Ohio Environmental Protