolved solids, Target Analyte List (TAL) metals, and explosives compounds. As indicated during the RAB meeting, the original sampling locations were selected based on the availability of drillers' well logs, proximity of the property to the RVAAP installation in general, and to high priority Areas of Concern (AOCs) in particular, and the suspected groundwater flow direction based on topography and surface water flow. Due to the characteristics of the constituents being analyzed, shallower wells were usually selected in preference to deeper wells. For example, metals and explosives compounds do not usually have the downward mobility of other compounds, thus, samples from the shallower portions of the aquifer (water bearing unit) would probably have the best chance of showing contamination, if present. In addition, because some of the residents located to the south of the RVAAP installation have historically expressed concerns about health problems that they perceive as possibly being related to activities at the RVAAP, a concerted effort was made to include wells located in these areas in the sampling event.

The twenty-five samples were collected as follows: nine (9) samples were sampled on Minyoung Road, five (5) on Holcomb Road, three (3) on Newton Falls Road, two (2) on State Route 225, two (2) on Newton Falls Road, one (1) on Vair Road, two (2) on Oak Street, and one (1) on Wadsworth Road. Please refer to the enclosed correspondence, dated March 23, 1998, which summarizes the results of OEPA's sampling event.

OEPA's residential well sampling file contains additional data and information, in addition to the details presented in this correspondence. If you would like to review OEPA residential well sampling files related to the RVAAP project, please contact Ms. Lily Aaron of this office at 330-963-1129, in order to set up a file review time that is mutually convenient.

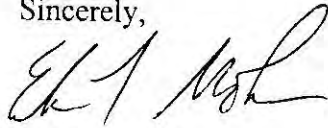




MR. ELLICE THOMPSON  
JANUARY 20, 2000  
PAGE 2

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,

A handwritten signature in black ink, appearing to read 'ETM', followed by a stylized flourish.

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

Enclosure

cc: Bob Princic, NEDO, DERR  
Diane Kurlich, NEDO, DDAGW  
Bonnie Buthker, OFFO, SWDO  
Mark Patterson, RVAAP  
John Cicero, RVAAP  
John Jent, USACE Louisville

From: "Patterson, Mark" <PattersonM@ioc.army.mil>  
To: "Jent, John P LRL02" <John.P.Jent@Irl02.usace.army.mil>, "Mohr, Eileen" <eileen.mohr@epa.state.oh.us>, "Whelove, Robert W" <WheloveR@ioc.army.mil>, "Zorko, Paul" <paul.l.zorko@Irl02.usace.army.mil>, "Brancato, David" <David.J.Brancato@Irl02.usace.army.mil>  
Date: 1/27/00 5:50PM  
Subject: FW: Ravenna AAP PER training

All,

AEC is planning on having the Principles of Environmental Restoration (PER) work shop at RVAAP on 3/13-15/00 or 4/10-12/00. A sample agenda is attached and there is additional info in preceding emails. I think we should invite SAIC personnel most closely involved with development of RVAAP's DQOs. What do you all think? Anyone else you want to invite?

Mark Patterson

-----Original Message-----

From: Armstrong, Jeffrey P USAEC  
[mailto:Jeffrey.Armstrong@aec.apgea.army.mil]  
Sent: Thursday, January 27, 2000 11:16 AM  
To: Patterson, Mark  
Cc: Snyder, Robert A USAEC; Whelove, Robert W; Armstrong, Jeffrey P USAEC  
Subject: FW: Ravenna AAP PER training

Mark,

I am forwarding the information you requested on PER. Rob is still in discussions about whether to hold a PER in Marion, OH, in March or April. As previously discussed, we would also like to do a site mini-tour with the PER team the afternoon before we start the PER.

I have received your Facility-Wide SAP. I noticed that it was written in April 1996. Do you develop more specific DQOs at each AOC-specific investigation as identified on the bottom of page 3-1 of the SAP?

Thanks,

Jeff Armstrong  
410-436-1510

> -----Original Message-----

> From: Snyder, Robert A USAEC  
> Sent: Wednesday, January 26, 2000 10:49 PM  
> To: Armstrong, Jeffrey P USAEC  
> Subject: RE: Ravenna AAP PER training

>

> The critical attendees are the EPA (if applicable), state, and  
> installation project managers (who are the day-to-day decision-makers).  
> Mark may also wish to invite support and input personnel (e.g. USACE,  
> contractors, CHPPM, etc).

>



- > Below is an outline of the Principles of Environmental Restoration (PER)
- > workshop. Also attached is a typical agenda for the two-day PER. The
- > Ravenna agenda could be different depending on specific needs. But this
- > gives you a basic understanding of what's in the workshop.

>

>

> Rob Snyder

>

> <<agenda.doc>>

>

>

#### > PRINCIPLES OF ENVIRONMENTAL RESTORATION WORKSHOP OUTLINE

>

- > One of the initiatives that has resulted from the initial year of
- > Independent Technical Review is the development of a workshop on the
- > Principles of Environmental Restoration. The four principles that are
- > addressed are 1) building an effective project management team, 2) problem
- > identification, 3) early identification of possible response actions, and
- > 4) managing uncertainty. The workshop addresses the applicability of
- > these principles across the spectrum of restoration efforts - from site
- > investigation planning through site closeout - and how they can be used to
- > improve the
- > decision-making process at most sites.
- >
- > The purpose of the PER workshop is to provide tools and approaches that
- > will help decision-makers collect appropriate investigative information
- > and proceed more quickly to acceptable site close-out. The course is
- > based on a course prepared jointly between DOE and EPA and stresses the
- > need for early planning and development of data quality objectives and
- > early development of exit criteria to ensure investigations and cleanups
- > stay on track. The course is intended to:
- > 1. Provide sufficient understanding of ER principles to ensure that
- > proposed investigative and
- > cleanup requirements are needed to support risk-based decisions and
- > actions, and
- > 2. Improve the process within which the installation project teams
- > operate to better focus on the end objectives of the restoration program.

>

>

>

>

> -----Original Message-----

> From: Armstrong, Jeffrey P USAEC  
> Sent: Wednesday, January 26, 2000 03:07 PM  
> To: Snyder, Robert A USAEC  
> Subject: FW: Ravenna AAP PER training

>

>

>

> -----Original Message-----

> From: Patterson, Mark [mailto:PattersonM@ioc.army.mil]  
> Sent: Wednesday, January 26, 2000 3:03 PM  
> To: 'Armstrong, Jeffrey P USAEC'  
> Subject: RE: Ravenna AAP PER training

&gt;

&gt;

&gt; Jeff

&gt;

&gt; Do you have any information describing the EPR process you

&gt; can email or

&gt; fax me? Also, I need to give a heads up to the people who should

&gt; attend. Who do

&gt; you recommend?

&gt;

&gt; Mark Patterson

&gt;

&gt; -----Original Message-----

&gt; From: Armstrong, Jeffrey P USAEC

&gt; [mailto:Jeffrey.Armstrong@aec.apgea.army.mil]

&gt; Sent: Wednesday, January 26, 2000 1:55 PM

&gt; To: 'pattersonm@ioc.army.mil'

&gt; Cc: 'whelover@ioc.army.mil'; Snyder, Robert A USAEC;

&gt; 'gdawson@ppc.com';

&gt; 'gwdconsult@aol.com'; 'gps@bbl-inc.com';

&gt; 'swashburn@environcorp.com';

&gt; Armstrong, Jeffrey P USAEC

&gt; Subject: Ravenna AAP PER training

&gt;

&gt;

&gt; Mark,

&gt;

&gt; I'm waiting on Rob Snyder to give me an OK for either March 13-15 or

&gt; April

&gt; 10-12. He is looking at coordinating a visit to Marion, OH. I'll

&gt; get back

&gt; with you as soon as I get the approval.

&gt;

&gt; Jeff Armstrong

&gt; 410-436-1510



## Principles of Environmental Restoration Workshop Agenda\*

<b>Day 1: Four Principles of Environmental Restoration</b>	
Introduction to the Participants, Instructors, and Overview of Principles of Environmental Restoration	
Module 1: Communication and Cooperation	
Break	
Module 2: Problem Identification and Definition (Includes site-specific example)	
Lunch Break	8:30 – 9:30
Module 3: Early Identification of Likely Response Action (Includes site-specific example)	9:30 – 10:00
Break	10:00 – 10:15
Module 4: Managing Uncertainties (Includes site-specific example)	10:15 – 12:00
	12:00 – 1:15
<b>Day 2: Applying the Principles to Site-Specific Problems</b>	1:15 – 3:00
Summary of Day 1	
Module 5: Conceptual Site Models (Includes site-specific example)	3:00 – 3:15
Ecological Risk	3:15 – 4:30
Break	
Module 6: Data Collection (Includes site-specific example)	8:30 – 8:15
Lunch Break	8:15 – 9:00
Module 7: Uncertainty Mitigation (Includes site-specific example)	9:00 – 10:00
Break	10:00 – 10:15
Module 8: Developing Exit Strategies (Includes site-specific example)	10:15 – 12:00
Course Summary and Comments	12:00 – 1:15
	1:15 – 3:00

\*Please note that due to interactive nature of the course resulting in discussions during each module, times on the agenda within each day are subject to slight change.

3:00 – 3:15

3:15 – 4:00

4:00 – 4:30



From: Eileen Mohr  
To: JJ; Patterson, Mark  
Date: 3/20/00 11:04AM  
Subject: Background Issues

John and Mark

I took a quick look at the fax John sent me on March 9, 2000 regarding the determination of background. Comments are as follows:

1. We need to have discussions on why the methodology for determining the ~~site-wide~~ background was acceptable up to this point in time, and now isn't. If the methodology and background numbers changed, and then we went to do another removal action and the background numbers were again not achievable... would there be a proposal to change background again? It was my understanding that IOC was glad to have determined background concentrations (after lots of discussion and negotiation) so early in the process.
2. On page 4-13, where did the "recommended clean-up levels" come from? (For the most part, it is noted that they are higher than the background levels determined during the site-related process)
3. With respect to the DHWM Closure Plan Review Guidance pages included in the fax, please note that the first page of the guidance indicates that the applicability of this document to areas other than RCRA closures is limited, as the statutory basis and regulatory development for the programs are independent.
4. With respect to DHWM Alternative A Comparison to Background conditions):
  - a. in the determination of background at RVAAP, the 95% UTL was calculated using either the data or log transformed data; if the UTL was greater than the maximum detected background concentration, the maximum detect was used as the background concentration. Utilizing this procedure would require that someone recalculate the background by using the mean plus 2 SD. And there would need to be a strong rationale behind changing the methodology that was already agreed upon.
  - b. in this methodology, there is the requirement that the owner/operator compares the soil texture, soil pH and cation capacity. Do we have this data? In addition do we have the requisite number of sampling points to utilize this method, or would we need to conduct additional sampling?
  - c. In order to determine where or not a Background based Remediation Standard (BRS) has been exceeded, typically a t-test is conducted which requires that both the data sets (background and confirmation) are normally distributed or can be transformed such that the data sets are approximately normal. Is this true for the previously collected data at RVAAP?
5. With respect to Alternative B (Comparison to Generic remediation Standards):
  - a. this alternative recommends that it be utilized at units where the contaminants are limited to barium, cadmium, chromium, lead, mercury, nickel and zinc. Based upon this recommendation, it does not appear to be applicable to RVAAP, as we are dealing with these constituents and more.
  - b. I am concerned about the limited data set that was utilized to construct these Generic Remediation Standards (GRS). Only 49 sites (representing 32 counties) were utilized and only 8 sites were from northeast Ohio. The geologic regimes in Ohio are so variable, ranging from glaciated to non-glaciated to carbonate vs. sandstone/shale bedrock (etc.) that I wonder about the applicability of these GRS to the RVAAP.

c. This section also freely indicates that the soil samples were taken at different locations, from different soil types and at different depths, were sampled by different people with different methodology and equipment and were analyzed by different laboratories. These caveats on the sample collection data alone would cause me to seriously question whether or not we wanted to use this methodology.

Call me if you have any questions regarding this email.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

CC: Bob Princic; Bonnie Buthker; Brian Tucker; Todd Fisher



**Mail Envelope Properties** (38D64C06.CE7 : 5 : 52863)

**Subject:** Background Issues  
**Creation Date:** 3/20/00 11:04AM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
INTERNET.CENTRAL-OFFICE "john.p.jent@lrl02.usacc.army.mil" (JJ)	Transferred	03/20/00 11:04AM
epa.state.oh.us DERR.Central-Office Btucker CC (Brian Tucker)	Delivered	03/20/00 11:04AM
epa.state.oh.us NEDO.Central-Office Bprincic CC (Bob Princic)	Delivered	03/20/00 11:04AM
Emohr BC (Eileen Mohr)	Opened	03/20/00 11:13AM
Tfisher CC (Todd Fisher)		
epa.state.oh.us SWDO.Central-Office Bbuthker CC (Bonnie Buthker)	Delivered Opened	03/20/00 11:04AM 03/20/00 11:10AM
ioc.army.mil pattersonm (Patterson, Mark)	Transferred	03/20/00 11:04AM

Post Office	Delivered	Route
INTERNET.CENTRAL-OFFICE		
DERR.Central-Office	03/20/00 11:04AM	epa.state.oh.us
NEDO.Central-Office	03/20/00 11:04AM	epa.state.oh.us
SWDO.Central-Office	03/20/00 11:04AM	epa.state.oh.us ioc.army.mil

Files	Size	Date & Time
MESSAGE	5604	03/20/00 11:04AM

**Options**

**Auto Delete:** No  
**Expiration Date:** None  
**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No

<b>Return Notification:</b>	None
<b>Concealed Subject:</b>	No
<b>Security:</b>	Standard
<b>To Be Delivered:</b>	Immediate
<b>Status Tracking:</b>	Delivered & Opened



**From:** Eileen Mohr  
**To:** Patterson, Mark  
**Date:** 3/21/00 12:53PM  
**Subject:** PER Meeting

Mark

I spoke with Rod Beals and Bob Princic this morning. They expressed interest in attending the Principles of Environmental Restoration (PER) workshop to be held on April 10-12. So (hopefully)..... add in two more from the state, and they also will be commuters.

As part of the PER, are we supposed to identify a particular issue or problem that needs to be resolved (or at least discussed)? If so, a good idea (at least from my perspective would be the following): Given that we will have all the principal players there including IOC, RVAAP, OEPA, USAEC etc. perhaps we can look at how do we reconcile the DSMOA/CA process with the annual planning that I need to do for my division (along with all the ramifications)? Allow me to elaborate.....

We (the RVAAP team - usually you, JJ and myself) sit down and generate a detailed two year workplan table that indicates the work that we reasonably think we will tackle during that time period (as well as based upon the IAP projections). I then translate those activities (workplan reviews, scoping meetings etc.) into the amount of Ohio EPA personnel hours that I estimate will be needed to work on the projects. This includes not only DERR, but risk assessment, groundwater, engineering (RD/RA support), legal (if necessary) etc. This then all gets summed up by Dayton/Columbus folks who put a dollar amount to all the projected work... which goes to the Army for review. (At this point I don't know where our last DSMOA/CA stands....)

Then to complicate issues I have to submit an annual plan to my Division in Columbus... which basically indicates all the same stuff in the budgetting process that we went through above, but with perhaps a little less detail.

Anyway, both of these tools indicate that a certain amount of Ohio EPA resources will be necessary to assist the Army in completing projects in a reasonable timeframe. At this point in time, the required resources that have been projected outweigh the current Ohio EPA resources that are available (if all the projected work were to arrive fairly consistently in the one and two year workplan). A problem arises in that the work does not come in to the Agency as expected due to a variety of reasons including funding, slipped schedules.... so it makes it impossible to predict whether or not the Agency should hire on additional resources... given that there is no guarantee that the work will remain consistent and stable (i.e..... not everything coming in all at once in the last quarter, scrambling to obtain year end funds etc.)...

I guess the bottom-line is: how do we continue to provide the services that are described in the DSMOA to the Army in a timely fashion (and that the Army has come to expect), without compromising my Division? By that I mean... what happens if based on our projections we hire an additional person, and then the money does not come through to help support the position? We then have a person that my Division can't support, because they are not doing work related to the grant, because the work isn't coming in like expected. (And... we are really careful to only charge to the grant, actual work that is being conducted)

This is a real sticky question for me... and not one that I think can be resolved by one single partner in the RVAAP process. So... perhaps it is a good question for the group to tackle (maybe the contractors could leave the room if we discuss this issue).

I hope this rambling makes some sense. To be honest with you, Bob or Rod could give folks a much clearer picture of the "state of DERR" than I can. But hopefully this email can be a springboard for discussion at the PER meeting.

Thanks!

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

CC: JJ; Whelover@ioc.army.mil



**Mail Envelope Properties** (38D7B717.CE7 : 5 : 52863)

**Subject:** PER Meeting  
**Creation Date:** 3/21/00 12:53PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL.-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
INTERNET.CENTRAL-OFFICE "john.p.jcnt@lrl02.usace.army.mil" (JJ)	Transferred	03/21/00 12:53PM
epa.state.oh.us NEDO.Central-Office Bprincic BC (Bob Princic)	Delivered	03/21/00 12:53PM
Emohr BC (Eileen Mohr)	Opened	03/21/00 12:53PM
Rbeals BC (Rod Beals)		
Tfisher BC (Todd Fisher)		
epa.state.oh.us SWDO.Central-Office Bbuthker BC (Bonnie Buthker)	Delivered	03/21/00 12:53PM
ioc.army.mil PattersonM (Patterson, Mark)	Transferred	03/21/00 12:53PM
Whelover CC ( <u>Whelover@ioc.army.mil</u> )		

Post Office	Delivered	Route
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NEDO.Central-Office	03/21/00 12:53PM	epa.state.oh.us
SWDO.Central-Office	03/21/00 12:53PM	epa.state.oh.us ioc.army.mil

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MESSAGE	5277	03/21/00 12:53PM

**Options**

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**Expiration Date:** None  
**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No

**Security:**

Standard

**To Be Delivered:**

Immediate

**Status Tracking:**

Delivered & Opened



**Mail Envelope Properties** (39006078.CE7 : 5 : 52863)**Subject:** Revised Small Mammal Protocol for RVAAP**Creation Date:** 4/21/00 10:06AM**From:** Eileen Mohr**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
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epa.state.oh.us DERR.Central-Office Btucker CC (Brian Tucker)	Delivered	04/21/00 10:06AM
epa.state.oh.us NEDO.Central-Office Emohr BC (Eileen Mohr) Tfisher BC (Todd Fisher)	Delivered Opened	04/21/00 10:06AM 04/21/00 10:11AM
epa.state.oh.us SWDO.Central-Office Bbuthker CC (Bonnie Buthker) Lmoore CC (Laurie Moore)	Delivered	04/21/00 10:06AM
lrl02.usace.army.mil Elizabeth.A.Ferguson (Elizabeth.A.Ferguso)	Transferred	04/21/00 10:07AM
usace.army.mil David.J.Brancato (David.J.Brancato@lrl102	Transferred	04/21/00 10:07AM
<b>Post Office</b> INTERNET.CENTRAL-OFFICE DERR.Central-Office NEDO.Central-Office SWDO.Central-Office	<b>Delivered</b> 04/21/00 10:06AM 04/21/00 10:06AM 04/21/00 10:06AM	<b>Route</b> epa.state.oh.us epa.state.oh.us epa.state.oh.us lrl02.usace.army.mil usace.army.mil

Files	Size	Date & Time
MESSAGE	2928	04/21/00 10:06AM

**Options****Auto Delete:** No

<b>Expiration Date:</b>	None
<b>Notify Recipients:</b>	Yes
<b>Priority:</b>	Standard
<b>Reply Requested:</b>	No
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<b>Concealed Subject:</b>	No
<b>Security:</b>	Standard
<b>To Be Delivered:</b>	Immediate
<b>Status Tracking:</b>	Delivered & Opened



NEAL ENVIRONMENTAL SERVICES, LLC

172 E. State Street  
Ste. 312  
Columbus, OH 543215

## FAX Transmittal

To: Mark Patterson Fax No. -330-358-7314  
From: Ernie Neal  
Date: June 15, 2000  
Pages: 4

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Comments: Attached is OAC 3745-27-13

Note in Section (A) that this rule applies to solid waste or hazardous waste facilities. I wouldn't declare a load line a solid or hazardous waste facility.

Also note under (B)(2), that if in fact a portion of the RVAAP site involved closed solid or hazardous facilities and that you engaged in filling, grading, corrective action etc., at this location you would not need a 27-13 authorization if you were under orders (i.e. administrative orders). I believe there are more appropriate mechanisms to provide the opportunity for bioremediation and other associated activities at RVAAP.

Concern - The possible downsides to applying for a 27-13 may be significant.

Telephone no. 614-224-5333 --- Fax 614-224-5334

with the approved explosive gas monitoring plan. Authorization shall be granted upon the director's finding that there is no significant likelihood of future explosive gas formation and migration sufficient to require action under the contingency plan.

(M) Upon the demolition of an occupied structure, or the elimination of a potential explosive gas migration pathway, or other circumstances which may eliminate the potential hazard to occupied structures, the person identified in paragraph (A) of this rule may apply to the director for authorization to discontinue monitoring or abandon the permanent monitors probes. Such a request shall include the following:

- (1) Identification of the landfill site;
- (2) Description of the proposed activity for which authorization is being requested;
- (3) Details regarding how the potential hazard to occupied structures has been eliminated;
- (4) A proposed schedule for the implementation of the proposed activities.

(N) If new occupied structures or explosive gas pathways are built within one thousand feet of solid waste placement, or if topographic or other changes occur in the vicinity of the landfill, such that a potential for explosive gas migration towards any occupied structure is created, the person identified in paragraphs (A)(2) and (A)(3) of this rule shall submit a new explosive gas monitoring plan in accordance with this rule or revise all applicable sections of the approved plan to address this potential and submit the plan to the director for approval. The person identified in paragraphs (A)(1) of this rule shall revise the explosive gas monitoring plan, place the revised plan into the operating record in accordance with rule 3745-27-09 of the Administrative Code, and implement the revised plan.

(O) Upon the director's finding that explosive gas formation and migration threaten human health, safety or the environment, he may order the person identified in paragraph (A) of this rule to perform such measures to abate or minimize the formation or migration of explosive gas.

(P) The director may require the installation of additional temporary or permanent monitors or abandonment of permanent monitors as necessary to monitor explosive gas pathways or eliminate the potential contamination of ground water.

(Q) The explosive gas monitoring plan, certification reports, and all revisions shall be submitted by the person identified in paragraph (A) of this rule to the appropriate Ohio EPA district office and to the approved health department,

and for a sanitary landfill facility subject to paragraph (A)(1) or (A)(2) of this rule, into the operating record in accordance with rule 3745-27-09 of the Administrative Code.

(Effective June 12, 1989; June 1, 1994)

**3745-27-13 Authorization to engage in filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated.**

(A) No person shall, without prior authorization from the director, engage in filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated.

(B)(1) This rule does not apply to filling, grading, excavating, building, drilling, or mining for which:

(a) The owner or operator of a solid waste facility has obtained a permit to install in accordance with the requirements of Chapter 3745-31 of the Administrative Code, and an effective solid waste disposal license in accordance with the requirements of Chapter 3745-37 of the Administrative Code, and that is in accordance with authorized development, operating, maintenance or monitoring practices at the facility;

(b) The owner or operator of a hazardous waste treatment, storage, or disposal facility has obtained a permit, plan approval, or other authorization in accordance with the requirements of Chapter 3734, of the Revised Code and that is in accordance with authorized development, operating, maintenance, or monitoring practices at the facility;

(c) The owner or operator of a solid waste facility or hazardous waste treatment, storage or disposal facility is exempted or otherwise excluded from requirements to obtain permits or licenses under Chapter 3734, of the Revised Code.

(2) This rule does not apply to a person to whom the director has issued a final order under which this person will fill, grade, excavate, drill, build, or mine at a site as part of a corrective or remedial investigation or action, ground-water investigation, or other investigation or action to abate air or water pollution or soil contamination, or to protect public health and safety under Chapter 6111, or 3734, of the Revised Code.

(3) A public utility as defined in section 4905.02 of the Revised Code that has main or distribution lines above or below the surface, located on an easement or right-of-way across land where a solid waste facility was operated,

Amended 3745-27-13



may engage in any such activity within the easement or right-of-way without prior authorization from the director for purposes of performing emergency repair or emergency replacement of its lines; of the poles, towers, foundations, or other structures supporting or sustaining any such lines; or of the appurtenances to those structures necessary to restore or maintain existing public utility service. A public utility may enter upon any such easement or right-of-way without prior authorization from the director for the purposes of performing necessary or routine maintenance of those portions of its existing lines; of the existing poles, towers, foundations, or other structures sustaining or supporting its lines; or of the appurtenances to any such supporting or sustaining structures, located on or above the land surface on any such easement or right-of-way. Within twenty-four hours after commencing any such emergency repair or replacement or maintenance work, the public utility shall notify the director or his authorized representative of those activities and shall provide such information regarding those activities as the director or his representative may request. Upon completion of the emergency repair or replacement or maintenance activities, the public utility shall restore any land of the solid waste facility disturbed by those activities to the condition existing prior to the commencement of those activities.

(4) This rule does not apply to routine maintenance of final cover.

(5) This rule does not apply to routine agricultural, horticultural, recreational, or maintenance activities done by occupants of single-family homes on their own premises.

(C) Any person wishing to obtain an authorization under this rule shall provide such information to the director as necessary for him to make a determination that such activity will not create a nuisance and is unlikely to adversely affect the public safety or health or the environment, including as appropriate, the following information in the following order:

(1) The location specified on a 7 1/2 minute USGS topographical map and on a topographic map with a maximum scale of one inch equals two hundred feet, legal description, type of facility, demonstration of current property ownership, and demonstration of current facility ownership.

(2) The specific activities and their intended purposes for which authorization is requested.

(3) Discussion of all previous and existing permits, licenses, approvals, and orders pertaining to past and ongoing waste treatment, storage, or disposal activities issued under local,

state, and federal environmental regulations for lands upon which authorization under this rule is requested.

(4) Letters of acknowledgment from the owners of all parcels of land to which the authorization pertains.

(5) Copies of letters of notice to:

(a) The board of health of the health district wherein the facility is located;

(b) The local zoning authority having jurisdiction over the geographical area where the facility is located, if any;

(c) Letters of notice shall state that authorization under this rule is being requested and shall include a legal description of the affected site.

(6) A discussion of the facility's present or known prior use for hazardous waste or solid waste treatment, storage or disposal, including a summary and discussion of all available documentation pertaining to the dates of operation, types and quantities of waste handled at the facility, and ownership.

(7) For closed facilities or closed waste treatment, storage, or disposal areas at an operating facility, a detailed discussion of the closure activities, if any, performed at the facility and an evaluation of the present condition of the closed facility.

(8) A detailed description of the manner by which the proposed filling, grading, excavating, building, drilling, or mining will be accomplished.

(9) A detailed plan describing the manner by which the proposed filling, grading, excavating, building, drilling, or mining will be accomplished in compliance with all applicable state and federal laws and regulations pertaining to environmental protection, including but not limited to control of air emissions, control of leachate, surface water run-on and run-off, and protection of ground water.

(10) A detailed description of the procedures to be followed should solid or hazardous waste or potentially contaminated soils be removed from the closed facility. The description shall address procedures for representative sampling of waste and potentially contaminated soil, sample analysis, and the selection of the appropriate disposal method, and shall provide for the submittal of a copy of a letter of acceptance from a disposal facility to the director prior to any removal of waste or contaminated soil from the property. Waste and contaminated soils which have been removed from the closed facility must be collected and disposed of in accordance with Chapter 3734, of the Revised Code.

(11) A detailed description of the procedures to be followed in reestablishing or instituting a formal closure of the facility upon completion of



the proposed filling, grading, excavating, building, drilling, or mining. The reestablishing or instituting of the closure of the facility shall be in accordance with the applicable provisions of Chapter 3734, of the Revised Code and the rules promulgated thereunder.

(12) Other such information as the director deems necessary to determine that these activities will be in compliance with all applicable laws and regulations administered by the director.

(D)(1) Requests for authorization to engage in filling, grading, excavating, drilling, building, or mining on land where a hazardous waste facility or a solid waste facility was operated shall be signed as follows:

(a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or his duly authorized representative if such representative is responsible for the overall operation of the facility;

(b) In the case of a partnership, by a general partner;

(c) In the case of a sole proprietorship, by the proprietor; and

(d) In the case of a municipal, state, federal, or other governmental facility, by the principal executive officer, the ranking elected official, or other duly authorized employee.

(2) The signature shall constitute personal affirmation that all statements or assertions of fact made in the application are true and complete and comply fully with applicable state requirements, and shall subject the signatory to liability under applicable state laws forbidding false or misleading statements, and shall be notarized.

(E) An incomplete request shall not be considered. Within sixty days of the date of receipt of an incomplete request, the director or his authorized representative shall notify the applicant of the nature of any deficiency and of the director's refusal to consider the request until the deficiency is rectified and the application is deemed complete.

(F) The director shall not grant an authorization to engage in filling, grading, excavating, drilling, building, or mining on land where a hazardous waste facility or a solid waste facility was operated unless he determines that such authorization will not result in violation of applicable laws and regulations administered by the director, will not create a nuisance and is unlikely to adversely affect the public safety or health or the environment.

(G) The director may impose such special terms and conditions as part of the authorization to engage in filling, grading, excavating, drilling, building, or mining on land where a hazardous waste facility or a solid waste facility was operated as are appropriate or necessary to ensure compli-

ance with all applicable laws and regulations administered by the director, and to ensure protection of public health and safety and the environment.

(H) An authorization to engage in filling, grading, excavating, drilling, building, or mining on land where a hazardous waste facility or a solid waste facility was operated shall terminate within eighteen months of its effective date if the person to whom authorization was granted has not begun the activities authorized thereby or has not entered into a binding contractual obligation to undertake and complete the activities authorized thereby within twenty-four months of the effective date of the authorization.

(I) The director may extend the date of expiration of any authorization to engage in filling, grading, excavating, drilling, building, or mining on land where a hazardous waste facility or a solid waste facility was operated by up to twelve months if the person to whom authorization was granted submits, at least sixty days prior to the original termination date, a request for an extension of the authorization containing information that, in the judgment of the director, justifies an extension of time. No appeal taken from denial of extension of an expiration date shall prevent termination of the authorization during the period between denial of an extension and final disposition of the appeal unless prohibited by any court or administrative body having jurisdiction over the matter.

(J) The director may revoke an authorization to engage in filling, grading, excavating, drilling, building, or mining on land where a hazardous waste facility or a solid waste facility was operated if he concludes at any time that any applicable laws have been or are likely to be violated or continued implementation of the approved plans may cause a threat to human health or safety or the environment.

(K) Authorization to engage in filling, grading, excavating, drilling, building, or mining on land where a hazardous waste facility or a solid waste facility was operated shall be granted, extended, revoked, or denied in accordance with the provision of Chapters 119, and 3745, of the Revised Code and Chapter 3745-47 of the Administrative Code.

(Effective November 17, 1988; March 9, 1989; June 12, 1989)

#### 3745-27-14 Post-closure care of sanitary landfill facilities.

(A) Following completion of final closure activities in accordance with rule 3745-27-11 of the Administrative Code or following closure activi-

Composite 3745-27-14



DEPARTMENT OF THE ARMY  
U.S. ARMY MUNITIONS AND ARMAMENTS COMMAND  
1 ROCK ISLAND ARSENAL  
ROCK ISLAND, IL 61299-5500

TO	7/19/00
CR-COR	7/19/00
ENV	7/19/00
LAND MGR	7/19/00
CONTRACTOR	7/19/00
RETURN FOR FILE	

SOSMA-MA (200(B))

18 July 2000

MEMORANDUM FOR ALL MAC (PROV) COMMANDERS/COMMANDER'S  
REPRESENTATIVES

SUBJECT: **Reporting of Environmental Enforcement Actions and  
Fines and Penalties**

1. This memorandum is a reminder of the policies and procedures to be followed when reporting environmental enforcement actions and fines and penalties.
  2. Chapter 15-7 of AR 200-1 states that all enforcement actions, e.g., Notice of Violation, Warning Letter, etc., will be reported to the U.S. Army Environmental Center through the Environmental Quality Report (EQR) within 48 hours and any fine or penalty within 24 hours. In addition, it is Headquarters, U.S. Army Materiel Command's (AMC's) policy that, within 24 hours of receipt of written notification of a violation or fine, the installation will fax a copy of the notice to their appropriate major subordinate command (MSC). Upon receipt, the MSC must immediately fax a copy to HQ, AMC, ATTN: AMCEN-A.
  3. In order to meet these stringent timeframes and to ensure the proper notifications are made, the following responsibilities and procedures have been established:
    - a. Within 24 hours of receipt of written notification of a violation or fine/penalty, a copy of the notice will faxed to the U.S. Army Munitions and Armaments Command's (MAC) (PROV) Environmental Team (SOSMA-ISE-P). If the notification is received late in the day prior to a weekend or holiday, the notification must be faxed immediately the next business day.
    - b. Within 48 hours of receipt of written notification of a violation, enter the violation in the EQR. If the notification is received late in the day prior to a weekend or holiday, the violation must be entered in the EQR NLT the second business day.
- NOTE: Data for fines will be imported to the EQR from the Environmental Law Data Fines database at the HQDA level.



State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center  
122 S. Front Street  
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

P.O. Box 1049  
Columbus, OH 43216-1049

November 11, 2000

John A. Cicero, Jr.  
Commander's Representative  
Department of the Army  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, Ohio 44266-9297

TO	11/17/00
<input checked="" type="checkbox"/>	CR-COR
<input checked="" type="checkbox"/>	ENV
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	CONTRACTOR
<input type="checkbox"/>	RETURN FOR FILE

SMARV-CR (200-1a)

Re: Federal Based Air Permit Exemption - OAC rule 3745-31-03(A)(2) for the  
Ravenna Army Ammunition Plant

Dear Mr. Cicero,

Thank you for your August 18, 2000 letter to Mr. Chris Jones, Director, Ohio EPA in which you are requesting concurrence from Ohio EPA that your referenced remedial activities listed in that letter would not require you to apply for and obtain an air permit to install.

After reviewing your letter, we understand that you believe that this site is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 121 (e) site and that you maybe undertaking projects that may fall under air permit to install rule 3745-31-03(A)(2)(a) exemption.

We also understand that your plans are to notify Akron Air Pollution Control and Ohio Environmental Protection Agency prior to starting a project under the above mentioned exemption and that prior to starting each project you will be providing information to us that explains to us that you meet all the elements of the above mentioned exemption.

We realize that it maybe impossible to precisely define these elements at this time but that once a project is defined we will meet or discuss to define the elements needed to allow us to properly evaluate the project's exemption and/or compliance status.

We look forward to working with you on this important site.

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director





John A. Cicero, Jr.  
Commander's Representative  
Page no. 2.

Please contact me if you have any questions concerning the concepts and procedures of securing the above exemption.

Sincerely,



Michael E. Hopkins, P.E.  
Manager  
Air Quality Modeling & Planning  
Division of Air Pollution Control

MH/all

cc: US ARMY Munitions and Armaments Command, ATTN: SOSMA-ISD (Mr. Bill Ingold), 1 Rock Island Arsenal, Rock Island, IL 61299-5500  
US ARMY Munitions and Armaments Command, ATTN: SOSMA-ISE-R (Mr. Robert Whelove), 1 Rock Island Arsenal, Rock Island, IL 61299-5500  
Ohio EPA, NEDO, Division of Emergency and Remedial Response, ATTN: Ms. Eileen Mohr, 2110 E. Aurora Road, Twinsburg, Ohio 44087-1969  
Ravenna Training and Logistics Site, ATTN: AGOH-OT-RTLS (LTC Thomas Tadsen), 1488 Newton Falls-Portage Road, Newton Falls, Ohio 44444  
Mr. Khodi Irani, MKM Engineers, Inc., 4153 Bluebonnet Drive, Stafford, TX 77477  
Mr. Rick Callahan, MKM Engineers, Inc., RVAAP, 8451 State Route 5, Ravenna, OH 44266  
Mr. James McGee, TolTEST/R&R International, Inc., RVAAP, 8451 State Route 5, Ravenna, OH 44266  
Mr. Ernie Neal, Neal Environmental Services, Suite 312, 172 E. State Street, Columbus, OH 43215  
Mr. Steve Uecke, Portage County Health Department, 449 South Meridian, 3<sup>rd</sup> Floor, Ravenna, Ohio 44266  
Mr. Sean Vadas, Akron Regional Air Management Quality District, 146 S. High Street, Room 904, Akron, OH 44308  
Mr. Graham Mitchell, Office of Federal Facilities Oversight, OEPA, Southwest District Office, 401 East 5<sup>th</sup> Street, Dayton, OH 45402-2911

c:/save/akron/ravenna.cercla.letter.

**From:** Eileen Mohr  
**To:** JJ; Patterson, Mark  
**Date:** 1/13/00 4:00PM  
**Subject:** Monazite Sand Area

Mark and John

I had a lengthy discussion with Joe Crombie of ODH regarding the Monazite Sand Area today. During the conversation, Joe indicated to me that he would be sending me written information/calculations regarding the appropriate levels for clean-up. I would expect that the numbers that he calculated are not going to match what Bill Haney (New World Technology) indicated he wanted to utilize, i.e., they will be more conservative. As an example, for a single contaminant, the level for Thorium 232 is going to be 4 picocuries/gram and for Uranium, it would be 30 picocuries. If there is more than one constituent in a particular area, these numbers would need to be adjusted accordingly.

I asked Joe to track down whether or not any written correspondence was sent from ODH to New World Technologies regarding the draft workplan. He will check on this for me. In addition, as a point of information, Mr. Haney has not responded to the comments on the workplan that OEPA generated.

It is my understanding that New World Technologies has already conducted a portion of the cleanup work, but was not able to complete it due to financial constraints.

I would recommend that we have a conference call or meeting between the necessary parties (especially including ODH) prior to commencing any additional work. New World Technologies will need to meet the cleanup levels for rad that Joe Crombie will be putting into writing. In addition, are there any objections to Joe coming up and conducting a site visit?

Let me know what you think, and how you want to arrange a meeting/conference call.

Thanks.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us



**Mail Envelope Properties** (387E3CE9.CE7 : 5 : 52863)

**Subject:** Monazite Sand Area  
**Creation Date:** 1/13/00 4:00PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
INTERNET.CENTRAL-OFFICE "john.p.jent@lrl02.usace.army.mil" (JJ)	Transferred	01/13/00 04:00PM
epa.state.oh.us NEDO.Central-Office Emohr BC (Eileen Mohr)	Delivered Opened	01/13/00 04:00PM 01/13/00 04:01PM
gw.odh.state.oh.us jcrombie BC (jcrombie@gw.odh.state.oh.us)	Transferred	01/13/00 04:00PM
ioc.army.mil PattersonM (Patterson, Mark)	Transferred	01/13/00 04:00PM

Post Office	Delivered	Route
INTERNET.CENTRAL-OFFICE NEDO.Central-Office	01/13/00 04:00PM	epa.state.oh.us gw.odh.state.oh.us ioc.army.mil

Files	Size	Date & Time
MESSAGE	3008	01/13/00 04:00PM

**Options**

**Auto Delete:** No  
**Expiration Date:** None  
**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**To Be Delivered:** Immediate  
**Status Tracking:** Delivered & Opened

**From:** Eileen Mohr  
**To:** JJ; Patterson, Mark  
**Date:** 1/18/00 1:39PM  
**Subject:** Fwd: Ravenna

Mark and John

I am forwarding the email from Joe Crombie (ODH) that delineates the DCGLs for the **monazite sand** area. I would recommend that Joe Crombie be involved with any discussions that we have with Bill Ingold regarding this issue.

Thanks.

eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

**CC:** Bonnie Buthker; jcrombie@gw.odh.state.oh.us



**Mail Envelope Properties** (3884B371.CE7 : 5 : 52863)

**Subject:** Fwd: Ravenna  
**Creation Date:** 1/18/00 1:39PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

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INTERNET.CENTRAL-OFFICE "john.p.jent@lrl02.usace.army.mil" (JJ)	Transferred	01/18/00 01:40PM
epa.state.oh.us NEDO.Central-Office Emohr BC (Eileen Mohr)	Delivered Opened	01/18/00 01:39PM 01/18/00 01:39PM
epa.state.oh.us SWDO.Central-Office Bbuthker CC (Bonnie Buthker)	Delivered	01/18/00 01:40PM
gw.odh.state.oh.us JCROMBIE CC ( <u>jcrombie@gw.odh.state.oh.us</u> )	Transferred	01/18/00 01:40PM
ioc.army.mil PattersonM (Patterson, Mark)	Transferred	01/18/00 01:40PM
<b>Post Office</b> INTERNET.CENTRAL-OFFICE NEDO.Central-Office SWDO.Central-Office	<b>Delivered</b> 01/18/00 01:39PM 01/18/00 01:40PM	<b>Route</b> epa.state.oh.us epa.state.oh.us gw.odh.state.oh.us ioc.army.mil

Files	Size	Date & Time
Mail MESSAGE	1389	01/18/00 01:39PM

**Options**

**Auto Delete:** No  
**Expiration Date:** None  
**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:**

No

**Security:**

Standard

**To Be Delivered:**

Immediate

**Status Tracking:**

Delivered & Opened



**From:** Eileen Mohr  
**To:** 'Hays, David'; 'Jent, John P LRL02'; Patterson, Mark  
**Date:** 1/19/00 12:24PM  
**Subject:** Re: Monazite Meeting

All -

I can make the meeting at 8 AM on 2/2 regarding the monazite sand area. Here is Joe Crombie's email address:

[JCROMBIE@gw.odh.state.oh.us](mailto:JCROMBIE@gw.odh.state.oh.us)

I will forward your email to him. Joe is located in Columbus, so an 8 AM meeting may be problematic for him, unless his Agency can spring for an overnight.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Patterson, Mark" <PattersonM@ioc.army.mil> 01/19/00 11:51AM >>>  
All,

Ingold can meet at RVAAP at 8:00 A.M. on 2/2 to discuss monazite site.  
Can you make it?

Eileen, do you have Crombie's email address? I left a phone message for him.

Thanks

Mark

**CC:** [jcrombie@gw.odh.state.oh.us](mailto:jcrombie@gw.odh.state.oh.us)

**Mail Envelope Properties** (3885F36A.CE7 : 5 : 52863)

**Subject:** Re: Monazite Meeting  
**Creation Date:** 1/19/00 12:24PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

Recipients	Action	Date & Time
epa.state.oh.us		
NEDO.Central-Office	Delivered	01/19/00 12:24PM
Emohr BC (Eileen Mohr)	Opened	01/19/00 12:25PM
gw.odh.state.oh.us		
JCROMBIE CC ( <u>jcrombie@gw.odh.state.oh.us</u> )	Transferred	01/19/00 12:25PM
ioc.army.mil		
PattersonM (Patterson, Mark)	Transferred	01/19/00 12:25PM
lrl02.usace.army.mil		
John.P.Jent ('Jent, John P LRL02')	Transferred	01/19/00 12:25PM
swt02.swt.usace.army.mil		
David.Hays ('Hays, David')	Transferred	01/19/00 12:25PM

Post Office	Delivered	Route
NEDO.Central-Office	01/19/00 12:24PM	epa.state.oh.us gw.odh.state.oh.us ioc.army.mil lrl02.usace.army.mil
		swt02.swt.usace.army.mil

Files	Size	Date & Time
MESSAGE	2512	01/19/00 12:24PM

**Options**

**Auto Delete:** No  
**Expiration Date:** None  
**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No



**Security:**

Standard

**To Be Delivered:**

Immediate

**Status Tracking:**

Delivered & Opened

**From:** Eileen Mohr  
**To:** Hays, David C SWT; Jent, John P LRL02; 'Patterson, Mark'  
**Date:** 1/24/00 2:02PM  
**Subject:** RE: Monazite Meeting

Mark, David, and John:

I just spoke with Joe Crombie of ODH regarding other potential meeting times and dates since David is not available on February 2, 2000. Either January 31, 2000 or February 1, 2000, (both days at 11:00) would work for us. My only time constraint is that on February 1, 2000 (Tuesday), I would need to leave the RVAAP at 3:00 PM.

Will there be an agenda for the meeting?

Thanks!

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

>>> "Hays, David C SWT" <David.Hays@swt02.swt.usace.army.mil> 01/24/00 06:36AM >>>  
Mark, the 2nd is not possible for me. I could make the afternoon of the 31st or the morning of the 1st, if something changes. Do you want me to contact another Corps HP???

Dave

> -----Original Message-----

> From: Patterson, Mark [SMTP:PattersonM@ioc.army.mil]  
> Sent: Wednesday, January 19, 2000 10:52 AM  
> To: 'Mohr, Eileen'; 'Jent, John P LRL02'; 'Hays, David'  
> Subject: Monazite Meeting

>

> All,

>

> Ingold can meet at RVAAP at 8:00 A.M. on 2/2 to discuss monazite  
> site.

> Can you make it?

> Eileen, do you have Crombie's email address? I left a phone message for  
> him.

>

> Thanks

>

> Mark



CC: [jcrombie@gw.odh.state.oh.us](mailto:jcrombie@gw.odh.state.oh.us)

**Mail Envelope Properties** (388CA1CD.CE7 : 5 : 52863)

**Subject:** RE: Monazite Meeting  
**Creation Date:** 1/24/00 2:02PM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

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epa.state.oh.us		
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Emohr BC (Eileen Mohr)	Opened	01/24/00 02:02PM
gw.odh.state.oh.us		
JCROMBIE CC ( <u>jcrombie@gw.odh.state.oh.us</u> )	Transferred	01/24/00 02:03PM
ioc.army.mil		
PattersonM ('Patterson, Mark')	Transferred	01/24/00 02:03PM
lrl02.usace.army.mil		
John.P.Jent (Jent, John P LRL02)	Transferred	01/24/00 02:03PM
swt02.swt.usace.army.mil		
David.Hays (Hays, David C SWT)	Transferred	01/24/00 02:03PM
<b>Post Office</b>	<b>Delivered</b>	<b>Route</b>
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Files	Size	Date & Time
MESSAGE	3526	01/24/00 02:02PM

**Options**

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**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No

**Security:**

Standard

**To Be Delivered:**

Immediate

**Status Tracking:**

Delivered & Opened



## Patterson, Mark

---

**From:** William Haney [bhaney@earthlink.net]  
**Sent:** Thursday, January 27, 2000 4:00 PM  
**To:** Matthys, Bob  
**Cc:** Styvaert, Mike; Bill Ingold; Irwin Dreyfuss; Mark Patterson  
**Subject:** Re: **Monazite Sand Area**



OEPA Response.doc

Bob,

The formal response to the OEPA comments is attached. On the issue of the release concentration, the state has not notified NWT of the recalculation of the release limits. I was notified via a phone conversation with Irwin Dreyfus on 1/21/00 that they received the revision from Ms. Mohr, OEPA. The Ohio Department of Health, as lead state agency, developed the number.

Ohio DOH still has not notified NWT of the proposed limit. I will be contacting them today (1/27/00) or tomorrow for a copy of the calculations so that we can review and concur (or not) on the reasonableness of the concentration.

Please call me with any questions.

Thanks  
Bill Haney

----- Original Message -----

From: Matthys, Bob <MatthysB@ioc.army.mil>  
To: Boyd Sweger (E-mail) <boyd@dnai.com>; Bill Haney (E-mail) <bhaney@earthlink.net>; New World Technology (E-mail) <nwtmail@newworld.org>  
Cc: Matthys, Bob <MatthysB@ioc.army.mil>  
Sent: Friday, January 21, 2000 3:08 PM  
Subject: FW: Monazite Sand Area

> Please respond back to me on the note from Eileen Mohr.

>

> Thanks,

>

> Robert J. Matthys

>

> Contracting Officer

>

> telephone 309-782-5554

> fax 309-782-3804

> e-mail matthysb@ioc.army.mil

>

>

> -----Original Message-----

> From: Ingold, William G

> Sent: Wednesday, January 19, 2000 7:40 AM

> To: Matthys, Bob

> Subject: FW: Monazite Sand Area

>

>

>

>

> -----Original Message-----

> From: Patterson, Mark

> Sent: Tuesday, January 18, 2000 1:34 PM

> To: Ingold, William

> Cc: Patterson, Mark

> Subject: FW: Monazite Sand Area

>

>

> Bill,  
>  
> Please see Eileen's message below. I was originally told by Bill Haney  
> that Celeste Lipp with ODOH had reviewed and approved the work plans for  
the  
> Monazite Sand removal. Bill had told me he had gotten an email from  
Celeste  
> approving the plans. I have not seen the email. I would like to have a  
meeting  
> with New World and OEPA when you are here next. Let me know and I will  
set  
> something up.  
>  
> Mark  
>  
> -----Original Message-----  
> From: Eileen Mohr [mailto:eileen.mohr@epa.state.oh.us]  
> Sent: Thursday, January 13, 2000 4:00 PM  
> To: PattersonM@ioc.army.mil; john.p.jent@lrl02.usace.army.mil  
> Subject: Monazite Sand Area  
>  
>  
> Mark and John  
>  
> I had a lengthy discussion with Joe Crombie of ODH regarding the Monazite  
Sand  
> Area today. During the conversation, Joe indicated to me that he would be  
> sending me written information/calculations regarding the appropriate  
levels for  
> clean-up. I would expect that the numbers that he calculated are not  
going to  
> match what Bill Haney (New World Technology) indicated he wanted to  
utilize,  
> i.e., they will be more conservative. As an example, for a single  
contaminant,  
> the level for Thorium 232 is going to be 4 picocuries/gram and for  
Uranium, it  
> would be 30 picocuries. If there is more than one constituent in a  
particular  
> area, these numbers would need to be adjusted accordingly.  
>  
> I asked Joe to track down whether or not any written correspondence was  
sent  
> from ODH to New World Technologies regarding the draft workplan. He will  
check  
> on this for me. In addition, as a point of information, Mr. Haney has not  
> responded to the comments on the workplan that OEPA generated.  
>  
> It is my understanding that New World Technologies has already conducted a  
> portion of the cleanup work, but was not able to complete it due to  
financial  
> constraints.  
>  
> I would recommend that we have a conference call or meeting between the  
> necessary parties (especially including ODH) prior to commencing any  
additional  
> work. New World Technologies will need to meet the cleanup levels for rad  
that  
> Joe Crombie will be putting into writing. In addition, are there any  
objections  
> to Joe coming up and conducting a site visit?  
>  
> Let me know what you think, and how you want to arrange a  
meeting/conference  
> call.  
>  
> Thanks.  
>  
> Eileen  
>  
> Eileen T. Mohr

- > Project Coordinator
- > Division of Emergency and Remedial Response
- > 2110 East Aurora Road
- > Twinsburg, OH 44087
- > 330-963-1221
- > 330-487-0769 (FAX)
- > email: Eileen.Mohr@epa.state.oh.us
- >
- >



Men  
Sand

**From:** "Patterson, Mark" <PattersonM@ioc.army.mil>  
**To:** "Mohr, Eileen" <eileen.mohr@epa.state.oh.us>  
**Date:** 1/27/00 5:15PM  
**Subject:** FW: Work Plan Comments

Eileen,

I finally got a copy of Lipp's original email to New World on the work plans. It indicates she was satisfied with the plans but doesn't imply the agency was done reviewing them. It sounds like it might have been a communication problem. What do you think?

Mark

-----Original Message-----

**From:** William Haney [mailto:bhaney@earthlink.net]  
**Sent:** Thursday, January 27, 2000 4:21 PM  
**To:** Mark Patterson  
**Subject:** Fw: Work Plan Comments

----- Original Message -----

**From:** Celeste Lipp <Celeste\_Lipp@gw.odh.state.oh.us>  
**To:** <bhaney@earthlink.net>  
**Cc:** Joseph Crombie <JCROMBIE@gw.odh.state.oh.us>; Ruth Vandegrift <RVANDEGR@gw.odh.state.oh.us>  
**Sent:** Wednesday, December 01, 1999 2:44 PM  
**Subject:** Re: Work Plan Comments

> Bill,

>

> Your response satisfies my comments on the Ravenna site. Your RESRAD analysis arrived and is being reviewed by another member of our staff. Joseph Crombie will contact you to deliver any remarks.

>

> Celeste Lipp

>

> >>> "William Haney" <bhaney@earthlink.net> 11/23/99 03:09PM >>>

> Celeste,

>

> Please find the comment responses attached as a MS Word document. Let me know if you have any problems opening the document. Have a good Thanksgiving.

>

> Bill Haney

>

>

## **INTERIM REPORT ON SITE ACTIVITIES RAVENNA ARMY AMMUNITION PLANT**

### **Monazite Sand Removal Project**

#### **Scope and History**

New World Technology (NWT) was contracted by the U.S. Army, Industrial Operations Command (IOC) to remove and dispose of soils contaminated with monazite sand (thorium bearing) from the tank farm area of the Ravenna Army Ammunition Plant (RVAAP), Ravenna Ohio. The sands had been stored as a part of the strategic stockpile plan under the General Services Administration (GSA), later the Defense Logistics Agency (DLA). The material had been removed in the mid 1970s and the license for possession (Atomic Energy Commission) terminated at that time.

The removal action was based on a characterization survey performed by the U.S. Army Corps of Engineers (USACOE) in 1997 detailing locations and depths of the contamination in the report defined "Area of Concern" (AOC). The proposed work entailed removal and packaging for disposal of approximately 245 cubic yards of materials followed by a final status survey to verify removal and to provide data for unrestricted reuse of the area.

RVAAP's mission of the production of ammunition was ended and the facility is currently under "care taker" status with portions of the installation being re-utilized by the Ohio National Guard.

The original effort as detailed in NWT's proposal has been completed with the exception of the final release survey.

#### **Work Performed**

NWT mobilized on site December 6, 1999 and proceeded to re-establish the grid pattern utilized by the USACOE for characterization of the affected area. The area was heavily overgrown by vegetation making access to portions of it difficult. Surveys ("as found") indicated discrepancies from the characterization survey in both magnitude of radiation levels detected and locations of contamination. These surveys were performed using instruments consisting of 2" X 2" sodium iodide (NaI) detectors linked to rate meters. Regardless of those discrepancies, NWT proceeded to remove surface vegetation and the topmost 6 inches of soils from the AOC.

Surveys of the container lay-down areas were performed prior to placing the containers. Follow on surveys will be performed following shipment.

Following completion of the initial soil removal action, further surveys were performed to determine the effectiveness of the effort. It was determined during this survey that the



contamination extended to depths exceeding 6 inches below ground surface (bgs), particularly in the trench area bordering the rail tracks and at various locations throughout the AOC.

Surveys were also performed along the boundaries of the defined AOC. During these surveys, it was noted that radiation levels exceeding twice the defined background readings were detected up to 300 yards along the rail bed from the original AOC boundary (in both directions). Further, the area adjacent to the north (site) AOC boundary was found contaminated to levels exceeding  $1 \times 10^6$  ccpm (corrected counts per minute).

For purposes of efficiency, soils known to be contaminated by survey but determined to be beyond the current scope of work were removed and stockpiled in the original AOC.



*Figure 1, Stockpiled Soils*

Due to the extent of contamination detected and the additional areas of contamination detected, a final status survey was not performed at this time. Preliminary surveys were performed in an attempt to further characterize the conditions at the site. Samples were obtained to determine depth profiles of the contamination. The sample results will be distributed as an addendum to this report once they are received.

### Waste

The contracted volume of ~ 245 cubic yards of material was packaged in 21 twenty cubic yard inter-modal containers. The containers were lined prior to placement of the materials. Absorbent material was placed in each container to preclude moisture accumulation from the soils. These containers are currently sealed and stored on the site with transport to Waste Control Specialist (a licensed disposal facility) currently scheduled for shipment later in January 2000.



**Future Actions**

**The stockpiled soils should be covered to preclude potential spread of contamination and for weather protection.** NWT is currently in contact with suppliers for cover material and will proceed with this action upon authorization from the IOC.

**The extent of contamination along the rail bed requires further characterization/evaluation.** There are several identifiable locations of contamination greater than twice the area background. These areas, along with the remainder of the rail bed should be evaluated for extent and depth of contamination.

**An estimate for packaging and disposal of the stockpiled soils is being developed.** It is anticipated that the materials will again be disposed of at Waste Control Specialist of Texas. Unit pricing for disposal should decrease due to the expanded volume. NWT is awaiting revised transportation and disposal estimates from the individual vendors.

55'Lx55'Wx12'H - 352CuYds

40'Lx24'Wx10'H - 100CuYds

40'Lx40'Wx12'H - 186CuYds

42'Lx34'Wx6'H - 84CuYds

50'Lx34'Wx7'H - 120CuYds

Drainage Trench - 75CuYds.

*Total Existing Volume - 917 Cubic Yards*

Note: The above estimate does not include any materials from the abandoned rail bed that may require disposal. Survey/characterization data is insufficient at this time to support a reliable estimate.

**Surveys/sampling around and under the concrete footings of the two southern most tanks.** Surveys performed while on site identified areas of elevated radiation levels under the base of tank 1304 with some elevated readings immediately inside the hatch to the tank. The physical condition of the tank precluded further intrusive investigation of these areas of elevated activity.

**An expanded final status survey will be required.** Further remediation (removal of contaminated soils) will necessitate additional surveys and sampling to verify full removal of the contaminated soil.



*Figure 2 - Container Storage and Extent of Soil Removal (South)*

An effort to characterize the site in detail should be performed once the stockpiled materials are removed from the site. The effect of the stockpiles on background radiation levels will influence any characterization effort at this time.

All surveys and sample results will be forwarded as they are reviewed and compiled.

**Attention: Gonzalo Corvera and Robert Skruck**  
**1/24/00**

The following is a statement detailing our job site upon our arrival on or around Dec. 6, 1999 at approximately 10:00 a.m.

Upon arriving, we noticed that the plywood sheeting which Mr. Corveras' workers had used to secure the containment tank was partially removed, allowing access to their trucks and equipment. We did a visual inspection and seen that all locks on the trucks and trailers were in tact, and appeared to be nothing missing. We were unaware of the total contents of this tank though. After we exited the tank, we found two sets of foot prints outside the tank leading to the job site directly behind ours, left in the fresh snow that we had received through the previous evening. We proceeded to follow them for about 100' towards the other site and well into it, but seen no other people. They did have a trailer though, and a couple vehicles were visible by it. It was then we decided to turn around and get to work ourselves, and I figured when we seen Mr. Skruck, we would report it to him.

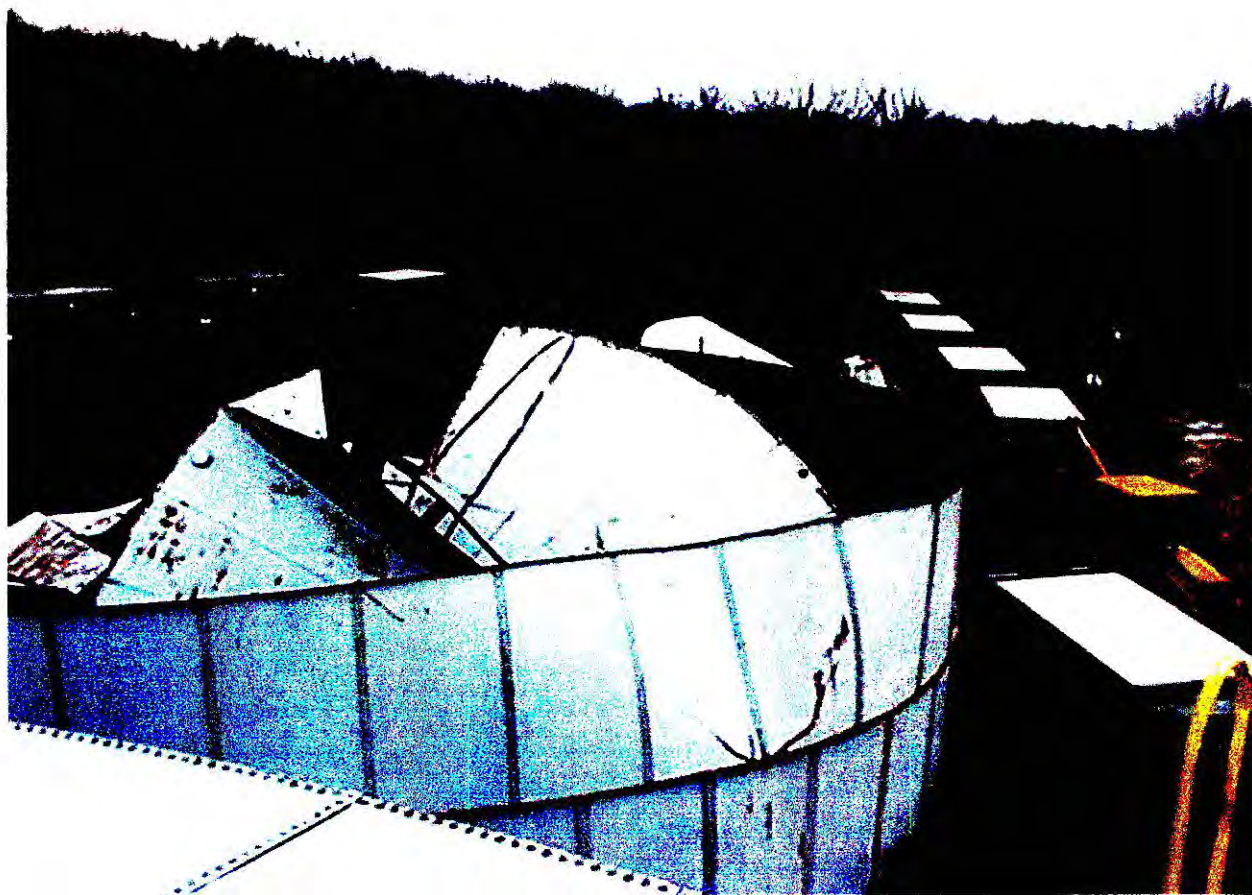
We also had several sections of our site fence torn down by the crew behind us, but we did not actually see them do this. We did observe them attempting to move the steel plates though which were damaged.

This is a true and accurate account of our recollection of the events which took place.

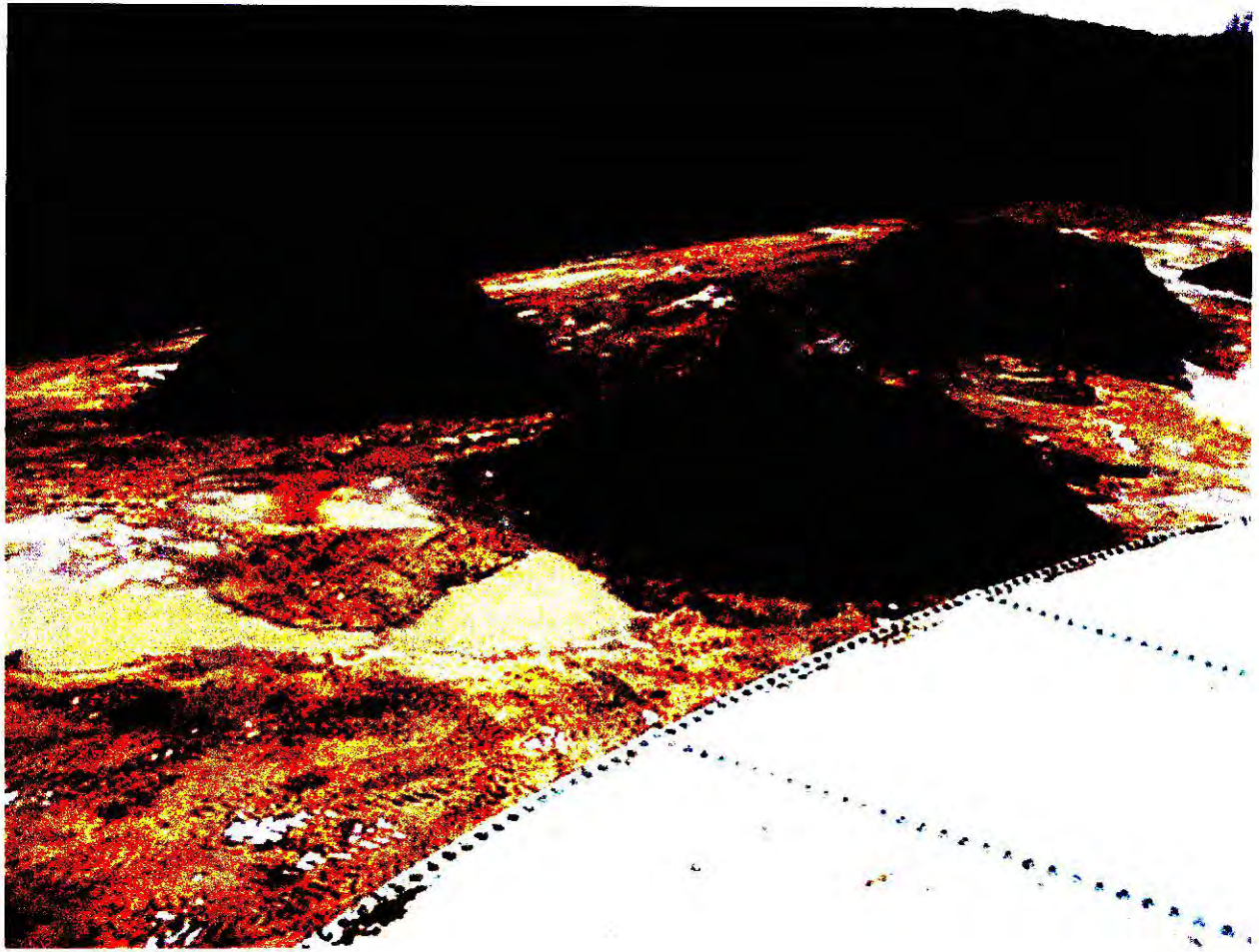
Bill Bennett  
Elmer Bennett

B. Bennett  
Elmer Bennett

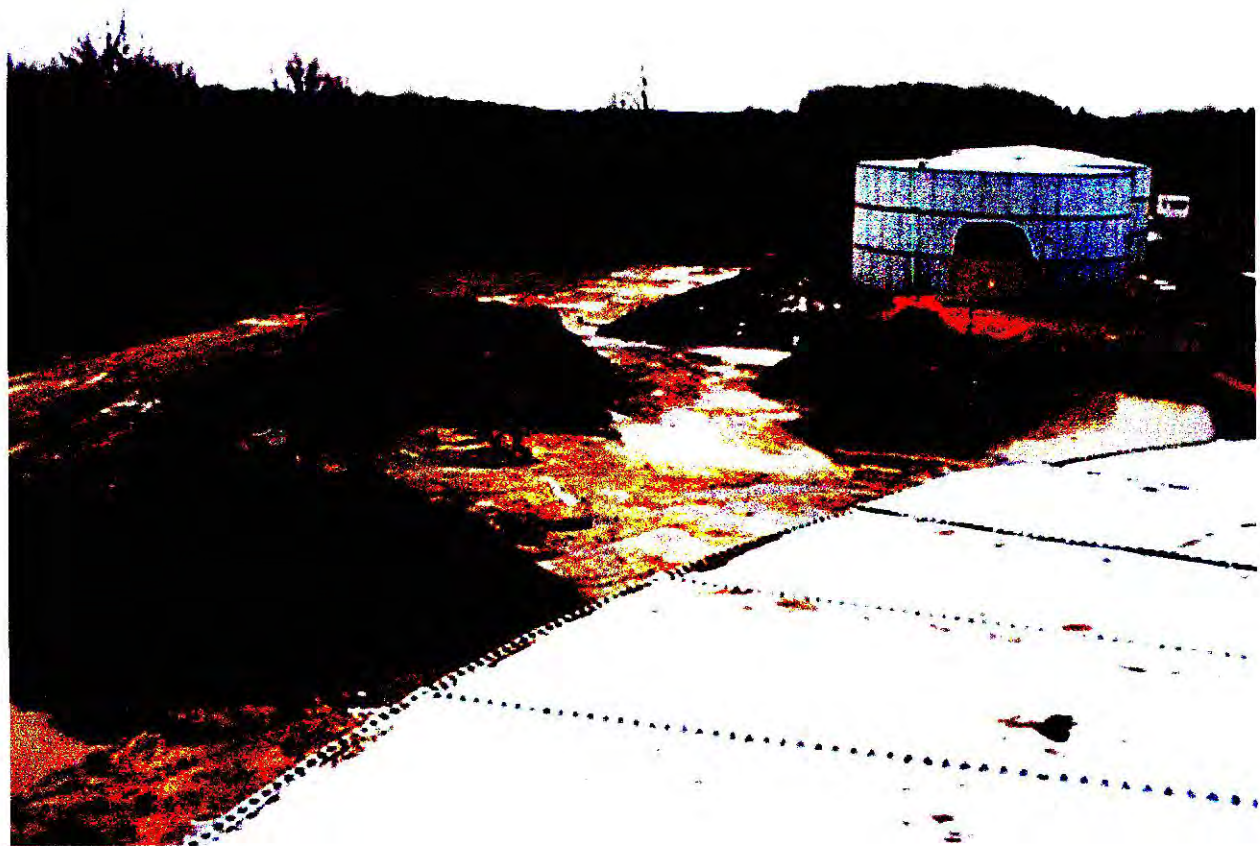
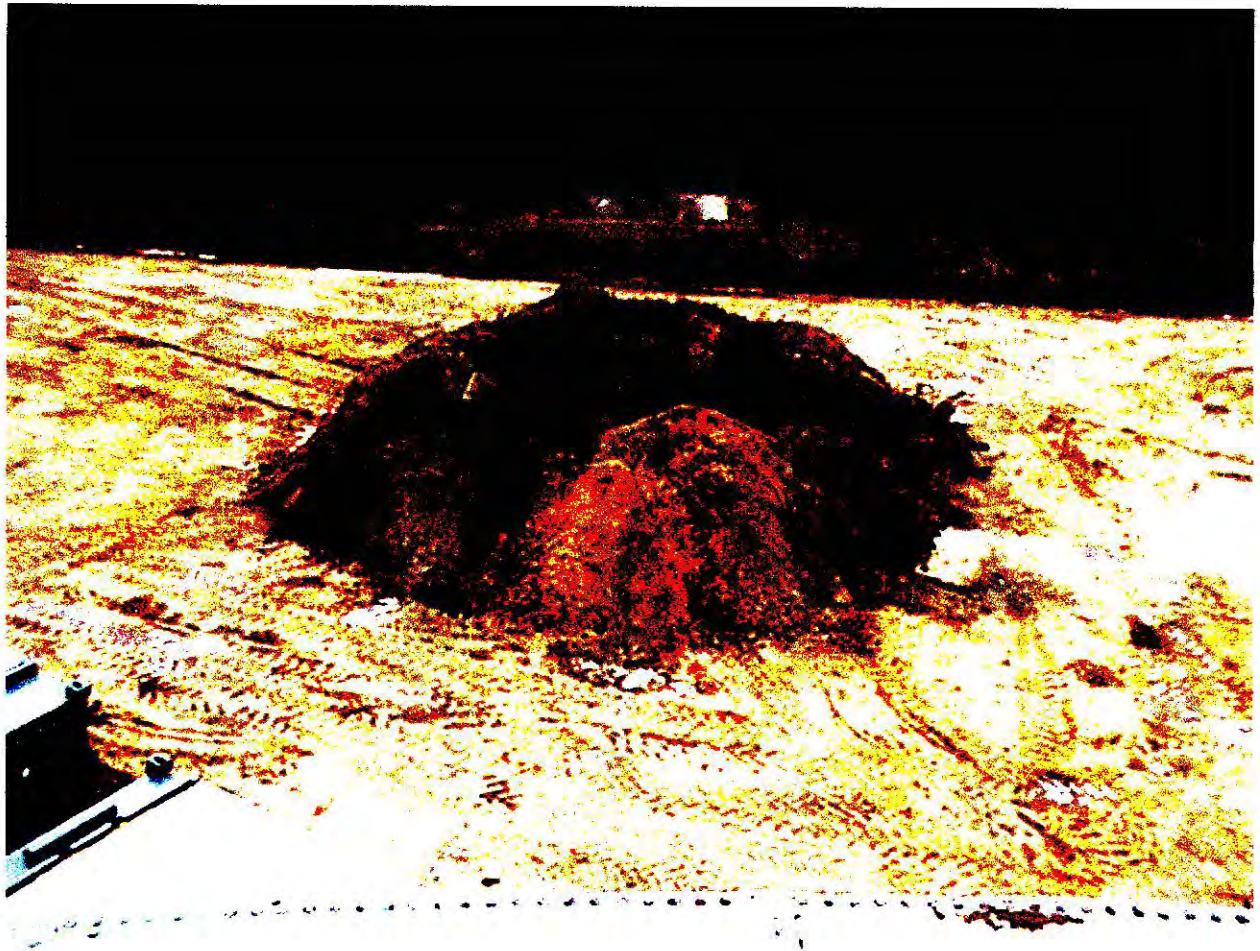


















State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

February 11, 2000

RE: RAVENNA ARMY AMMUNITION  
PLANT, PORTAGE/TRUMBULL  
COUNTIES, **MONAZITE SAND**

Mr. David Seely  
U.S. EPA Region V  
SR-6J  
77 West Jackson Blvd.  
Chicago IL 60604

Dear Mr. Seely:

At the Ravenna Army Ammunition Plant (RVAAP), the Defense Logistics Agency (DLA) stored, and subsequently removed some monazite sand in the northwestern portion of the installation. Monazite is the main ore for cerium and thorium, and may contain up to 12% thorium oxide.

The contractor for the Industrial Operations Command (IOC) submitted a soil removal workplan to the Ohio Environmental Protection Agency (Ohio EPA) and the Ohio Department of Health (ODH), on October 29, 1999. Ohio EPA submitted comments to the contractor (hand-delivered and mailed), which were recently addressed (February 2, 2000). However, prior to addressing any comments, the contractor arrived at the RVAAP in the beginning of December to do the soil removal, started excavation, found that the contamination was more widespread than initially expected, ran short of funds and halted excavation. (As a point of information, we have no data on this Area of Concern - AOC - other than the radiation information, i.e., no chemical analytical data).

The ODH has the state lead on selecting cleanup levels for rad parameters at RVAAP. ODH utilized the industrial worker scenario and site-specific parameters provided by the U.S. Army Corps of Engineers (USACE), along with appropriate occupational and dose conversion factors. Using RESRAD, the ODH has preliminarily determined the following Derived Concentration Guidelines (DCGLs):

Th-232 4 pCi/g  
U-238 30 pCi/g

These DCGLs listed above are for individual species that will give 25 mrem/yr when present by themselves in soil at this concentration. (To use the guidelines in conjunction, the sum of fractions may be used.)





MR. DAVID SEELY  
FEBRUARY 11, 2000  
PAGE 2

During the meeting held on February 2, 2000, to discuss the monazite sand cleanup issue, the question arose as to whether or not the U.S. Environmental Protection Agency (U.S. EPA) wanted/needed to have input on these DCGLs. The position of the Army representatives was, basically, that they did not want to cleanup to a level that was acceptable to ODH and, ultimately, Ohio EPA, and then potentially have to re-visit the issue if U.S. EPA wanted to have input into the DCGLs.

Please advise me, as soon as possible, as to whether or not the U.S. EPA wants to have input into the DCGLs. Thank you in advance for your response to this correspondence.

If you have any questions, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
Joe Crombie, ODH  
Mark Patterson, RVAAP  
John Cicero, RVAAP  
Bill Ingold, IOC  
John Jent, USACE - Louisville





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

July 5, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
PORTAGE/TRUMBULL COUNTIES  
MONAZITE SAND AREA AOC

Mr. Mike Styvaert, Health Physicist  
U.S. Army Headquarters  
Operations Support Command  
1 Rock Island Arsenal  
Building 390, 4<sup>th</sup> Floor, SE  
Rock Island, IL 61299

TO	2/7/00
<input checked="" type="checkbox"/>	CR-COR
<input checked="" type="checkbox"/>	ENV
<input type="checkbox"/>	LAND MGR
<input checked="" type="checkbox"/>	IS
<input type="checkbox"/>	CONTRACTOR
<input checked="" type="checkbox"/>	RETURN FOR FILE

Dear Mr. Styvaert:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) has received and reviewed the following documents: "Draft Final Report, Characterization Survey/Sampling Effort, Ravenna Army Ammunition Plant, Monazite Sand Removal Project Phase II" and "Remediation and Final Survey Work Plan, Ravenna Army Ammunition Plant, Monazite Sand Removal Project, Phase III." These documents, dated May 30, 2000 and June 19, 2000, were generated by New World Technology for the Operations Support Command (OSC), and were received at Ohio EPA, NEDO via e-mail on June 29, 2000.

The comments in this correspondence solely reflect the review of the documents by Ohio EPA personnel. Comments from the Ohio Department of Health (ODH) will be forthcoming to your attention under separate cover.

**General Comments:**

1. The cover memo to the above-referenced reports indicates that OSC would realistically like to get the contractor out in the field in late July 2000. Neither Ohio EPA nor the ODH believe that this is a realistic time frame. Given the facts that these reports were just recently received by both Agencies, that the received reports are incomplete, that there are a number of comments on the portions of the documents that were received, and that there are still outstanding issues to be resolved on previous documents, the Agencies concur that it would not be prudent to go into the field with all these issues un-resolved. If work commences prior to the resolution of outstanding issues, the OSC and contractor are proceeding at their own risk.
2. Documents entitled, "Soil Removal and Packaging, Ravenna Army Ammunition Plant"; "Project Radiation Control Plan, Monazite Sand Removal"; and "Project Health and Safety Plan, Monazite Sand Removal" were received at Ohio EPA on October 29, 1999.





MR. MIKE STYVAERT, HEALTH PHYSICIST

JULY 5, 2000

PAGE 2

Ohio EPA hand-delivered written comments on these documents to New World Technology (NWT) on December 8, 1999, and additionally mailed copies to all involved stakeholders on the same date. **On that date, removal activities had already commenced, even though there had been no regulatory input into the process.** On February 2, 2000, responses to Ohio EPA comments were received during a meeting via an unsigned letter, dated December 20, 1999. This correspondence, in several places, indicated that the documents referenced in this section would be revised. However, as of this date, the revised documents have not been received by this office. This is not acceptable to either Ohio EPA or ODH. Please submit the revised documents for Agency (Ohio EPA and ODH) review and, in addition, ensure that any applicable Agency comments related to the October 1999 workplan were also addressed in the recently-submitted documents.

3. Please note that the e-mail version of the characterization report and the final survey workplan did not include the appendices referenced, nor did they include the applicable figures. As such, the report and workplan are considered to be deficient, and a full evaluation of the report and workplan could not be performed. Please provide complete hard copy versions of both documents.
4. It is not clear as to why gamma surveys and laboratory data which are not specific to the constituent of concern (COC) are being utilized. Thorium 232 is a beta/gamma emitter and could be analyzed for along with the daughter products. NWT should conduct a beta analysis to confirm that cleanup standards are met for the Thorium 232.
5. In other monazite sand remediations (Wayne and May Sites), additional COCs (Uranium-238 and Radium-226) were noted in the Department of Energy (DOE) fact sheets. As it does not appear the Area of Concern (AOC) was evaluated for these isotopes, please re-evaluate.
6. Although an AOC may be released for unrestricted use with respect to radiological constituents, that does not mean that all potential COCs have been identified and evaluated. For example, metals such as barium, arsenic, chromium, copper, lead, lithium, and selenium may be associated with these types of sites. Additional discussions are warranted regarding the identification and evaluation of other potential COCs from both a human health and ecological perspective.
7. Please provide the NWT standard operating procedures (SOPs) relied upon for this work. In several instances in the text of the report and workplan, the SOPs are referenced, but are not provided.



**Specific Comments - Draft Final Report, Characterization Survey/sampling Effort:**

8. Section 1.0: Please provide additional information in the report that details when the additional characterization survey (in order to estimate the quantity of material left on the AOC that required disposal) was conducted by NWT.
9. Section 2.2: Please provide a more detailed discussion of the stockpiles that are referenced in this section. For example: how were the soils stockpiled, where were/are they stockpiled, were the soils stockpiled on any sheeting material and/or covered to reduce any potential leaching or run-off of radiological constituents, etc.?
10. Section 2.2: This section references a "Characterization Survey and Sampling Plan." Please provide copies of this plan to both Ohio EPA and ODH.
11. Section 4.0: Were any gamma scans completed on the tank walls? The daughter products of Thorium are gamma emitters and a gamma scan should have been conducted prior to release.
12. Section 4.0: Please provide confirmation that 10% is the industry/regulatory standard for survey percentages. In addition, please provide information on how the 30 random locations were chosen for fixed direct measurements, as well as providing the protocol for the smear surveys for loose beta-gamma, and alpha contamination.
13. Section 5.0: Please provide the rationale for scanning every other bucket load of ballast with a NaI detector during removal operations. At this point in time, it is impossible to confirm that none of the ballast was/is contaminated by radiological constituents.
14. Section 6.1: Please discuss why the NaI detector was used, the type of screening conducted (gamma only or beta/gamma), the type of instrument used, the source material used for calibration, and limitations of the detector for the survey conducted.
15. Sections 6.2 and 6.3: Please provide additional details on how the reference areas were chosen. In particular, how was it determined that this area had similar chemical and geologic characteristics, since no samples were obtained for chemical or geotechnical constituents? In addition, please provide more detailed information as to the location of the reference area, and plot this area on a scale-appropriate map.
16. Sections 6.2 and 6.7: Please note the background survey should be constituent-specific and consistent with the COCs of the monazite sand. The COCs should include Thorium-232, Uranium-238, Radium-226 and their daughter products. In this way, background levels of naturally-occurring radionuclides (potassium, etc.) can be screened out of the survey.

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17. Section 6.4: Please explain why the gamma process was utilized to determine the thorium concentration, when samples could have been collected and analyzed for the beta emitter, as well as the gamma emissions of the daughter products. This could provide a more appropriate mean concentration for the site.
18. Section 6.5: It is noted that only surface scans of the stockpiled soils were completed. Is there any concern that higher levels of radionuclides are deeper in the stockpiles? If no, please demonstrate to the Agencies that the stockpiles are relatively homogeneous in nature.
19. Section 6.6: Please provide a definition in the text as to what constitutes a Class I and Class II grid.
20. Section 6.6: Define the term "action level" as it is being used in this report.
21. Sections 6.7 and 6.8: Provide additional details on the sampling methodologies for both surface and sub-surface soils. Provide information in the text as to whether or not soils were screened to remove vegetation, rocks, and foreign objects exceeding 0.25 inches.
22. Sections 6.7 and 6.8: Please provide an explanation/justification as to why sample results are being compared to the DCGL of 4 pCi/gram plus the background, rather than just the DCGL.
23. Section 7.0: Include a column on the chart that indicates the maximum detected concentration in each area.

**Specific Comments - Remediation and Final Survey Work Plan:**

24. Sections 2.0 and 3.0: Please refer to comments 5 and 6 detailed above, with respect to potential COCs at the AOC and unrestricted use.
25. Section 3.0: Please define what is meant by "foreseeable future."
26. Section 3.2: Please provide information to the Agencies as to when the stockpiled soils will be removed.
27. Sections 4.2 and 4.8.2: Please discuss the determinations made in this section. Specifically, has previously sampling demonstrated that the depth of the radionuclides is only six inches and that the extent of the contamination is limited to defined areas? If not, why is the sampling being limited and how is this determination being made?



28. Section 4.3: Please note whether the intermodals will be lined and covered.
29. Section 4.4: Please note under what classification the materials are being shipped. Is the material considered class 11 E, i.e., low-level? Are there tracking procedures in place to ensure appropriate shipment and receipt of the materials by the disposal facility?
30. Section 4.6: Please note that the soils are not licensed materials and the appropriate release criteria for the remediated areas would be the 4 pCi/g level for Thorium. Additionally, if levels of other radionuclides could be significant with respect to exposures, a re-evaluation of the 4 pCi/g level may be necessary to ensure that the 25 mrem/yr level is met.
31. Section 4.7: Please provide definition in the text as to what constitutes "environmental exposures."
32. Section 4.8.2: Please discuss the type of scan to be completed on the remaining soil surface. Will beta and gamma scans be performed?
33. Section 4.8.2: Please provide more detail on the sampling and remediation around the Class 1 and 2 grids. Please provide a diagram of the movement from grid to grid. Will the equipment be scanned before entering a Class 2 grid? How will the consultant ensure that clean areas will not be contaminated in the later remedial activities conducted at each grid? When will confirmational sampling be conducted within the grid system, in order to document that the grid meets release criteria?
34. Section 4.8.3: Please note that all Department of Transportation (DOT) regulations for labeling and shipping must be met prior to releasing any intermodal from the site. Also, please discuss how the shipment will be tracked to ensure proper delivery to the waste disposal facility.
35. Section 5.2.1: Please refer to previous comments regarding developing a recommendation for unrestricted release (free from regulatory control). This is specific to the radiological concerns and does not encompass any other potential COCs.
36. Section 5.3.4: Please indicate how the additional 29 survey unit samples will be collected. Are these from Class 1 units, and are they selected randomly?
37. Section 6.2.1: Please note that when conducting the final survey, surface and subsurface samples should not be combined. Different soil horizons must be compared and evaluated independently.

MR. MIKE STYVAERT, HEALTH PHYSICIST  
JULY 5, 2000  
PAGE 6

38. Section 6.2.2: Please explain why the gamma process was used to determine the thorium concentration when samples could have been collected and analyzed for the beta emitter, as well as the gamma emissions of the daughter products. This could provide a more appropriate mean concentration for the site.
39. Section 6.3: Please discuss how the 25 % of the Class 2 grids will be selected for survey.
40. Figure: Please include a figure which includes an AOC map with the grid system superimposed.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Nancy Zikmanis, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
Joe Crombie, ODH  
Bill Ingold, IOC  
Mark Patterson, RVAAP  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
John Jent, USACE Louisville  
David Seely, U.S. EPA Region V





State of Ohio Environmental Protection Agency

**Northeast District Office**

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

November 16, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
**Monazite Sand AOC**

Mr. Mike Styvaert, Health Physicist  
U.S. Army Headquarters  
Operations Support Command  
1 Rock Island Arsenal  
Building 390, 4<sup>th</sup> Floor, SE  
Rock Island, IL 61299

Dear Mr. Styvaert:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Remediation and Final Survey Workplan, Ravenna Army Ammunition Plant, Monazite Sand Removal Project, Phase III." This document (project number USA 00-005), dated August 3, 2000 and received at Ohio EPA, NEDO on November 6, 2000, was generated by New World Technology (NWT) for the Operations Support Command (OSC).

The document was reviewed compared to previous Ohio EPA comments dated July 5, 2000, and the NWT response to comment (RTC) correspondence dated August 3, 2000 (received at Ohio EPA, NEDO on November 6, 2000).

Comments in this correspondence solely reflect the review of Ohio EPA, NEDO, DERR. The Ohio Department of Health (ODH) has indicated that they will adhere to the comments made by Ohio EPA in this correspondence, and that the critical issue for ODH is that the 4 pCi/gram clean-up level is adhered to by the contractor and OSC.

The format of this correspondence is as follows: a general comment that impacts the entire submittal; individual responses to the RTC document; and, comments generated on the health and safety plan (HASP) portion of the document.

**GENERAL COMMENT:**

1. On June 29, 2000, the Ohio EPA received via email a document that contained a report entitled "Draft Final Report, Characterization Survey/Sampling Effort, Ravenna Army Ammunition Plant, Monazite Sand Removal Project, Phase II."



Many of the comments made by Ohio EPA in the above-referenced July 5, 2000 correspondence related directly to this document. However, a revised version of this document was not received by the Agency, and as such, it is impossible to determine if the revisions were made as requested. Please submit a revised version of this document for Agency review. Several of the individual responses to the RTC document will specifically reference back to this general comment.

**RESPONSE TO THE RTC CORRESPONDENCE FROM NWT:**

1. It is unclear as to what is meant by "NWT understands and acknowledges this statement." The Agency reiterates that if work commences prior to the resolution of any outstanding issues, that the OSC and contractor are proceeding at their own risk.
2. Response is acceptable.
3. Refer to general comment #1. A revised version of the characterization report needs to be submitted to the Agency.
4. Response is acceptable. Verbiage in the RTC letter should have been inserted into the appropriate section(s) of the workplan.
5. Response is acceptable.
6. Response is not acceptable. The Ohio EPA reiterates the position that although the Area of Concern (AOC) may be released for unrestricted use with respect to radiological constituents, that does not mean that all potential constituents of concern (COCs) have been identified and evaluated. A minimal number of waste profile samples (TCLP analyses) are not adequate for determining whether or not the nature and extent of other potential COCs has been determined.

In addition, please refer to general comment #1 detailed above.

7. The requested Standard Operating Procedures (SOPs) were not supplied as the RTC document indicates.
8. Response is acceptable, although the text was actually added to Section 3.0 of the workplan.
9. Response is not acceptable. There is no section 2.2 in the recently-submitted document. Also refer to general comment #1 detailed-above.



10. Refer to general comment #1 detailed above.
11. Provide the data generated from scans performed on the tank walls.
12. Response is partially acceptable to the Agency. The RTC indicates that text was added to Section 4.0 of the report, however, the revised report was not received. Refer to general comment #1 detailed above. In addition, the Agency reiterates that it is incumbent upon OSC and NWT to dispose of all materials in accordance with all applicable state and federal rules, laws, and regulations.
13. Please clarify the RTC document as to whether or not every bucket load of ballast was scanned for radiological constituents. The RTC letter contains conflicting information.
14. Response is acceptable.
15. Response is not acceptable as no additional details were provided with respect to the physical and geological characteristics of the reference area.
16. Response is acceptable.
17. Response is acceptable.
18. Response is not acceptable. The RTC document provides no additional information to substantiate that the stockpiles are homogeneous in nature.
19. Response is not acceptable. There is no section 6.6 in the recently-submitted document. Also refer to general comment #1 detailed-above.
20. Response is not acceptable. There is no section 6.6 in the recently-submitted document. Also refer to general comment #1 detailed-above.
21. Response is not acceptable. There are no sections 6.7 and 6.8 in the recently-submitted document. Also refer to general comment #1 detailed-above.
22. Response is acceptable.
23. Response is not acceptable. There is no section 7.0 in the recently-submitted document. Also refer to general comment #1 detailed-above.
24. Response is not acceptable. The Ohio EPA reiterates the position that although the AOC may be released for unrestricted use with respect to radiological constituents, that does not mean that all potential COCs have been identified

and evaluated. A minimal number of waste profile samples (TCLP analyses) are not adequate for determining whether or not the nature and extent of other potential COCs has been determined.

25. Response is partially acceptable. The Ohio National Guard (ONG) and other personnel should be included in the "general public" category.
26. Response is acceptable.
27. Response is acceptable. Ensure that the 4 pCi/gram clean-up level is adhered to by the contractor and OSC.
28. Response is acceptable.
29. Response is acceptable. However, the waste must be classified and all manifests, shipping documents must be completed prior to the waste leaving the installation. (The answer in the RTC is unclear on this issue.)
30. Provide an explanation for what is meant by the statement "NWT understands and acknowledges this statement." The Ohio EPA reiterates the position previously stated by the Agency in the July 5, 2000 correspondence.
31. Response is not acceptable. No additional information was provided.
32. Response is acceptable. Please ensure that confirmation sampling is conducted subsequent to excavation to document that the 4 pCi/gram clean-up level is attained.
33. Response is acceptable. If any areas are encountered that have higher than expected radiation readings, decon of equipment should take place prior to entering any areas with lower residual radiation.
34. Response is acceptable. However, the waste must be classified and all manifests, shipping documents must be completed prior to the waste leaving the installation.
35. Response is not acceptable. The Ohio EPA reiterates the position that although the AOC may be released for unrestricted use with respect to radiological constituents, that does not mean that all potential COCs have been identified and evaluated. A minimal number of waste profile samples (TCLP analyses) are not adequate for determining whether or not the nature and extent of other potential COCs has been determined.



- 36. Response is acceptable.
- 37. Response is acceptable. Please ensure that the 4 pCi/gram clean-up level is attained.
- 38. No response was provided.
- 39. No response was provided.
- 40. No response was provided.

**PROJECT HEALTH AND SAFETY PLAN:**

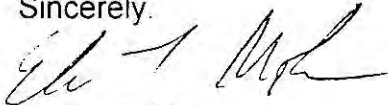
Although the Ohio EPA does not have regulatory jurisdiction over HASPs, the following comments are offered for your consideration:

- 1. In section 1.3(b), please ensure that if operational changes occur that could potentially affect the community or environment, that the Ohio EPA is notified. (Page 1)
- 2. As a point of information, a recent change allows for the use of contact lenses with a full-face respirator. (Page 19)
- 3. Doffing procedures for personal protective equipment (PPE) should be more specific (ex. - inner gloves should remain on while removing the respirator). (Pages 22 and 25)
- 4. Provide the correct notation for the specified SOP. Also refer to comment #7 in the RTC section. (Page 22)
- 5. Please ensure that all decontamination fluids are containerized and characterized prior to proper disposal in accordance with all applicable state and federal rules, laws, and regulations. (Page 25 - both the equipment and PPE sections.)
- 6. Please revise the text on page 37 to indicate that in the event of an emergency, the first point of contact is Guard Post #1.
- 7. If a spill enters waters of the state, the Ohio EPA must be notified. (Page 38)
- 8. On page 41, please include the telephone number for the RVAAP Guard Post.

Mike Styvaert  
Page 6

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,

A handwritten signature in black ink, appearing to read "Eileen T. Mohr". The signature is fluid and cursive, with the first name "Eileen" and last name "Mohr" clearly distinguishable.

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

cc: Bob Prinic, NEDO DERR  
Nancy Zikmanis, NEDO DERR  
Bonnie Buthker, OFFO SWDO  
Joe Crombie, ODH  
Bill Ingold, IOC  
Jeff Robb, RVAAP  
Mark Patterson, RVAAP  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
John Jent, USACE Louisville  
David Seely, USEPA Region V  
Bill Haney, NWT  
Dan Spicuzza, NWT





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

November 30, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
Monazite Sand AOC

Mr. Mike Styvaert, Health Physicist  
U.S. Army Headquarters  
Operations Support Command  
1 Rock Island Arsenal  
Building 390, 4<sup>th</sup> Floor, SE  
Rock Island, IL 61299

Dear Mr. Styvaert:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the documents entitled: "Final Report, Characterization Survey Sampling Effort, Ravenna Army Ammunition Plant, **Monazite Sand Removal Project**, Phase II," and "New World Technology, Field Procedures." The final report was revised August 3, 2000, and both of the above-referenced documents were received at Ohio EPA, NEDO, DERR, on November 28, 2000. The documents were prepared by New World Technology (NWT) for the Operations Support Command (OSC) as project number USA 00-005.

The final report was reviewed and compared to the draft report, which was e-mailed to the Agency on June 29, 2000; the Ohio EPA comment letter on the draft report, dated July 5, 2000; the NWT response to comment letter, dated August 3, 2000 (received on November 6, 2000); and Ohio EPA correspondence, dated November 16, 2000.

Comments in this correspondence solely reflect the review of Ohio EPA, NEDO, DERR. The Ohio Department of Health (ODH) has indicated that they will adhere to the comments made by Ohio EPA, and that the critical issue for ODH (as well as Ohio EPA) is that the 4 pCi/gram cleanup level is adhered to by the contractor and the OSC.

No comments were generated specific to the review of the NWT field procedures. However, Ohio EPA has the following comments on the final characterization report and the monazite sand cleanup project, as a whole:

1. Please ensure that hard copies of the NWT field procedures and the final characterization report are submitted to Mr. Joe Crombie of the ODH.
2. Ohio EPA reiterates that although an Area of Concern (AOC) may be released for unrestricted use with respect to radiological constituents, that does not mean that all potential constituents of concern (COCs) have been identified and evaluated. Additional discussions between the OSC and Ohio





EPA are warranted, regarding the identification and evaluation of other potential COCs from both a human health and ecological risk perspective. However, Ohio EPA acknowledges that these discussions are beyond the scope of radiological remedial work planned for the near future.

3. Please ensure that any additional excavated soil is placed on visqueen, covered with visqueen, and hay bales placed around the stockpiles (etc.), in order to ensure that erosion of the stockpiles and subsequent transport of contamination does not occur. In addition, please employ proper erosion and sedimentation controls on the existing stockpiles. Stockpiled soil should be classified and disposed of in accordance with all applicable State and Federal rules, laws, and regulations, as soon as possible.
4. In the report that is to be generated from the additional soil removal work, please ensure that there is a more detailed description regarding the selection of reference areas. Neither the NWT Response to Comments (RTC), nor the revised final characterization survey report provide this information.
5. Please provide additional clarification as to whether or not each bucket load of ballast was scanned for radiological constituents. Conflicting information is presented in the RTC and the final report. How will it be ensured that no ballast is left on the installation that is contaminated with radiological constituents? It is incumbent upon OSC and the contractor to ensure that contaminated ballast is correctly classified and disposed of in accordance with all applicable State and Federal rules, laws, and regulations.
6. The RTC and the revised characterization report did not adequately address the issue of whether or not the stockpiled soils were homogeneous with respect to radiological constituents. As only surface scans were conducted on the stockpiled materials, there is no guarantee that there are not higher levels of radiological contamination in the subsurface portions of the stockpiles. The Agency reiterates that it is the responsibility of the OSC and the contractor to ensure that the soil is correctly classified and is disposed of in accordance with all applicable State and Federal rules, laws, and regulations.

The proposed additional soil removal may commence subsequent to the following conditions:

1. Please provide a hard-copy or e-mail response to the issues detailed in this correspondence, and allow for adequate review and response time for Ohio EPA personnel.

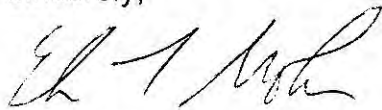


MR. MIKE STYVAERT, HEALTH PHYSICIST  
NOVEMBER 30, 2000  
PAGE 3

2. Please provide hard-copy or e-mail responses to comments 24 through 40 in Ohio EPA's correspondence dated November 16, 2000, and allow for adequate review and response time for Ohio EPA personnel.
3. Although it is not required that responses be provided to the health and safety plan (HASP) comments made by Ohio EPA in the November 16, 2000 correspondence, it is strongly recommended.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response

ETM/kss

cc: Bob Princic, NEDO, DERR  
Nancy Zikmanis, NEDO, DERR  
Bonnie Buthker, OFFO, SWDO  
Joe Crombie, ODH  
Bill Ingold, IOC  
Jeff Robb, RVAAP  
Mark Patterson, RVAAP  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
John Jent, USACE Louisville  
David Seely, USEPA Region V  
Bill Haney, NWT  
Dan Spicuzza, NWT



**IT Corporation**

312 Directors Drive  
Knoxville, TN 37923-4799  
Tel. 423.690.3211  
Fax. 423.690.3626

A Member of The IT Group

February 21, 2000

ITCHO-775574-0068

Mr. Kerry Kennedy  
U.S. Army Corps of Engineers  
2700 D. Street  
Building 22-B/Suite 1  
Area B  
Wright-Patterson, AFB, OH 45433-7404

**Transmittal  
Monthly Report of Activities  
D&D, Soil Removal Actions  
Ravenna AAP, Ravenna, Ohio**

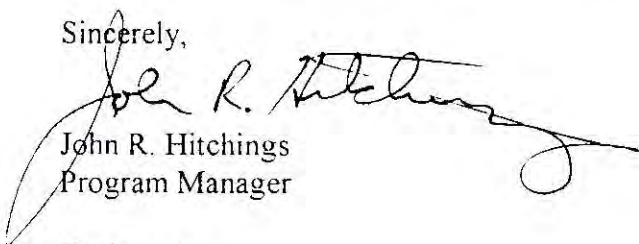
Dear Mr. Kennedy:

Please find enclosed **two** copies of Report No. 20 - Monthly Report of Activities. Report No. 20 covers the period of January 1, 2000 through February 4, 2000 for the remedial action at Ravenna AAP. Remaining work consists of workplan, revisions, field activity, and reporting.

This report is issued under IT Corporation's PRAC Contract DACA27-97-D-0005, Delivery Order 009 with the Louisville USACE.

Please contact me if there are any questions.

Sincerely,

  
John R. Hitchings  
Program Manager

Enclosure

cc: John Jent  
Mark Patterson  
LTC Tom Tadsen  
K. Van Keuren, IT Cincinnati  
F. Haseltine, IT Knoxville  
Kreis Anderson, IT Knoxville  
IT Central Files



**Monthly Report of Activities  
Preplaced Remedial Action Contract  
U.S. Corps of Engineers, Louisville District**

**Building D&D and Soil Removal Actions  
Ravenna AAP, Ravenna, Ohio**

Report Number: 20  
Reporting Period: January 1, 2000 through February 4, 2000  
Contract Number: DACA 27-96-D-0005  
Delivery Order Number: 0009

Submitted To:

U.S. Army Corps of Engineers  
Wright Patterson Area Office  
2475 K Street, Bldg 52, Room 135  
Wright-Patterson AFB, OH 45433-7642

Submitted By:

IT Corporation  
312 Directors Drive  
Knoxville, Tennessee 37923-4799

### ***General Status***

The remaining tasks on this delivery order are:

1. Complete UXO screening at the Deactivation Furnace, excavate soil, and do site restoration.
2. Reissue the closure report for Buildings W-221 and X-232 with the new rinsate data.
3. Issue the closure report for the Pesticide Building.

### ***Current Activity***

- Pesticide building closure report is being prepared. The Building W-221 and X-232 closure report is being revised. Soil excavation and disposal for the DFA is planned for the spring/summer of 2000, pending approval of the RCRA closure plan.
- The office trailer and equipment was demobilized due to delays in approval of the closure plan.

### ***Major Milestones Achieved***

No major milestones occurred during the reporting period.

### ***Health and Safety Issues***

No issues to report for this period.

### ***Staffing***

No changes in staffing occurred during the reporting period.

### ***Problems Encountered***

No significant issues to report for this period.

### ***Variances to Plan***

No variances to report for this reporting period.

### ***Schedule***

Completion of the field work at the Deactivation Furnace Area is currently planned for spring/summer 2000, pending approval of the RCRA closure plan.

### ***Cost***

All WADs are projected to be completed at or under budget.

### ***Major Activities for the Next Reporting Period***

The pesticide building closure report will be issued during the next reporting period. The Building W-221 and X-222 closure report will be reissued.



ACTIVITY ID	DESCRIPTION	RESOURCE	BUDGET	PERCENT SPENT	RESOURCE PERCENT COMPLETE	COST THIS PERIOD	COST TO DATE	ESTIMATE TO COMPLETE	ESTIMATE AT COMPLETION	VARIANCE
WAD 1 - Open Burning Ground										
01010100	Project Familiarization/Site Walk	OFFICE LABOR	1432	101.1	100.0	0	1447	0	1447	-16
		OTHER O/S	16	0.0	0.0	0	0	0	0	16
		SUBCONTRACTS	0	0.0	0.0	0	0	0	0	0
		TRAVEL	0	0.0	0.0	0	0	0	0	0
		MATERIALS O/S	0	0.0	0.0	0	0	0	0	0
			1447	100.0	100.0	0	1447	0	1447	0
01010200	RFP Response	OFFICE LABOR	3313	100.2	100.0	0	3320	0	3320	-7
		MATERIAL IT	46	101.2	100.0	0	47	0	47	-1
		EQUIPMENT IT	38	99.7	100.0	0	38	0	38	0
		SUBCONTRACTS	64	98.4	100.0	0	63	0	63	1
		OTHER O/S	7	112.4	100.0	0	7	0	7	-1
			3467	100.2	100.0	0	3475	0	3475	-8
01020000	Analytical Services	OFFICE LABOR	4225	100.0	100.0	0	4226	0	4226	-1
		ANALYTICAL	2350	138.5	100.0	0	3255	0	3255	-905
		EQUIPMENT IT	458	100.3	100.0	0	459	0	459	-1
		SUBCONTRACTS	0	0.0	100.0	0	1873	0	1873	-1873
		OTHER O/S	346	112.3	100.0	0	388	0	388	-42
			7379	138.2	100.0	0	10202	0	10202	-2822
01030100	RA Work Plan	OFFICE LABOR	10960	60.7	100.0	0	6655	0	6655	4305
		MATERIAL IT	122	292.9	100.0	0	358	0	358	-236
		EQUIPMENT IT	344	48.1	100.0	0	165	0	165	178
		OTHER O/S	88	381.4	100.0	0	335	0	335	-247
		MATERIALS O/S	0	0.0	100.0	0	67	0	67	-67
TRAVEL	0	0.0	100.0	0	517	0	517	-517		
			11514	70.3	100.0	0	8098	0	8098	3416
01030200	Project Management Plan	OFFICE LABOR	2411	144.4	100.0	0	3481	0	3481	-1071
		EQUIPMENT IT	109	62.6	100.0	0	68	0	68	41
		MATERIAL IT	34	2659.0	100.0	0	917	0	917	-883
		OTHER O/S	29	0.0	0.0	0	0	0	0	29
		SUBCONTRACTS	0	0.0	100.0	0	101	0	101	-101
			2583	176.8	100.0	0	4567	0	4567	-1984
01040100	Field Mob/Demob	FIELD LABOR	2833	34.6	100.0	0	980	0	980	1853
		EQUIPMENT O/S	784	0.0	0.0	0	0	0	0	784
		TRAVEL	1463	317.6	100.0	0	4647	0	4647	-3184
		OFFICE LABOR	0	0.0	100.0	0	3910	0	3910	-3910
		MATERIALS O/S	0	0.0	0.0	0	0	0	0	0
SUBCONTRACTS	0	0.0	100.0	0	9	0	9	-9		
OTHER O/S	0	0.0	100.0	0	842	0	842	-842		
			5080	204.5	100.0	0	10388	0	10388	-5308
01040200	Decon, Demo, Excavation	OFFICE LABOR	8879	100.0	100.0	0	8881	0	8881	-2
		FIELD LABOR	23777	98.4	100.0	0	23386	0	23386	391
		MATERIALS O/S	9730	47.6	100.0	0	4628	0	4628	5102
		SUBCONTRACTS	7897	183.5	100.0	0	14495	0	14495	-6598
		EQUIPMENT O/S	2550	81.0	100.0	0	2065	0	2065	485
EQUIPMENT IT	0	0.0	100.0	0	-950	0	-950	950		
TRAVEL	8001	94.3	100.0	0	7543	0	7543	457		
OTHER O/S	1199	100.0	100.0	0	1198	0	1198	0		
			62032	98.7	100.0	0	61246	0	61246	787
01040300	Temporary Construction Facility	TRAVEL	41711	5.9	100.0	0	2476	0	2476	39235
		EQUIPMENT O/S	3051	178.1	100.0	0	5434	0	5434	-2383
		MATERIALS O/S	690	207.6	100.0	0	1432	0	1432	-742
		SUBCONTRACTS	614	37.5	100.0	0	231	0	231	384
		FIELD LABOR	0	0.0	100.0	0	8511	0	8511	-8511
OFFICE LABOR	0	0.0	100.0	0	11	0	11	-11		
EQUIPMENT IT	0	0.0	100.0	0	149	0	149	-149		
OTHER O/S	0	0.0	100.0	0	4312	0	4312	-4312		

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WAD 1 - Open Burning Ground									
		46067	49.0	100.0	0	22556	0	22556	23511
01040400 Added Field Work	FIELD LABOR	0	0.0	0.0	0	0	0	0	0
	SUBCONTRACTS	0	0.0	100.0	0	14	0	14	-14
	OFFICE LABOR	0	0.0	100.0	0	12	0	12	-12
		0	0.0	100.0	0	26	0	26	-26
01040500 EDO Sweep	OFFICE LABOR	0	0.0	100.0	0	2171	0	2171	-2171
	TRAVEL	0	0.0	100.0	0	1069	0	1069	-1069
	OTHER O/S	0	0.0	100.0	0	8	0	8	-8
	SUBCONTRACTS	0	0.0	100.0	0	9145	0	9145	-9145
		0	0.0	100.0	0	12393	0	12393	-12393
01050100 Closure Report	OFFICE LABOR	9932	78.0	100.0	0	7750	0	7750	2181
	EQUIPMENT IT	254	83.0	100.0	0	211	0	211	43
	OTHER O/S	354	1.3	100.0	0	5	0	5	350
	MATERIAL IT	125	442.3	100.0	0	555	0	555	-429
		10665	79.9	100.0	0	8520	0	8520	2145
01060100 Home Office Support	OFFICE LABOR	16630	141.3	100.0	1139	23499	0	23499	-6869
	EQUIPMENT IT	184	148.4	100.0	17	273	0	273	-89
	MATERIAL IT	60	12.3	100.0	0	7	0	7	52
	OTHER O/S	56	518.1	100.0	0	292	0	292	-236
	SUBCONTRACTS	0	0.0	100.0	0	939	0	939	-939
	TRAVEL	0	0.0	100.0	0	413	0	413	-413
		16930	150.2	100.0	1156	25424	0	25424	-8494
		167165	100.7	100.0	1156	168341	0	168341	-1176
WAD 2									
01999999 Fee for Open Burning Ground	FEE	9387	100.0	100.0	0	9387	0	9387	0
		9387	100.0	100.0	0	9387	0	9387	0
		9387	100.0	100.0	0	9387	0	9387	0
WAD 3 - Deactivation Furnace Area									
02010100 Project Familiarization/Site Walk	OFFICE LABOR	255	410.9	100.0	0	1050	0	1050	-794
	TRAVEL	1013	2.3	100.0	0	24	0	24	989
		1268	84.6	100.0	0	1073	0	1073	195
02010200 RFP Response	OFFICE LABOR	9116	63.1	100.0	0	5756	0	5756	3360
	EQUIPMENT IT	61	0.0	0.0	0	0	0	0	61
	OTHER O/S	0	0.0	100.0	0	8	0	8	-8
		9177	62.8	100.0	0	5763	0	5763	3414
02020000 Analytical Services	OFFICE LABOR	5550	81.6	81.7	2985	4528	1012	5540	10
	ANALYTICAL	32709	0.0	0.0	0	0	32709	32709	0
	EQUIPMENT IT	241	12.0	12.0	0	29	212	241	0
	SUBCONTRACTS	0	0.0	100.0	52	4810	0	4810	-4810
		38500	24.3	21.6	3037	9367	33933	43300	-4800
02030100 RA Work Plan	OFFICE LABOR	12804	64.4	64.4	0	8242	4562	12804	0
	MATERIAL IT	0	0.0	100.0	0	1667	0	1667	-1667
	OTHER O/S	0	0.0	100.0	0	205	0	205	-205
	EQUIPMENT IT	330	44.7	44.7	0	148	183	330	0
	MATERIALS O/S	289	23.2	23.2	0	67	222	289	0
	SUBCONTRACTS	0	0.0	100.0	0	319	0	319	-319
		13423	79.3	68.2	0	10647	4967	15614	-2191



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WAD 3 - Deactivation Furnace Area									
02030200 Project Management Plan	OFFICE LABOR	4583	22.9	100.0	0	1048	0	1048	3535
	MATERIAL IT	9	0.0	0.0	0	0	0	0	9
	OTHER O/S	89	0.0	0.0	0	0	0	0	89
	EQUIPMENT IT	121	18.0	100.0	0	22	0	22	99
	TRAVEL	0	0.0	100.0	0	48	0	48	-48
		4802	23.3	100.0	0	1117	0	1117	3685
02040001 Building Demolition & Debris Removal	OFFICE LABOR	4057	321.0	100.0	0	13022	0	13022	-8965
	FIELD LABOR	12082	0.0	0.0	0	0	0	0	12082
	EQUIPMENT O/S	1964	51.0	51.0	102	1002	962	1964	0
	MATERIALS O/S	4276	9.8	9.8	117	421	3855	4276	0
	SUBCONTRACTS	130495	24.2	24.2	0	31597	98898	130495	0
	TRAVEL	4977	138.5	100.0	3041	6895	0	6895	-1918
	OTHER O/S	0	0.0	100.0	25	219	0	219	-219
		157851	33.7	33.9	3284	53156	103715	156871	980
02040200 UXO Avoidance on DFA Site	FIELD LABOR	46840	43.2	43.2	0	20248	26592	46840	0
	OFFICE LABOR	4057	152.3	86.3	0	6180	978	7158	-3101
	TRAVEL	4803	239.5	100.0	327	11505	0	11505	-6702
	EQUIPMENT O/S	10844	31.0	57.7	35	3360	2465	5825	5019
	MATERIALS O/S	760	30.7	30.7	67	233	527	760	0
	OTHER O/S	0	0.0	100.0	47	616	0	616	-616
	SUBCONTRACTS	0	0.0	100.0	0	52	0	52	-52
		67304	62.7	58.0	476	42195	30562	72756	-5452
02040300 Temporary Construction Facility	EQUIPMENT O/S	10074	52.4	52.4	1940	5283	4791	10074	0
	TRAVEL	4671	0.0	0.0	0	0	4671	4671	0
	OFFICE LABOR	13926	3.6	32.5	-51	506	1051	1557	12369
	MATERIALS O/S	10506	16.6	31.0	129	1739	3871	5610	4896
	SUBCONTRACTS	1150	135.5	100.0	0	1558	0	1558	-408
	EQUIPMENT IT	0	0.0	100.0	482	1468	0	1468	-1468
	OTHER O/S	0	0.0	100.0	36	1620	0	1620	-1620
		40327	30.2	45.8	2536	12174	14384	26558	13769
02050100 Closure Report	OFFICE LABOR	15131	0.0	0.0	0	0	15131	15131	0
	EQUIPMENT IT	394	0.0	0.0	0	0	394	394	0
	MATERIALS O/S	511	0.0	0.0	0	0	511	511	0
		16036	0.0	0.0	0	0	16036	16036	0
02060100 Home Office Support	OFFICE LABOR	36835	87.1	87.1	1355	32099	4736	36835	0
	EQUIPMENT IT	303	75.2	75.3	37	228	75	303	0
	OTHER O/S	0	0.0	100.0	59	551	0	551	-551
	SUBCONTRACTS	0	0.0	100.0	6	154	0	154	-154
	FIELD LABOR	0	0.0	100.0	0	74	0	74	-74
	MATERIALS O/S	226	0.0	0.0	0	0	226	226	0
	MATERIAL IT	0	0.0	100.0	0	61	0	61	-61
		37364	88.8	86.8	1457	33167	5037	38204	-840
	386052	43.7	44.7	10790	168660	208633	377293	8759	
WAD 4									
02999999 Fee for Deactivation Furnace Area	FEE	24107	37.7	37.7	1014	9086	15021	24107	0
		24107	37.7	37.7	1014	9086	15021	24107	0
		24107	37.7	37.7	1014	9086	15021	24107	0

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WAD 5 - Building 1601									
03010100 Project Familiarization/Site Walk	OFFICE LABOR	456	76.9	100.0	0	351	0	351	105
	TRAVEL	5	2053.3	100.0	0	107	0	107	-102
	EQUIPMENT IT	0	0.0	100.0	0	2	0	2	-2
	FIELD LABOR	0	0.0	0.0	0	0	0	0	0
	OTHER O/S	0	0.0	0.0	0	0	0	0	0
		462	99.7	100.0	0	460	0	460	1
03010200 RFP Response	OFFICE LABOR	968	100.0	100.0	0	968	0	968	0
		968	100.0	100.0	0	968	0	968	0
03020000 Analytical Services	OFFICE LABOR	3184	100.0	100.0	0	3183	0	3183	1
	ANALYTICAL	6887	98.5	100.0	0	6780	0	6780	107
	EQUIPMENT IT	178	152.5	100.0	0	271	0	271	-93
	OTHER O/S	0	0.0	100.0	0	130	0	130	-130
	SUBCONTRACTS	947	101.3	100.0	0	959	0	959	-12
		11195	101.1	100.0	0	11323	0	11323	-128
03030100 RA Work Plan	OFFICE LABOR	4208	108.9	100.0	0	4582	0	4582	-374
	MATERIAL IT	47	403.5	100.0	0	190	0	190	-143
	OTHER O/S	29	307.6	100.0	0	90	0	90	-61
	EQUIPMENT IT	159	56.0	100.0	0	89	0	89	70
	MATERIALS O/S	0	0.0	100.0	0	67	0	67	-67
	SUBCONTRACTS	0	0.0	100.0	0	218	0	218	-218
		4443	117.9	100.0	0	5236	0	5236	-793
03030200 Project Management Plan	OFFICE LABOR	3136	100.1	100.0	0	3140	0	3140	-3
	EQUIPMENT IT	13	265.4	100.0	0	33	0	33	-21
	MATERIAL IT	25	0.0	0.0	0	0	0	0	25
	SUBCONTRACTS	115	102.7	100.0	0	118	0	118	-3
		3289	100.1	100.0	0	3291	0	3291	-2
03040000 Field Activities	OFFICE LABOR	7509	100.3	100.0	0	7529	0	7529	-20
	FIELD LABOR	13781	106.1	100.0	0	14627	0	14627	-846
	MATERIALS O/S	1259	76.4	100.0	0	962	0	962	297
	EQUIPMENT O/S	19623	100.0	100.0	0	19621	0	19621	2
	TRAVEL	5316	99.6	100.0	0	5297	0	5297	19
	OTHER O/S	349	100.3	100.0	0	350	0	350	-1
	EQUIPMENT IT	59	601.5	100.0	0	352	0	352	-293
	SUBCONTRACTS	7185	100.0	100.0	0	7185	0	7185	0
		55080	101.5	100.0	0	55924	0	55924	-844
03040200 T&D	FIELD LABOR	0	0.0	100.0	0	308	0	308	-308
	OFFICE LABOR	0	0.0	100.0	0	148	0	148	-148
	TRAVEL	0	0.0	100.0	0	169	0	169	-169
	MATERIALS O/S	0	0.0	100.0	0	69	0	69	-69
		0	0.0	100.0	0	695	0	695	-695
03050100 Closure Report	OFFICE LABOR	9681	78.2	100.0	0	7570	0	7570	2111
	MATERIAL IT	105	579.4	100.0	0	605	0	605	-501
	EQUIPMENT IT	280	66.6	100.0	0	186	0	186	94
	OTHER O/S	0	0.0	0.0	0	0	0	0	0
		10066	83.1	100.0	0	8362	0	8362	1704
03060100 Home Office Support	OFFICE LABOR	21666	66.9	100.0	0	14503	0	14503	7163
	OTHER O/S	47	26.0	100.0	0	12	0	12	35
	MATERIAL IT	46	0.0	0.0	0	0	0	0	46
	EQUIPMENT IT	101	35.8	100.0	0	36	0	36	65
	TRAVEL	1441	100.0	100.0	0	1441	0	1441	-1
	SUBCONTRACTS	57	152.8	100.0	0	87	0	87	-30
	FIELD LABOR	8	98.0	100.0	0	8	0	8	0
		23366	68.9	100.0	0	16088	0	16088	7279

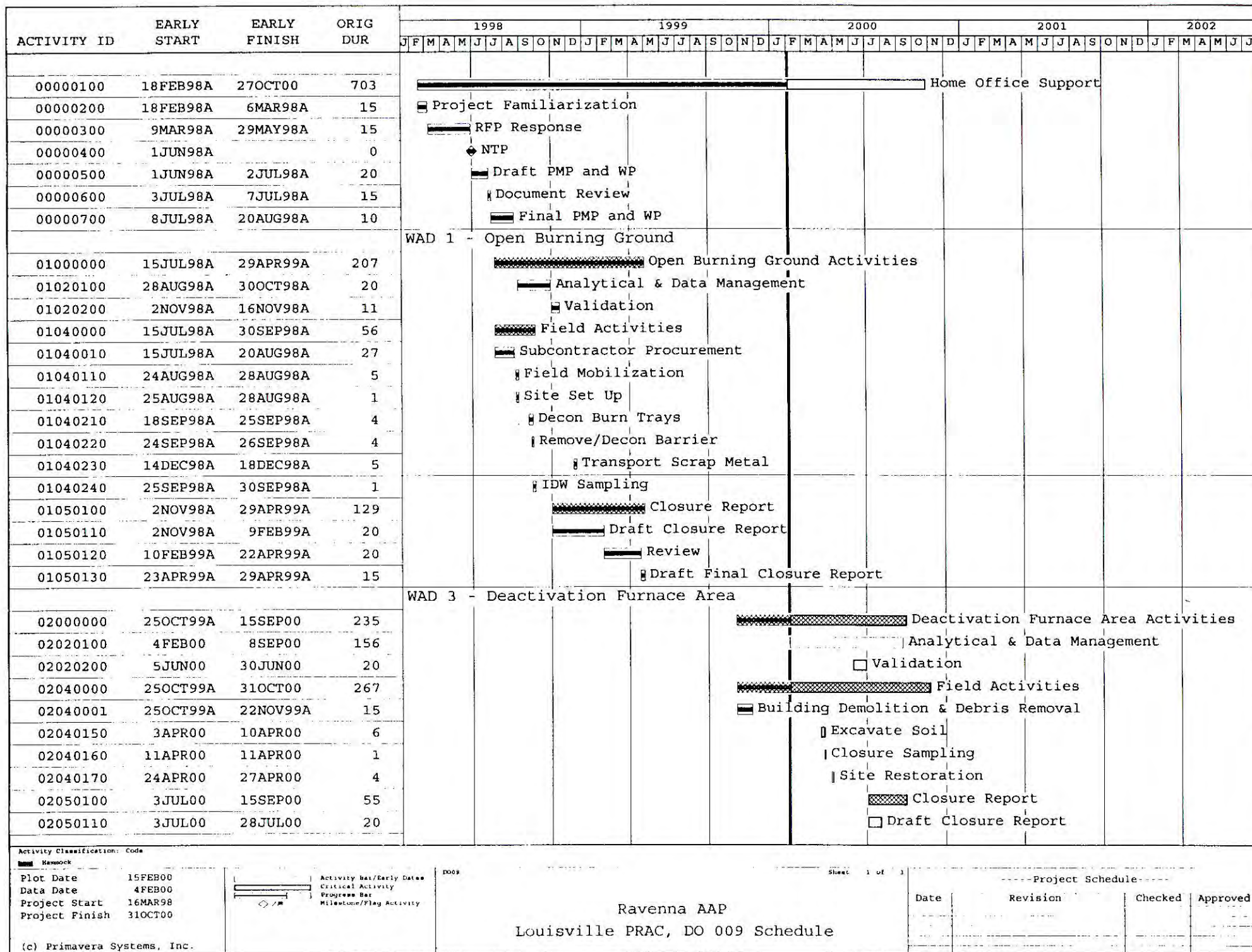


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WAD 5 - Building 1601		108868	94.0	100.0	0	102346	0	102346	6521
WAD 6									
03999999 Fee for Bldg 1601	FEE	3665	100.0	100.0	0	3665	0	3665	0
		3665	100.0	100.0	0	3665	0	3665	0
		3665	100.0	100.0	0	3665	0	3665	0
WAD 7 - Buildings W-221 & X-232									
04010100 Project Familiarization/Site Walk	OFFICE LABOR	709	100.0	100.0	0	709	0	709	0
	EQUIPMENT IT	9	0.0	0.0	0	0	0	0	9
	OTHER O/S	33	100.0	100.0	0	33	0	33	0
	FIELD LABOR	0	0.0	0.0	0	0	0	0	0
	TRAVEL	0	0.0	0.0	0	0	0	0	0
		751	98.8	100.0	0	742	0	742	9
04010200 RFP Response	OFFICE LABOR	1372	100.0	100.0	0	1372	0	1372	0
	MATERIAL IT	3	0.0	0.0	0	0	0	0	3
		1375	99.8	100.0	0	1372	0	1372	3
04020000 Analytical Services	OFFICE LABOR	4179	85.8	81.1	0	3587	834	4421	-242
	ANALYTICAL	2220	100.0	81.6	0	2220	500	2720	-500
	EQUIPMENT IT	470	94.5	100.0	0	444	0	444	26
	SUBCONTRACTS	5087	104.3	100.0	0	5307	0	5307	-220
	OTHER O/S	98	9.2	100.0	0	9	0	9	89
	TRAVEL	101	100.0	100.0	0	101	0	101	0
	MATERIALS O/S	53	0.0	0.0	0	0	0	0	53
		12208	95.6	89.7	0	11668	1334	13002	-794
04030100 RA Work Plan	OFFICE LABOR	3954	96.6	100.0	0	3821	0	3821	133
	MATERIAL IT	190	100.0	100.0	0	190	0	190	0
	OTHER O/S	81	101.1	100.0	0	82	0	82	-1
	EQUIPMENT IT	140	24.9	100.0	0	35	0	35	105
	MATERIALS O/S	67	100.2	100.0	0	67	0	67	0
		4432	94.6	100.0	0	4194	0	4194	238
04030200 Project Management Plan	OFFICE LABOR	1175	100.1	100.0	0	1176	0	1176	-1
	OTHER O/S	29	0.0	0.0	0	0	0	0	29
	MATERIAL IT	26	0.0	0.0	0	0	0	0	26
	EQUIPMENT IT	70	56.2	100.0	0	39	0	39	31
		1300	93.4	100.0	0	1215	0	1215	85
04040000 Field Activities	OFFICE LABOR	4104	107.5	100.0	0	4411	0	4411	-307
	FIELD LABOR	19255	78.0	100.0	0	15017	0	15017	4238
	SUBCONTRACTS	4833	21.0	100.0	0	1014	0	1014	3820
	MATERIALS O/S	3707	59.6	100.0	0	2209	0	2209	1498
	EQUIPMENT O/S	10960	100.0	100.0	0	10960	0	10960	0
	TRAVEL	4684	99.6	100.0	0	4666	0	4666	18
	OTHER O/S	44	100.0	100.0	0	44	0	44	0
	EQUIPMENT IT	557	99.6	100.0	0	555	0	555	2
		48144	80.7	100.0	0	38876	0	38876	9268
04040200 IT EO Dispatch	FIELD LABOR	617	99.9	100.0	0	617	0	617	0
	OFFICE LABOR	297	100.0	100.0	0	297	0	297	0
	TRAVEL	292	100.0	100.0	0	292	0	292	0
		1206	100.0	100.0	0	1206	0	1206	0

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WAD 7 - Buildings W-221 & X-232									
04050100 Closure Report	OFFICE LABOR	10065	78.1	79.7	0	7864	1998	9862	203
	MATERIAL IT	318	50.6	44.6	0	161	200	361	-43
	EQUIPMENT IT	280	43.2	100.0	0	121	0	121	159
	OTHER O/S	135	12.6	100.0	0	17	0	17	118
		10798	75.6	78.8	0	8163	2198	10361	437
04060100 Home Office Support	OFFICE LABOR	14481	94.4	88.0	36	13675	1859	15534	-1053
	OTHER O/S	159	96.5	96.5	0	153	6	159	0
	MATERIAL IT	49	0.0	0.0	0	0	0	0	49
	EQUIPMENT IT	234	75.9	100.0	0	178	0	178	56
	SUBCONTRACTS	910	101.0	100.0	0	919	0	919	-9
	FIELD LABOR	118	100.0	100.0	0	118	0	118	0
		15951	94.3	89.0	36	15043	1864	16907	-956
		96166	85.8	93.9	36	82479	5397	87876	8290
WAD 8									
04999999 Fee for Bldgs W-221 and X-232	FEE	3380	100.0	100.0	0	3380	0	3380	0
		3380	100.0	100.0	0	3380	0	3380	0
		3380	100.0	100.0	0	3380	0	3380	0
WAD 9 - Building T-4452									
05010100 Project Familiarization/Site Walk	OFFICE LABOR	968	0.0	0.0	0	0	0	0	968
	TRAVEL	93	213.2	100.0	0	198	0	198	-105
		1061	18.7	100.0	0	198	0	198	863
05010200 RFP Response	OFFICE LABOR	8832	68.8	100.0	0	6075	0	6075	2757
	EQUIPMENT IT	53	0.0	0.0	0	0	0	0	53
	MATERIALS O/S	29	0.0	0.0	0	0	0	0	29
		8914	68.1	100.0	0	6075	0	6075	2839
05020000 Analytical Services	OFFICE LABOR	3176	246.3	100.0	5792	7822	0	7822	-4646
	ANALYTICAL	25610	33.8	71.2	0	8668	3514	12183	13427
	EQUIPMENT IT	282	70.1	70.0	0	198	85	282	0
	SUBCONTRACTS	0	0.0	100.0	0	13427	0	13427	-13427
	FIELD LABOR	0	0.0	100.0	0	945	0	945	-945
		29068	106.9	89.6	5792	31060	3599	34659	-5591
05030100 RA Work Plan and Meeting	OFFICE LABOR	5466	107.5	100.0	0	5874	0	5874	-408
	MATERIAL IT	0	0.0	100.0	0	190	0	190	-190
	OTHER O/S	0	0.0	78.4	0	101	28	129	-129
	EQUIPMENT IT	146	97.1	100.0	0	142	0	142	4
	TRAVEL	2538	0.0	0.0	0	0	0	0	2538
	MATERIALS O/S	211	31.8	100.0	0	67	0	67	144
	SUBCONTRACTS	0	0.0	0.0	0	0	0	0	0
		8361	76.2	99.6	0	6374	28	6402	1959
05030200 Project Management Plan	OFFICE LABOR	1879	31.9	100.0	0	600	0	600	1279
	OTHER O/S	206	0.0	0.0	0	0	0	0	206
	MATERIAL IT	115	0.0	0.0	0	0	0	0	115
	EQUIPMENT IT	89	35.8	100.0	0	32	0	32	57
		2289	27.6	100.0	0	631	0	631	1657

ACTIVITY ID DESCRIPTION	RESOURCE	BUDGET	PERCENT SPENT	RESOURCE PERCENT COMPLETE	COST THIS PERIOD	COST TO DATE	ESTIMATE TO COMPLETE	ESTIMATE AT COMPLETION	VARIANCE
WAD 9 - Building T-4452									
05040100 Decon, Demo & Excavation	FIELD LABOR	6041	0.0	0.0	0	0	0	0	6041
	EQUIPMENT O/S	1108	37.5	96.6	-14	415	14	429	679
	MATERIALS O/S	1787	76.2	97.5	-35	1361	35	1396	391
	SUBCONTRACTS	41748	95.2	64.5	2062	39735	21867	61602	-19854
	TRAVEL	1756	1.8	1.7	-1811	31	1811	1842	-86
	OFFICE LABOR	0	0.0	48.7	-2616	2478	2616	5094	-5094
	EQUIPMENT IT	0	0.0	99.0	-11	1103	11	1114	-114
	OTHER O/S	0	0.0	8.4	-76	7	76	83	-83
		52440	86.1	63.1	-2502	45130	26431	71561	-19121
05040200 Pre-Mobilization Sampling	EQUIPMENT O/S	10150	5.1	100.0	507	522	0	522	9628
	TRAVEL	10129	16.8	100.0	782	1706	0	1706	8423
	OTHER O/S	0	0.0	100.0	59	76	0	76	-76
	OFFICE LABOR	9305	28.3	100.0	2635	2635	0	2635	6670
		0	0.0	100.0	11	11	0	11	-11
		29584	16.7	100.0	3994	4950	0	4950	24634
05050100 Closure Report	OFFICE LABOR	6400	27.5	27.5	1157	1759	4641	6400	0
	EQUIPMENT IT	470	16.1	16.1	0	76	394	470	0
	OTHER O/S	0	0.0	0.0	0	0	0	0	0
	MATERIALS O/S	511	0.0	0.0	0	0	511	511	0
		7381	24.9	24.9	1157	1835	5546	7381	0
05060100 Home Office Support	OFFICE LABOR	13722	62.5	62.5	0	8570	5152	13722	0
	OTHER O/S	0	0.0	100.0	0	60	0	60	-60
	MATERIAL IT	0	0.0	100.0	0	33	0	33	-33
	EQUIPMENT IT	287	11.1	11.1	0	32	255	287	0
	SUBCONTRACTS	0	0.0	100.0	0	91	0	91	-91
	FIELD LABOR	0	0.0	100.0	0	17	0	17	-17
	MATERIALS O/S	226	0.0	0.0	0	0	226	226	0
		14235	61.8	61.0	0	8802	5633	14436	-201
		153333	68.5	71.8	8441	105056	41237	146292	7041
WAD 10									
05999999 Fee for Bldg T-4452	FEE	9126	56.2	56.2	1568	5132	3994	9126	0
		9126	56.2	56.2	1568	5132	3994	9126	0
		9126	56.2	56.2	1568	5132	3994	9126	0
		961249	68.4	70.6	23005	657533	274281	931814	29435







ACTIVITY ID	EARLY START	EARLY FINISH	ORIG DUR	1998												1999												2000												2001												2002											
				J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
				WAD 3 - Deactivation Furnace Area																																																											
02050120	31JUL00	25AUG00	20	<div><input type="checkbox"/> Review</div> <div><input type="checkbox"/> Draft Final Closure Report</div>																																																											
02050130	28AUG00	15SEP00	15																																																												
				WAD 5 - Building 1601																																																											
03000000	2SEP98A	29APR99A	172	Building 1601 Activities																																																											
03020100	24SEP98A	6NOV98A	20	Analytical & Data Management																																																											
03020200	9NOV98A	27NOV98A	15	Validation																																																											
03040000	2SEP98A	24SEP98A	17	Field Activities																																																											
03040110	2SEP98A	21SEP98A	2	Soil Sampling																																																											
03040120	21SEP98A	23SEP98A	4	Repair Flooring/Remove Sediment																																																											
03040130	21SEP98A	24SEP98A	2	Decon Facility																																																											
03040140	21SEP98A	24SEP98A	1	Confirmation/IDW Sampling																																																											
03050100	1OCT98A	29APR99A	151	Closure Report																																																											
03050110	1OCT98A	9FEB99A	20	Draft Closure Report																																																											
03050120	10FEB99A	22APR99A	20	Review																																																											
03050130	23APR99A	29APR99A	15	Draft Final Closure Report																																																											
03060100	18FEB98A	27OCT00	703	Home Office Support																																																											
				WAD 7 - Buildings W-221 & X-232																																																											
04000000	24AUG98A	29MAY00	461	Building W221 & X232 Activities																																																											
04020100	24SEP98A	6NOV98A	20	Analytical & Data Management																																																											
04020200	9NOV98A	27NOV98A	15	Validation																																																											
04040000	24AUG98A	4SEP98A	10	Field Activities																																																											
04040110	24AUG98A	1SEP98A	1	Decon/Remove Debris																																																											
04040120	1SEP98A	4SEP98A	3	Prep/Decon Facilities																																																											
04040130	3SEP98A	4SEP98A	1	Confirmation/IDW Sampling																																																											
04050100	1OCT98A	29MAY00	433	Closure Report																																																											
04050110	1OCT98A	10APR00	47	Draft Closure Report																																																											
04050120	11APR00	8MAY00	20	Review																																																											
04050130	9MAY00	29MAY00	15	Draft Final Closure Report																																																											
				WAD 9 - Building T-4452																																																											
05040200	4FEB00	4FEB00	1	Pre-Mobilization Sampling																																																											
05000000	18SEP98A	5JUN00	447	Building T-4452 Activities																																																											
05040000	18SEP98A	31OCT00	553	Field Activities																																																											
05040100	4FEB00	17FEB00	10	Decon, Demo & Excavation																																																											
05040110	18SEP98A	20SEP98A	2	Asbestos Removal/Disposal																																																											

Hammock	
Plot Date	15FEB00
Data Date	4FEB00
Project Start	16MAR98
Project Finish	31OCT00

Activity Bar/Early Dates  
Critical Activity  
Progress Bar  
Milestone/Flag Activity

Sheet 2 of

--- Project Schedule ---

Ravenna AAP  
Louisville PRAC, DO 009 Schedule

ACTIVITY ID	EARLY START	EARLY FINISH	ORIG DUR	1998												1999												2000												2001												2002											
				J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
				WAD 9 - Building T-4452																																																											
05040120	14SEP98A	17SEP98A	2	Equipment/Furniture Removal																																																											
05040160	16NOV99A	23NOV99A	5	Backfill Excavation																																																											
05040167	4FEB00	10FEB00	5	T&D all Stockpiles																																																											
05050100	6MAR00	5JUN00	66	Closure Report																																																											
05050110	6MAR00	26MAY00	60	Data Validation and Draft Closure Report																																																											
05050115		31MAR00	0	Submit Draft																																																											
05050120	3APR00	1MAY00	21	Client/Regulatory Review																																																											
05050123		1MAY00	0	Receive Comments																																																											
05050125	2MAY00	8MAY00	5	Prepare Response to Comments																																																											
05050130	9MAY00	5JUN00	20	Prepare Draft Final Closure Report																																																											
05050135		5JUN00	0	Submit Draft/Final																																																											
05880000	18SEP00	27OCT00	30	Close Out Period																																																											

Activity Classification: Code

Plot Date 15FEB00

Data Date 4FEB00

Project Start 16MAR98

Project Finish 31OCT00

Activity Bar/Early Dates

Critical Activity

Progress Bar

Milestone/Flag Activity

Sheet 3 of 3

Ravenna AAP

Louisville PRAC, DO 009 Schedule

Project Schedule

Date	Revision	Checked	Approved

(c) Primavera Systems, Inc.





State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center  
122 South Front St.  
Columbus, OH 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

Lazarus Government Center  
P. O. Box 1049  
Columbus, OH 43216-1049

June 26, 2000

TO	7/28/00
1	COR-COR
1	ENV
	LAND MGR
02	ATKIN 7/28/00
	CONTRACTOR
	RETURN FOR FILE

Mr. John Cicero  
Commander's Representative  
Department of the Army  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9279

**Re: Ravenna Army Ammunition Plant, Portage/Trumbull Counties, AOCs: RVAAP-12, 44, 49, 03**

Dear Mr. Cicero:

By written submissions dated June 23, 2000 and revised June 26, 2000, the Ravenna Army Ammunition Plant (RVAAP) has requested authorization, pursuant to Ohio Administrative Code (OAC) 3745-27-13, to fill, grade, excavate, drill, build, or mine at the following Areas of Concern (AOCs) on the installation property:

- RVAAP - 12 Load Line 12
- RVAAP - 44 Load Line 11/Artillery Primer
- RVAAP - 49 Central Burn Pits
- RVAAP - 03 Open Demolition Area #1

The activities to be undertaken at the AOCs include: drilling; trenching; excavating; bioremediation of explosives-contaminated soils; placement of clean hard fill or backfilling; grading; surgical removal/other removal of unexploded ordnance (UXO) and suspected UXO; surface and sub-surface soil sampling; well point and monitor well installation and groundwater sampling; and, surface water and sediment sampling. These activities are being conducted under the Department of Defense (DOD) Installation Restoration Program (IRP). The Ohio Environmental Protection Agency (Ohio EPA) Division of Emergency Response (DERR) is providing technical assistance to the Department of the Army (DA), as specified under the Defense - State Memorandum of Agreement (DSMOA).

As part of the technical assistance provided by Ohio EPA DERR, the following documents prepared by various contractors and the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), on behalf of the U.S. Army Corps of Engineers (USACE), have been reviewed and found to be acceptable submissions:

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director



1. Final (March, 1996), "Action Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
2. Final (February, 1996), "Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
3. Final (April, 1996), "Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
4. Final (February, 1996), "Facility-Wide Safety and Health Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
5. Final (July, 1996), "Phase 1 Remedial Investigation Sampling and Analysis Plan, Addendum for High Priority Areas of Concern for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
6. Final (July, 1996), "Phase 1 Remedial Investigation Site Safety and Health Plan, Addendum for High Priority Areas of Concern for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
7. Final (February, 1998), "Phase 1 Remedial Investigation Report for the Phase 1 Remedial Investigation of High Priority Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna, Ohio";
8. "Sampling Plan, Relative Risk Site Evaluation for Ravenna Army Ammunition Plant, Project Number 37-EF-5360-99, Ravenna, Ohio, 19-27 October 1998";
9. Draft (March 2000), "Work Plan and Sampling and Analysis Plan for the Bioremediation Study for Soils From Former Building FJ 904 at Load Line 12 (AOC 12), Ravenna Army Ammunition Plant." This document is currently undergoing final revision consistent with Ohio EPA comments detailed in correspondence dated April 14, 2000.
10. Final (October 1999), Sampling and Analysis Plan, Addendum No. 1 for the Phase 1 Remedial Investigation of Demolition Area #1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio"; and,
11. (March 2000) Installation Action Plan for the Ravenna Army Ammunition Plant.



Based upon the review of the above-referenced documents submitted to the DERR Northeast District Office (NEDO), I have determined that the proposed investigative activities will not result in violation of applicable laws and regulations, will not create a nuisance, and are unlikely to adversely affect the public safety, human health, or the environment. Therefore, you are hereby authorized to perform the above actions in accordance with the above-referenced documents and the Area of Concern (AOC) specific documents that are to be received and reviewed by Ohio EPA DERR prior to the commencement of any intrusive activities. This action does not relieve you of any obligation under other state/federal requirements.

This approval is subject to the following conditions:

1. Any activities conducted at the above-referenced AOCs, must be accomplished in compliance with all applicable state and federal rules, laws and regulations pertaining to environmental protection, including, but not limited to, control of air emissions, control of leachate, surface water run-on and run-off, and protection of groundwater.
2. Any activities undertaken shall not create a nuisance and shall not adversely affect public safety, human health, or the environment.
3. OEPA NEDO DERR, must be given seventy-two (72) hours notice prior to any work commencing on-site.
4. All solid and/or hazardous wastes removed during intrusive activities shall be containerized and securely stored until such time as these materials are properly characterized and disposed of in accordance with Chapter 3734 of the Ohio Revised Code (ORC) and regulations promulgated thereunder.
5. All liquids, semi-solids, industrial wastes and other wastes regulated by ORC Chapter 6111 removed during intrusive activities shall be containerized and securely stored until such time as these materials are characterized and disposed of in accordance with ORC Chapter 6111 and regulations promulgated thereunder.
6. As per Section C(10) of OAC 3745-27-13, upon selection of appropriate disposal facility(ies), the RVAAP must submit to Ohio EPA a copy of a letter of acceptance from the disposal facility(ies).
7. This approval shall allow the RVAAP to conduct the described investigative activities in accordance with the above-referenced documents and the AOC specific documents/workplans. The RVAAP must obtain prior approval from



Mr. John Cicero

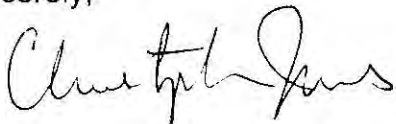
Page 4

the Ohio EPA to perform any other additional activities at the above-referenced AOCs beyond those being approved under this authorization, and prior to commencing intrusive activities at the other AOCs identified at the installation.

You are hereby notified that this action of the Director is final, and may be appealed to the Environmental Review Appeals Commission pursuant to ORC Section 3745.04. The appeal must be in writing and set forth the action complained of and the ground upon which the appeal is based. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of Environmental Protection within three (3) days of filing with the Board. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission  
236 East Town Street  
Room 300  
Columbus OH 43215

Sincerely,



Christopher Jones  
Director

cc: Bonnie Buthker, OEPA, SWDO, OFFO  
Catherine Stroup, CO Legal  
Bob Princic, OEPA, NEDO, DERR  
Eileen T. Mohr, OEPA, NEDO, DERR  
John Jent, USACE Louisville

CF: MKH



DEPARTMENT OF THE ARMY

RAVENNA ARMY AMMUNITION PLANT

8451 STATE ROUTE 5

RAVENNA, OHIO 44266-9297

REPLY TO  
ATTENTION OF

June 26, 2000

SMARV-CR (200-1a)

Portage County Health Department  
449 South Meridian Street  
Ravenna, Ohio 44266

Dear Sir or Madam:


This correspondence serves as notice, as required, under the Ohio Administrative Code (OAC) 3745-27-13 (authorization to engage in filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated) that a supplemental authorization is being requested from the Ohio Environmental Protection Agency (OEPA), to conduct investigative activities (drilling and soil sampling), excavation and remediation at four Areas of Concern (AOCs) at the Ravenna Army Ammunition Plant, Ravenna, Ohio, under the Comprehensive Environmental Response, Compensation, and Liability Act leading to the environmental restoration of AOCs under the U.S. Department of Defense Installation Restoration Program. The AOCs covered under this correspondence are Load Line 12 (RVAAP 12), Load Line 11 (RVAAP 44), Central Burn Pits (RVAAP 49) and Demolition Area # 1 (RVAAP 03). The request for authorization is submitted as part of the Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio, (U.S. Army Corps of Engineers, Nashville District, 1996).

The Ravenna Army Ammunition Plant is located in northeastern Ohio within Portage and Trumbull Counties, approximately 4.8 kilometers (3 miles) east/northeast of the Town of Ravenna and approximately 1.61 kilometers (1 mile) northwest of the Town of Newton Falls. The installation consists of 21,419 acres (8668 hectares) contained in a 17.7-kilometer (11-mile) by 5.63-kilometer (3.5-mile) tract bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; State Route 534 on the east; the Garrettsville and Berry Roads on the west; and the CONRAIL Railroad on the north. The land use surrounding the installation is primarily farmland with sparse private residences. The Michael J. Kirwan Reservoir is located immediately south of the facility. A map of the facility is attached to this correspondence.

The Ravenna Army Ammunition Plant is a government-owned, contractor-operated U.S. Army Munitions and Armaments Command facility. Currently the Ravenna Army Ammunition Plant is an inactive facility maintained by a contracted caretaker, TolTest, Inc.

If you have questions or concerns pertaining to this request for authorization under OAC 3745-27-13, you may contact me at (330) 358-7311, or Ms. Eileen Mohr with the OEPA in Twinsburg, Ohio, at (330) 963-1221.

Sincerely,

  
John A. Cicero, Jr.  
Commander's Representative

Enclosure

Copies Furnished:

Commander, U.S. Army Munitions and Armaments Command (PROV), ATTN: SOSMA-ISE-R  
(Mr. Whelove), Rock Island, IL 61299-6000

Commander, U.S. Army Munitions and Armaments Command (PROV), ATTN: SOSMA-ISO  
(Mr. Cramond), Rock Island, IL 61299-6000

Mr. John Jent, U.S. Army Corps of Engineers, Louisville District, CELRL-ED-EK, 600 Martin  
Luther King, Jr. Pl., P.O. Box 59, Louisville, KY 40201-0059

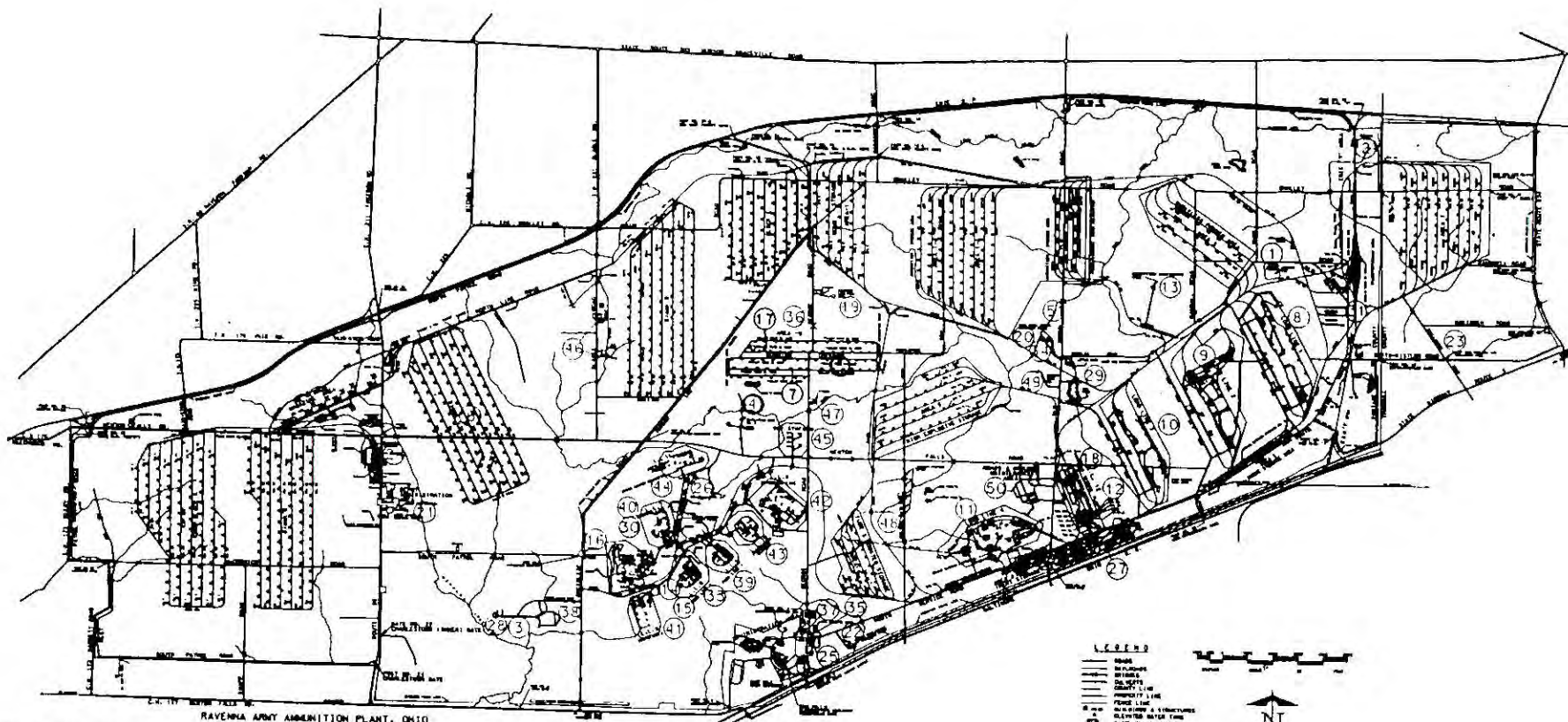
Ms. Eileen Mohr, Ohio Environmental Protection Agency, Division of Emergency and Remedial  
Response, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087

Mr. Todd Fisher, Project Coordinator, Ohio Environmental Protection Agency, Division of  
Emergency and Remedial Response, Northeast District Office, 2110 East Aurora Road,  
Twinsburg, Ohio 44087

Mr. Khodi Irani, MKM Engineers, Inc., 4153 Bluebonnet Drive, Stafford, Texas, 77477

Deputy Commander, Ravenna Training and Logistics Site ATTN: AGOH-OT-RTLS (LTC Tom  
Tadsen), 1438 State Route 534 SW, Newton Falls, OH 44444





RAVENNA ARMY AMMUNITION PLANT, OHIO  
ENVIRONMENTAL AREAS OF CONCERN

1. RAMSDALL QUARRY LANDFILL
2. ERIE BURNING GROUNDS
3. DEMOLITION AREA #1
4. DEMOLITION AREA #2
5. WINKLEPECK BURNING GROUNDS
6. C BLOCK QUARRY
7. BLDG 1401 HAZ WASTE STORAGE
8. LOAD LINE 1
9. LOAD LINE 2
10. LOAD LINE 3
11. LOAD LINE 4
12. LOAD LINE 12
13. BUILDING 1200
14. LOAD LINE 6, EVAPORATION UNIT
15. LOAD LINE 5
16. FUZE & BOOSTER BURN PITS/LANDFILL
17. DEACTIVATION FURNACE
18. LOAD LINE 12 PINK WATER TRT PLANT
19. LANDFILL NORTH OF WINKLEPECK BG

20. SAND CREEK SEWAGE TRT PLANT
21. DEPOT SEWAGE TRT PLANT
22. GEORGE ROAD SEWAGE TRT PLANT
23. UNIT TRAINING SITE- WASTE OIL TANK
24. RESERVE UNIT MAINT AREA WASTE OIL TANK
25. BLDG 1034 MOTOR POOL WASTE OIL TANK
26. FUZE & BOOSTER AREA SETTLING TANKS
27. BLDG 854 PCB STORAGE
28. MUSTARD AGENT BURIAL SITE
29. UPPER & LOWER COBBS POND COMPLEX
30. LOAD LINE 7 PINK WATER TREATMENT PLANT
31. ORE PILE RETENTION POND
32. 40 & 40 MM FIRING RANGE
33. FIRESTONE TEST FACILITY
34. SAND CREEK DISPOSAL ROAD LANDFILL
35. BLDG 1037 - LAUNDRY WASTEWATER SUMP
36. PISTOL RANGE
37. BLDG T - 4452 PESTICIDE STORAGE
38. MACA TEST AREA

39. LOAD LINE 5 / FUZE LINE 1
40. LOAD LINE 7 / BOOSTER LINE 1
41. LOAD LINE 8 / BOOSTER LINE 2
42. LOAD LINE 9 / DETONATOR LINE
43. LOAD LINE 10 / PERCUSSION ELEMENT
44. LOAD LINE 11 / ARTILLERY PRIMER
45. WET STORAGE AREA
46. BLDG S F-15 AND F-16
47. BLDG T-5301 DECONTAMINATION
48. ANCHOR TEST AREA
49. CENTRAL BURN PITS
50. ATLAS SCRAP YARD
51. DUMP ALONG PARIS-WINDHAM ROAD

- = CERCLA  
○ = RCRA  
○ = OTHER REGULATORY

APRIL, 1999

RAVENNA ARMY AMMUNITION PLANT			
OPERATED BY RAVENNA ARSENAL, INC.			
APPROVED	SIGNATURE	DATE	TITLE
SAFETY			
TECHNICAL			
PRODUCTION			
ENGINEERING			
GENERAL			
CONSTRUCTION			
OFFICE			
REF: OHIO, MD			GENERAL AREA MAP
DRAWN: JUNE/99			
DATE: 1999			
SCALE: A-1400.00			



DEPARTMENT OF THE ARMY

RAVENNA ARMY AMMUNITION PLANT

8451 STATE ROUTE 5

RAVENNA, OHIO 44266-9297

REPLY TO  
ATTENTION OF

June 26, 2000

SMARV-CR (200-1a)

Trumbull County Health Department  
176 Chestnut NE  
Warren, Ohio 44483

Dear Sir or Madam:

This correspondence serves as notice, as required, under the Ohio Administrative Code (OAC) 3745-27-13 (authorization to engage in filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated) that a supplemental authorization is being requested from the Ohio Environmental Protection Agency (OEPA), to conduct investigative activities (drilling and soil sampling), excavation and remediation at four Areas of Concern (AOCs) at the Ravenna Army Ammunition Plant, Ravenna, Ohio, under the Comprehensive Environmental Response, Compensation, and Liability Act leading to the environmental restoration of AOCs under the U.S. Department of Defense Installation Restoration Program. The AOCs covered under this correspondence are Load Line 12 (RVAAP 12), Load Line 11 (RVAAP 44), Central Burn Pits (RVAAP 49) and Demolition Area # 1 (RVAAP 03). The request for authorization is submitted as part of the Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio, (U.S. Army Corps of Engineers, Nashville District, 1996).

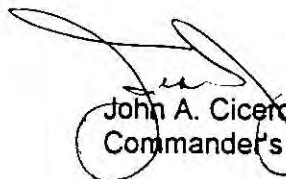
The Ravenna Army Ammunition Plant is located in northeastern Ohio within Portage and Trumbull Counties, approximately 4.8 kilometers (3 miles) east/northeast of the Town of Ravenna and approximately 1.61 kilometers (1 mile) northwest of the Town of Newton Falls. The installation consists of 21,419 acres (8668 hectares) contained in a 17.7-kilometer (11-mile) by 5.63-kilometer (3.5-mile) tract bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; State Route 534 on the east; the Garrettsville and Berry Roads on the west; and the CONRAIL Railroad on the north. The land use surrounding the installation is primarily farmland with sparse private residences. The Michael J. Kirwan Reservoir is located immediately south of the facility. A map of the facility is attached to this correspondence.

The Ravenna Army Ammunition Plant is a government-owned, contractor-operated U.S. Army Munitions and Armaments Command facility. Currently the Ravenna Army Ammunition Plant is an inactive facility maintained by a contracted caretaker, TolTest, Inc.



If you have questions or concerns pertaining to this request for authorization under OAC 3745-27-13, you may contact me at (330) 358-7311, or Ms. Eileen Mohr with the OEPA in Twinsburg, Ohio, at (330) 963-1221.

Sincerely,



John A. Cicero, Jr.  
Commander's Representative

Enclosure

Copies Furnished:

Commander, U.S. Army Munitions and Armaments Command (PROV), ATTN: SOSMA-ISE-R  
(Mr. Whelove), Rock Island, IL 61299-6000

Commander, U.S. Army Munitions and Armaments Command (PROV), ATTN: SOSMA-ISO  
(Mr. Cramond), Rock Island, IL 61299-6000

Mr. John Jent, U.S. Army Corps of Engineers, Louisville District, CELRL-ED-EK, 600 Martin  
Luther King, Jr. Pl., P.O. Box 59, Louisville, KY 40201-0059

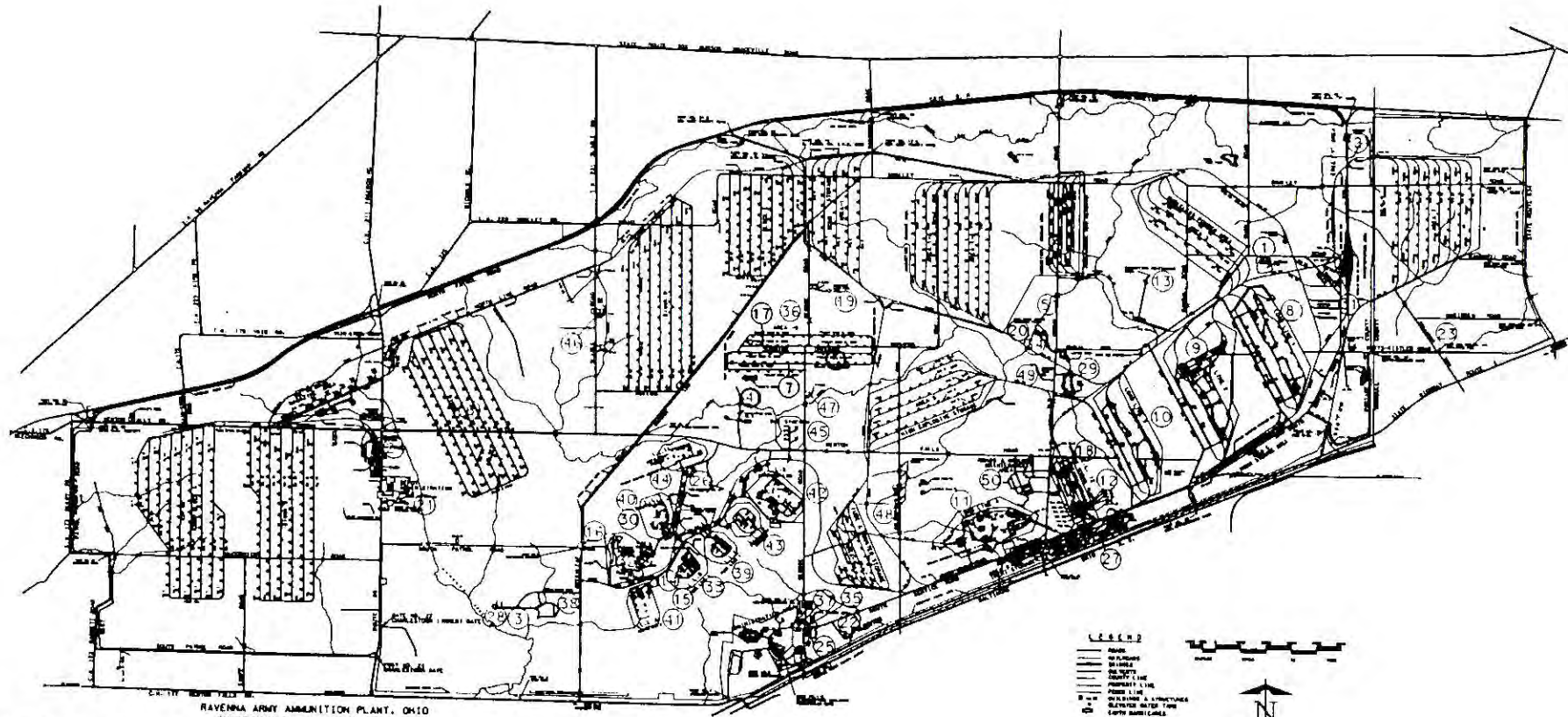
Ms. Eileen Mohr, Ohio Environmental Protection Agency, Division of Emergency and Remedial  
Response, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087

Mr. Todd Fisher, Project Coordinator, Ohio Environmental Protection Agency, Division of  
Emergency and Remedial Response, Northeast District Office, 2110 East Aurora Road,  
Twinsburg, Ohio 44087

Mr. Khodi Irani, MKM Engineers, Inc., 4153 Bluebonnet Drive, Stafford, Texas, 77477

Deputy Commander, Ravenna Training and Logistics Site ATTN: AGOH-OT-RTLS (LTC Tom  
Tadsen), 1438 State Route 534 SW, Newton Falls, OH 44444





RAVENNA ARMY AMMUNITION PLANT, OHIO  
ENVIRONMENTAL AREAS OF CONCERN

- |  |  |  |
|--|--|--|
| <ol style="list-style-type: none"> <li>1. RAMSDALL QUARRY LANDFILL</li> <li>2. ERIE BURNING GROUNDS</li> <li>3. DEMOLITION AREA #1</li> <li>4. DEMOLITION AREA #2</li> <li>5. WINKLEPECK BURNING GROUNDS</li> <li>6. C BLOCK QUARRY</li> <li>7. BLDG 1601 HAZ WASTE STORAGE</li> <li>8. LOAD LINE 1</li> <li>9. LOAD LINE 2</li> <li>10. LOAD LINE 3</li> <li>11. LOAD LINE 4</li> <li>12. LOAD LINE 12</li> <li>13. BUILDING 1200</li> <li>14. LOAD LINE 6, EVAPORATION UNIT</li> <li>15. LOAD LINE 8</li> <li>16. FUZE &amp; BOOSTER BURN PITS/LANDFILL</li> <li>17. DEACTIVATION FURNACE</li> <li>18. LOAD LINE 12 PINK WATER TRT PLANT</li> <li>19. LANDFILL NORTH OF WINKLEPECK BG</li> </ol> | <ol style="list-style-type: none"> <li>20. SAND CREEK SEWAGE TRT PLANT</li> <li>21. DEPOT SEWAGE TRT PLANT</li> <li>22. GEORGE ROAD SEWAGE TRT PLANT</li> <li>23. UNIT TRAINING SITE - WASTE OIL TANK</li> <li>24. RESERVE UNIT MAINT AREA WASTE OIL TANK</li> <li>25. BLDG 1034 MOTOR POOL WASTE OIL TANK</li> <li>26. FUZE &amp; BOOSTER AREA SETTLING TANKS</li> <li>27. BLDG 854 - PCB STORAGE</li> <li>28. MUSTARD AGENT BURIAL SITE</li> <li>29. UPPER &amp; LOWER COBBS POND COMPLEX</li> <li>30. LOAD LINE 7 PINK WATER TREATMENT PLANT</li> <li>31. DRE PILE RETENTION POND</li> <li>32. 40 &amp; 60 MM FIRING RANGE</li> <li>33. FIRESTONE TEST FACILITY</li> <li>34. SAND CREEK DISPOSAL ROAD LANDFILL</li> <li>35. BLDG 1037 - LAUNDRY WASTEWATER SUMP</li> <li>36. PISTOL RANGE</li> <li>37. BLDG T - 4452 PESTICIDE STORAGE</li> <li>38. NACA TEST AREA</li> </ol> | <ol style="list-style-type: none"> <li>39. LOAD LINE 5 / FUZE LINE 1</li> <li>40. LOAD LINE 7 / BOOSTER LINE 1</li> <li>41. LOAD LINE 8 / BOOSTER LINE 2</li> <li>42. LOAD LINE 9 / DETONATOR LINE</li> <li>43. LOAD LINE 10 / PERCUSSION ELEMENT</li> <li>44. LOAD LINE 11 / ARTILLERY PRIMER</li> <li>45. WET STORAGE AREA</li> <li>46. BLDG'S F-15 AND F-16</li> <li>47. BLDG T-5301 DECONTAMINATION</li> <li>48. ANCHOR TEST AREA</li> <li>49. CENTRAL BURN PITS</li> <li>50. ATLAS SCRAP YARD</li> <li>51. DUMP ALONG PARIS-WINDHAM ROAD</li> </ol> |
|--|--|--|

- = CERCLA  
○ = RCRA  
○ = OTHER REGULATORY

APRIL, 1999

RAVENNA ARMY AMMUNITION PLANT OPERATED BY RAYMOND ARSENAL, INC.			
APPROVED	SIGNATURE	DATE	TITLE
SAFETY			GENERAL AREA MAP
TECHNICAL			
PRODUCTION			
ENGINEERING			
QUALITY			
DATE 1/99		SCALE	A=1400.00



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
RAVENNA ARMY AMMUNITION PLANT  
8451 STATE ROUTE 5  
RAVENNA, OHIO 44266-9297

TO	6/27/00
✓	FILE
	LAND
	CONTRACT
	RETURN FOR FILE

SMARV-CR (200-1a)

June 27, 2000

Subject: Ohio Administrative Code 3745-27-13 - Supplemental Request for Authorization for the Ravenna Army Ammunition Plant

Mr. Christopher Jones  
Director  
Ohio Environmental Protection Agency  
P.O. Box 1049  
Columbus, Ohio 43216-1049

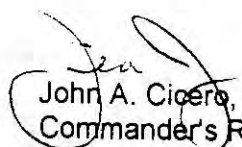
Dear Director Jones:

Please find enclosed the supplemental request for authorization to conduct investigative activities, excavation and soil remediation at three specific Areas of Concern at RVAAP that are regulated under the Ohio Administrative Code 3745-27-13. This supplemental request for authorization was prepared with specific reference to, and in accordance with the original OAC Rule 13 authorization issued for RVAAP. The existing "OAC Rule 13" authorizes investigative activities at several other AOCs at RVAAP.

This request is forwarded for your review and concurrence.

Point of contact is Mr. John Cicero, (330) 358-7311.

Sincerely,

  
John A. Cicero, Jr.  
Commander's Representative

Enclosures

Copies Furnished:

Ms. Eileen Mohr, Ohio Environmental Protection Agency, Division of Emergency and Remedial Response, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087  
Mr. Todd Fisher, Project Coordinator, Ohio Environmental Protection Agency, Division of Emergency and Remedial Response, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087  
Commander, U.S. Army Munitions and Armaments Command (PROV),  
ATTN: SOSMA-ISE-R (Mr. Whelove), Rock Island, IL 61299-5500  
U.S. Army Corps of Engineers, Louisville District, ATTN: CELRL-ED-EK (Mr. Jent),  
P.O. Box 59, Louisville, KY 40201-0059  
Mr. Khodi Irani, MKM Engineers, Inc., 4153 Bluebonnet Drive, Stafford, Texas 77477  
Deputy Commander, Ravenna Training and Logistics Site, ATTN: AGOH-OT-RTLS (LTC Tom Tadsen), 1438 State Route 534 SW, Newton Falls, OH 44444





State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center  
122 South Front St.  
Columbus, OH 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

Lazarus Government Center  
P. O. Box 1049  
Columbus, OH 43216-1049

June 26, 2000

TO	7/28/00
1	CR-COR
1	ENV
	LAND MGR
By MKM	7/28/00
	CONTRACTOR
	RETURN FOR FILE

Mr. John Cicero  
Commander's Representative  
Department of the Army  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9279

**Re: Ravenna Army Ammunition Plant, Portage/Trumbull Counties, AOCs: RVAAP-12, 44, 49, 03**

Dear Mr. Cicero:

By written submissions dated June 23, 2000 and revised June 26, 2000, the Ravenna Army Ammunition Plant (RVAAP) has requested authorization, pursuant to Ohio Administrative Code (OAC) 3745-27-13, to fill, grade, excavate, drill, build, or mine at the following Areas of Concern (AOCs) on the installation property:

- RVAAP - 12 Load Line 12
- RVAAP - 44 Load Line 11/Artillery Primer
- RVAAP - 49 Central Burn Pits
- RVAAP - 03 Open Demolition Area #1

The activities to be undertaken at the AOCs include: drilling; trenching; excavating; bioremediation of explosives-contaminated soils; placement of clean hard fill or backfilling; grading; surgical removal/other removal of unexploded ordnance (UXO) and suspected UXO; surface and sub-surface soil sampling; well point and monitor well installation and groundwater sampling; and, surface water and sediment sampling. These activities are being conducted under the Department of Defense (DOD) Installation Restoration Program (IRP). The Ohio Environmental Protection Agency (Ohio EPA) Division of Emergency Response (DERR) is providing technical assistance to the Department of the Army (DA), as specified under the Defense - State Memorandum of Agreement (DSMOA).

As part of the technical assistance provided by Ohio EPA DERR, the following documents prepared by various contractors and the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), on behalf of the U.S. Army Corps of Engineers (USACE), have been reviewed and found to be acceptable submissions:

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director



1. Final (March, 1996), "Action Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
2. Final (February, 1996), "Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
3. Final (April, 1996), "Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
4. Final (February, 1996), "Facility-Wide Safety and Health Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
5. Final (July, 1996), "Phase 1 Remedial Investigation Sampling and Analysis Plan, Addendum for High Priority Areas of Concern for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
6. Final (July, 1996), "Phase 1 Remedial Investigation Site Safety and Health Plan, Addendum for High Priority Areas of Concern for the Ravenna Army Ammunition Plant, Ravenna, Ohio";
7. Final (February, 1998), "Phase 1 Remedial Investigation Report for the Phase 1 Remedial Investigation of High Priority Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna, Ohio";
8. "Sampling Plan, Relative Risk Site Evaluation for Ravenna Army Ammunition Plant, Project Number 37-EF-5360-99, Ravenna, Ohio, 19-27 October 1998";
9. Draft (March 2000), "Work Plan and Sampling and Analysis Plan for the Bioremediation Study for Soils From Former Building FJ 904 at Load Line 12 (AOC 12), Ravenna Army Ammunition Plant." This document is currently undergoing final revision consistent with Ohio EPA comments detailed in correspondence dated April 14, 2000.
10. Final (October 1999), Sampling and Analysis Plan, Addendum No. 1 for the Phase 1 Remedial Investigation of Demolition Area #1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio"; and,
11. (March 2000) Installation Action Plan for the Ravenna Army Ammunition Plant.

Based upon the review of the above-referenced documents submitted to the DERR Northeast District Office (NEDO), I have determined that the proposed investigative activities will not result in violation of applicable laws and regulations, will not create a nuisance, and are unlikely to adversely affect the public safety, human health, or the environment. Therefore, you are hereby authorized to perform the above actions in accordance with the above-referenced documents and the Area of Concern (AOC) specific documents that are to be received and reviewed by Ohio EPA DERR prior to the commencement of any intrusive activities. This action does not relieve you of any obligation under other state/federal requirements.

This approval is subject to the following conditions:

1. Any activities conducted at the above-referenced AOCs, must be accomplished in compliance with all applicable state and federal rules, laws and regulations pertaining to environmental protection, including, but not limited to, control of air emissions, control of leachate, surface water run-on and run-off, and protection of groundwater.
2. Any activities undertaken shall not create a nuisance and shall not adversely affect public safety, human health, or the environment.
3. OEPA NEDO DERR, must be given seventy-two (72) hours notice prior to any work commencing on-site.
4. All solid and/or hazardous wastes removed during intrusive activities shall be containerized and securely stored until such time as these materials are properly characterized and disposed of in accordance with Chapter 3734 of the Ohio Revised Code (ORC) and regulations promulgated thereunder.
5. All liquids, semi-solids, industrial wastes and other wastes regulated by ORC Chapter 6111 removed during intrusive activities shall be containerized and securely stored until such time as these materials are characterized and disposed of in accordance with ORC Chapter 6111 and regulations promulgated thereunder.
6. As per Section C(10) of OAC 3745-27-13, upon selection of appropriate disposal facility(ies), the RVAAP must submit to Ohio EPA a copy of a letter of acceptance from the disposal facility(ies).
7. This approval shall allow the RVAAP to conduct the described investigative activities in accordance with the above-referenced documents and the AOC specific documents/workplans. The RVAAP must obtain prior approval from

Mr. John Cicero

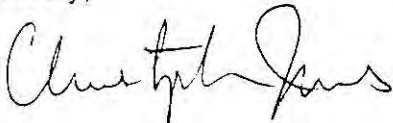
Page 4

the Ohio EPA to perform any other additional activities at the above-referenced AOCs beyond those being approved under this authorization, and prior to commencing intrusive activities at the other AOCs identified at the installation.

You are hereby notified that this action of the Director is final, and may be appealed to the Environmental Review Appeals Commission pursuant to ORC Section 3745.04. The appeal must be in writing and set forth the action complained of and the ground upon which the appeal is based. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of Environmental Protection within three (3) days of filing with the Board. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission  
236 East Town Street  
Room 300  
Columbus OH 43215

Sincerely,



Christopher Jones  
Director

cc: Bonnie Buthker, OEPA, SWDO, OFFO  
Catherine Stroup, CO Legal  
Bob Princic, OEPA, NEDO, DERR  
Eileen T. Mohr, OEPA, NEDO, DERR  
John Jent, USACE Louisville

CF: NKH



OHIO ADMINISTRATIVE CODE 3745-27-13

REQUEST FOR AUTHORIZATION  
FOR THE  
RAVENNA ARMY AMMUNITION PLANT  
RAVENNA, OHIO





## 1. INTRODUCTION

This is a supplemental request for authorization from the Ohio Environmental Protection Agency (OEPA) to conduct investigative activities, excavation and soil remediation at four specific Areas of Concern (AOCs) at the Ravenna Army Ammunition Plant (RVAAP) which is regulated under the Ohio Administrative Code (OAC) 3745-27-13 (Authorization to engage in filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated), hereinafter referred to as OAC Rule 13. An agreement between the RVAAP and the OEPA, Northeast District (documented in a letter from RVAAP to the OEPA, Northeast District, dated January 4, 1996) stipulates that a OAC Rule 13 authorization request be developed according to the requirements of the rule and presented in the Facility-Wide Sampling and Analysis Plan (SAP) covering the AOCs at RVAAP where a hazardous facility or solid waste facility was operated. The original Facility-Wide Sampling and Analysis Plan (USACE 1996a) contained a request for authorization for eleven AOCs for conducting investigative activities. Investigative activities at RVAAP commonly include processes such as those named in the OAC statute, i.e., filling, grading, excavating and drilling. This request for authorization under OAC Rule 13 also addresses measures necessary to ensure that investigative activities (surface soil sampling, groundwater sampling, subsurface soil sampling, surface water and sediment sampling, etc.) necessary to characterize Load Line 12 (RVAAP 12), Load Line 11 (RVAAP 44) Central Burn Pits (RVAAP 49), and Demolition Area # 1 (RVAAP 3) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) are protective of human health and the environment.

The existing "OAC Rule 13" applies only to AOCs addressed under CERCLA at RVAAP where a hazardous waste facility or solid waste facility was operated based on available information. However, as more information is learned about environmental conditions at AOCs at RVAAP, additional AOCs, not designated under this authorization request, may become applicable areas under OAC Rule 13 if evidence indicates that additional safeguards are needed to protect human health and the environment. Should it be determined by the OEPA that additional AOCs are applicable areas under OAC Rule 13, then a formal request will be submitted to the OEPA requesting authorization under this request. Any additional safeguards, if necessary, will be addressed in the supplemental request for each AOC. The status, plans, and schedules for the current characterization and removal activities at RVAAP AOCs are presented in the Installation Action Plan for the RVAAP, Ravenna, OH (RVAAP). The Action Plan is revised annually to reflect current, planned and completed environmental activities at RVAAP.

This supplemental request includes four AOCs that are identified as Load Line 12 (RVAAP-12), Load Line 11 (RVAAP 44), Central Burn Pits (RVAAP 49), and Demolition Area # 1 (RVAAP 3). A detailed history of process operations and waste processes for these AOCs is presented in the *Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 1996) and the *Installation Action Plan* (OSC, 2000).



## 2. LOCATION AND DESCRIPTION - OAC 37-45-27-13(C)(1)

RVAAP is located in northeastern Ohio within Portage and Trumbull Counties, approximately 4.8 kilometers (3 miles) east-northeast of the Town of Ravenna and approximately 1.61 kilometers (1 mile) northwest of the Town of Newton Falls. The installation consists of 21,419 acres (8668 hectares) contained in a 17.7-kilometers (11-mile) by 5.63-kilometers (3.5-mile) tract bounded by State Route 5 and the CSX System Railroad on the south; State Route 534 on the east; the Garrettsville and Berry Roads on the west; and the CONRAIL Railroad on the north. The land use surrounding the installation is primarily farmland with sparse private residences. The Michael J. Kirwan Reservoir is located immediately south of the facility.

RVAAP is a government-owned, contractor-operated, U.S. Army Operations Support Command (OSC) facility. Currently, RVAAP is an inactive facility maintained by the contracted caretaker TolTest, Inc. Table 2-1 presents the RVAAP Command Organization, IRP executing agencies, and lead regulatory agencies.

Over the years, RVAAP handled and stored strategic and critical materials for various government agencies and received, stored, maintained, transported, and demilitarized military ammunition and explosive items. RVAAP maintained the capabilities to load, assemble, and pack military ammunition; however, these operations are inactive. RVAAP is still used to store bulk explosives and for infrequent demolition of UXO. As part of the RVAAP mission, the inactive facilities are in the process of being closed down, buildings being demolished, and equipment decontaminated and liquidated.

The location of the RVAAP facility on a 7.5 minute USGS topographic map is provided in the *Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 1996). The location, description, and operating history for the AOCs at RVAAP, including those currently covered under this OAC Rule 13 request for authorization, are also included in the Preliminary Assessment and the Installation Action Plan. Figure 1 is an installation map showing the general location of the AOCs.

Table 2-1. RVAAP Organization Responsibilities

Command Organization	
Major Command: U.S. Army Material Command	
Major Subordinate Command: U.S. Army Munitions and Armaments Command (PROV)	
Installation: RVAAP, Commander's Representative	
Installation Contractor: TolTest, Inc.	
Installation Restoration Program Executing Agency	
U.S. Army Corps of Engineers, Louisville District	
U.S. Army Munitions and Armaments Command (PROV)	
Regulatory Agencies	
Ohio Environmental Protection Agency, Northeast District	
U.S. Environmental Protection Agency, Region V	



### 3. INVESTIGATION ACTIVITIES - OAC 3745-27-13(C)(2)

The planned activities for which authorization is requested are as follows:

- ◆ Drilling: Soil borings may be drilled in and adjacent to former disposal areas in order to collect surface and subsurface soil samples for laboratory analyses to characterize potential contaminants, or to characterize lithology.
- ◆ Trenching: Trenches may be excavated in some disposal areas to evaluate the nature of buried waste in former landfills for which records are limited or unavailable. Samples of waste materials and adjacent subsurface soils may be collected for laboratory analysis to characterize potential source materials and any contamination resulting from leaching. Trenches will not penetrate groundwater zones (Perched or Water Table).
- ◆ Surface water, Surface and Subsurface Soil, Sediment and Groundwater sampling: Samples may be collected from streams, and other drainage areas (culverts, ponds, pits and sumps), surface and subsurface soils and sediments for a field or laboratory analysis to characterize these media prior to implementing any disposal or cleanup activity.
- ◆ Excavation: Following sampling and laboratory analysis, soil may be excavated to remove any immediate threat to human health and environment. The excavated soil may be disposed off-site or bioremediated prior to disposal on-site.
- ◆ Bioremediation: Explosive contaminated soils will be bioremediated following excavation as part of the clean-up efforts.
- ◆ Placement of clean fill material or Backfilling: All excavated areas will be backfilled with an approved backfill source.
- ◆ Grading: Removal of contaminated soils during interim or emergency actions will require the proper grading of the ground surface.
- ◆ Monitoring well installation: Boreholes may be drilled to install monitoring wells in and adjacent to an AOC to collect groundwater samples for characterization of contaminants.
- ◆ Piezometer and well point installation: Piezometer and well points may be installed to determine the depth to shallow groundwater.
- ◆ Surgical removal/other removal of UXO and suspected UXO: Interim and emergency removals of hazardous or solid waste including UXO and OE in soils may require the excavation and disposal of contaminated soils and associated materials.

These activities are necessary to further characterize and remediate the four AOCs leading to the restoration of these under the U.S. Department of Defense (DoD) Installation Restoration Program (IRP). The approach to implementing CERCLA under



the IRP is described in Section 1 of the *Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2000) and the *Installation Action Plan*. The characterization of AOCs under this supplemental authorization includes investigative activities to determine the concentrations and define the horizontal and vertical extent of contaminants in soil, evaluate the nature of buried solid and/or hazardous waste (UXO and OE) materials and the potential impact from leaching of contaminants on adjacent soils, groundwater, surface water, and sediment. The specific activities during investigation, excavation and remediation for each AOC relevant to this supplemental request will be defined in an investigative-specific SAP addendum to the Facility-Wide SAP and submitted in draft for OEPA review and comment, and as a final document for OEPA review prior to conducting any investigative activities at an AOC.

#### **4. PREVIOUS AND EXISTING PERMITS, APPROVALS, AND ORDERS – OAC 3745-27-13(C)(3)**

There are no previous or existing permits, approvals, or orders pertaining to the AOCs for which authorization under OAC Rule 13 is being requested. The regulatory history of AOCs at RVAAP is presented in the Preliminary Assessment and the facility Action Plan.

#### **5. LETTERS OF ACKNOWLEDGMENT - OAC 3745-27-13(C)(4)**

All parcels of land to which this supplemental request for authorization pertains are owned by the U.S. Army. Because of the interior locations of the AOCs within the boundaries of the RVAAP facility, all adjacent parcels are similarly owned by the U.S. Army. Consequently, no letters of acknowledgment are included in this request for authorization under OAC Rule 13.

#### **6. LETTERS OF NOTICE - OAC 3745-27-13(C)(5)**

Letters of notice of this request for authorization are required, under the provisions of the OAC Rule 13, to be sent to the board of health for the health district and the local zoning authority for the area within which the facility is located. The Departments of Health for both Trumbull and Portage Counties, Ohio, have been notified and the copies of the letters of notice are attached to this request for authorization as Attachments I and II. Because the Federal Government owns the RVAAP, local zoning authorities do not have jurisdiction over the facility; therefore, notices of this request for authorization were not sent to these agencies. The local zoning authorities were contacted to confirm their jurisdiction at RVAAP.

#### **7. HISTORY OF HAZARDOUS WASTE OR SOLID WASTE TREATMENT, STORAGE OR DISPOSAL OPERATIONS - OAC 3745-27-13(C)(6)**

A summary of all currently known hazardous waste and solid waste treatment, storage and disposal facilities at RVAAP is presented in the Preliminary Assessment, USACHPPM Report and the Installation Action Plan. The histories of the AOCs proposed under this supplemental authorization request are included in the individual work plans for each AOC.



## **8. CLOSURE ACTIVITIES - OAC 3745-27-13(C)(7)**

Hazardous waste and solid waste treatment, storage and disposal operations have ceased at all AOCs at RVAAP. Under the CERCLA process, as presented in Section 1 of the Facility-Wide SAP, the investigation of potentially contaminated AOCs is the first step in the remediation and closure process. A summary of all known previous closure activities for AOCs at RVAAP is presented in the Preliminary Assessment, and additional information is presented in the facility Action Plan. With reference to the this supplemental request, the building FJ-904 at Load Line 12 has been demolished to ground surface and the Pink Waste Water Treatment Plant at Load Line 12 is being closed as per Division of Surface Water protocol. The NPDES permit was revoked on May 01, 2000.

## **9. INVESTIGATION METHODS AND PROCEDURES - OAC 3745-27-13(C)(8)**

The investigation activities, excavation and remediation of AOCs at RVAAP will be conducted in accordance with facility-wide work plans and investigation-specific work plan addenda developed to meet the requirements established by the OEPA and the U.S. Environmental Protection Agency (EPA), Region V, under CERCLA. These plans contain detailed methods and procedures for performing the described field activities. Facility-Wide work plans consist of the 2000 *Action Plan*, the *Facility-Wide SAP*, and the *Facility-Wide Safety and Health Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 1996 - and revised in 2000). The intent of the facility-wide documents is to guide the investigation activities, to the extent practical, expected to be common to the investigation of all AOCs at RVAAP. For each AOC under the supplement request, addenda to the facility-wide work plans will be developed that contain additional project-specific information regarding the investigation, excavation and remediation activities and implementing methods and procedures. The investigation of any AOC can not be implemented without the Facility-Wide SAP, FSHP, and an investigation-specific addendum for each plan. The contents and relationship of the facility-wide work plans and investigation-specific addenda are addressed in greater detail in Section 1 (Introduction) of the Facility-Wide SAP. The facility-wide work plans and their addenda will be reviewed and commented on by the OEPA prior to initiating investigation activities. Disposal of all generated investigation derived waste will be in accordance with applicable state and federal rules, laws and regulations.

Detailed procedures describing the investigative methods are contained in the Field Sampling Plan (FSP) part of either the Facility-Wide SAP or the AOC-specific SAP addenda.

## **10. ENVIRONMENTAL PROTECTION - OAC 3745-27-13(C)(9)**

As previously described in Section 9 of this request, the investigation, excavation and remediation of AOCs at RVAAP will be conducted in accordance with the facility-wide work plans and investigation-specific work plan addenda developed to meet the requirements established by the OEPA and the EPA, Region V, under CERCLA. These plans contain detailed methods and procedures for performing the described field



activities. The primary focus of these documents is to produce legally defensible data and results, and ensure protection of human health and the environment. Consequently, the investigation methods and procedures cited in Section 9 are prepared to be compliant with applicable state and federal rules, laws and regulations for conducting CERCLA investigations. These procedures contain provisions for protection of the environment from investigative activities, excavation and remediation. In addition the Facility-Wide SAP and its addenda contain provisions (Section 7, FSP) for the management of Investigation-Derived Waste (IDW) in accordance with applicable state and federal rules, laws and regulations. Provisions are included for the treatment, storage, and disposal of IDW in accordance with applicable state and federal rules, laws and regulations.

#### **11. REMOVAL OF SOLID OR HAZARDOUS WASTE, OR POTENTIALLY CONTAMINATED SOILS - OAC 3745-27-13(C)(10)**

During the investigation, excavation and remediation of these four AOCs at RVAAP, it is expected that the only contaminated or hazardous IDW generated as a result of the proposed field activities will include excess soil and drill cuttings from soil borings, purged groundwater, compost piles (windrows) on conclusion of the bioremediation pilot test, and equipment decontamination water and PPE. Section 7 of the FSP in the Facility-Wide SAP and the investigation-specific SAP addenda contain provisions for sampling, analysis, treatment, storage and disposal of IDW in accordance with applicable state and federal rules, laws and regulations. The soil cuttings will be included with the excavated soils and treated through the soil windrows. The soil from the compost windrows after the pilot test will be analyzed at an approved laboratory and will be spread over or stockpiled at a pre-approved location at RVAAP following an approval from the OEPA or disposed of off-site. All poly, PPE, miscellaneous debris will be disposed appropriately in accordance with the federal, state and local rules, regulations and laws. Section 7 of the FSP in the Facility-Wide SAP requires submittal of a copy of a letter of acceptance from a disposal facility be submitted to the OEPA prior to any removal of IDW from an AOC.

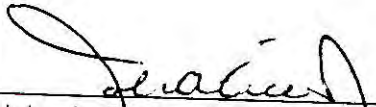
#### **12. CLOSURE PROCEDURES - OAC 3745-27-13(C)(11)**

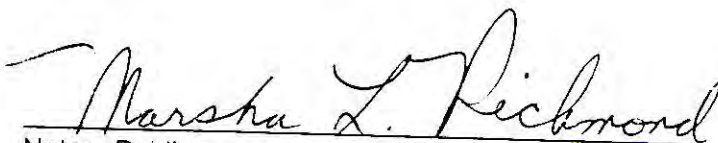
The formal process for completing regulatory closure of AOCs at RVAAP regulated under CERCLA is described in Section 1 (Introduction) of the Facility-Wide SAP, and additional information regarding closure/remediation of AOCs under CERCLA is presented in the 2000 *Action Plan*. Because the CERCLA process is iterative and requires a considerable amount of time in which to implement a remediation, the FSP part of the Facility-Wide SAP and the investigation-specific SAP addenda contain provisions for reestablishing AOC conditions following completion of characterization activities to mitigate the impact to human health and the environment from these activities until such time that the AOC can be remediated, if necessary, under the CERCLA process. These reestablishment measures are described for each investigative activity presented in the FSP part of the Facility-Wide SAP and investigation-specific addenda.



13. OAC RULE 13 AUTHORIZATION REQUEST SIGNATURES –  
OAC 3745-27-13(C)(12)(D)(1)(d)

The statements and assertions of fact made in this application are true and complete to my knowledge and comply fully with applicable state requirements as stated in OAC Rule 3745-27-13.

  
\_\_\_\_\_  
John A. Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant

  
\_\_\_\_\_  
Notary Public

**MARSHA L. RICHMOND, Notary Public**  
**STATE OF OHIO**  
**My Commission Expires October 15, 2022**



State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

September 28, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
OH5-210-020-736  
PORTAGE COUNTY  
NOTICE OF VIOLATION

DATE	9/29/00
CR-COR	
ENV	
CONTRACTOR	
RETURN FOR FILE	

John Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, Ohio 44266-9297

RECEIVED  
SEP 29 2000

Dear Mr. Cicero:

1130 Hrs

On September 19, 2000, Cindy Dabner, representing the U.S. EPA and I, representing the Ohio Environmental Protection Agency (OEPA), Division of Hazardous Waste Management (DHWM), conducted a hazardous waste compliance evaluation inspection (CEI) of Ravenna Arsenal Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. The purpose of the inspection was to determine your facility's compliance with Ohio's hazardous waste laws and rules as adopted under the Ohio Revised Code (ORC) Chapter 3734 and Chapter 3745 of the Ohio Administrative Code (OAC). Mark Patterson represented the facility.

From April 1, 1950 through September 30, 1993, RVAAP operated the facility, located at the address above. The facility, owned by the United States Army, engaged in the storage and treatment of munitions and munition derivatives. RVAAP operated an Open Burning ("OB") area, an Open Detonation ("OD") area, a deactivation furnace, pinkwater treatment plants and a hazardous waste storage area in accordance with the interim standards found in the Ohio Administrative Code ("OAC") Chapters 3745-65 et seq. since 1980. Currently RVAAP is undergoing closure under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), and the Resource Conservation and Recovery Act (RCRA) at this site. Hazardous waste generated at the site includes: lead-based paint chips, mercury switches, lead anchors, acetone, and explosive material.

A copy of our checklist is enclosed for your information. At the time of the inspection, RVAAP was evaluated for compliance with applicable Hazardous Waste Regulations. The inspection revealed that RVAAP is in violation of the following regulations:

**VIOLATIONS:**

1. RVAAP failed to have all waste generated at the facility evaluated, in violation of Ohio Administrative Code (OAC) rule 3745-52-11.

It was noted during the inspection that a 55-gallon drum of "paint chips" was being managed in Building 1036. The drum was labeled as "Non-hazardous Waste - Paint Chips, pending analysis, dated 5/20/00." According to Mark Patterson, the paint chips are a characteristic hazardous waste for lead. At the time of the inspection Mark Patterson was given several "Hazardous Waste" stickers to place on the container.





To abate this violation, RVAAP shall label the 55-gallon drum with the words "Hazardous Waste", and with the accumulation date. RVAAP shall document compliance by submitting a photograph of the properly labeled drum to the OEPA's Northeast District Office (NEDO).

2. RVAAP failed to have the words "Hazardous Waste", and the date that accumulation began clearly marked on containers in violation of Ohio Administrative Code (OAC) rule 3745-52-34(A)(3) and 3745-52-34(A)(2) respectively.

To abate this violation, RVAAP shall comply with the instruction listed in Violation #1.

3. RVAAP failed to have the name and telephone number of the emergency coordinator posted by the telephone, in violation of OAC rule 3745-52-34(D)(5)(b).

At the time of the inspection, it was noted that some emergency information was posted by the telephone (in Mark Patterson's office), but it lacked the name and telephone number of the emergency coordinator, and the location of fire and spill control equipment. Mark was given a sheet with all applicable information (i.e. location of fire and spill control equipment, telephone number of local fire department and other emergency agencies, name and number of emergency coordinator, etc.) to place by the phone. All that needs to be done is to fill in all pertinent information on the form, and place it by the telephone.

To abate this violation, RVAAP shall post the following by all telephone(s) at or near the location where hazardous waste is being managed:

- a. The name and telephone number of the emergency coordinator(s).
- b. The location of fire and spill control equipment, and, if present, fire alarm(s).
- c. Telephone number of local fire department and other emergency agencies.

RVAAP shall document compliance by submitting a photograph(s) of this information posted by the telephone(s) at or near the location where hazardous waste is being managed.

4. RVAAP failed to test (conduct inspections) on emergency and spill control equipment on a weekly basis in violation of OAC rule 3745-65-33. RVAAP also failed to record the results of the inspections in a log, in violation of OAC rule 3745-65-33(B).

To abate this violation, RVAAP shall test emergency and spill control equipment on a weekly basis. RVAAP shall record the results of the inspections in a log which contains the following [as required by OAC rule 3745-65-33(B)]:

- a. The date and time of the test (inspection);
- b. The name of the person conducting the test;
- c. Any observations made;
- d. The date and nature of any repairs made.

John Cicero, Jr.  
Ravenna Army Ammunition Plant  
September 28, 2000  
Page 3

To document compliance, RVAAP shall submit two weeks of the completed inspection log to the OEPA's NEDO.

5. RVAAP failed to record in a log, all of the results from the inspections done in the container storage area, in violation of OAC rule 3745-66-74(B).

It was noted during the inspection that the inspection log lacked the time that inspections were being conducted, and the name of the inspector (only initials were provided).

To abate this violation, RVAAP shall conduct weekly inspections of the container storage area. RVAAP shall record the results of the inspections in a log which contains the following:

- a. Date and time of inspection
- b. Name of inspector
- c. Observations made during the inspection
- d. Date/nature of any repairs or remedial action

To document compliance, RVAAP shall submit two (2) weeks of the completed inspection log to the OEPA's NEDO.

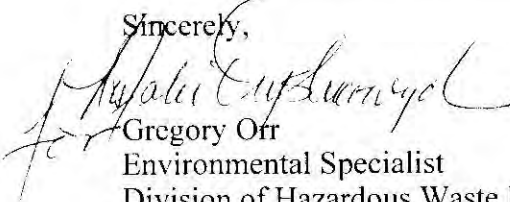
The OEPA strongly encourages pollution prevention as the preferred approach for waste management. The first priority of pollution prevention is to eliminate the generation of wastes and pollutants at the source (source reduction). For those wastes and pollutants that are generated, the second priority is to recycle or reuse them in an environmentally sound manner. You can benefit economically, help preserve the environment and improve your public image by implementing pollution prevention programs. For more information about pollution prevention, including fact sheets or U.S EPA's "Facility Pollution Prevention Guide" (EPA/600.R-92/088), please contact the Ohio EPA Pollution Prevention Section at (614) 64-3469 or this writer.

Failure to list specific deficiencies in this communication does not relieve you from the responsibility of complying with all applicable regulations. Please be advised that present or past instances of non-compliance can continue as subjects of pending or future enforcement actions.

Should you have any questions or concerns, please do not hesitate to call me at (330) 963-1189.

Sincerely,

cc: Natalie Oryshkewych, DHWM, NEDO  
Jarnal Singh, DSIWM, NEDO  
Eileen Mohr, DERR, NEDO  
Diane Kurlich, DDAGW, NEDO  
Linda Neumann, DHWM, CO  
Mark Patterson, RVAAP  
Cindy Dabner, U.S. EPA, Region V

  
Gregory Orr  
Environmental Specialist  
Division of Hazardous Waste Management

GO:cl



# RCRA HAZARDOUS WASTE GENERATOR INSPECTION CHECKLIST

Company: RAVENNA ARSENAL AMMUNITION PLANT EPA ID#: OH5-210-020-736  
 Street: 9451 STATE ROUTE 5 City: RAVENNA  
 County: PORTAGE State: Ohio Zip: 44266-9297  
 Mailing Address: SAME  
 (If different from above)  
 Telephone: (330) 358-7311 Fax #: (330) 358-7314  
 Owner/Operator: SAME  
 (If different from above)  
 Street: \_\_\_\_\_  
 City: \_\_\_\_\_ State: Ohio Zip: \_\_\_\_\_  
 Inspection Date(s): 9/19/00 Time(s): 8:30am  
 Inspection Announced? Yes ☒ NO If so, how much advance notice given? \_\_\_\_\_

	Name	Affiliation	Telephone
Inspectors:	<u>CINDY M. DEBNER</u>	<u>U.S. EA</u>	<u>(312) 886-0743</u>
	<u>GREG ORL</u>	<u>OHIO EPA</u>	<u>(330) 963-1189</u>
Facility Representative:	<u>MARK PATTERSON</u>	<u>RUAP</u>	<u>(330) 258-7311</u>

Generator Classification	Waste Management Activity
<input type="checkbox"/> Conditionally Exempt SQG (CESQG)	<input checked="" type="checkbox"/> Containers
<input checked="" type="checkbox"/> Small Quantity Generator (SQG)	<input type="checkbox"/> Tank(s)
<input type="checkbox"/> Large Quantity Generator (LQG)	<input type="checkbox"/> Other (specify)
<input type="checkbox"/> No Generation	

CESQG: < 100 Kg. (approximately 25-30 gallons) of waste in a calendar month

SQG: Between 100 and 1,000 Kg. (about 25 to under 300 gallons) of waste in a calendar month

LQG: >1,000 Kg. (~300 gallons) of waste in a calendar month or > 1 Kg. of acutely hazardous waste in a calendar month

NOTE: To convert from gallons to pounds: Amount in gallons x Specific Gravity x 8.345 = Amounts in pounds

## POLLUTION PREVENTION

**Note to the Inspector:** This checklist has been developed to help the division in gathering general information about the pollution prevention (P2) practices that the company may have initiated or attempted to initiate. The checklist is also used to:

- ☐ Facilitate P2 discussions;
- ☐ Identify barriers to P2;
- ☐ Define the P2 universe;
- ☐ Identify the need for future P2 initiatives;
- ☐ Identify partnership opportunities; and
- ☐ Link companies with better P2 resources.

As a prelude to completing this checklist the inspector should use the following list of questions as a way to initiate a dialogue concerning P2:

1. Have you tried to reduce the volume of waste (hazardous and nonhazardous) that you generate? N/A
2. What is the largest waste stream that you generate? N/A
3. How important would it be to you to eliminate that waste stream? N/A
4. Does your company understand the reduced regulatory burden and cost saving benefits that eliminating or reducing a waste stream can have? N/A
5. Could you use better housekeeping practices to reduce the amount of waste that you generate? N/A

If the company responds with one of the canned answers below, the appropriate box should be checked. If the company's response does not correspond to one of the options below, please record the answer in the space provided for in the remarks section.

1. Has the company undertaken any P2 activities to reduce the amount of hazardous waste generated? Yes\_\_\_No\_\_\_ N/A X RMK#\_\_\_

a. **If so**, what has the company done to minimize hazardous waste generation?

- ☐ A change in the process resulting in less waste.
- ☐ A change in the product resulting in less waste.
- ☐ Use of fewer and less toxic hazardous raw materials.
- ☐ Better operations/improved housekeeping.
- ☐ On-site recycling/reuse of hazardous materials.
- ☐ Sending waste off-site for recycling/reuse.
- ☐ Other activities (specify): \_\_\_\_\_



b. *If so*, what hazardous wastes have been addressed?

- ☐ Solvents
- ☐ Paint related wastes
- ☐ Industrial process wastes (sludges, slags, contaminated waste waters, etc.)
- ☐ Contaminated oils/hydraulic fluids
- ☐ Off-spec chemicals
- ☐ Fluorescent light bulbs
- ☐ Used batteries
- ☐ Shop rags
- ☐ Other (specify): \_\_\_\_\_

c. *If not*, why hasn't the company considered P2?

- ☐ The company just never thought about it.
- ☐ Lack of information about practical alternatives.
- ☐ Lack of capital to make process changes.
- ☐ Lack of internal management support.
- ☐ The company does not generate enough hazardous waste to consider P2.
- ☐ Other reason given (specify): \_\_\_\_\_

2. Does the company plan to do P2 activities in the future? Yes\_\_\_No\_\_\_ N/A ☒ RMK#\_\_\_
3. Would the company be interested in receiving additional information from Ohio EPA about P2? Yes\_\_\_No\_\_\_ N/A ☒ RMK#\_\_\_
4. Did you give the company information about P2 during the inspection? Yes\_\_\_No\_\_\_ N/A ☒ RMK#\_\_\_
5. Would the company like a P2 assessment? Yes\_\_\_No\_\_\_ N/A ☒ RMK#\_\_\_

*If the company would like a P2 assessment done at their facility, the inspector must give the company representative a copy of Pollution Prevention Assessments for Hazardous Waste Generators document and discuss it with them.*

6. If the company does not want a P2 assessment, why not? WASTE IS ONLY GENERATED FROM COORE ACTIVITIES.

REMARKS

## SMALL QUANTITY GENERATOR REQUIREMENTS

### WASTE EVALUATION

- ① Have all wastes generated at the facility been evaluated? [3745-52-11] Yes ☐ No ☒ N/A ☐ RMK# 1  
*55-gal. drum of paint chip waste (labeled as non-haz)*

### IDENTIFICATION NUMBER

2. Has the generator obtained an EPA ID number? [3745-52-12] Yes ☒ No ☐ N/A ☐ RMK#

### ACCUMULATION OF HAZARDOUS WASTES

3. Has the generator accumulated hazardous wastes in excess of (180/270) days without a permit or an extension from the Director? [3745-52-34; ORC §3734.02(E)(F)] Yes ☐ No ☒ N/A ☐ RMK#

**NOTE:** SQG's shipping waste to a facility greater than 200 miles away can accumulate on-site for 270 days.

4. Is the generator accumulating more than 6,000 kg on site? [2745-52-34(D)(F)] Yes ☐ No ☒ N/A ☐ RMK#

**NOTE:** 6,000 kg = approximately 27, 55-gallon drums. If the facility is accumulating waste for greater than 180/270 days without an extension/permit or is accumulating greater than 6,000 kg on-site, it is classified as a storage facility and TSD standards apply. Complete applicable TSD checklists.

### MANIFEST REQUIREMENTS

5. Are all hazardous wastes either reclaimed under a contractual agreement as defined in OAC rule 3745-52-20(F), or shipped off-site accompanied by a manifest (U.S. EPA Form 8700-2)? [2745-52-20] Yes ☒ No ☐ N/A ☐ RMK#

6. Are wastes reclaimed under a contractual agreement? If so: Yes ☒ No ☐ N/A ☐ RMK# lead

- a. Does the contractual agreement specify the type of waste and frequency of shipment? [3745-52-20(F)(1)(a)] Yes ☒ No ☐ N/A ☐ RMK#

- b. Is the transport vehicle owned and operated by the reclaimer? [3745-52-20(F)(1)(b)] Yes ☒ No ☐ N/A ☐ RMK#

- c. Is a copy of the reclamation agreement kept on-site for at least three years after termination/expiration of the agreement? [3745-52-20(F)(2)] Yes ☒ No ☐ N/A ☐ RMK#



7. Have all hazardous wastes shipped off-site been accompanied by a manifest? (U.S. EPA Form 8700-22) [3745-52-20(A)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

a. Has item I and items 1 through 20 of each manifest been completed? [3745-52-20(B)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

b. Does each manifest designate at least one permitted disposal facility? [3745-52-20(C)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

**NOTE:** U.S. EPA Form 8700-22(A) (the continuation form) may be needed in addition to Form 8700-22. In these situations, item R and items (21) through (35) must also be completed. [3745-52-20(B)]

**NOTE:** The generator may designate on the manifest one alternate facility to handle the waste in the event of an emergency which prevents the delivery of waste to the primary designated facility. [3745-52-20(D)].

8. Has the generator, each transporter, and the owner/operator of the designated facility been provided with a copy of the manifest? [3745-52-22]

Yes ☒ No ☐ N/A ☐ RMK# ☐

9. Since the date of the last inspection, has the transporter been unable to deliver a shipment of hazardous waste to the designated facility? If so:

Yes ☐ No ☒ N/A ☐ RMK# ☐

a. Did the generator designate an alternate TSD facility or give the transporter instructions to return the waste? [3745-52-20(E)]

Yes ☐ No ☐ N/A ☒ RMK# ☐

10. Have the manifests been signed by the generator and initial transporter? [3745-52-34(A)(1)(2)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

11. Has the generator received a returned copy of each completed manifest within 60 days of being accepted by the transporter? If not:

Yes ☒ No ☐ N/A ☐ RMK# ☐

a. Did the generator submit, to Ohio EPA, a copy of the manifest with some indication that the generator has not received confirmation of delivery? [3745-52-42(B)]

Yes ☐ No ☐ N/A ☒ RMK# ☐

12. Are signed copies of all manifests being retained for at least three years? [3745-52-40]

Yes ☒ No ☐ N/A ☐ RMK# ☐

### REMARKS

## LDR REQUIREMENTS

1. Has the generator adequately evaluated all wastes to determine if they are restricted from land disposal? [3745-59-07(A)]
 

Yes ☒ No ☐ N/A ☐ RMK# ☐

  - a. **For determinations based solely on knowledge of the waste:** Is supporting data retained on-site for at least five years? [3745-59-07(A)(5) and (A)(7)]
 

Yes ☐ No ☐ N/A ☒ RMK# ☐
  - b. **For determinations based upon analytical testing:** Is waste analysis data retained on-site for at least five years? [3745-59-07(A)(5) and (A)(7)]
 

Yes ☒ No ☐ N/A ☐ RMK# ☐
2. Does the generator ensure that restricted wastes or treatment residues are not diluted as a method of achieving/circumventing LDR treatment standards? [3745-59-03]
 

Yes ☒ No ☐ N/A ☐ RMK# ☐
3. Has the generator determined each Ohio EPA hazardous waste code applicable to the waste? [3745-59-09(A)]
 

Yes ☒ No ☐ N/A ☐ RMK# ☐
4. Has the generator determined the correct "treatability group(s)" (e.g., wastewater, non-wastewater, etc.)? [3745-59-07(A)]
 

Yes ☒ No ☐ N/A ☐ RMK# ☐
5. Has the generator correctly determined if restricted wastes meet or exceed treatment standards? [3745-59-07(A)]
 

Yes ☒ No ☐ N/A ☐ RMK# ☐
6. Does the generator generate listed waste(s) which also exhibit hazardous characteristics? [3745-59-09] If so:
 

Yes ☒ No ☐ N/A ☐ RMK# ☐

  - a. Has the generator listed waste(s) which also exhibit hazardous characteristics? [3745-59-09(A)]
 

Yes ☒ No ☐ N/A ☐ RMK# ☐

**NOTE:** The generator is not required to identify the treatment standards for the characteristic if the listing covers the associated characteristic (e.g., a FO19/D007 hazardous waste - FO19 being listed due to chromium content and D007 being the characteristic waste code for chromium). [See OAC rule 3745-59-09(B)].

7. Does the generator ship hazardous waste off-site under a tolling agreement? [3745-59-07(A)(10)] If so:
 

Yes ☒ No ☐ N/A ☐ RMK# ☐ <sup>wa</sup>

  - a. Does the generator have an LDR notification (and certification, where applicable) form for the initial shipment of the waste? [3745-59-07(A)(10)]
 

Yes ☒ No ☐ N/A ☐ RMK# ☐



b. Is a copy of the notification/certification retained on-site for at least three years after termination/expiration of the agreement? [3745-59-07(A)(10)]

Yes ☒ No ☐ N/A ☐ RMK#

8. Does the generator ship hazardous waste off-site under a manifest? If so:

Yes ☒ No ☐ N/A ☐ RMK#

a. Does the generator have LDR notification (and certification where applicable) forms for each shipment of waste? [3745-59-07(A)(1) and (A)(2)]

Yes ☒ No ☐ N/A ☐ RMK#

b. Is the generator maintaining LDR notifications/certifications on-site for at least five years? [3745-59-07(A)(7)]

Yes ☒ No ☐ N/A ☐ RMK#

9. Does each notification/certification form contain the following information: [3745-59-07(A)(1) and (A)(2)]

a. EPA hazardous waste codes for each waste?

Yes ☒ No ☐ N/A ☐ RMK#

b. Appropriate treatment standards for each waste?

Yes ☒ No ☐ N/A ☐ RMK#

c. The manifest number?

Yes ☒ No ☐ N/A ☐ RMK#

d. Waste analysis data, where available?

Yes ☒ No ☐ N/A ☐ RMK#

e. Certification signed by the generator or an authorized representative (for wastes meeting treatment standards only)?

Yes ☒ No ☐ N/A ☐ RMK#

10. Does the generator produce a waste that is hazardous at the point of generation, but subsequently excluded from regulation under OAC rules 3745-51-02 through 3745-51-06? [3745-59-07(A)(6)] If so:

Yes ☐ No ☒ N/A ☐ RMK#

a. Is a one-time notice placed in the facility file stating such generation, subsequent exclusion or exemption, and disposition of the waste? [3745-59-07(A)(6)]

Yes ☐ No ☐ N/A ☒ RMK#

**NOTE:** Examples include hazardous wastes discharged to a POTW or to surface water under an NPDES permit, and any characteristic hazardous waste that is rendered nonhazardous via mixing or treatment.

11. Does the generator treat characteristic hazardous waste(s) in a RCRA-exempt unit to render such wastes non-hazardous? If so:

Yes ☐ No ☒ N/A ☐ RMK#

a. Are treated waste(s) sent to a licensed solid waste disposal facility?

Yes ☐ No ☐ N/A ☒ RMK#

i. Does the generator submit a notification and certification to the Director which contains the following:

a. Name and address of the facility receiving the waste? [3745-59-09(D)(1)(a)]

Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

b. A description of the waste, including EPA hazardous waste numbers and treatability group? [3745-59-09(D)(1)(b)]

Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

c. The treatment standards applicable to the waste at the initial point of generation? [3745-59-09(D)(1)(c)]

Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

ii. Is the certification signed by an authorized representative and does it contain the language in OAC rule 3745-59-07(B)(5)(a)? [3745-59-09(D)(2)]

Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

**NOTE:** An example of a RCRA-exempt unit would include an elementary neutralization unit or a wastewater treatment unit as defined by OAC rule 3745-50-10.

**REMARKS**



## EMERGENCY PROCEDURES/PREPAREDNESS AND PREVENTION

1. Is an emergency coordinator available at all times? [3745-52-34(D)(5)(a)] Yes ☒ No ☐ N/A ☐ RMK# ☐
2. Has the following been posted by the telephone: [3745-52-34(D)(5)(b)]
- a. Name and telephone number of emergency coordinator? Yes ☐ No ☒ N/A ☐ RMK# ☐
- b. Location of fire and spill control equipment, and, if present, fire alarm(s)? Yes ☒ No ☐ N/A ☐ RMK# ☐
- c. Telephone number of local fire department? Yes ☒ No ☐ N/A ☐ RMK# ☐
3. Are employees familiar with waste handling and emergency procedures? [3745-52-34(D)(5)(c)] Yes ☒ No ☐ N/A ☐ RMK# ☐
4. Is the facility operated to minimize the possibility of fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste? [3745-65-31] Yes ☒ No ☐ N/A ☐ RMK# ☐
5. Does the generator have the following equipment at the facility if it is required due to the actual hazards associated with the waste: [3745-65-32(A)(B)(C)(D)]
- a. Internal alarm system? Yes ☐ No ☒ N/A ☒ RMK# ☐
- b. Emergency communication device? Yes ☒ No ☐ N/A ☐ RMK# ☐
- c. Portable fire control, spill control and decon equipment? Yes ☒ No ☐ N/A ☐ RMK# ☐
- d. Water of adequate volume/pressure? Yes ☐ No ☒ N/A ☐ RMK# ☐
6. Is emergency equipment tested (inspected) on a weekly basis and maintained as necessary? [3745-65-33] Yes ☐ No ☒ N/A ☐ RMK# ☐
7. Are emergency equipment tests (inspections) recorded in a log that includes the following information: [3745-65-33(B)]
- a. Date and time of test? Yes ☐ No ☒ N/A ☐ RMK# ☐
- b. Name of person conducting the test? Yes ☐ No ☒ N/A ☐ RMK# ☐
- c. Observations made? Yes ☐ No ☒ N/A ☐ RMK# ☐

d. Date/nature of any repairs?

Yes \_\_\_ No ☒ N/A \_\_\_ RMK# \_\_\_

8. Do personnel have immediate access to a communication device when handling hazardous waste (*unless the device is not required under OAC 3745-65-32*)? [3745-65-34]

Yes ☒ No ☐ N/A \_\_\_ RMK# \_\_\_

9. Is adequate aisle space provided for unobstructed movement of emergency or spill control equipment? [3745-65-35]

Yes ☒ No ☐ N/A \_\_\_ RMK# \_\_\_

10. Has the generator attempted to familiarize emergency authorities with possible hazards and facility layout? [3745-65-37(A)]

Yes ☒ No ☐ N/A \_\_\_ RMK# \_\_\_

11. Where authorities have declined to enter into arrangements/agreements, has the generator documented such a refusal? [3745-65-37(B)]

Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

#### REMARKS



# SATELLITE ACCUMULATION AREA REQUIREMENTS [3745-52-34(C)(1)]

1. Does the generator ensure that satellite accumulation area(s):

a. Are at or near a point of generation?

Yes ☒ No ☐ N/A ☐ RMK# ☐

b. Are under the control of the operator of the process generating the waste?

Yes ☒ No ☐ N/A ☐ RMK# ☐

c. Do not exceed a total of 55 gallons of hazardous waste?

Yes ☒ No ☐ N/A ☐ RMK# ☐

d. Do not exceed one quart of acutely hazardous waste at any one time?

Yes ☐ No ☐ N/A ☒ RMK# ☐

e. Containers are marked with the words "Hazardous Waste" or other words identifying the contents?

Yes ☐ No ☒ N/A ☐ RMK# ☐ *SALE LAB there were paint chips waste limited as "non-hazardous"*

**NOTE:** The 55 gallon limit applies to the area itself, and not to each individual waste stream accumulated in the area. The inspector should refer to Ohio EPA's November 1994 Guidance on the Location of Satellite Accumulation Areas.

2. Is the facility accumulating hazardous waste(s) in excess of the amounts listed in either 1(c) or 1(d)? If so:

Yes ☐ No ☒ N/A ☐ RMK# ☐

a. Did the generator comply with 3745-52-34(A) or other applicable generator requirements within three days?

Yes ☐ No ☐ N/A ☒ RMK# ☐

b. Did the generator mark the container(s) holding the excess with the accumulation date when the 55 gallon (one quart) limit was exceeded?

Yes ☐ No ☐ N/A ☒ RMK# ☐

## USE AND MANAGEMENT OF CONTAINERS

3. Has the generator marked containers with the words "Hazardous Waste" [3745-52-34(D)(4)]

Yes ☐ No ☒ N/A ☐ RMK# ☐ *See statement*

4. Is the accumulation date on each container? [3745-52-34(D)(4)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

5. Are hazardous wastes stored in containers which are: [3745-52-34(D)(4)]

a. Closed (except when adding/removing wastes)? [3745-66-73(A)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

b. In good condition? [3745-66-71]

Yes ☒ No ☐ N/A ☐ RMK# ☐

c. Compatible with wastes stored in them? [3745-66-72]

Yes ☒ No ☐ N/A ☐ RMK# ☐

d. Handled in a manner which prevents rupture/leakage?  
[3745-66-73(B)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

6. Is the container accumulation area inspected weekly?  
[3745-66-74]

Yes ☒ No ☐ N/A ☐ RMK# ☐ *By MKR CONSULTANT*

7. Are inspections described in Question No. 6 recorded in a log which contains: [3745-66-74(B)]

a. Date and time of inspection?

Yes ☐ No ☒ N/A ☐ RMK# ☐

b. Name of inspector? *only initials*

Yes ☐ No ☒ N/A ☐ RMK# ☐

c. Observations made during the inspection?

Yes ☒ No ☐ N/A ☐ RMK# ☐

d. Date/nature of any repairs or remedial action?

Yes ☒ No ☐ N/A ☐ RMK# ☐

8. Are containers of ignitable and/or reactive hazardous waste(s) stored away from materials that they may react with in a hazardous manner? [3745-66-77(C)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

#### PRE-TRANSPORT REQUIREMENTS

9. Does the generator package/label its hazardous waste in accordance with the applicable DOT regulations? [3745-52-30, 3745-52-31 and 3745-53-32(A)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

10. Does each container <110 gallons have a completed hazardous waste label? [3745-52-32(B)]

Yes ☒ No ☐ N/A ☐ RMK# ☐

11. Before off-site transportation, does the generator placard or offer the appropriate DOT placards to the initial transporter? [3745-52-33]

Yes ☒ No ☐ N/A ☐ RMK# ☐

#### REMARKS



## TANK SYSTEM REQUIREMENTS

1. Is each tank marked with the words "Hazardous Waste"? [3745-52-34(A)(3)] Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

## TANK SYSTEM OPERATING REQUIREMENTS (OAC 3745-66-92(B))

2. Is the SQG complying with the following operating requirements of OAC 3745-66-992(B):
- a. Is the accumulation of ignitable or reactive waste done in accordance with precautionary measures of 3745-65-17(B)? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
- b. Does the SQG ensure that wastes are not placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode or fail? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
- c. Are uncovered tanks operated with 2 feet of freeboard? Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
- i. **If not**, is the tank equipped with a containment structure, drainage control system, or diversion structure with a capacity that equals or exceeds the volume of the top 2 feet of the tank? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
- ii. **If waste is continuously added to the tank:** Is the tank equipped with a waste feed cut-off or bypass system? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

## TANK SYSTEM INSPECTION (OAC 3745-66-992(C))

3. Does the generator inspect the following: [3745-66-992(C)]:
- a. Discharge control equipment (daily)? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
- b. Data from monitoring equipment (daily)? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
- c. The level of the waste in the tank (daily)? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
- d. The tanks construction material (weekly)? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
- e. The area surrounding the tank (weekly)? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

**TANK SYSTEM CLOSURE REQUIREMENTS (OAC 3745-66-992(D))**

4. Upon closure of the tank did the SQG remove all hazardous waste from the tank system in compliance with OAC 3745-66-992(D)? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

**TANK SYSTEMS STORING IGNITABLE OR REACTIVE WASTES (OAC 3745-66-992(E) & (F)))**

5. For tanks used to store ignitable or reactive wastes, has the owner/operator complied with **one of the following**: [3745-66-992(E)]
- a. Is the waste stored or treated to protect it from any materials or conditions that may cause the waste to ignite or react? [3745-66-992(E)(1)(b)] Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
- b. Is the tank used solely for emergencies? [3745-66-992(E)(1)(c)] Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
6. If ignitable or reactive waste is stored in covered tanks, are protective distances maintained between the tanks and any public streets, alleys, or adjoining property lines as required by the NFPA Flammable and Combustible Liquid Code (1977 or 1981)? [3745-66-992(E)(2)] Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
7. Have incompatible wastes, or incompatible wastes and materials been placed into the same tank? [3745-66-992(F)] Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
- If so*, have the requirements of 3745-65-17(B) been met? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
8. Have hazardous wastes been placed in an unwashed tank which previously held an incompatible waste or material? [3745-66-992(F)(2)] Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
- If so*, have the requirements of 3745-65-17(B) been met? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

**REMARKS**



## ENFORCEMENT ACTION TRACKING

9/28/2000 NOV entered  
into EQR on 10/2/2000  
Mark Felt

**IMPORTANT NOTE:** The EQR software is undergoing modifications to reflect recent changes in the definition of an ENF (Ref. 28 January 2000 memo: "Change in the Definition of What Constitutes an Enforcement Action"). Forthcoming software changes will more accurately reflect new policy and guidance. Until these modifications are complete the software will continue to require that all compliance indicators (Notices of Violation, Warning Letters and Lawsuits) be reported in the ENF section.

**Enforcement Actions (and other compliance actions, such as Warning Letters, Lawsuits and Compliance Agreements) should be entered into EQR as soon as they are received.** A separate entry must be made for each action received by the installation. All fields must be answered, including the reason for non-compliance, finding descriptions, milestone descriptions, etc. All entries should be validated/updated at least quarterly to ensure accurateness. Careful attention should be given to the Milestone related fields as they may warrant frequent changes.

**1. ENFORCEMENT ACTION ID:**

This Identification number is automatically generated by the EQR system and is unique to a specific enforcement action.

**2. REGULATORY/STATUTORY REQUIREMENT:**

Choose the statute, for example CWA or RCRC, under which the Installation Notice of Violation (INOV), or other compliance indicator (warning letter, lawsuit) was issued From the picklist. **This field must be filled out.** Enter "Other" for any violation not included in the statutory picklist. ENFs pertaining to affirmative procurement, CERCLA, FIFRA, NEPA, NCA or EPCRA should also be entered as "Other".

**3. ENFORCEMENT ACTION TYPE:**

**IMPORTANT NOTE:** The EQR software is undergoing modifications to reflect recent changes in the definition of an ENF (Ref. 28 January 2000 memo: "Change in the Definition of What Constitutes an Enforcement Action"). Forthcoming software changes will more accurately reflect new policy and guidance. Until these modifications are complete the software will continue to require that all compliance indicators (Notices of Violation, Warning Letters and Lawsuits) be reported in the ENF section.

The type of enforcement notice sent to your installation. **This field must be filled out.** **IMPORTANT NOTE:** The EQR software is undergoing modifications to reflect recent changes in the definition of an ENF (Ref. 28 January 2000 memo: "Change in the Definition of What Constitutes an Enforcement Action"). Forthcoming software changes will more accurately reflect new policy and guidance. Until these modifications are complete the software will continue to require that all compliance indicators (Notices of Violation, Warning Letters and Lawsuits) be reported in the ENF section. One written enforcement action, which cites violations of one statutory requirement, counts as one INOV (warning letter or lawsuit) regardless of the number of individual violations, findings or citations listed in it. If the enforcement action cites violations of more than one statutory requirement, count it as multiple INOVs, and record one INOV under each of the applicable statutory requirement categories. Do not include items found, to be out of compliance, during either internal or other DoD component reviews, compliance reviews or audits. These are not included in EQR's definition of an enforcement action. [DODI 4715.6].

**NOTE:** All official notices from a regulating entity must be evaluated based upon the above criteria. If an installation is uncertain about the appropriate classification of an official notice, they are encouraged to seek clarification or help from their MACOM. MACOMs may request assistance from the legal staff of U.S. Army Environmental Center (USAEC), which will coordinate a timely review by the Regional Environmental Office, Office of the Director of Environmental Programs (ODEP) and the Judge Advocate General, Environmental Law Division.

The installation's receipt of the enforcement action (ENF) occurs when a state/federal employee is served either by mail or personal service. The ENF usually is sent to the installation responsible for the site of the violation, not the Environmental Office. The Environmental Office may not even become aware of the ENF until many weeks have passed.

**I. COMPLIANCE ACTIONS GENERALLY CONSIDERED TO BE AN ENF/INOV**

An ENF is a written notification of any violation of an environmental law or regulation by the EPA, or another authorized federal, State, or local regulatory agency, requesting compliance with the alleged violated provision. For the purposes of the NHPA (National Historic Preservation Act), the SHPO (State Historic Preservation Officer) and the ACHP (Advisory Council on Historic Preservation) are regulatory authorities. One written notification counts as one NOV, regardless of the number of individual findings, violations or citations, it contains. Do not include deficiencies noted during an internal or DOD environmental audit or review.

Regulatory agencies commonly issue written statements notifying, or acknowledging, that the installation is due to perform certain regulatory or permit investigation/remediation required actions. These are not necessarily initiating an enforcement action, for example when a regulator responds to an installation's report of a release. When the regulator is not informing the installation that it is out of compliance and ordering that it get into compliance, such a notification is a Warning Letter not an ENF.



The following notices, typically constitute an ENF (INOV) as defined in the EQR. Given the differences in nomenclature used by various state and local entities, it is important to review each notification individually and, as needed, to request interpretation assistance. Ultimately, each installation makes the final determination of what constitutes an ENF.

- a. Administrative Order (AO): A formal written notice by a federal, state, or local regulator ordering compliance with, specific alleged violated environmental law or regulation. These are issued either when a INOV has not brought about compliance, or as a first notice of an enforcement action for alleged noncompliance with applicable laws or regulations. Under most schemes, if the respondent does not reply to the AO, it is assumed the respondent is agreeing to the charges. An AO states that there are no questions of fact to resolve, and respondent's failure to respond is considered agreement, therefore the issuing agency is ordering the installation to comply. If the AO is not complied with, court action is usually taken.
- b. Compliance Order (CO): Essentially, an AO (Administrative Order) that in EQR is treated like an AO.
- c. Field Citation (FC): A form of INOV issued by the inspector in the field. A Field Citation serves as legal notice and is enforceable under law.
- d. Finding Of Alleged Violation (FOAV): Essentially a INOV that in EQR is treated like an ENF.
- e. Finding Of Violation (FOV): The same as a INOV and in EQR is treated like an ENF.
- f. Notice of Deficiency (NOD): To be classified as an ENF, the NOD must have been issued in an enforcement context. In that context, the NOD functions as a INOV. When a NOD is received related to a permit action, the NOD is not classified as an ENF and is reported in EQR as a Warning Letter.
- g. Notice of Noncompliance (NON): The same as a INOV and in EQR is treated like an ENF.
- h. Proposed Order On Consent (POOC): Essentially an INOV, that in EQR is treated like a ENF.
- i. Report Of Violation (ROV): Similar to an INOV and in EQR is treated like an ENF.
- j. Violation Letter (VL): Similar to an INOV, in that compliance is demanded and a time frame for compliance is issued. EQR treats VLs like ENFs. Do not confuse a VL with WL (Warning Letter), a WL is not classified as a ENF.

## **II.COMPLIANCE ACTIONS GENERALLY NOT CONSIDERED TO BE AN ENF/INOV**

The following notices typically do not constitute a INOV (ENF) as defined in the EQR. However, given differences in nomenclature used by various state and local entities, it is important to review each notification individually and, as needed, to request interpretation assistance. Ultimately, each installation makes the final determination of what constitutes an ENF.

- a. A Notice To Comply (NTC) typically is not an enforcement action. NTCs are most commonly issued to owners of underground storage tanks after a release has been confirmed. Essentially, the NTC lists all the requirements the regulated party will have to comply with to investigate the site properly, and establishes a timeframe when each step is to be completed. If the NTC is not complied with, an ENF is usually issued to obtain compliance, however, the NTC itself is not considered to be an ENF.
- b. A Notice of Potential Liability (NPL) is not an enforcement action. An NPL is issued by the EPA, for a CERCLA site, informing the recipients that they are considered a Responsible Party (RP). Such a letter invites the responsible party(s) to discuss the possibility of the recipient's clean up of the site to avoid court action.
- c. Notice of Significant Noncompliance (NOSN) is not an enforcement action. NOSNs are issued to entities that the regulator believes have established a poor environmental compliance record. Installations that receive a NOSN can generally expect to receive more intensive scrutiny, compliance requests, and enforcement actions. When EPA issues a NOSN the recipient is placed on the EPA's Federal Facilities Significant Noncompliance list. Neither the receipt of a NOSN, nor the placement of an installation on the list, should be reported as an ENF.
- d. Pre-Enforcement Conference Letter (PECL) is not an enforcement action. The PECL is a notice in which the regulator informs the regulated party of all the findings and violations found, and requests that a conference be scheduled with the regulator discuss the charges and the timeframe for compliance.

**General Guidance on Interpretation of What Constitutes an ENF:** All official notices from a regulating entity must be



evaluated based upon the above definition of an ENF. If an installation is uncertain about the appropriate classification of an official notice, they are encouraged to seek clarification or help from their MACOM. MACOMs may request assistance from the legal staff of U.S. Army Environmental Center (USAEC), which will, as appropriate, coordinate a timely review by the Regional Environmental Office, Office of the Director of Environmental Programs (ODEP) and the Judge Advocate General, Environmental Law Division. However, it will always be the installation's prerogative to make the final determination whether or not official notification constitutes an ENF. Installations are to continue to report ENFs in accordance with AR 200-1, paragraph 15-7.b.

#### **OTHER COMPLIANCE INDICATORS:**

In addition to enforcement actions, EQR will continue to track the other compliance indicators: Compliance Agreements (CMPA), lawsuit (LS), and Warning Letter (WL), which are described in this section.

##### **A. COMPLIANCE AGREEMENT (CMPA)**

The basic requirement for classification of a Compliance Agreement (CMPA) as an enforcement is that it was negotiated between the regulator and the installation. Such a negotiated agreement administratively resolves all past INOVs covered under the agreement. The status of all the findings in the INOVs covered by the CMPA are marked as Administratively Resolved in the Finding Description. The word "administratively" is emphasized, because all the past INOVs covered by the negotiated agreement are resolved only in an administrative sense. A negotiated agreement in no way negates the need to correct the instances of noncompliance for which the original INOVs were issued. When an INOV is administratively resolved and a CMPA is opened, all of the applicable findings of the INOV should become milestones in the CMPA, and new milestones should be entered in the database. If you have a CMPA, one of the following Agreement Types must also be selected:

1. Federal Facility Compliance Agreements (FFCA): Similar to a Consent Agreement, but follows special content guidelines for agreements between two federal agencies. This only applies to an agreement with a federal regulator.
2. Interagency Agreement (IAG): Used only in CERCLA actions. The Army uses the term IAG in place of a Federal Facility Compliance Agreement (FFCA).
3. OTHER: Some types of Compliance Agreements fall into the "other" category. These are generally forms of CMPAs with non-federal regulators.
  - a. Consent Agreement (CA): A negotiated agreement (hence, the word consent) between the regulator and the respondent, establishing facts agreed to by both sides. There is a section explaining what actions the respondent will perform and in what time frame such actions will occur. To demonstrate command attention to the situation, most regulators request that the commander, or the commander's designated representative, sign for the installation. If required, the method of enforcement action, usually legal action, is stated in the agreement. A CA usually is issued to obtain compliance for outstanding INOVs, and is a way to administratively extend, to a more practical date, compliance time frames. The INOVs covered by a CA are only Administratively Resolved.
  - b. Negotiated Compliance Agreement (NCA): Another term used for a Consent Agreement (CA).
  - c. Federal Facilities Agreement (FFA): Only used in CERCLA actions, is used when a CERCLA site is discovered. An FFA lists the responsibilities and duties of the regulator and the regulated parties, as well as the time frame within which various actions must occur. In the EQR enter FFAs as IAGs.

##### **B. WARNING LETTER (WL)**

A Warning Letter (WL) is a written notice from a regulator with legal enforcement authority, listing areas of noncompliance, but not requiring the installation to come into compliance. The regulator is alerting the installation that it knows the installation is in violation of a statutory requirement. Warning letters are most commonly given for a first violation or for very minor infractions. Although a WL does not require compliance, it is both formal notice to an installation that the installation is not in compliance, and documentation that the regulator has made the installation aware of a problem. An ENF commonly follows a WL if the conditions mentioned are not corrected. A Warning Notice is similar, and in EQR is treated the same way as an ENF. Common types of warning letters include:

1. Notice of Deficiency (NOD): Many permitting schemes require timely submission of information to the regulator so that a permit decision can be made. Enter a NOD under "Warning Letter" if it has been received as a result of a permit application. The NOD serves as formal notice of a deficiency and places that deficiency on the legal record. If the defect is not corrected, the permit is denied on the grounds of failure to submit all the required information or documentation.
2. Notice Of Significant Noncompliance (NOSN): A NOSN is issued by a regulator informing the regulated party that, because of a poor compliance history, an installation is being placed on the EPA's Federal Facilities Significant Noncompliance list. An installation on the Significant Noncompliance list receives more intensive compliance scrutiny and more enforcement actions. Being put on that list does not, in itself, constitute an INOV. The installation's notification



that it is being placed on the list, however, may be accompanied by notification that the installation is currently out of compliance with statutory or regulatory requirements. That notification accompanying the NOSN does constitute an INOV.

3. Notice of Potential Liability (NPL): A notice issued by the EPA informing the recipients they are considered a Responsible Party (RP) for a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site. An NPL invites the responsible party(s) to discuss the possibility, to avoid court action, of the recipient's cleaning the site.
4. Pre-Enforcement Conference Letter (PECL): A letter from the regulator informing the regulated of all the findings and violations, and requesting that the regulated party schedule a conference with the regulator to discuss the charges and the time frame for compliance. A PECL is similar to an ENF in most respects.
5. Notice To Comply (NTC): NTCs are most commonly issued to owners of underground storage tanks after a release has been confirmed. Essentially, the NTC lists all the requirements the regulated party will have to comply with to investigate the site properly, and establishes a timeframe when each step is to be completed. If the NTC is not complied with, an ENF is usually issued to obtain compliance, however, the NTC itself is not considered to be an ENF.

### C. LAWSUIT (LS)

A lawsuit is any legal action brought by a private citizen or private group. Examples: Your installation is sued by a national environmental group, claiming that an environmental assessment you have completed is inadequate; A group of local citizens sues your installation to recoup damages resulting from a release of a hazardous material from your installation.

### 4. DATE OF WRITTEN NOTIFICATION:

The date the enforcement action was issued by the regulator. This field must be filled out. This date is usually stated clearly on either the enforcement action or its accompanying cover letter. If there is no date on the letter, enter the date you received the correspondence. An enforcement action may be issued after compliance has been attained.

### 5. ACTION #:

The number found on the enforcement action or in the attached correspondence. This field must be filled out. If there is no such number, use the automatically assigned tracking number.

### 6. ACTION STATUS:

Use following guidelines to determine ENF status:

- A. Unresolved (U): The ENF remains unresolved.
- B. Pending (P): The ENF is pending when the installation has completed every project, and made every required change necessary to correct the ENF, and is awaiting regulatory approval. Although the regulatory agency has the final say in deciding when an ENF is closed, MACOMs are required to follow the Army's "60-Day Letter to the Regulatory Agency" policy, which is stated in Memorandum, HQDA, DAIM-ED, 08 Jun 99, subject: Army Environmental Enforcement Action (ENF) Prevention and Closure Procedures).
- C. Resolved (R): The ENF is resolved when the findings have been corrected by the installation and the installation has received written or telephonic notice from the regulator to that effect. Written confirmation of compliance is preferred. Use a Memorandum for Record when confirmation is telephonic. If more than one regulatory agency issued an enforcement action, the agency with primacy has to confirm compliance before the ENF may be marked as resolved.
- D. Administratively Resolved (A): An ENF is administratively resolved when the findings have been incorporated into a signed Compliance Agreement between the regulator and the installation, or a "60-day letter" was sent by the Installation in accordance with Memorandum, HQDA, DAIM-ED, 08 Jun 99, subject: Army Environmental Enforcement Action (ENF) Prevention and Closure Procedures) and the 60 days have passed. These are the *only* situations in which Administratively Resolved should be used. If Administratively Resolved is used because a Compliance Agreement has been signed, a new CMPA entry must be created referencing the administratively resolved INOV and all applicable findings and milestones. For all pending actions greater than 60 days old, an administrative resolution *in no way* corrects the finding. Although the regulatory agency has the final say in deciding when an ENF is closed, MACOMs are required to follow the Army's "60-Day Letter to the Regulatory Agency" policy. A previously marked Administratively Resolved ENF maybe entered as Resolved when the Compliance Agreement covering the findings is completed, to the satisfaction of both the regulator and the installation, and the installation has received from the regulator written, or telephonic, notice to that effect. Written confirmation of compliance is preferred. If more than one regulatory agency issued the ENF, before the ENF is marked "Resolved", the agency with **primacy** has to confirm compliance.

### COMPLIANCE AGREEMENT STATUS



*Under Negotiation (N):* The Compliance Agreement is currently being negotiated with the regulatory agency. To enter this answer your negotiations, to construct a Compliance Agreement, must already be underway.

*Signed (S):* The Compliance Agreement has been signed by representatives of the regulator and your installation, and is now binding on both parties. If the Compliance Agreement addresses a previous INOV, when it is signed that INOV can be changed to Administratively Resolved.

*Completed (C):* All requirements of the Compliance Agreement have been fulfilled to the satisfaction of both sides. Your installation has completed every task assigned to it by the Compliance Agreement, and the regulator has stated in writing or documented conversation that the installation has completed every task satisfactorily.

#### 7. STATUS DATE:

The date the enforcement action's status changed, entered in the preceding field, to the current status. This date is automatically checked against the values found in the findings. If they do not match this date is changed to a date calculated from the findings. The status date for CMPAs with a status of "Under Negotiation", and for other action types with a status of "Unresolved", is forced by the software to be the same date as the date of agreement or notification.

#### 8. AGENCY CONDUCTING INSPECTION:

The agency with the legal authority to issue the enforcement action. **This field must be filled out.** A separate entry must be made for each agency issuing an enforcement action. If a joint-enforcement action is issued, enter in the first block the regulatory agency issuing the enforcement action (the one that mailed you the enforcement action).

#### 9. REASON FOR NON-COMPLIANCE:

List all pertinent facts regarding the enforcement action, events leading up to its issuance, applicable comments and corrections. **Always fill this section out**, even if you do not believe the enforcement action to be correct. This field should be used to thoroughly document the details of non-compliance.

#### 10. TARGET DATE:

This is the targeted completion date for the final compliance milestone the installation intends to complete to resolve the enforcement action. **This field must be filled out.** This field may sometimes contain only an educated guess which can be changed if need be.

#### 11. DATE MET:

The date the final compliance milestone was actually completed, which is the date the installation completed all actions called for in the milestone.

#### 12. MILESTONE DESCRIPTION:

Enter a description of the actions that have to be completed in order for the Compliance Action to be formally resolved.

#### 13. FINDING NUMBER:

Enter the number of discrete findings. **This field must be filled out.** A finding is a specific violation, citation, or discovery of a violation of an environmental law or regulation cited in an enforcement action. The finding is usually based on the discovery of a violation, not on the number of instances of that violation. Count NOD findings (INOV and permit), WL findings, and lawsuits here also. NOD, WL, and LS findings can cover one or more instances of a violation. Several states have a history of issuing a discrete finding for each observed violation of a statute. When reporting follow the policy used by your regulator on the issuance of findings.

Example: Failure to label one drum as containing hazardous waste is one finding, as is failure to label five such drums. The violation of the regulation to label drums containing hazardous waste constitutes the finding, not the number of instances detected. If any one, or more, of those unlabelled drums had open bungs, there would be two findings.

#### 14. FINDING TYPE:(Findings Classification) **This field must be filled out.**

- A. Administrative (A): A finding relating to incomplete paperwork or lack of detail, such as failing to: completely fill out forms, note dates on forms, note land-ban information, keep log of information up to date, document required training, etc.
- B. Operational (O): A finding relating to how business is conducted, such as failing to: make proper notifications, have a required log of information (versus keeping it up to date), submit required samples in a timely manner; or incorrect operational procedure or method when operating a plant which results in exceeding permit conditions for air emissions or water discharges; keeping hazardous waste beyond allowed time-frames prior to shipping out or disposal; or failing to cover landfill material with soil to proper depth at end of day. Other examples may include: performing work with



personnel who lack training or certification required by law; failing to maintain proper aisle space between drums of hazardous waste in a storage or holding area; moving hazardous waste without (versus an incomplete) a manifest; depositing hazardous waste in a sanitary or other unauthorized landfill; failing to consider endangered species in any proposed action; or failure to obtain required permits before conducting operations requiring permits, such as asbestos removal, dredging, or in some states clean-up of leaking underground storage tank.

- C. Project (P): Any finding that requires the initiation of an EPR project to fund the work and/or significant construction and/or demolition. For example: When permit standards are exceeded and substantial facility repairs, modifications or upgrades must be made to regain compliance.

#### 15. FINDING STATUS:

Use the following guidelines to determine finding status:

- A. Unresolved (U): The finding remains unresolved.
- B. Pending (P): The finding is pending when the installation has completed every project, and made every required change necessary to correct it, and is awaiting regulatory approval.
- C. Resolved (R): A finding is resolved when the findings have been corrected by the installation and the installation has received written or telephonic notice from the regulator to that effect. Written confirmation of compliance is preferred. Use a 'Memorandum for Record' when confirmation is telephonic. If more than one regulatory agency issued a specific finding, the agency with primacy has to confirm compliance before the finding may be marked as resolved.
- D. Administratively Resolved (A): A finding is administratively resolved when the finding has been incorporated into a signed Compliance Agreement between the regulator and the installation, or a "60-day letter" (in accordance with 08 June 1999 Memorandum from the OACSIM "Army Environmental Enforcement Action (ENF) Prevention and Closure Procedures) was sent, by the Installation to the regulator, about the ENF in which the finding is listed. Only use administratively resolved in these situations. An Administratively Resolved *does not* correct or change the finding. A previously marked Administratively Resolved finding may be entered as Resolved when the Compliance Agreement covering the findings is completed to the satisfaction of both the regulator and the installation, and the installation has received from the regulator written, or telephonic, notice to that effect.

#### 16. DATE:

This is the date the violation status changes.

DATE CHANGED TO **Pending**: awaiting regulatory approval. The date the installation completed every project/change necessary to correct the finding listed in an enforcement notice. The installation is awaiting regulatory approval. If a 60 day letter is sent, state this and when sent in the reason for non-compliance field or as a milestone.

DATE CHANGED TO **Resolved**: The date when the installation received written or telephonic notice of compliance from the regulator. A written confirmation is preferred. If more than one regulatory agency issued the finding, the resolved date is the date when the agency with primacy has confirmed compliance. State in the reason for non-compliance field or as a milestone why status was changed to "Resolved".

DATE CHANGED TO **Administratively Resolved**: The date when the finding was incorporated into a signed Consent Agreement between the regulator and the installation, or the 60 days have passed since a "60-Day Letter" including the finding was sent. An administrative resolution in no way corrects or changes the finding.

#### 17. EPR NUMBER:

The EPR number used to identify funding requirements to correct a finding. If more than one EPR number is applicable, enter the additional numbers in the reason for non-compliance section. Only those findings classified as "Project" should have an EPR project number listed. Every project finding should have an EPR project number or an explanation in the 'reason for non-compliance field'.

#### 18. DESCRIPTION:

Give a brief description of the finding. This field must be filled out. If possible, use the description the regulator used in the enforcement notice, ENF or INOV. Write the description in a way that is understandable to those at higher headquarters.

#### ENFORCEMENT ACTION TRACKING COMPLIANCE AGREEMENT (CMPA) Only

The majority of fields in the CMPA section are duplicative of the ENF section and are properly addressed in there. The guidance below addresses CMPA specific fields and issues.



The basic requirement for classification of a Compliance Agreement (CMPA) is that it was negotiated between the regulator and the installation. Such a negotiated agreement administratively resolves all past INOVs covered under the agreement. The status of all the findings in the INOVs covered by the CMPA are marked as Administratively Resolved in the Finding Description. The word "administratively" is emphasized, because all the past INOVs covered by the negotiated agreement are resolved only in an administrative sense. A negotiated agreement in no way negates the need to correct the instances of noncompliance for which the original INOVs were issued. When an INOV is administratively resolved and a CMPA is opened, all of the applicable findings of the INOV should become milestones in the CMPA, and new milestones should be entered in the database. If you have a CMPA, one of the following Agreement Types must also be selected:

1. **Federal Facility Compliance Agreements (FFCA):** This only applies to an agreement with a federal regulator. Similar to a Consent Agreement, but follows special content guidelines for agreements between two federal agencies.
2. **Interagency Agreement (IAG):** Used only in CERCLA actions. The Army uses the term IAG in place of FFA (Federal Facilities Agreement).
3. **OTHER:** Some types of Compliance Agreements fall into the "Other" category. These are usually forms of CMPAs with non-federal regulators.
  - a. **Consent Agreement (CA):** A negotiated agreement between the regulator and the respondent, establishing the facts to which both sides agree. There is a section explaining what actions the respondent will perform, and in what time frame such actions will occur. To demonstrate command attention to the situation, most regulators request that the commander, or the commander's designated representative, sign for the installation. If required, the method of enforcement action, usually legal action, is stated in the agreement. A CA is usually issued to obtain compliance for outstanding INOVs, and is a way to administratively extend compliance time frames to a more practical date. The INOVs covered by a CA are only Administratively Resolved.
  - b. **Negotiated Compliance Agreement (NCA):** Another term used for a Consent Agreement (CA).
  - c. **Federal Facilities Agreement (FFA):** Only used in CERCLA actions, when a CERCLA site is discovered. An FFA lists the responsibilities and duties of the regulator and the regulated parties, as well as the time frame within which various actions must occur. In the EQR enter FFAs as IAGs.

#### COMPLIANCE AGREEMENT STATUS

*Under Negotiation (N):* The Compliance Agreement is currently being negotiated with the regulatory agency. To enter this answer your negotiations must already be underway to construct a Compliance Agreement.

*Signed (S):* The Compliance Agreement has been signed by representatives of the regulator and your installation, and is now binding on both parties. If, when it is signed, the Compliance Agreement addresses a previous INOV, that INOV can be changed to Administratively Resolved.

*Completed (C):* All requirements of the Compliance Agreement have been fulfilled to the satisfaction of both sides. Your installation has completed every task assigned to it by the Compliance Agreement, and the regulator has stated in writing, or documented conversation, that the installation has completed every task satisfactorily.



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
RAVENNA ARMY AMMUNITION PLANT  
8451 STATE ROUTE 5  
RAVENNA, OHIO 44266-9297

October 19, 2000

SMARV-EQ (200-1a)

Subject: Notice of Violation, Ravenna Army Ammunition Plant

Mr. Gregory Orr  
Environmental Specialist  
Division of Hazardous Waste Management  
Ohio Environmental Protection Agency  
2110 East Aurora Road  
Twinsburg, Ohio 44087-1969


Dear Mr. Orr,

This letter is in response to the Notice of Violation (NOV) dated September 28, 2000, that you sent to the Ravenna Army Ammunition Plant (RVAAP). The letter cited five separate findings of noncompliance with Ohio's hazardous waste laws and rules as adopted under the Ohio Revised Code (ORC) Chapter 3734 and Chapter 3745 of the Ohio Administrative Code (OAC). These findings were a result of the on-site inspection you conducted at the facility on September 19, 2000, copy enclosed.

Please be advised all deficiencies were corrected as of October 3, 2000. I have attached copies of the documentation and photographs you requested in your letter to verify that these corrective actions have been taken.

If you need any further information or have any questions concerning this matter, please call Mr. Mark Patterson, RVAAP Environmental Coordinator, at (330) 358-7311.

Sincerely,

  
John A. Cicero, Jr.  
Commander's Representative

Enclosures

Copies Furnished:

Ms. Cindy M. Dabner, USEPA Region 5, DRE-9J, 77 West Jackson Boulevard, Chicago, IL 60604-3590

Cdr, U.S. Army Munitions and Armaments Command, ATTN: SOSMA -ISO (Messrs. Woodhouse and Cramond), 1 Rock Island Arsenal, Rock Island, IL 61299-6000

Cdr, U.S. Army Munitions and Armaments Command, ATTN: SOSMA -ISD (Mr. Ingold), 1 Rock Island Arsenal, Rock Island, IL 61299-6000

Cdr, U.S. Army Munitions and Armaments Command, ATTN: SOSMA -ISE-R (Mr. Whelove), 1 Rock Island Arsenal, Rock Island, IL 61299-6000





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

October 30, 2000

RE: RAVENNA ARMY AMMUNITION PLANT  
OH5-210-020-736  
PORTAGE COUNTY  
RETURN TO COMPLIANCE

John Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, OH 44266-9297

TO	11/3/00
<input checked="" type="checkbox"/>	CP
<input checked="" type="checkbox"/>	IND DPEC
<input checked="" type="checkbox"/>	SAIC 11/3/00
<input checked="" type="checkbox"/>	CONTRACTOR 11/3/00
<input checked="" type="checkbox"/>	RETURN FOR FILE


Dear Mr. Cicero:

Thank you for your letter and documentation dated October 19, 2000, pursuant to the violations cited during my inspection of Ravenna Arsenal Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. This Agency considers RVAAP as having returned to compliance with the violations cited in the September 28, 2000 notice of violations letter.

Failure to list specific deficiencies in this communication does not relieve RVAAP from the responsibility of complying with all applicable hazardous waste regulations. This letter does not relieve RVAAP from liability for any past or present violations of the state's hazardous waste laws.

Should you have any questions or concerns, please do not hesitate to call me at (330) 963-1189.

Sincerely,

  
Gregory Orr  
Environmental Specialist  
Division of Hazardous Waste Management

GO:ddw

cc: Natalie Oryshkewych, DHWM, NEDO  
Jarnal Singh, DSIWM, NEDO  
Eileen Mohr, DERR, NEDO  
Diane Kurlich, DDAGW, NEDO  
Linda Neumann, DHWM, CO  
Mark Patterson, RVAAP  
Cindy Dabner, U.S. EPA, Region V



## **Patterson, Mark**

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**From:** Khtoltest@cs.com  
**Sent:** Wednesday, November 15, 2000 8:50 AM  
**To:** PattersonM@osc.army.mil; mcgee@apk.net  
**Subject:** NOV Response

FYI

I spoke with Jarnal Singh this morning. He said a response was not requested in the letter because he felt it was only dates that were missed and a response was not necessary. I questioned him on #3 telling him we did not resample and are awaiting the results of the statistics. He said we should probably respond with that information within 30 days from today. The due date for the response would be December 15, 2000.

Karen





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

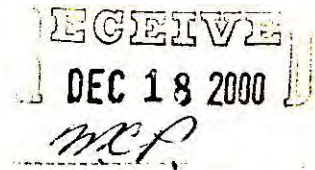
TO	12/18/2000
✓	OE-COE
✓	ENV
✓	LAND MGR
✓	75
✓	CONTRACTOR
✓	RETURN FOR FILE

DEC 13 2000

REPLY TO THE ATTENTION OF

DE-9J

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**



John Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, Ohio 44266-9297

Re: Notice of Violation  
Ravenna Army Ammunition Plant  
Compliance Evaluation Inspection  
EPA I.D. No.: OH5 210 020 736

Dear Mr. Cicero:

On September 19, 2000, representatives of the United States Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (OEPA) inspected Ravenna Army Ammunition Plant located in Ravenna, Ohio. The purpose of the inspection was to evaluate the installation's compliance with certain requirements of the Resource Conservation and Recovery Act (RCRA) as amended; specifically the Standards Applicable to Generators of Hazardous Waste set forth at 40 CFR Part 262, Part 265, and Part 268 respectively. A copy of the inspection report is enclosed for your reference.

Based on the September 19, 2000 inspection, we have determined that Ravenna Army Ammunition Plant violated the following requirements under RCRA and the authorized Ohio Administrative Code (OAC):

OAC Rule 3745-52-11 [40 CFR 262.11] which states that a person who generates a solid waste must determine whether a solid waste is hazardous. The inspectors observed during the inspection a 55-gallon drum of paint chips marked as "Non-Hazardous Waste Pending Analysis, Dated 5/20/00." According to Mark Patterson, the paint chips are typically characterized as hazardous waste. This deficiency was corrected at the time of the inspection.



OAC Rule 3745-52-34(D)(4) [40 CFR 262.34 (d)(4)] which states that a generator may accumulate hazardous waste on-site for 180 days or less without a permit or interim status provided that the date upon which accumulation begins is clearly marked on each container, and each container and tank is labeled "hazardous waste." At the time of the inspection, a 55-gallon drum of paint chips was incorrectly marked as "Non-Hazardous Waste Pending Analysis, Dated 5/20/00." Ravenna does not have interim status or a permit.

OAC Rule 3745-52-34(D)(5)(b) [40 CFR 262.34 (d)(5)] which states that a small quantity generator who accumulates greater than 100 kilograms but less than 1000 kilograms of waste in a calendar month may accumulate waste on-site for 180 days without a permit or interim status provided that the generator posts the following information next to the phone: (a) name and telephone number of the emergency coordinator; (b) location of fire extinguishers, spill control material, and fire alarm; (c) telephone number of fire department unless facility has direct alarm. At the time of the inspection, the inspectors observed that while some emergency information was posted by the phone, this information did not include the name and telephone number of the emergency coordinator nor the location of fire and spill control equipment. Ravenna does not have interim status or a permit.

OAC Rule 3745-65-33 (A-B) [40 CFR 265.33] which states that all safety equipment must be tested and maintained. Ravenna Army Ammunition Plant failed to conduct weekly inspections, record equipment test and inspections in a log. The inspection log should contain: (a) the date and time of the test (inspection); (b) the name of the person conducting the test; (c) any observations made; and (d) the date and the nature of any repairs made.

OAC Rule 3745-66-74(B) [40 CFR 265.15 (d)] which states that the owner/operator must inspect areas where containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors. The inspectors observed during the inspection that inspections were conducted at least weekly. However, the inspection log failed to provide the time of the inspection and the name of the inspector. The inspection log should contain: (a) the date and time of the inspection; (b) the name of the inspector; (c) observations made during the inspection; and (d) the date/nature of any repairs or remedial action.

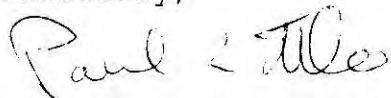
According to Section 3008 of the Resource Conservation and Recovery Act (RCRA), U.S. EPA may issue an order assessing the civil penalty for any past or current violation requiring compliance immediately or within a specified time period.



Although this letter is not such an order, we request that you submit a written response to the violations cited above no later than 30 days after receipt of this letter. The response should document the actions, if any, which you have taken since the inspection to comply with the above actions. You should submit your response to Cindy Dabner, United States Environmental Protection Agency, Region 5, 77 West Jackson Boulevard, DE-9J, Chicago, Illinois 60604.

If you have any questions regarding this letter, please contact Cindy Dabner, of my staff, at (312) 886-0743.

Sincerely,

A handwritten signature in cursive script that reads "Paul Little".

Paul Little, Chief  
Compliance Section 2  
Enforcement and Compliance Assurance Branch

Enclosure

cc: Gregory Orr, OEPA, NEDO (w/enclosures)

# RCRA HAZARDOUS WASTE GENERATOR INSPECTION CHECKLIST

Company: Ravenna Army Ammunition Plant EPA ID#: OH2 210 020 736

Street: 851 State Route 5 City: Ravenna

County: \_\_\_\_\_ State: Ohio Zip: 4266-9297

Mailing Address: same  
(If different from above)

Telephone: 330-358-7311 Fax #: 330-358-7314

Owner/Operator: Department of the Army  
(If different from above)

Street: \_\_\_\_\_

City: \_\_\_\_\_ State: Ohio Zip: \_\_\_\_\_

Inspection Date(s): September 19, 2000 Time(s): 8:00 am

Inspection Announced? ☐ Yes ☒ NO If so, how much advance notice given? \_\_\_\_\_

Name	Affiliation	Telephone
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Inspectors: <u>Cindy Dabner</u>	US EPA Region 5	312-886-0874
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<u>Gregg Orr</u>	OEPA	330-963-1189
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Facility Representative: <u>Mark Patterson</u>	Ravenna Army Ammunition Plant	330-358-7311
--	-------------------------------	--------------

Generator Classification	Waste Management Activity
<input type="checkbox"/> Conditionally Exempt SQG (CESQG)	<input type="checkbox"/> Containers
<input checked="" type="checkbox"/> Small Quantity Generator (SQG)	<input type="checkbox"/> Tank(s)
<input type="checkbox"/> Large Quantity Generator (LQG)	<input type="checkbox"/> Other (specify)
<input type="checkbox"/> No Generation	

CESQG: < 100 Kg. (approximately 25-30 gallons) of waste in a calendar month

SQG: Between 100 and 1,000 Kg. (about 25 to under 300 gallons) of waste in a calendar month







LQG: >1,000 Kg. (~300 gallons) of waste in a calendar month or > 1 Kg. of acutely hazardous waste in a calendar month

NOTE: To convert from gallons to pounds: Amount in gallons x Specific Gravity x 8.345 = Amounts in pounds



## POLLUTION PREVENTION

**Note to the Inspector:** This checklist has been developed to help the division in gathering general information about the pollution prevention (P2) practices that the company may have initiated or attempted to initiate. The checklist is also used to:

-  Facilitate P2 discussions;
-  Identify barriers to P2;
-  Define the P2 universe;
-  Identify the need for future P2 initiatives;
-  Identify partnership opportunities; and
-  Link companies with better P2 resources.

As a prelude to completing this checklist the inspector should use the following list of questions as a way to initiate a dialogue concerning P2:

1. Have you tried to reduce the volume of waste (hazardous and nonhazardous) that you generate?
2. What is the largest waste stream that you generate?
3. How important would it be to you to eliminate that waste stream?
4. Does your company understand the reduced regulatory burden and cost saving benefits that eliminating or reducing a waste stream can have?
5. Could you use better housekeeping practices to reduce the amount of waste that you generate?

If the company responds with one of the canned answers below, the appropriate box should be checked. If the company's response does not correspond to one of the options below, please record the answer in the space provided for in the remarks section.

1. Has the company undertaken any P2 activities to reduce the amount of hazardous waste generated? Yes x No    N/A    RMK#
- a. *If so*, what has the company done to minimize hazardous waste generation?
- ☒ A change in the process resulting in less waste.
  - ☐ A change in the product resulting in less waste.
  - ☐ Use of fewer and less toxic hazardous raw materials.
  - ☐ Better operations/improved housekeeping.
  - ☐ On-site recycling/reuse of hazardous materials.
  - ☒ Sending waste off-site for recycling/reuse.
  - ☐ Other activities (specify): \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

b. **If so**, what hazardous wastes have been addressed?

- ☐ Solvents
- ☐ Paint related wastes
- ☐ Industrial process wastes (sludges, slags, contaminated waste waters, etc.)
- ☐ Contaminated oils/hydraulic fluids
- ☐ Off-spec chemicals
- ☐ Fluorescent light bulbs
- ☐ Used batteries
- ☐ Shop rags
- ☐ Other (specify): lead anchors, mercury switch, Acetone, lead based paint

c. **If not**, why hasn't the company considered P2?

- ☐ The company just never thought about it.
- ☐ Lack of information about practical alternatives.
- ☐ Lack of capital to make process changes.
- ☐ Lack of internal management support.
- ☐ The company does not generate enough hazardous waste to consider P2.
- ☐ Other reason given (specify): \_\_\_\_\_

- |    |   |                                      |
|----|---|--------------------------------------|
| 2. | Does the company plan to do P2 activities in the future?                                    | Yes <u>x</u> No ___ N/A ___ RMK# ___ |
| 3. | Would the company be interested in receiving additional information from Ohio EPA about P2? | Yes <u>x</u> No ___ N/A ___ RMK# ___ |
| 4. | Did you give the company information about P2 during the inspection?                        | Yes <u>x</u> No ___ N/A ___ RMK# ___ |
| 5. | Would the company like a P2 assessment?   | Yes ___ No ___ N/A <u>x</u> RMK# ___ |

***If the company would like a P2 assessment done at their facility, the inspector must give the company representative a copy of Pollution Prevention Assessments for Hazardous Waste Generators document and discuss it with them.***

6. If the company does not want a P2 assessment, why not?

**REMARKS**



## SMALL QUANTITY GENERATOR REQUIREMENTS

### WASTE EVALUATION

1. Have all wastes generated at the facility been evaluated? [3745-52-11] Yes \_\_\_ No x N/A \_\_\_ RMK# 1

### IDENTIFICATION NUMBER

2. Has the generator obtained an EPA ID number? [3745-52-12] Yes x No ☐ N/A \_\_\_ RMK# \_\_\_

### ACCUMULATION OF HAZARDOUS WASTES

3. Has the generator accumulated hazardous wastes in excess of (180/270) days without a permit or an extension from the Director? [3745-52-34; ORC §3734.02(E)(F)] Yes ☐ No x N/A \_\_\_ RMK# \_\_\_

**NOTE:** SQG's shipping waste to a facility greater than 200 miles away can accumulate on-site for 270 days.

4. Is the generator accumulating more than 6,000 kg on site? [2745-52-34(D)(F)] Yes ☐ No x N/A \_\_\_ RMK# \_\_\_

**NOTE:** 6,000 kg = approximately 27, 55-gallon drums. If the facility is accumulating waste for greater than 180/270 days without an extension/permit or is accumulating greater than 6,000 kg on-site, it is classified as a storage facility and TSD standards apply. Complete applicable TSD checklists.

### MANIFEST REQUIREMENTS

5. Are all hazardous wastes either reclaimed under a contractual agreement as defined in OAC rule 3745-52-20(F), or shipped off-site accompanied by a manifest (U.S. EPA Form 8700-2)? [2745-52-20] Yes x No ☐ N/A \_\_\_ RMK# \_\_\_
6. Are wastes reclaimed under a contractual agreement? If so:
- a. Does the contractual agreement specify the type of waste and frequency of shipment? [3745-52-20(F)(1)(a)] Yes x No ☐ N/A \_\_\_ RMK# \_\_\_
- b. Is the transport vehicle owned and operated by the reclaimer? [3745-52-20(F)(1)(b)] Yes x No ☐ N/A \_\_\_ RMK# \_\_\_
- c. Is a copy of the reclamation agreement kept on-site for at least three years after termination/expiration of the agreement? [3745-52-20(F)(2)] Yes x No ☐ N/A \_\_\_ RMK# \_\_\_

7. Have all hazardous wastes shipped off-site been accompanied by a manifest? (U.S. EPA Form 8700-22) [3745-52-20(A)] Yes x No ☐ N/A ☐ RMK# ☐
- a. Has item 1 and items 2 through 20 of each manifest been completed? [3745-52-20(B)] Yes x No ☐ N/A ☐ RMK# ☐
- b. Does each manifest designate at least one permitted disposal facility? [3745-52-20(C)] Yes x No ☐ N/A ☐ RMK# ☐
- NOTE:** U.S. EPA Form 8700-22(A) (the continuation form) may be needed in addition to Form 8700-22. In these situations, item R and items (21) through (35) must also be completed. [3745-52-20(B)]
- NOTE:** The generator may designate on the manifest one alternate facility to handle the waste in the event of an emergency which prevents the delivery of waste to the primary designated facility. [3745-52-20(D)].
8. Has the generator, each transporter, and the owner/operator of the designated facility been provided with a copy of the manifest? [3745-52-22] Yes x No ☐ N/A ☐ RMK# ☐
9. Since the date of the last inspection, has the transporter been unable to deliver a shipment of hazardous waste to the designated facility? If so: Yes ☐ No x N/A ☐ RMK# ☐
- a. Did the generator designate an alternate TSD facility or give the transporter instructions to return the waste? [3745-52-20(E)] Yes x No ☐ N/A ☐ RMK# ☐
10. Have the manifests been signed by the generator and initial transporter? [3745-52-34(A)(1)(2)] Yes x No ☐ N/A ☐ RMK# ☐
11. Has the generator received a returned copy of each completed manifest within 60 days of being accepted by the transporter? If not: Yes x No ☐ N/A ☐ RMK# ☐
- a. Did the generator submit, to Ohio EPA, a copy of the manifest with some indication that the generator has not received confirmation of delivery? [3745-52-42(B)] Yes x No ☐ N/A ☐ RMK# ☐
12. Are signed copies of all manifests being retained for at least three years? [3745-52-40] Yes x No ☐ N/A ☐ RMK# ☐

#### REMARKS

RMK#1- Paint chips were marked as "Non-hazardous waste when chips are typically characterized as hazardous waste. This deficiency was corrected at the time of the inspection.



## LDR REQUIREMENTS

1. Has the generator adequately evaluated all wastes to determine if they are restricted from land disposal? [3745-59-07(A)] Yes x No ☐ N/A      RMK#
- a. **For determinations based solely on knowledge of the waste:** Is supporting data retained on-site for at least five years? [3745-59-07(A)(5) and (A)(7)] Yes      No ☐ N/A x RMK#
- b. **For determinations based upon analytical testing:** Is waste analysis data retained on-site for at least five years? [3745-59-07(A)(5) and (A)(7)] Yes x No ☐ N/A      RMK#
2. Does the generator ensure that restricted wastes or treatment residues are not diluted as a method of achieving/circumventing LDR treatment standards? [3745-59-03] Yes X No ☐ N/A      RMK#
3. Has the generator determined each Ohio EPA hazardous waste code applicable to the waste? [3745-59-09(A)] Yes x No ☐ N/A      RMK#
4. Has the generator determined the correct "treatability group(s)" (e.g., wastewater, non-wastewater, etc.)? [3745-59-07(A)] Yes x No ☐ N/A      RMK#
5. Has the generator correctly determined if restricted wastes meet or exceed treatment standards? [3745-59-07(A)] Yes x No ☐ N/A      RMK#
6. Does the generator generate listed waste(s) which also exhibit hazardous characteristics? [3745-59-09] If so: Yes x No      N/A      RMK#
- a. Has the generator listed waste(s) which also exhibit hazardous characteristics? [3745-59-09(A)] Yes x No ☐ N/A      RMK#
- NOTE:** *The generator is not required to identify the treatment standards for the characteristic if the listing covers the associated characteristic (e.g., a FO19/D007 hazardous waste - FO19 being listed due to chromium content and D007 being the characteristic waste code for chromium). [See OAC rule 3745-59-09(B)].*
7. Does the generator ship hazardous waste off-site under a tolling agreement? [3745-59-07(A)(10)] If so: Yes      No x N/A      RMK#
- a. Does the generator have an LDR notification (and certification, where applicable) form for the initial shipment of the waste? [3745-59-07(A)(10)] Yes x No ☐ N/A      RMK#
- b. Is a copy of the notification/certification retained on-site for at least three years after termination/expiration of the agreement? [3745-59-07(A)(10)] Yes x No ☐ N/A      RMK#

8. Does the generator ship hazardous waste off-site under a manifest? If so: Yes ☒ No ☐ N/A ☐ RMK# ☐
- a. Does the generator have LDR notification (and certification where applicable) forms for each shipment of waste? [3745-59-07(A)(1) and (A)(2)] Yes ☒ No ☐ N/A ☐ RMK# ☐
- b. Is the generator maintaining LDR notifications/certifications on-site for at least five years? [3745-59-07(A)(7)] Yes ☒ No ☐ N/A ☐ RMK# ☐
9. Does each notification/certification form contain the following information: [3745-59-07(A)(1) and (A)(2)]
- a. EPA hazardous waste codes for each waste? Yes ☒ No ☐ N/A ☐ RMK# ☐
- b. Appropriate treatment standards for each waste? Yes ☒ No ☐ N/A ☐ RMK# ☐
- c. The manifest number? Yes ☒ No ☐ N/A ☐ RMK# ☐
- d. Waste analysis data, where available? Yes ☒ No ☐ N/A ☐ RMK# ☐
- e. Certification signed by the generator or an authorized representative (for wastes meeting treatment standards only)? Yes ☒ No ☐ N/A ☐ RMK# ☐
10. Does the generator produce a waste that is hazardous at the point of generation, but subsequently excluded from regulation under OAC rules 3745-51-02 through 3745-51-06? [3745-59-07(A)(6)] If so: Yes ☐ No ☒ N/A ☐ RMK# ☐
- a. Is a one-time notice placed in the facility file stating such generation, subsequent exclusion or exemption, and disposition of the waste? [3745-59-07(A)(6)] Yes ☐ No ☐ N/A ☒ RMK# ☐
- NOTE:** Examples include hazardous wastes discharged to a POTW or to surface water under an NPDES permit, and any characteristic hazardous waste that is rendered nonhazardous via mixing or treatment.
11. Does the generator treat characteristic hazardous waste(s) in a RCRA-exempt unit to render such wastes non-hazardous? If so: Yes ☐ No ☒ N/A ☐ RMK# ☐
- a. Are treated waste(s) sent to a licensed solid waste disposal facility? Yes ☐ No ☐ N/A ☒ RMK# ☐
- i. Does the generator submit a notification and certification to the Director which contains the following:



- a. Name and address of the facility receiving the waste? [3745-59-09(D)(1)(a)] Yes ☐ No ☐ N/A ☒ RMK# ☐
- b. A description of the waste, including EPA hazardous waste numbers and treatability group? [3745-59-09(D)(1)(b)] Yes ☐ No ☐ N/A ☒ RMK# ☐
- c. The treatment standards applicable to the waste at the initial point of generation? [3745-59-09(D)(1)(c)] Yes ☐ No ☐ N/A ☒ RMK# ☐
- ii. Is the certification signed by an authorized representative and does it contain the language in OAC rule 3745-59-07(B)(5)(a)? [3745-59-09(D)(2)] Yes ☐ No ☐ N/A ☒ RMK# ☐

**NOTE:** An example of a RCRA-exempt unit would include an elementary neutralization unit or a wastewater treatment unit as defined by OAC rule 3745-50-10.

**REMARKS**

## EMERGENCY PROCEDURES/PREPAREDNESS AND PREVENTION

1. Is an emergency coordinator available at all times? [3745-52-34(D)(5)(a)] Yes ☒ No ☐ N/A ☐ RMK# 2
2. Has the following been posted by the telephone: [3745-52-34(D)(5)(b)]
- a. Name and telephone number of emergency coordinator? Yes ☐ No ☒ N/A ☐ RMK# 2
- b. Location of fire and spill control equipment, and, if present, fire alarm(s)? Yes ☐ No ☒ N/A ☐ RMK# 2
- c. Telephone number of local fire department? Yes ☐ No ☒ N/A ☐ RMK# 2
3. Are employees familiar with waste handling and emergency procedures? [3745-52-34(D)(5)(c)] Yes ☒ No ☐ N/A ☐ RMK#
4. Is the facility operated to minimize the possibility of fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste? [3745-65-31] Yes ☒ No ☐ N/A ☐ RMK#
5. Does the generator have the following equipment at the facility if it is required due to the actual hazards associated with the waste: [3745-65-32(A)(B)(C)(D)]
- a. Internal alarm system? Yes ☒ No ☐ N/A ☐ RMK#
- b. Emergency communication device? Yes ☒ No ☐ N/A ☐ RMK#
- c. Portable fire control, spill control and decon equipment? Yes ☒ No ☐ N/A ☐ RMK#
- d. Water of adequate volume/pressure? Yes ☒ No ☐ N/A ☐ RMK#
6. Is emergency equipment tested (inspected) on a weekly basis and maintained as necessary? [3745-65-33] Yes ☐ No ☒ N/A ☐ RMK# 3
7. Are emergency equipment tests (inspections) recorded in a log that includes the following information: [3745-65-33(B)]
- a. Date and time of test? Yes ☐ No ☒ N/A ☐ RMK#
- b. Name of person conducting the test? Yes ☐ No ☒ N/A ☐ RMK#
- c. Observations made? Yes ☐ No ☒ N/A ☐ RMK#



d. Date/nature of any repairs?

Yes \_\_\_ No ☒ N/A \_\_\_ RMK# \_\_\_

8. Do personnel have immediate access to a communication device when handling hazardous waste (*unless the device is not required under OAC 3745-65-32*)? [3745-65-34]

Yes ☒ No ☐ N/A \_\_\_ RMK# \_\_\_

9. Is adequate aisle space provided for unobstructed movement of emergency or spill control equipment? [3745-65-35]

Yes ☒ No ☐ N/A \_\_\_ RMK# \_\_\_

10. Has the generator attempted to familiarize emergency authorities with possible hazards and facility layout? [3745-65-37(A)]

Yes ☒ No ☐ N/A \_\_\_ RMK# \_\_\_

11. Where authorities have declined to enter into arrangements/agreements, has the generator documented such a refusal? [3745-65-37(B)]

Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

#### REMARKS

RMK#2 -Emergency information not posted by the phone

RMK#3 -Emergency equipment test not recorded in accordance with state code

## SATELLITE ACCUMULATION AREA REQUIREMENTS [3745-52-34(C)(1)]

1. Does the generator ensure that satellite accumulation area(s):
- a. Are at or near a point of generation? Yes ☒ No ☐ N/A ☐ RMK# ☐
  - b. Are under the control of the operator of the process generating the waste? Yes ☒ No ☐ N/A ☐ RMK# ☐
  - c. Do not exceed a total of 55 gallons of hazardous waste? Yes ☒ No ☐ N/A ☐ RMK# ☐
  - d. Do not exceed one quart of acutely hazardous waste at any one time? Yes ☒ No ☐ N/A ☐ RMK# ☐
  - e. Containers are marked with the words "Hazardous Waste" or other words identifying the contents? Yes ☒ No ☐ N/A ☐ RMK# ☐

**NOTE:** *The 55 gallon limit applies to the area itself, and not to each individual waste stream accumulated in the area. The inspector should refer to Ohio EPA's November 1994 Guidance on the Location of Satellite Accumulation Areas.*

2. Is the facility accumulating hazardous waste(s) in excess of the amounts listed in either 1(c) or 1(d)? If so:
- a. Did the generator comply with 3745-52-34(A) or other applicable generator requirements within three days? Yes ☐ No ☒ N/A ☐ RMK# ☐
  - b. Did the generator mark the container(s) holding the excess with the accumulation date when the 55 gallon (one quart) limit was exceeded? Yes ☐ No ☐ N/A ☒ RMK# ☐

## USE AND MANAGEMENT OF CONTAINERS

3. Has the generator marked containers with the words "Hazardous Waste" [3745-52-34(D)(4)] paint chips? Yes ☐ No ☒ N/A ☐ RMK# ☐ 4
4. Is the accumulation date on each container? [3745-52-34(D)(4)] Yes ☒ No ☐ N/A ☐ RMK# ☐
5. Are hazardous wastes stored in containers which are: [3745-52-34(D)(4)]
- a. Closed (except when adding/removing wastes)? [3745-66-73(A)] Yes ☒ No ☐ N/A ☐ RMK# ☐
  - b. In good condition? [3745-66-71] Yes ☒ No ☐ N/A ☐ RMK# ☐
  - c. Compatible with wastes stored in them? [3745-66-72] Yes ☒ No ☐ N/A ☐ RMK# ☐



d. Handled in a manner which prevents rupture/leakage?  
[3745-66-73(B)]

Yes x No ☐ N/A      RMK#     

6. Is the container accumulation area inspected weekly?  
[3745-66-74]

Yes x No ☐ N/A      RMK#     

7. Are inspections described in Question No. 6 recorded in a  
log which contains: [3745-66-74(B)]

a. Date and time of inspection?

Yes      No x N/A      RMK# 5

b. Name of inspector?

Yes      No x N/A      RMK# 5

c. Observations made during the inspection?

Yes      No x N/A      RMK# 5

d. Date/nature of any repairs or remedial action?

Yes      No x N/A      RMK# 5

8. Are containers of ignitable and/or reactive hazardous  
waste(s) stored away from materials that they may react  
with in a hazardous manner? [3745-66-77(C)]

Yes x No      N/A      RMK#     

#### PRE-TRANSPORT REQUIREMENTS

9. Does the generator package/label its hazardous waste in  
accordance with the applicable DOT regulations? [3745-  
52-30, 3745-52-31 and 3745-53-32(A)]

Yes x No ☐ N/A      RMK#     

10. Does each container <110 gallons have a completed  
hazardous waste label? [3745-52-32(B)]

Yes x No ☐ N/A      RMK#     

11. Before off-site transportation, does the generator placard  
or offer the appropriate DOT placards to the initial  
transporter? [3745-52-33]

Yes x No ☐ N/A      RMK#     

#### REMARKS

RMK# 4 -Container not marked with the words "hazardous waste"

RMK# 5 -Container accumulation log not in accordance with state code

## TANK SYSTEM REQUIREMENTS

1. Is each tank marked with the words "Hazardous Waste"? [3745-52-34(A)(3)] Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_

## TANK SYSTEM OPERATING REQUIREMENTS (OAC 3745-66-92(B))

2. Is the SQG complying with the following operating requirements of OAC 3745-66-992(B):
- a. Is the accumulation of ignitable or reactive waste done in accordance with precautionary measures of 3745-65-17(B)? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_
- b. Does the SQG ensure that wastes are not placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode or fail? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_
- c. Are uncovered tanks operated with 2 feet of freeboard? Yes \_\_\_ No \_\_\_ N/A ☒ RMK#\_\_\_
- i. **If not**, is the tank equipped with a containment structure, drainage control system, or diversion structure with a capacity that equals or exceeds the volume of the top 2 feet of the tank? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_
- ii. **If waste is continuously added to the tank:** Is the tank equipped with a waste feed cut-off or bypass system? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_

## TANK SYSTEM INSPECTION (OAC 3745-66-992(C))

3. Does the generator inspect the following: [3745-66-992(C):
- a. Discharge control equipment (daily)? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_
- b. Data from monitoring equipment (daily)? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_
- c. The level of the waste in the tank (daily)? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_
- d. The tanks construction material (weekly)? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_
- e. The area surrounding the tank (weekly)? Yes \_\_\_ No ☐ N/A ☒ RMK#\_\_\_



## TANK SYSTEM CLOSURE REQUIREMENTS (OAC 3745-66-992(D))

4. Upon closure of the tank did the SQG remove all hazardous waste from the tank system in compliance with OAC 3745-66-992(D)? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

## TANK SYSTEMS STORING IGNITABLE OR REACTIVE WASTES (OAC 3745-66-992(E) & (F))

5. For tanks used to store ignitable or reactive wastes, has the owner/operator complied with **one of the following**: [3745-66-992(E)]
- a. Is the waste stored or treated to protect it from any materials or conditions that may cause the waste to ignite or react? [3745-66-992(E)(1)(b)] Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
- b. Is the tank used solely for emergencies? [3745-66-992(E)(1)(c)] Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
6. If ignitable or reactive waste is stored in covered tanks, are protective distances maintained between the tanks and any public streets, alleys, or adjoining property lines as required by the NFPA Flammable and Combustible Liquid Code (1977 or 1981)? [3745-66-992(E)(2)] Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
7. Have incompatible wastes, or incompatible wastes and materials been placed into the same tank? [3745-66-992(F)] Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
- If so*, have the requirements of 3745-65-17(B) been met? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_
8. Have hazardous wastes been placed in an unwashed tank which previously held an incompatible waste or material? [3745-66-992(F)(2)] Yes \_\_\_ No \_\_\_ N/A ☒ RMK# \_\_\_
- If so*, have the requirements of 3745-65-17(B) been met? Yes \_\_\_ No ☐ N/A ☒ RMK# \_\_\_

## REMARKS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

DEC 22 2000

REPLY TO THE ATTENTION OF  
DE-9J

John Cicero, Jr.  
Commander's Representative  
Ravenna Army Ammunition Plant  
8451 State Route 5  
Ravenna, Ohio 44266-9297

Re: Letter of Acknowledgment  
Ravenna Army Ammunition Plant  
Compliance Evaluation Inspection  
EPA I.D. No.: OH5 210 020 736

Dear Mr. Cicero:

On September 19, 2000, representatives of both the United States Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (OEPA) inspected Ravenna Army Ammunition Plant located in Ravenna, Ohio. In response to violations identified during the inspection, we issued a Notice of Violation (NOV) on December 13, 2000.

On December 19, 2000, Cindy Dabner of my staff spoke to Mr. Chris Vercautren of the Headquarters Army Munition Armaments Command and clarified that our NOV was intended only to confirm RCRA violations cited by OEPA in its September 20, 2000, NOV issued to the Ravenna Army Ammunition Plant (RAAP).

This letter is to inform you that U.S. EPA does not plan additional enforcement action at this time, and that no further response is expected from RAAP. This letter does not limit the applicability of requirements evaluated, or of other federal or state statutes or regulations. U.S. EPA and OEPA will continue to evaluate your facility in the future.

We apologize for any confusion our NOV may have inadvertently caused. If you have any questions or concerns regarding this



matter, please contact Cindy Dabner of my staff at (312) 886-0743.

Sincerely yours,

Paul Little, Chief  
Compliance Section #2  
Enforcement and Compliance Assurance Branch

cc: Gregory Orr, OEPA, NEDO

RAVENNA ARMY AMMUNITION PLANT  
8451 STATE ROUTE 5  
RAVENNA, OH 44266-9297

**RECORD OF ENVIRONMENTAL CONSIDERATION**

**1 June 2000**

**I. PROJECT TITLE/PROPOSED PROJECT**

Transfer of portions of the Ravenna Army Ammunition Plant currently under the authority of the Operations Support Command, Rock Island, Illinois.

**II. PROJECT DESCRIPTION**

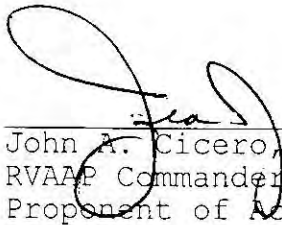
The proposed action involves the transfer of the operation and control of approximately 5,255 acres and associated buildings at the Ravenna Army Ammunition Plant to a yet to be determined entity. The property includes the administration area and former production lines. Areas contaminated by previous industrial activities are being investigated and remediated where necessary. Excess buildings are currently being demolished as funding becomes available. Unsafe environmental conditions, including asbestos removal, are being mitigated during the process. The land, buildings and associated improvements are not required to support the current or future mission of the RVAAP. This action is at the direction of the U.S. Army Operations Support Command.

**III. ANTICIPATED DATE AND/OR DURATION OF PROPOSED ACTION**


It's anticipated that the proposed action will be completed by 31 December 2000 and will last indefinitely.

**IV. REASON FOR USING A RECORD OF ENVIRONMENTAL CONSIDERATION**

It has been determined that this action is categorically excluded under the provisions of CX A-24, AR 200-2, appendix A, (and no extraordinary circumstances exist as defined in paragraph 4-3).

  
\_\_\_\_\_  
John A. Cicero, Jr.,  
RVAAP Commander's Representative,  
Proponent of Action

1 June 2000  
Date

  
\_\_\_\_\_  
Mark Patterson,  
RVAAP Environmental Coordinator

1 June 2000  
Date



**From:** Eileen Mohr  
**To:** Brancato, David J LRL02; JJ; Patterson, Mark  
**Date:** 1/25/00 7:41AM  
**Subject:** Draft RGOs

Hi Mark, David, John:

With respect to the draft RGOs... were we supposed to get additional documentation regarding the draft numbers or was that it? Also, can someone please explain to this non risk assessor why there are so many metals/compounds without a computed risk? An easy example of this is for lead... there isn't any toxicity data available?

At this point in time... when we look at the data, we'll just move the decimal point over to make the risk point of departure E-6.

Thanks for your help.

Eileen

Eileen T. Mohr  
Project Coordinator  
Division of Emergency and Remedial Response  
2110 East Aurora Road  
Twinsburg, OH 44087  
330-963-1221  
330-487-0769 (FAX)  
email: Eileen.Mohr@epa.state.oh.us

**CC:** Brian Tucker; Laurie Moore

**Mail Envelope Properties** (388D99F8.CE7 : 5 : 52863)

**Subject:** Draft RGOs  
**Creation Date:** 1/25/00 7:41AM  
**From:** Eileen Mohr

**Created By:** Emohr.NEDO.CENTRAL-OFFICE@epa.state.oh.us

<b>Recipients</b>	<b>Action</b>	<b>Date &amp; Time</b>
INTERNET.CENTRAL-OFFICE "john.p.jent@lrl02.usace.army.mil" (JJ)	Transferred	01/25/00 07:41AM

epa.state.oh.us DERR.Central-Office Btucker CC (Brian Tucker)	Delivered	01/25/00 07:41AM
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epa.state.oh.us NEDO.Central-Office Emohr BC (Eileen Mohr)	Delivered Opened	01/25/00 07:41AM 01/25/00 07:44AM
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epa.state.oh.us SWDO.Central-Office Lmoore CC (Laurie Moore)	Delivered	01/25/00 07:41AM
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ioc.army.mil PattersonM (Patterson, Mark)	Transferred	01/25/00 07:41AM
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lrl02.usace.army.mil David.J.Brancato (Brancato, David J LRL02)	Transferred	01/25/00 07:41AM
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<b>Post Office</b>	<b>Delivered</b>	<b>Route</b>
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DERR.Central-Office	01/25/00 07:41AM	epa.state.oh.us
NEDO.Central-Office	01/25/00 07:41AM	epa.state.oh.us
SWDO.Central-Office	01/25/00 07:41AM	epa.state.oh.us
		ioc.army.mil
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MESSAGE	1741	01/25/00 07:41AM

**Options**

**Auto Delete:** No  
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**Notify Recipients:** Yes



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<b>Reply Requested:</b>	No
<b>Return Notification:</b>	None
<b>Concealed Subject:</b>	No
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<b>Status Tracking:</b>	Delivered & Opened



State of Ohio Environmental Protection Agency  
Northeast District Office

2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

TELE (330) 425-9171 FAX (330) 487-0769

Bob Taft, Governor  
Christopher Jones, Director

March 30, 2000

RE: Ravenna Army Ammunition Plant  
Portage/Trumbull Counties  
Draft RGOs

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) and Central Office (CO), DERR, Environmental Assessment Unit (EAU) have received and reviewed the e-mail dated February 11, 2000 regarding the supporting documentation for the Ravenna Army Ammunition Plant (RVAAP) draft Remedial Goal Options (RGOs). The documentation in the February 11, 2000 appears to be the same information as presented in the document entitled "Development of Risk-based Remedial Goal Options" that was received on March 15, 2000.

RGOs are risk-based criteria that will be utilized during the Feasibility Study (FS) process to define the extent of contamination that must be remediated, and will additionally assist in helping to cost various alternatives. The RGOs are media and chemical-specific concentrations that are calculated for chemicals of concern (COCs) for each land use/receptor scenario for a given medium. They are also calculated for each exposure route as well as for the total chemical risk or hazard across all exposure routes.

The Ohio EPA has the following comments on the draft RGOs:

1. The calculation of risk-based RGOs should be completed by following the U.S. Environmental Protection Agency (USEPA) guidance given in the following document: "Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals, U.S. EPA, 1991, EPA/540/R-92/003." The use of the cited guidance "Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Waste Management Division, U.S. EPA Region 4, November 1995" may be appropriate with adequate documentation that all pathways and routes have been included and summed in the risk assessment.





The preferred method for calculating RGOs is through the methods given in the U.S. EPA's Risk Assessment Guidance for Superfund cited above. This methodology is transparent and allows for the reader to evaluate each input value in the RGO calculation.

2. A table should be completed that includes the RGO values for carcinogenic compounds at target excess cancer risk values of  $1E-4$ ,  $1E-5$ , and  $1E-6$ . These values are easy to compile and are suggested by several U.S. EPA guidance documents, including the U.S. EPA Region 4, Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, cited in the current document.

The RGO table should also include a similar set of values for compounds that have a non-cancer endpoint. It is not clear in the present document why only RGO values are calculated using a Hazard Quotient (HQ) target of 0.1. It is acceptable to calculate RGO values based on a target of 0.1, however, RGO values should also be calculated using a target goal of 1.0. Please include RGO values for all appropriate target risk and hazard goals.

3. The current document only discusses the derivation of RGO values for the "National Guard/Managed Recreational" land use scenario. To this date, the Ohio EPA has not received documentation on the planned long-term use of the site. Without such documentation, it is recommended that RGO values be generated for residential, and any other scenario used in the human health risk assessment that had unacceptable cancer risks, exceeded a HQ of 1.0, or where appropriate, a Hazard Index (HI) exceeding 1.0.

Currently, the long-term use of the property is only assumed to be appropriately modeled by the National Guard/Managed Recreational scenario, and some method for controlling the future use of the land may be warranted. In recent meetings a representative of the Ohio National Guard (ONG) indicated that although he could envision the potential land use for the near future, he could not guarantee that it (the land) would always remain the property of the ONG.

4. Groundwater must be considered as an exposure medium in the calculation of the RGO values. Currently, the only assumption that is being considered by the RGO document is that potable water will be transported to the installation. This assumption is probably not justified, as the RVAAP is located in an area where the local aquifers could produce the quantities of water that would be needed by the ONG on a regular basis. It is not reasonable to expect that the ONG would continue to pay for hauled water on a long-term basis when the option would exist to develop a network of production wells that in the long-run would be more cost-effective. In addition, given the uncertainty surrounding the future land use (item #3), the Ohio EPA requests that groundwater be included as an exposure medium, or provide documentation ensuring that groundwater will not be utilized at the installation.

5. The current document separates surface and sub-surface soils, as is consistent with the human health risk assessment. What has not been evaluated in this document, or the human health risk assessment, is the possibility of subsurface soils being brought to the surface and thus being available for more frequent contact. For example, a potential future use of the site includes ONG training activities that, in part, consist of digging into the sub-surface soils. This may be done by hand (ex. digging foxholes) or include the use of heavy machinery (ex. earth movers, tanks, etc.).

A residential or unrestricted land use scenario does not separate surface and sub-surface soils and relies upon a single point of compliance. This point of compliance for soil has generally been ten (10) or twelve (12) feet below ground surface (bgs). The residential or unrestricted land use scenario considers the possibility that sub-surface soils may be re-distributed and become surface soils during excavation activities. This process is also possible with the anticipated training exercises being planned for the site. This possibility requires the development of a combined surface and sub-surface soil exposure medium category. Specifically, the exposure frequency (for the ONG scenario) would be set at 180 days year<sup>1</sup> and would include the use of a combined data set of surface and sub-surface soils. Please include a combined surface and sub-surface RGO category in the revised RGO document.

6. Ohio EPA requests that as part of this effort, that the Agency receive and review (if available) documentation of remedial concentrations for explosives (including TNT, RDX, HMX, etc.) that were developed for other Department of Defense (DOD) sites. This effort may assist the RVAAP stakeholders in ensuring consistency among other sites/installations with similar contaminants and operations.
7. Any Ohio EPA comments (dated November 29, 1999 and December 8, 1999) on the draft-final document entitled "Phase II Remedial Investigation Report for the Winklepeck Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna, OH" that are specific to the calculation of potential risks or hazards, must be reviewed and included (where appropriate) in the RGO process.

If you have any questions concerning this correspondence, please do not hesitate to contact me at 330-963-1221.

Sincerely,



Eileen T. Mohr

Project Coordinator

Division of Emergency and Remedial Response



Mark Patterson

Page 4

cc: Bob Princic, NEDO DERR  
Todd Fisher, NEDO DERR  
Diane Kurlich, NEDO DDAGW  
Brian Tucker, CO DERR  
Bonnie Buthker, OFFO SWDO  
Laurie Moore, OFFO SWDO  
David Seely, USEPA Region V  
John Cicero, RVAAP  
LTC Tom Tadsen, RVAAP  
Bob Whelove, IOC  
John Jent, USACE Louisville  
David Brancato, USACE Louisville  
Paul Zorko, USACE Louisville  
Steve Selecman, SAIC  
Sam Stinnette, SAIC  
Rick Callahan, MKM



State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center  
122 S. Front Street  
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

P.O. Box 1049  
Columbus, OH 43216-1049

October 10, 2000

3GR00112

UNITED STATES ARMY  
ROBERT J KASPER

8451 STATE ROUTE 5  
RAVENNA OH 44266

Re: General National Pollutant Discharge Elimination System (NPDES) permit for storm water discharges associated with industrial activity (OHR000003)

Dear Covered Party:

According to our records, your facility has industrial storm water general permit coverage under Ohio EPA expired general permit OHR000002 or OHG000001. Ohio EPA's industrial storm water general permit was renewed on August 1, 2000. This packet contains a Notice of Intent (NOI, form used to apply for continuing general permit coverage) with instructions (please read carefully), Notice of Termination (NOT, form used to terminate coverage) with instructions, a copy of the final permit and a copy of U.S. EPA's "No Exposure Certification" form with instructions. Ohio EPA has decided to use the federal no exposure form. U.S. EPA has developed guidance regarding the new Phase II conditional storm water permitting exemption and it can be obtained via internet at: "<http://www.epa.gov/owm/sw/phase2>".

The renewal general permit will authorize most of Phase I industrial storm water discharger categories, including facilities previously covered by Ohio EPA's industrial storm water general permit for group applicants. The permit does not authorize storm water discharges associated with construction activity, landfills, SIC 5171 (petroleum bulk terminals), SIC 14 xx (Mining and Quarrying of Nonmetallic Minerals) and coal pile runoff that was not previously covered by either the industrial or group applicant general permit. Also, new direct dischargers to State Resource Waters and Superior High Quality Waters (i.e., Lake Erie) are not eligible for coverage under the permit. Those facilities not eligible for coverage, except construction activity, will need to apply for an individual storm water NPDES permit using Forms 1 and 2F within 90 days of notification. The renewal Forms 1 and 2F can be obtained by calling (614) 644-2053, please leave your name, address and phone number. Only Form 1 must be submitted to the appropriate district office with a check for \$200.00, made out to: "Treasurer, State of Ohio", within the 90 day timeframe with a letter indicating when Ohio EPA should expect the completed Form 2F. District Office addresses and jurisdictions can be found on the last page of the NOI instructions.

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director





OHR000003 - INDUSTRIAL STORM GENERAL PERMIT RENEWAL  
October 10, 2000

water NPDES permit. It is Ohio EPA's position that C&DD landfills require a construction storm water NPDES permit for their ground disturbing activities (if greater than or equal 5 to acres) but as long as the facility does not receive manufacturing/process related waste from the industrial categories described at 40 CFR 122.26(b)(14) i-ix and xi, then an industrial storm water NPDES permit is not required.

NOI forms should be accompanied by a check for \$200.00 made out to: "Treasurer, State of Ohio" and are to be sent to:

Ohio EPA  
Office of Fiscal Administration  
P.O. Box 1049  
Columbus, Oh 43216-1049

NOT's and "No Exposure Certification" forms (no fee required for either) are to be sent to:

Ohio EPA  
Division of Surface Water  
Attn: Delores Conley  
P. O. Box 1049  
Columbus, OH 43216-1049

If you have further questions please contact one of the following:

John Morrison at (614) 644-2259  
email: [john.morrison@epa.state.oh.us](mailto:john.morrison@epa.state.oh.us)

Tim Bartrand at (614) 752-0782  
email: [tim.bartrand@epa.state.oh.us](mailto:tim.bartrand@epa.state.oh.us)

Anthony Robinson at (614) 728-3392  
email: [anthony.robinson@epa.state.oh.us](mailto:anthony.robinson@epa.state.oh.us)

Bob Phelps at (614) 644-2034  
email: [robert.phelps@epa.state.oh.us](mailto:robert.phelps@epa.state.oh.us)

Sincerely,



Robert E. Phelps, P.E., Manager  
Storm Water Section  
Division of Surface Water



State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center  
122 S. Front Street  
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

P.O. Box 1049  
Columbus, OH 43216-1049

RAVENNA ARMY AMMUNITION PLANT - US ARMY  
JOHN CICERO JR  
8451 SR 5

12/14/2000

RAVENNA OH 44266-9297

RE: Approval for coverage under Ohio EPA NPDES General Permit for  
STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITY - OHR000003

Dear Discharger:

The Ohio Environmental Protection Agency has received a Notice of Intent for coverage under the above referenced general permit for:

RAVENNA ARMY AMMUNITION PLANT  
8451 SR 5

County: PORTAGE  
City: RAVENNA  
Township:

**Ohio EPA Facility Permit Number: 3GR00112\*BG**

This site/facility is approved for coverage under the above referenced Ohio EPA general permit. Please use your Ohio EPA facility permit number in all future correspondence. Enclosed is a copy of the general permit regulating your discharge(s).

Please read and review the permit carefully. The permit contains requirements and prohibitions with which you must comply. Coverage remains in effect until a renewal general permit is issued and Ohio EPA has contacted you in writing about submitting a new NOI for continuing coverage.

If you have any further questions, you may contact:

John Morrison at (614) 644-2259 or email [john.morrison@epa.state.oh.us](mailto:john.morrison@epa.state.oh.us)

Tim Bartrand at (614) 752-0782 or email: [tim.bartrand@epa.state.oh.us](mailto:tim.bartrand@epa.state.oh.us)

Anthony Robinson at (614) 728-3392 or email: [anthony.robinson@epa.state.oh.us](mailto:anthony.robinson@epa.state.oh.us)

Bob Phelps at (614) 644-2034 or email: [bob.phelps@epa.state.oh.us](mailto:bob.phelps@epa.state.oh.us)

Thank you for your cooperation in this matter.

Sincerely,

Christopher Jones

Director

cc: File

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director



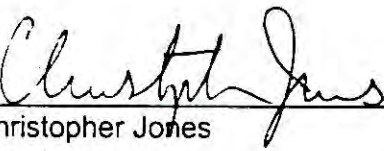
**OHIO ENVIRONMENTAL PROTECTION AGENCY**

**GENERAL PERMIT AUTHORIZATION TO DISCHARGE  
STORM WATER ASSOCIATED  
WITH INDUSTRIAL ACTIVITY UNDER  
THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et. seq., hereafter referred to as "the Act"), and the Ohio Water Pollution Control Act (Ohio Revised Code Chapter 6111), discharges of storm water from industrial facilities, as defined in Part I.B of this permit, are authorized by the Ohio Environmental Protection Agency, hereafter referred to as "Ohio EPA", to discharge from the outfalls at the sites and to the receiving waters identified in the applicant's Notice of Intent (NOI) on file with Ohio EPA in accordance with the conditions specified in Parts I through IX of this permit.

Permit coverage is conditioned upon payment of applicable fees, submittal of a complete Notice of Intent, and written approval of coverage from the Director of Ohio EPA in accordance with Ohio Administrative Code Rule 3745-38-06.

This permit and the authorization to discharge shall expire at midnight on the expiration date shown above. In order to receive authorization to discharge beyond the above date of expiration, the permittee shall submit such information and forms as are required by the Ohio EPA.

  
\_\_\_\_\_  
Christopher Jones  
Director

## Part I. COVERAGE UNDER THIS PERMIT

- A. Permit Area.** This permit covers the entire state of Ohio.
- B. Applicability.** Storm water discharges associated with industrial activity from a point source to surface waters of the state are unlawful, unless authorized by an NPDES permit. Dischargers with a storm water discharge associated with industrial activity (see definition in Part IX of this permit) which is discharged via a point source (including discharges through a municipal separate storm sewer system) to surface waters of the state are required to submit a permit application in accordance with Ohio EPA regulations. Dischargers that are eligible for coverage under this permit and that submit a Notice of Intent (NOI) in accordance with the requirements of Part II of this permit are in compliance with the NPDES application requirements for such storm water discharges.
- C. Eligibility.**
1. This permit may cover all new and existing point source discharges of storm water associated with industrial activity to surface waters of the state, except for storm water discharges identified under paragraph I.C.3.
  2. This permit may authorize storm water discharges associated with industrial activity that are mixed with storm water discharges associated with industrial activity from construction activities provided that the storm water discharge from the construction activity is in compliance with the terms, including applicable NOI or application requirements, of a different NPDES general permit or individual permit authorizing such discharges.
  3. Limitations on Coverage. The following storm water discharges associated with industrial activity are not authorized by this permit:
    - a. storm water discharges associated with industrial activity that are mixed with sources of non-storm water other than non-storm water discharges that are:
      - (i) in compliance with a different NPDES permit; or
      - (ii) non-storm water discharges that are identified and in compliance with Attachment II.A.2 of this permit.
    - b. storm water discharges associated with industrial activity which are subject to an existing effluent limitation guideline addressing storm water (or a combination of storm water and process water)<sup>1</sup>;

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<sup>1</sup> For the purpose of this permit, the following effluent limitation guidelines address storm water (or a combination of storm water and process water): cement manufacturing (40 CFR 411); feedlots (40 CFR 412); fertilizer manufacturing (40 CFR 418); petroleum refining (40 CFR 419); phosphate manufacturing (40 CFR 422); steam electric (40 CFR 423); coal mining (40 CFR 434); mineral mining and processing (40 CFR 436); ore mining and dressing (40 CFR 440); and asphalt emulsion (40 CFR 443 Subpart A). This permit may authorize storm water discharges associated with industrial activity which are not subject to an effluent limitation



- c. storm water discharges associated with industrial activity that are subject to an existing NPDES individual or general permit. Such discharges may be authorized under this permit after an existing permit expires provided the existing permit did not establish numeric limitations for such discharges;
  - d. storm water discharges associated with industrial activity that the Director has determined to be contributing to a violation of a water quality standard;
  - e. storm water discharges associated with landfills, standard industrial classification (SIC) code 5171, SIC 14xx, construction activity, and discharges of coal pile runoff that were not authorized to discharge under general permit OHR000002 or OHG000001; and
  - f. storm water dischargers that discharge to surface waters of the state having a use designation of State Resource Waters or Superior High Quality Waters that have not previously had general permit coverage for its storm water associated with industrial activity and did not previously have coverage under general permit No. OHR000002 or OHG000001.
4. Storm water discharges associated with industrial activity which are authorized by this permit may be combined with other sources of storm water which are not classified as associated with industrial activity pursuant to 40 CFR 122.26(b)(14), so long as the resulting discharge is in compliance with this permit.

**D. Authorization.**

- 1. Dischargers of storm water associated with industrial activity must submit an NOI in accordance with the Ohio Administrative Code 3745-38 and the requirements of Part II of this permit, using an NOI form provided by the Director, to be authorized to discharge under this general permit.
- 2. After the NOI form is reviewed by the Ohio EPA, the permittee shall be notified, in writing as to Ohio EPA's approval or denial for coverage under this general permit.
- 3. The Director may require submittal of an application for an individual NPDES permit based on a review of the NOI or other information.

**Part II. NOTICE OF INTENT, TRANSFER, NOTICE OF TERMINATION REQUIREMENTS AND NO EXPOSURE CERTIFICATION**

This part of the permit addresses how to obtain, transfer and terminate general permit coverage. See Attachment I of the permit.

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guideline even where a different storm water discharge at the facility is subject to an effluent limitation guideline.

### **Part III. SPECIAL CONDITIONS**

This part of the permit addresses what types of non-storm water discharges are prohibited by the permit and what to do in case of a discharge containing pollutants in excess of reportable quantities. See Attachment II of the permit.

### **Part IV. STORM WATER POLLUTION PREVENTION PLANS**

This part of the permit requires the development, implementation and updating of a storm water pollution prevention plan. The plan involves the formation of an in-house storm water pollution prevention team, examining the facility for potential sources of contamination of storm water discharges, and selecting and implementing best management practices for minimizing or eliminating storm water contamination. The plan also requires a Comprehensive Site Compliance Evaluation, additional requirements for storm water discharges associated with industrial activity from facilities subject to Superfund Amendments and Reauthorization Act (SARA) Title III, Section 313 requirements and employee and contractor training requirements. See Attachment III of the permit.

### **Part V. NUMERIC EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

This part contains numeric effluent limitations for coal pile runoff, monitoring requirements for storm water runoff from 11 industrial categories (defined in Attachment IV), and additional storm water monitoring requirements for facilities required to report under SARA Title III for "Section 313 Water Priority Chemicals." Effluent limitations of 50 mg/l for Total Suspended Solids and a pH range of 6.0 S.U. to 9.0 S.U. apply to coal pile runoff. All facilities required to monitor storm water discharges must monitor for: oil & grease, pH, storm event duration, amount of precipitation, time between storm events, and volume of discharge. There are other parameters where monitoring may be required dependent upon industrial category and whether a discharger is a "Section 313" facility (see Attachment IV for detailed requirements that must be met).

### **Part VI. REPORTING REQUIREMENTS**

This part contains types of certifications and reports required by the permit. (See Attachment V of the permit for detailed requirements which must be met).

### **Part VII. STANDARD PERMIT CONDITIONS**

This part contains a variety of obligations and requirements that govern operating under this permit (see Attachment VI for detailed requirements and conditions that must be met).

### **Part VIII. REOPENER CLAUSE**

This part addresses permit changes that could happen if a storm water discharge was discovered to be impairing water quality. See Attachment VII of the permit.

### **Part IX. DEFINITIONS**

This part gives definitions of terminology used within the permit (see Attachment VIII of the permit for actual definitions).



**ATTACHMENT I. NOTICE OF INTENT, TRANSFER, NOTICE OF TERMINATION REQUIREMENTS, AND NO EXPOSURE CERTIFICATION**

**A. Deadlines for Notification.**

1. Except as provided in paragraphs A.4, A.5 and A.6 of Attachment I, individuals who intended to obtain coverage for a storm water discharge associated with industrial activity that was in existence prior to April 1, 1993, under the industrial storm water general permit should have initially submitted a Notice of Intent (NOI) in accordance with the requirements of this part on or before October 1, 1992 or for group applicants in accordance with written instructions provided by Ohio EPA.
2. Except as provided in paragraphs A.3, A.4, A.5 and A.6 of Attachment I, operators of facilities which begin discharging storm water associated with industrial activity after April 1, 1993, shall submit an NOI in accordance with the requirements of this part at least 180 days prior to the commencement of storm water discharge associated with industrial activity at the facility;
3. Operators of oil and gas exploration, production, processing, or treatment operations or transmission facilities, that were not required to submit a permit application as of October 1, 1992 in accordance with 40 CFR 122.26(c)(1)(iii), but that after October 1, 1992 have a discharge of a reportable quantity of oil or a hazardous substance for which notification are required pursuant to either 40 CFR 110.6, 40 CFR 117.21 or 40 CFR 302.6, must submit an NOI in accordance with the requirements of paragraph C of Attachment I of this permit within 14 calendar days of the first knowledge of such release.
4. Storm water discharges associated with industrial activity from a facility that is owned or operated by a municipality that has participated in a timely Part 1 group application and where either the group application is rejected or the facility is denied participation in the group application by U.S. EPA, and that are seeking coverage under this general permit shall submit an NOI in accordance with the requirements of this part on or before the 180th day following the date on which the group is rejected or the denial is made, or October 1, 1992, whichever is later.
5. Where the operator of a facility with a storm water discharge associated with industrial activity which is covered by this permit changes and the new operator wishes to have existing general permit coverage transferred, the new and current operators of the facility must complete and send to Ohio EPA a transfer of responsibility form in accordance with the requirements of this part at least 60 days prior to the change.
6. An operator of a storm water discharge associated with industrial activity may submit an NOI in accordance with the requirements of this part after the dates provided in paragraphs A.1, 2, 3, or 4 of Attachment I of this permit. In such instances, Ohio EPA may bring an enforcement action for any discharges of storm water associated with industrial activity that have occurred on or after the dates specified in paragraphs A.1, 2, 3 or 4 in Attachment I.

**B. Contents of Notice of Intent.** The applicant shall complete and submit an approved NOI form provided by Ohio EPA.

- C. **Where to Submit.** Facilities which discharge storm water associated with industrial activity must use an NOI form provided by the Director. NOIs must be signed in accordance with paragraph G of Attachment VI of this permit. NOIs are to be submitted to the Director at the following address:

**Ohio Environmental Protection Agency  
Office of Fiscal Administration  
P.O. Box 1049  
Columbus, Ohio 43216-1049**

- D. **Additional Notification.** Facilities which discharge storm water associated with industrial activity through large or medium municipal separate storm sewer systems (systems located in an incorporated city with a population of 100,000 or more, or in a county identified as having a large or medium system (see definition in Attachment VIII of this permit)) shall, in addition to filing copies of the Notice of Intent in accordance with paragraph D of Attachment I, also submit signed copies of the Notice of Intent to the operator of the municipal separate storm sewer through which they discharge in accordance with the deadlines in paragraph A of Attachment I of this permit.
- E. **Renotification.** Upon issuance of a renewal or alternate general permit, the permittee shall notify the Director of its intent to be covered by the renewal or alternate general permit in accordance with written instructions provided by Ohio EPA. Coverage under this permit (NPDES permit number OHR000003) shall terminate within 90 days of the date of Ohio EPA's written instructions to renotify.
- F. **Notice of Termination (NOT).** Where all storm water discharges associated with industrial activity that are authorized by this permit are eliminated, the operator of the facility must submit an NOT form provided by Ohio EPA that is signed in accordance with paragraph G of Attachment VI of this permit.

All Notices of Termination are to be sent, using the form provided by the Director (or a photocopy thereof), to the following address:

**Ohio Environmental Protection Agency  
Division of Surface Water  
General Permit Program-NOT  
P.O. Box 1049  
Columbus, Ohio 43216-1049**

- G. **Facilities Eligible for "No Exposure" Exemption for Storm Water Permitting.** By filing a certification of "No Exposure," facilities previously having industrial storm water general permit coverage are automatically removed from permit coverage and an NOT to terminate permit coverage is not required.



## **ATTACHMENT II. SPECIAL CONDITIONS**

### **A. Prohibition on Non-Storm Water Discharges.**

1. Except as provided in paragraph A.2 of Attachment II, all discharges covered by this permit shall be composed entirely of storm water.
2. a. Except as provided in paragraph A.2.b of Attachment II of this permit, discharges of material other than storm water must be in compliance with a NPDES permit (other than this permit) issued for the discharge.
- b. The following non-storm water discharges may be authorized by this permit provided the non-storm water component of the discharge is in compliance with paragraph D.3.g of Attachment III of this permit: discharges from fire fighting activities; fire hydrant flushings; potable water sources including waterline flushings; irrigation drainage; lawn watering; routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

### **B. Releases in excess of Reportable Quantities.**

1. The discharge of hazardous substances or oil in the storm water discharge(s) from a facility shall be minimized in accordance with the applicable storm water pollution prevention plan for the facility. Except as provided in paragraph B.2 of Attachment II of this permit, where a release containing a hazardous substance in an amount equal to or in excess of a reportable quantity established under either 40 CFR 117 or 40 CFR 302, occurs during a 24 hour period:
  - a. Any person in charge of the facility is required to notify the National Response Center (NRC) (800-424-8802); in accordance with the requirements of 40 CFR 110, 40 CFR 117 and 40 CFR 302 as soon as he or she has knowledge of the discharge;
  - b. The permittee shall submit within 14 calendar days of knowledge of the release a written description of the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, and steps to be taken in accordance with paragraph B.1.c of Attachment II of this permit to the appropriate Ohio EPA District Office; and
  - c. The storm water pollution prevention plan required under Part IV (see Attachment III) of this permit must be modified within 14 calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the plan must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.
2. Multiple Anticipated Discharges - Facilities which have more than one anticipated discharge per year containing a hazardous substance in an amount equal to or in excess of a reportable quantity established under either 40 CFR 117 or 40 CFR 302, which occurs during a 24 hour

period, where the discharge is caused by events occurring within the scope of the relevant operating system shall:

- a. submit notifications in accordance with paragraph B.1 of Attachment II of this permit for the first such release that occurs during a calendar year (or for the first year of this permit, after submittal of an NOI); and
  - b. shall provide in the storm water pollution prevention plan required under Part IV (see Attachment III) a written description of the dates on which such releases occurred, the type and estimate of the amount of material released, and the circumstances leading to the release. In addition, the plan must be reviewed to identify measures to minimize such releases and the plan must be modified where appropriate.
3. Spills. This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill.



### **ATTACHMENT III. STORM WATER POLLUTION PREVENTION PLANS**

A storm water pollution prevention plan (plan) shall be developed for each facility covered by this permit. Storm water pollution prevention plans shall be prepared in accordance with good engineering practices. The plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges associated with industrial activity from the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit. Facilities must implement the provisions of the storm water pollution prevention plan required under this part as a condition of this permit.

#### **A. Deadlines for Plan Preparation and Compliance.**

1. Except as provided in paragraphs A.3, 4 and 5 of Attachment III, a plan for a storm water discharge associated with industrial activity that existed on or before October 1, 1992, or that commenced prior to April 1, 1993 (group applicants that had initial storm water general permit coverage under OHG000001 had different deadlines):
  - a. was to be prepared on or before April 1, 1993 (and updated as appropriate); and
  - b. was to provide for initial implementation and compliance with the terms of the plan on or before October 1, 1993.
2. The plan for any storm water discharges associated with industrial activity that commences after April 1, 1993, shall be prepared, and except as provided elsewhere in this permit, shall provide for compliance with the terms of the plan and this permit within 180 days of a timely-submitted NOI (and the plan shall be updated as appropriate);
3. The plan for storm water discharges associated with industrial activity from an oil and gas exploration, production, processing, or treatment operation or transmission facility that is not required to submit a permit application as of October 1, 1992 in accordance with 40 CFR 122.26(c)(1)(iii), but after October 1, 1992 has a discharge of a reportable quantity of oil or a hazardous substance for which notification is required pursuant to either 40 CFR 110.6, 40 CFR 117.21 or 40 CFR 302.6, shall be prepared and except as provided elsewhere in this permit, shall provide for compliance with the terms of the plan and this permit on or before the date 60 calendar days after the first knowledge of such release (and updated as appropriate);
4. The plan for storm water discharges associated with industrial activity from any facility owned or operated by a municipality that has participated in a timely Part 1 group application and where either the group application is rejected or facility is denied participation in the group application by U.S. EPA; or a group applicant to whom Ohio EPA did not contact to apply for coverage under its industrial storm water general permit for group applicants (OHG000001):
  - a. shall be prepared on or before the 365th day following the date on which the group is rejected or the denial is made, or by April 1, 1993, whichever was later (and updated as appropriate); or for group applicants Ohio EPA did not previously contact 365 days from the date coverage is granted for this general permit (OHR000003).

- b. except as provided elsewhere in this permit, shall provide for compliance with the terms of the plan and this permit on or before the 545th day following the date on which the group is rejected or the denial is made, or by October 1, 1993, whichever is later; or for group applicants Ohio EPA did not previously contact 545 days from the date coverage is granted under this general permit (OHR000003).
5. Upon a showing of good cause, the Director may establish a later date for preparing and compliance with a plan for a storm water discharge associated with industrial activity that submits an NOI in accordance with paragraph A.5 of Attachment I of this permit (and updated as appropriate).

**B. Signature and Plan Review.**

1. The plan shall be signed in accordance with paragraph G of Attachment VI of this permit and be retained on-site at the facility which generates the storm water discharge.
2. The permittee shall make plans available upon request to the Ohio EPA Director, or authorized representative, or Regional Administrator of U.S. EPA, or in the case of a storm water discharge associated with industrial activity which discharges through a municipal separate storm sewer system, to the operator of the municipal system.
3. The Director may notify the permittee at any time that the plan does not meet one or more of the minimum requirements of this part. Within 30 days of such notification from the Director, the permittee shall make the required changes to the plan and shall submit to the Director a written certification that the requested changes have been made.
4. All storm water pollution prevention plans (SWP3s) required under this permit are considered reports that shall be available to the public under Section 308(b) of the Act. The permittee may claim any portion of a storm water pollution plan as confidential in accordance with 40 CFR Part 2 and does not have to release any portion of the plan describing facility security measures (such as provided for in paragraph D.7.b(8) of Attachment III of this permit). An interested party wishing a copy of a discharger's SWP3 will have to contact Ohio EPA to obtain a copy.

**C. Keeping Plans Current.**

The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the surface waters of the state or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified under paragraph D.2 of Attachment III of this permit, or otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with industrial activity. Amendments to the plan may be reviewed by Ohio EPA in the same manner as paragraph B, above, of Attachment III of this permit.

**D. Contents of Plan.** The plan shall include, at a minimum, the following items:

1. Pollution Prevention Team - Each plan shall identify a specific individual or individuals within the facility organization as members of a Storm Water Pollution Prevention Team that are responsible for developing the storm water pollution prevention plan and assisting the facility



or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

2. Description of Potential Pollutant Sources. Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials which may potentially be significant pollutant sources. Each plan shall include, at a minimum:
  - a. Drainage.
    1. A site map indicating an outline of the drainage area of each storm water outfall, each existing structural control measure to reduce pollutants in storm water runoff, surface water bodies, locations where significant materials are exposed to precipitation, locations where major spills or leaks identified under paragraph D.2.c of Attachment III of this permit have occurred, and the locations of the following activities where such activities are exposed to precipitation: fueling stations, vehicle and equipment maintenance and/or cleaning areas, loading/unloading areas, locations used for the treatment, storage or disposal of wastes, liquid storage tanks, processing areas and storage areas.
    2. For each area of the facility that generates storm water discharges associated with industrial activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow, and an estimate of the types of pollutants which are likely to be present in storm water discharges associated with industrial activity. Flows with a significant potential for causing erosion shall be identified.
  - b. Inventory of Exposed Materials. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of three years prior to the date of the issuance of this permit and the present; method and location of on-site storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of three years prior to the date of the issuance of this permit and the present; the location and a description of existing structural and non-structural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.
  - c. Spills and Leaks. A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at the facility after the date of three years prior to the effective date of this permit.
  - d. Sampling Data. A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility.

- e. Risk Identification and Summary of Potential Pollutant Sources A narrative description of the potential pollutant sources at the following areas: loading and unloading operations; outdoor storage activities; outdoor manufacturing or processing activities; significant dust or particulate generating processes; and on-site waste disposal practices. The description shall specifically list any significant potential source of pollutants at the site and for each potential source, any pollutant or pollutant parameter (e.g., biochemical oxygen demand, etc.) of concerns shall be identified.
3. Measures and Controls. Each facility covered by this permit shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:
    - a. Good Housekeeping - Good housekeeping requires the maintenance of a clean, orderly facility.
    - b. Preventive Maintenance - A preventive maintenance program shall involve inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.
    - c. Spill Prevention and Response Procedures - Areas where potential spills can occur, and their accompanying drainage points shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures for cleaning up spills shall be identified in the plan and made available to the appropriate personnel. The necessary equipment to implement a clean up should be available to personnel.
    - d. Inspections - In addition to or as part of the comprehensive site evaluation required under paragraph 4 of Attachment III of this permit, qualified facility personnel shall be identified to inspect designated equipment and areas of the facility at appropriate intervals specified in the plan. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained.
    - e. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.
    - f. Record-keeping and Internal Reporting Procedures - A description of incidents such as spills, or other discharges, along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.



g. Non-Storm Water Discharges

1. The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the on-site drainage points that were directly observed during the test. Such certification may not be feasible if the facility operating the storm water discharge associated with industrial activity does not have access to an outfall, manhole, or other point of access to the ultimate conduit which receives the discharge. In such cases, the source identification section of the storm water pollution plan shall indicate why the certification required by this part was not feasible, along with the identification of potential significant sources of non-storm water at the site. A discharger that is unable to provide the certification required by this paragraph must notify in accordance with paragraph A of Attachment V of this permit.
  2. Except for flows from fire fighting activities, sources of non-storm water listed in paragraph A.2 of Attachment II of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.
- h. Sediment and Erosion Control - The plan shall identify areas which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify measures to limit erosion.
- i. Management of Runoff - The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the source of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures determined to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity (see paragraphs D.2(b), (d) and (e) of Attachment III of this permit) shall be considered when determining reasonable and appropriate measures. Appropriate measures may include: including vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, and wet detention/retention devices.
4. Comprehensive Site Compliance Evaluation. Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but, except as provided in paragraph D.4.d of Attachment III of this permit, in no case less than once a year. Such evaluations shall provide:
- a. Material handling areas and other potential sources of pollution identified in the plan in accordance with paragraph D.2 in Attachment III of this permit shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Structural storm water management measures, sediment and control measures, and other structural



pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

- b. Based on the results of the inspection, the description of potential pollutant sources identified in the plan in accordance with paragraph D.2 of Attachment III of this permit and pollution prevention measures and controls identified in the plan in accordance with paragraph D.3 of Attachment III of this permit shall be revised as appropriate within two weeks of such inspection and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than twelve weeks after the inspection.
  - c. A report summarizing the scope of the inspection, personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with paragraph D.4.b of Attachment III of the permit shall be made and retained as part of the storm water pollution prevention plan for at least three years. The report shall be signed in accordance with paragraph G of Attachment VI of this permit.
  - d. Where annual site inspections are shown in the plan to be impractical for inactive mining sites due to the remote location and inaccessibility of the site, site inspections required under this part shall be conducted at appropriate intervals specified in the plan, but, in no case less than once in three years. At least one site inspection required under this part shall be conducted prior to October 1, 1994 or, for sites which become inactive after October 1, 1994, the date two years after such site becomes inactive.
5. Additional requirements for storm water discharges associated with industrial activity through municipal separate storm sewer systems serving a population of 100,000 or more. In addition to the applicable requirements of this permit, facilities covered by this permit must comply with applicable requirements in municipal storm water management programs developed under NPDES permits issued for the discharge of the municipal separate storm sewer system that receives the facility's discharge, provided the discharger has been notified of such conditions.
  6. Consistency with other plans. Storm water pollution prevention plans may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans developed for the facility under section 311 of the Act or Best Management Practices (BMP) Programs otherwise required by a NPDES permit for the facility as long as such requirement is incorporated into the storm water pollution prevention plan.
  7. Additional requirements for storm water discharges associated with industrial activity from facilities subject to SARA Title III, Section 313 requirements (these additional requirements are not applicable to Section 313 water priority chemicals in gaseous or non-soluble liquid or solid [at atmospheric pressure and temperature] forms). In addition to the requirements of paragraphs D.1 through 4 of Attachment III of this permit and other applicable conditions of this permit, storm water pollution prevention plans for facilities subject to reporting requirements under SARA Title III, Section 313 for chemicals which are classified as "Section 313 water priority chemicals" in accordance with the definition in Attachment VIII of this permit, shall describe and ensure the implementation of practices which are necessary to provide for conformance with the following guidelines:



- a. In areas where Section 313 water priority chemicals are stored, processed or otherwise handled, appropriate containment, drainage control and/or diversionary structures shall be provided. At a minimum, one of the following preventive systems or its equivalent shall be used:
  1. Curbing, culverting, gutters, sewers or other forms of drainage control to prevent or minimize the potential for storm water run-on to come into contact with significant sources of pollutants; or
  2. Roofs, covers or other forms of appropriate protection to prevent storage piles from exposure to storm water, and wind blowing.
- b. In addition to the minimum standards listed under paragraph D.7.a of Attachment III of this permit, the storm water pollution prevention plan shall include a complete discussion of measures taken to conform with the following applicable guidelines, other effective storm water pollution prevention procedures, and applicable State rules, regulations and guidelines:
  1. Liquid storage areas where storm water comes into contact with any equipment, tank, container, or other vessel used for Section 313 water priority chemicals.
    - a. No tank or container shall be used for the storage of a Section 313 water priority chemical unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature, etc.
    - b. Liquid storage areas for Section 313 water priority chemicals shall be operated to minimize discharges of Section 313 chemicals. Appropriate measures to minimize discharges of Section 313 chemicals may include secondary containment provided for at least the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation, a strong spill contingency and integrity testing plan, and/or other equivalent measures.
  2. Material storage areas for Section 313 water priority chemicals other than liquids. Material storage areas for Section 313 water priority chemicals other than liquids which are subject to runoff, leaching, or wind blowing shall incorporate drainage or other control features which will minimize the discharge of Section 313 water priority chemicals by reducing storm water contact with Section 313 water priority chemicals.
  3. Truck and rail car loading and unloading areas for liquid Section 313 water priority chemicals. Truck and rail car loading and unloading areas for liquid Section 313 water priority chemicals shall be operated to minimize discharges of Section 313 water priority chemicals. Appropriate measures to minimize discharges of Section 313 chemicals may include: the placement and maintenance of drip pans where spillage may occur (such as hose connections, hose reels and filler nozzles) for use when making and breaking hose connections; a strong spill contingency and integrity testing plan; and/or other equivalent measures.
  4. In facility areas where Section 313 water priority chemicals are transferred, processed or otherwise handled. Processing equipment and materials handling equipment shall

be operated so as to minimize discharges of Section 313 water priority chemicals. Materials used in piping and equipment shall be compatible with the substances handled. Drainage from process and materials handling areas shall be designed as described in paragraphs (a), (b) and (c) of this section. Additional protection such as covers or guards to prevent wind blowing, spraying or releases from pressure relief vents from causing a discharge of Section 313 water priority chemicals to the drainage system, and overhangs or door skirts to enclose trailer ends at truck loading/unloading docks shall be provided as appropriate. Visual inspections or leak tests shall be provided for overhead piping conveying Section 313 water priority chemicals without secondary containment.

5. Discharges from areas covered by paragraphs (1), (2), (3) or (4).
  - a. Drainage from areas covered by paragraphs (1), (2), (3) or (4) of this part should be restrained by valves or other positive means to prevent the discharge of a spill or other excessive leakage of Section 313 water priority chemicals. Where containment units are employed, such units may be emptied by pumps or ejectors; however, these shall be manually activated.
  - b. Flapper-type drain valves shall not be used to drain containment areas. Valves used for the drainage of containment areas should, as far as is practical, be of manual, open-and-closed design.
  - c. If facility drainage is not engineered as above, the final discharge of all in-facility storm sewers shall be equipped to be equivalent with a diversion system that could, in the event of an uncontrolled spill of Section 313 water priority chemicals, return the spilled material to the facility.
  - d. Records shall be kept of the frequency and estimated volume (in gallons) of discharges from containment areas.
6. Facility site runoff other than from areas covered by (1), (2), (3) or (4). Other areas of the facility (those not addressed in paragraphs (1), (2), (3) or (4)), from which runoff which may contain Section 313 water priority chemicals or spills of Section 313 water priority chemicals could cause a discharge shall incorporate the necessary drainage or other control features to prevent discharge of spilled or improperly disposed material and ensure the mitigation of pollutants in runoff or leachate.
7. Preventive maintenance and housekeeping. All areas of the facility shall be inspected at specific intervals for leaks or conditions that could lead to discharges of Section 313 water priority chemicals or direct contact of storm water with raw materials, intermediate materials, waste materials or products. In particular, facility piping, pumps, storage tanks and bins, pressure vessels, process and material handling equipment, and material bulk storage area shall be examined for any conditions or failures which could cause a discharge. Inspection shall include examination for leaks, wind blowing, corrosion, support or foundation failure, or other forms of deterioration or non-containment. Inspection intervals shall be specified in the plan and shall be based on design and operational experience. Different areas may require different inspection intervals. Where a leak or other condition is discovered



which may result in significant releases of Section 313 water priority chemicals to the drainage system, corrective action shall be immediately taken or the unit or process shut down until corrective action can be taken. When a leak or non-containment of a Section 313 water priority chemical has occurred, contaminated soil, debris, or other material must be promptly removed and disposed in accordance with Federal, State, and local requirements and as described in the plan.

8. Facility security. Facilities shall have the necessary security systems to prevent accidental or intentional entry which could cause a discharge. Security systems described in the plan shall address fencing, lighting, vehicular traffic control, and securing of equipment and buildings.
9. Training. Facility employees and contractor personnel using the facility shall be trained in and informed of preventive measures at the facility. Employee training shall be conducted at intervals specified in the plan, but not less than once per year, in matters of pollution control laws and regulations, and in the storm water pollution prevention plan and the particular features of the facility and its operation which are designed to minimize discharges of Section 313 water priority chemicals. The plan shall designate a person who is accountable for spill prevention at the facility and who will set up the necessary spill emergency procedures and reporting requirements so that spills and emergency releases of Section 313 water priority chemicals can be isolated and contained before a discharge of a Section 313 water priority chemical can occur. Contractor or temporary personnel shall be informed of facility operation and design features in order to prevent discharges or spills from occurring.
8. Additional Requirements for Salt Storage. Storage piles of salt used for deicing or other commercial or industrial purposes and which generate a storm water discharge associated with industrial activity which is discharged to surface waters of the state shall be enclosed or covered to prevent exposure to precipitation, except for exposure resulting from adding or removing materials from the pile. Piles do not need to be enclosed or covered where storm water from the pile is not discharged to surface waters of the state.

#### ATTACHMENT IV. NUMERIC EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- A. Coal Pile Runoff Effluent Limitations.** Any discharge of coal pile runoff to waters of the state in existence and being covered under the general permit for storm water associated with industrial activity as of February 18, 1996 is eligible for coverage under this general permit as long as the permittee complied with the following effluent limitations as expeditiously as practicably but no later than October 26, 1995, if in existence at that time, or if initial discharge commenced after October 26, 1995 then upon commencement of discharge. Coal pile runoff shall not be diluted with storm water or other flow in order to meet these limitations.

<u>Units</u>	<u>Parameter</u>	<u>Daily Minimum</u>	<u>Daily Maximum</u>
mg/l	Total Suspended Solids	---	50
S.U.	pH	6.0	9.0

Any untreated overflow from facilities designed, constructed and operated to treat the volume of coal pile runoff which is associated with a 10 year, 24-hour rainfall event shall not be subject to the limitation for total suspended solids. It is the permittee's responsibility to demonstrate to the Ohio EPA that a 10 year, 24-hour rainfall event has occurred and the volume of the overflow to which the Total Suspended Solids effluent limitation does not apply.

- B. Monitoring Requirements.** Only the activities described in the following matrix and associated definitions are required to conduct monitoring. The monitoring required in the following matrix shall be conducted annually. Monitoring shall be initiated within twelve months of the date that the Director approves the entity for coverage under this general permit and henceforth on an annual basis, weather conditions permitting. A permittee may, in lieu of annual monitoring, certify that industrial materials are not exposed to storm water; such certification shall be submitted to the Ohio EPA upon request of the Director. See paragraph B.2.a of Attachment IV of this permit regarding Section 313 water priority chemicals and associated areas regarding monitoring.

##### 1. Monitoring Requirements Matrix

Reporting Units	Parameter	INDUSTRIAL ACTIVITY CATEGORIES											
		a	b'	c	d	e	f	g	h	i	j	k	l'
mg/l	Oil and Grease		x	x	x	x	x	x	x	x	x	x	x
mg/l	5-day Biochemical Oxygen Demand		x							x		x	
mg/l	Chemical Oxygen Demand		x	x	x	x	x		x	x			x
mg/l	Total Suspended Solids		x		x	x	x	x	x	x	x	x	x
mg/l	Total Kjeldahl Nitrogen			x								x	
mg/l	Phosphorus											x	
S.U.	pH		x	x	x	x	x	x	x	x	x	x	x
TU	Acute Toxicity												
Hours	Duration of Storm Event		x	x	x	x	x	x	x	x	x	x	x
Inches	Precipitation		x	x	x	x	x	x	x	x	x	x	x
Hours	Duration Between Storm Events*		x	x	x	x	x	x	x	x	x	x	x
Gallons	Volume (est)		x	x	x	x	x	x	x	x	x	x	x
ug/l	Lead, Total		x	x					x				



Reporting Units	Parameter	INDUSTRIAL ACTIVITY CATEGORIES											
		a	b <sup>1</sup>	c	d	e	f	g	h	i <sup>2</sup>	j	k	l <sup>3</sup>
µg/l	Cadmium, Total		X <sup>3</sup>	X									
µg/l	Copper, Total		X <sup>3</sup>				X	X	X		X		
µg/l	Arsenic, Total		X <sup>3</sup>	X			X						
µg/l	Chromium, Total		X <sup>3</sup>	X			X						
mg/l	Ammonia												
µg/l	Magnesium, Total			X									
µg/l	Magnesium, Diss.			X									
mg/l	Total Dissolved Solids			X									
mg/l	Total Organic Carbon			X									
µg/l	Barium, Total			X									
mg/l	Cyanide, Total			X									
µg/l	Mercury, Total			X									
µg/l	Selenium, Total			X									
µg/l	Silver, Total			X									
µg/l	Pentachlorophenol				X								
µg/l	Nickel, Total							X			X		
µg/l	Zinc, Total							X			X		
#/100ml	Fecal Coliform											X	

\*Time between the storm event when sampling is being conducted and the last storm event producing rainfall greater than 0.1 inches.

- <sup>1</sup> and any pollutant limited in an effluent guideline or categorical pretreatment standard which the facility is subject.
- <sup>2</sup> and the primary ingredient used in the deicing materials used at the site (e.g., ethylene glycol, urea, etc.).
- <sup>3</sup> facilities that are classified as SIC 33 only because they manufacture pure silicon and/or semiconductor grade silicon are not required to monitor for this parameter.

## 2. Industrial Activity Categories Definitions

- a. Section 313 of SARA Title III Facilities. As of the effective date of permit OHR000003, facilities with storm water discharges associated with industrial activity that are subject to requirements to report releases into the environment under Section 313 of SARA Title III for chemicals which are classified as 'Section 313 water priority chemicals' are no longer required to perform monitoring unless required by paragraphs B.2.b through B.2.l. of Attachment IV of this permit.
- b. Primary Metal Industries. Facilities with storm water discharges associated with industrial activity classified as Standard Industrial Classification (SIC) 33 (Primary Metal Industry) are required to monitor such storm water that is discharged from the facility.

- c. Land Disposal Units/Incinerators/BIFs. Facilities with storm water discharges associated with industrial activity from any active or inactive land application sites that has received any industrial wastes from a facility with a Standard Industrial Classification (SIC) of between 20-39 (manufacturing); and incinerators (including Boilers and Industrial Furnaces (BIFs)) that burn hazardous waste and operate under interim status or a permit under Subtitle C of RCRA, are required to monitor such storm water that is discharged from the facility (see land application unit on page 31).
- d. Wood Treatment Using Chlorophenolic Formulations. Facilities with storm water discharges associated with industrial activity from areas that are used for wood treatment, wood surface application or storage of treated or surface protected wood at any wood preserving or wood surface facilities are required to monitor such storm water that is discharged from the facility.
- e. Wood Treatment Using Creosote Formulations. Facilities with storm water discharges associated with industrial activity from areas that are used for wood treatment, wood surface application or storage of treated or surface protected wood at any wood preserving or wood surface facilities are required to monitor such storm water that is discharged from the facility.
- f. Wood Treatment Using Chromium-Arsenic Formulations. Facilities with storm water discharges associated with industrial activity from areas that are used for wood treatment, wood surface application or storage of treated or surface protected wood at any wood preserving or wood surface facilities are required to monitor such storm water that is discharged from the facility.
- g. Coal Pile Runoff. Facilities with storm water discharges associated with industrial activity from coal pile runoff are required to monitor such storm water that is discharged from the facility.
- h. Battery Reclaimers. Facilities with storm water discharges associated with industrial activity from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation (including material handling activities) at facilities that reclaim lead acid batteries are required to monitor such storm water that is discharged from the facility.
- i. Airports. At airports with over 50,000 flight operations per year, facilities with storm water discharges associated with industrial activity from areas where aircraft or airport deicing operations occur (including runways, taxiways, ramps, and dedicated aircraft deicing stations) are required to monitor such storm water that is discharged from the facility.
- j. Coal-fired Steam Electric Facilities. Facilities with storm water discharges associated with industrial activity from coal handling sites at coal fired steam electric power generating facilities (other than discharges in whole or in part from coal piles subject to storm water effluent guidelines at 40 CFR 423 - which are not eligible for coverage under this permit) are required to monitor such storm water that is discharged from the facility.



- k. **Animal Handling / Meat Packing.** Facilities with storm water discharges associated with industrial activity from animal handling areas, manure management (or storage) areas, and production waste management (or storage) areas that are exposed to precipitation at meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils, are required to monitor such storm water that is discharged from the facility.
- l. **Additional Facilities.** Facilities with storm water discharges associated with industrial activity that:
  - 1. come in contact with storage piles for solid chemicals used as raw materials that are exposed to precipitation at facilities classified as SIC 30 (Rubber and Miscellaneous Plastics Products) or SIC 28 (Chemicals and Allied Products);
  - 2. are from those areas at automobile junkyards with any of the following: (A) over 250 auto/truck bodies with drivelines (engine, transmission, axles, and wheels), 250 drivelines, or any combination thereof (in whole or in parts) are exposed to storm water; (B) over 500 auto/truck units (bodies with or without drive lines in whole or in parts) are stored and exposed to storm water; or (C) over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water;
  - 3. come in contact with lime storage piles that are exposed to storm water at lime manufacturing facilities;
  - 4. are from oil handling sites at oil fired steam electric power generating facilities;
  - 5. are from cement manufacturing facilities and cement kilns (other than discharges in whole or in part from material storage piles subject to storm water effluent guidelines at 40 CFR 411 - which are not eligible for coverage under this permit);
  - 6. are from ready-mixed concrete facilities; or
  - 7. are from ship building and repairing facilities;

are required to monitor such storm water discharged from the facility.

- 3. **When and How to Sample.** Take a minimum of one grab sample from the discharge associated with industrial activity resulting from a storm event with at least 0.1 inch of precipitation (defined as "measurable" event), providing the interval from the preceding measurable storm is at least 72 hours. The 72-hour storm interval is waived when the preceding measurable storm did not yield a measurable discharge, or if you are able to document that less than a 72-hour interval is representative for local events during the sampling period. Take the grab sample during the first 30 minutes of the discharge. If it is not practicable to take the sampling during the first 30 minutes, sample during the first hour of discharge and describe why a grab sample during the first 30 minutes was impracticable.
- 4. **Sampling Waiver.** When a discharger is unable to collect samples due to adverse climatic conditions, the discharger must prepare, in lieu of sampling data, a description of why

samples could not be collected, including available documentation of the event. Adverse climatic conditions which may prohibit the collection of samples includes weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

5. **Representative Discharge.** When a facility has two or more outfalls that, based on a consideration of features and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may test the effluent of one such outfalls and report that the quantitative data also applies to the substantially identical outfalls. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area (e.g., low (under 40%), medium (40% to 65%) or high (above 65%)) shall be provided.

- C. **Toxicity Testing.** As of the effective date of permit OHR000003, acute toxicity testing is no longer required.
- D. **Alternative Certification of "Not Present or No Exposure."** You are not subject to the analytical monitoring requirement of this part provided: you make a certification for a given outfall, or on a pollutant-by-pollutant basis in lieu of monitoring required under this part, that material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, industrial machinery or operations, or significant materials from past industrial activity that are located in areas of the facility within the drainage area of the outfall are not presently exposed to storm water and are not expected to be exposed to storm water for the certification period; and your certification is signed in accordance with Attachment VI.G and retained in the SWP3. If you cannot certify for an entire period, you must note the date exposure was eliminated and perform any monitoring required up until that date.



## **ATTACHMENT V. REPORTING REQUIREMENTS**

- A. Failure to Certify.** Any facility that is unable to make the certification required under paragraph D.3.g(1) (testing for non-storm water discharges) of Attachment III of this permit, must note in its storm water pollution prevention plan its inability to make the certification by April 1, 1993 or, for facilities which begin to discharge storm water associated with industrial activity after October 1, 1992, within 180 days after submitting an NOI to be covered by this permit. Such notation shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible.
- B. Reporting: Where to Submit.**
1. Permittees shall submit all monitoring data upon request of the Director or Regional Administrator.
  2. Signed copies of individual permit applications and all other reports required herein, shall be submitted to the Director of the Ohio EPA at the addresses previously given in this permit for NOTs (see Attachment 1.F).
  3. Additional Notification. Facilities with at least one storm water discharge associated with industrial activity through a large or medium municipal separate storm sewer system (systems serving a population of 100,000 or more) in addition to submitting monitoring data in accordance with paragraph B of Attachment V of this permit, must submit signed copies to the operator of the municipal separate storm sewer system at the same time they are submitted to the Ohio EPA.
- C. Retention of Records.**
1. The permittee shall retain the pollution prevention plan developed in accordance with Attachment III of this permit for the life of the permit. The permittee shall retain all records of all monitoring information, copies of all reports required by this permit, and records of all data used to complete the Notice of Intent to be covered by this permit, for a period of at least six years from the date of the measurement, report, or application. This period may be explicitly modified by alternative provisions of this permit (see paragraph C.2 of Attachment V of this permit) or extended by request of the Director at any time.
  2. For discharges subject to sampling requirements pursuant to paragraph B of Attachment IV of this permit, in addition to the requirements of paragraph C.1 of Attachment V of this permit, permittees are required to retain for a six year period from the date of sample collection or for the term of this permit, which ever is greater, records of all monitoring information collected during the term of this permit. Permittees must submit such monitoring results to the Director upon the request of the Director.

**ATTACHMENT VI. STANDARD PERMIT CONDITIONS**

**A. Duty to Comply.**

1. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Ohio Revised Code Chapter 6111 and Ohio Administrative Code rule 3745-38 and is grounds for enforcement action; for permit coverage termination, revocation and reissuance, or modification; or for denial of coverage under a renewal of this general permit.
2. Penalties for Violations of Permit Conditions.
  - a. Criminal
    1. Ohio Revised Code Section 6111.99 provides that any person who violates permit terms or conditions is subject to a fine and/or imprisonment.
    2. Falsification. Ohio Revised Code Chapter 6111 provides that any person who knowingly submits false information or records pertaining to discharges required as a condition of a permit is subject to a fine and/or imprisonment.
  - b. Civil Penalties - Ohio Revised Code Chapter 6111 provides that any person who violates permit terms or conditions is subject to a civil penalty for each day of violation.

- B. Continuation of the Expired General Permit.** An expired general permit continues in force and effect until a new general permit is issued.
- C. Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- D. Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
- E. Duty to Provide Information.** The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine compliance with this permit. The permittee shall also furnish to the Director upon request copies of records required to be kept by this permit.
- F. Other Information.** When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Director, he or she shall promptly submit such facts or information.
- G. Signatory Requirements.** All Notices of Intent, Notices of Termination, storm water pollution prevention plans, reports, certifications or information either submitted to the Director (and/or the operator of a large or medium municipal separate storm sewer system), or that this permit requires be maintained by the permittee, shall be signed.



1. All Notices of Intent shall be signed as follows:
  - a. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
  - b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
  - c. For a municipality: State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - a. The authorization is made in writing by a person described above and submitted to the Director.
  - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).
  - c. Changes to authorization. If an authorization under paragraph G.2 of Attachment VI of this permit is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph G.2 of Attachment VI of this permit must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
  - d. Certification. Any person signing documents under this section shall make the following certification:

*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons*

*directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

- H. **Penalties for Falsification of Monitoring Systems.** Ohio Revised Code Chapter 6111 provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment.
- I. **Oil and Hazardous Substance Liability.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.
- J. **Property Rights.** The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.
- K. **Severability.** The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.
- L. **Transfers.** This permit is not transferable to any person except as described in Attachment I of this permit. The Director may require the operator to apply for and obtain an individual NPDES permit as stated in paragraph M of Attachment VI of this permit.
- M. **Requiring an Individual Permit or an Alternative General Permit.**
  - 1. The Director may require any person authorized by this permit to apply for and/or obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Director to take action under this paragraph. The Director may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. Individual permit applications shall be submitted to the address of the appropriate Ohio EPA district office. The Director may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application as required by the Director, then the applicability of this permit to the individual NPDES permittee is automatically terminated at the end of the day specified for application submittal.
  - 2. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application (Form 1 and Form 2F) with reasons supporting the request to the Director. Individual permit applications shall be submitted to the appropriate Ohio EPA



district office. The request may be granted by the issuance of any individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.

3. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is authorized for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be.

**N. Environmental Laws.** No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

**O. Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

**P. Monitoring and Records.**

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
2. The permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 6 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
3. **Records Contents.** Records of monitoring information shall include:
  - a. The date, exact place, and time of sampling or measurements;
  - b. The initials or name(s) of the individual(s) who performed the sampling or measurements;
  - c. The date(s) analyses were performed;
  - d. The time(s) analyses were initiated;
  - e. The initials or name(s) of the individual(s) who performed the analyses;
  - f. References and written procedures, when available, for the analytical techniques or methods used; and

g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

4. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

**Q. Inspection and Entry.** The permittee shall allow the Director or an authorized representative of Ohio EPA or, in the case of a facility which discharges through a municipal separate storm sewer, an authorized representative of the municipal operator or the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and
3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

**R. Permit Actions.** This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

**S. Upset.** The provisions of 40 CFR Section 122.41(n), relating to "Upset," are specifically incorporated herein by reference in their entirety. For definition of "upset," see Attachment VIII, Definitions, of this permit.



**ATTACHMENT VII. REOPENER CLAUSE**

- A. If there is evidence indicating potential or realized impacts on water quality due to any storm water discharge associated with industrial activity covered by this permit, the owner or operator of such discharge may be required to obtain individual permit or an alternative general permit in accordance with Part I.C of this permit or the permit may be modified to include different limitations and/or requirements.
- B. Permit modification or revocation will be conducted according to Ohio Administrative Code 3745-38-06.

## ATTACHMENT VIII. DEFINITIONS

"Act" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, Pub. L. 97-117, and Pub. L. 100-433 U.S.C. 1251 et. seq.

"Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of surface waters of the state. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"Coal pile runoff" means the rainfall runoff from or through any coal storage pile.

"Director" means the director of Ohio EPA or an authorized representative.

"Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

"Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

"Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

"Large and Medium municipal separate storm sewer system" means all municipal separate storm sewers that are either:

- (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or
- (ii) located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or
- (iii) owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

"National Pollutant Discharge Elimination System (NPDES)" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program".

"NOI" means notice of intent to be covered by this permit (see Attachment I of this permit).

"NOT" means notice of termination (see Attachment I of this permit).



"Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

"Section 313 water priority chemical" means a chemical or chemical categories which are: 1) are listed at 40 CFR 372.65 pursuant to Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986, also titled the Emergency Planning and Community Right-to-Know Act of 1986; 2) are present at or above threshold levels at a facility subject to SARA Title III, Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the Act at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

"Significant materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

"Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).

"Storm Water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

"U.S. EPA Definition of Storm Water Associated with Industrial Activity" (not every activity in this definition is eligible for coverage under this permit; see Part 1.C. for eligibility criteria) means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program. For the categories of industries identified in subparagraphs (i) through (x) of this subsection, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.

For the categories of industries identified in subparagraph (xi), the term includes only storm water discharges from all areas listed in the previous sentence (except access roads) where material handling equipment or activities, "raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water". For the purposes of this paragraph, material handling activities include the: storage, loading and unloading, transportation, or conveyance of



any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally or municipally owned or operated that meet the description of the facilities listed in this paragraph (i)-(xi)) include those facilities designated under 40 CFR 122.26(a)(1)(v). The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

- (i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards which are exempted under category (xi) of this paragraph);
- (ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285) 29, 311, 32 (except 323), 33, 3441, 373;
- (iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations meeting the definition of a reclamation area under 40 CFR 434.11(l)) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but which have an identifiable owner/operator;
- (iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;
- (v) Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under Subtitle D of RCRA;
- (vi) Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but not limited to those classified as Standard Industrial Classification 5015 and 5093;
- (vii) Steam electric power generating facilities, including coal handling sites;
- (viii) Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45, and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under paragraphs (i)-(vii) or (ix)-(xi) of this subsection are associated with industrial activity;
- (ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located



within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with 40 CFR 503;

- (x) Construction activity - including clearing, grading and excavation activities except: operations that result in disturbance of less than five acres of total land area which is not part of a larger common plan of development or sale; and
- (xi) Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included within categories (ii)-(x)).

"SWPPP" or "SWP3" means storm water pollution prevention plan to be completed as a condition of this permit (see Attachment III of this permit).

"Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

"Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

"Waste treatment systems," including treatment ponds or lagoons designed to meet the requirements of the CWA are not surface waters of the state.

"10-year, 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable recurrence interval of once in 10 years. This information is available in "Weather Bureau Technical Paper No. 40," May 1961 and "NOAA Atlas 2," 1973 for the 11 Western States, and may be obtained from the National Climatic Center of the Environmental Data Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

"Bypass" means the intentional diversion of waste streams from any portion of the treatment facility.

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

"Surface waters of the state" means all streams, lakes, ponds, marshes, watercourses, waterways, springs, irrigation systems, drainage systems, and all other bodies or accumulations of surface water, natural or artificial, which are situated wholly or partly within, or border upon, this state, or are within its jurisdiction, except those private waters which do not combine or effect a junction with natural surface waters.





## Notice of Termination (NOT) Form Instructions For Ohio EPA General Permits

### Where to file NOT form

NOTs must be sent to the following address:

Ohio Environmental Protection Agency  
General Permit Program  
P.O. Box 1049  
Columbus, OH 43216-1049

### Completing the Form

All responses must be typewritten in the appropriate areas only. Forms transmitted by FAX will not be accepted. Complete all sections of the NOT form. Incomplete forms will be returned to the applicant for resubmittal.

Please place each character slightly above the appropriate line. Abbreviate if necessary to stay within the space allowed for each item. Use one space for breaks between words but not for punctuation marks unless they are needed to clarify your response.

### Section I - Permit Information

Enter the existing Ohio NPDES general permit number assigned to the facility or site for which you are submitting this NOT. If you do not know the permit number, contact the Ohio EPA Storm Water Section at (614) 644-2001.

### Section II - Owner/Applicant Information/Mailing Address

This information should appear on the NOT form as it appears on the original Notice of Intent (NOI) form.

Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in the application. The name of the operator may or may not be the same as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. For construction activities, the responsible party is the owner or the developer of the property. Do not use a colloquial name. Give the name and phone number of a contact person who is responsible for addressing NPDES permit requirements. Enter the complete address and telephone number of the operator (provide phone number as: area code exchange number).

### Section III - Facility/Site Location Information

This information should appear on the NOT form as it appears on the original Notice of Intent (NOI) form.

Enter the facility's or site's official or legal name and complete address, including city, state, zip code, county, township, and section. If the facility lacks a street address, indicate the street name and approximate address number.

### Section IV - Reason for Termination

Indicate your reason for submitting this NOT by placing an "x" on the appropriate space. You may indicate more than one reason.

#### Standard Certification

The standard certification should be completed except where a specific certification (listed below) is required.

#### Industrial Storm Water and Coal Mining Activity Certification Only

This certification should be completed only if you are submitting this NOT to terminate permit coverage under the storm water general permit associated with industrial activity or the general permit associated with coal mining activity.

#### Construction Certification Only

This certification should be completed only if you are submitting this NOT to terminate permit coverage under the storm water general permit associated with construction activity.

Note for all certifications: provide date as month day year using 2 digits for each space.

### Signatory Requirements

Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows.

For a corporation; by a responsible corporate officer, which means: 1) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions; or 2) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship; by a general partner or the proprietor; or

For a municipality, state, federal, or other public facility; by either a principal executive officer or ranking elected official





## Notice of Termination (NOT) of Coverage Under Ohio Environmental Protection Agency General Permit

(Read accompanying instructions carefully before completing this form)

Submission of this NOT constitutes notice that the party identified in Section II of this form is no longer authorized to discharge into state waters under the NPDES general permit program. Complete all information - THIS FORM MUST BE COMPLETELY TYPEWRITTEN AND ORIGINAL (not a copy) - NOT FOLDED OR STAPLED - FOR PROPER ELECTRONIC SCANNING. Forms transmitted by fax will not be accepted.

### I. Permit Information:

NPDES general permit number: OH \_\_\_\_\_ Facility General Permit Number: \_\_\_\_\_

### II. Owner/Applicant Information/Mailing Address:

Company Name: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

### III. Facility/Site Location Information:

Facility Name: \_\_\_\_\_  
Facility Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
Facility Address/Location: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
County: \_\_\_\_\_ Township: \_\_\_\_\_ Section: \_\_\_\_\_

### IV. Reason for Termination:

\_\_\_\_\_ Transfer of Ownership \_\_\_\_\_ Cease to Discharge \_\_\_\_\_ Facility Closed \_\_\_\_\_ Project Completed  
\_\_\_\_\_ Obtained Individual Permit

### Standard Certification:

*I certify under penalty of law that all discharges authorized by the NPDES general permit have been eliminated or that I am no longer the operator of the facility. I understand that by submitting this NOT, I am no longer authorized to discharge under this general permit and that discharging pollutants to waters of the state without a NPDES permit is unlawful under ORC 6111.*

Name (typed): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### Industrial Storm Water and Coal Mining Activity Certification Only:

*I certify under penalty of law that all discharges associated with the identified facility that are authorized by the above referenced NPDES general permit have been eliminated, that I am no longer the operator of the facility, or in the case of a coal mine that the SMCRA bond has been released by ODNR-Division of Reclamation. I understand that, by submitting this NOT, I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that all discharging pollutants in storm water associated with industrial activity to waters of the state is unlawful under ORC 6111 where the discharge is not authorized by a NPDES permit.*

Name (typed): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### Storm Water Construction Activity Certification Only:

*I certify under penalty of law that all elements of the storm water pollution prevention plan have been completed, the disturbed soil at the identified facility have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all storm water discharges associated with construction activity from the identified facility that are authorized by the above referenced NPDES general permit have otherwise been eliminated. I understand that, by submitting this NOT, I am no longer authorized to discharge storm water associated with construction activity by the general permit, and that discharging pollutants in storm water associated with construction activity to waters of the state is unlawful under ORC 6111 where the discharge is not authorized by a NPDES permit.*

Name (typed): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

OUTFALL 903

OUTFALL 907

OUTFALL 908

LOAD LINE 1

LOAD LINE 2

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AREA 1

AREA 2

AREA 3

AREA 4

AREA 5

AREA 6

AREA 7

AREA 8

AREA 9

AREA 10

AREA 11

AREA 12

STORAGE

ADMINISTRATIVE AREA

WATERWAY

RAILROAD

SCALE



<b>RAVENNA ARMY AMMUNITION PLANT</b>			
<b>DIVISION ONE OPERATED BY GARDNER ARSENAL, INC.</b>			
<b>APPROPRIATION</b>	<b>DESCRIPTION</b>	<b>DATE</b>	<b>TITLE</b>
EXPENSES			<b>GENERAL AREA MAP</b>
MATERIALS			
PERSONNEL			
MAINTENANCE			
REPAIRS			
OTHER			
			<div style="float: right;"> <b>A-109</b> </div>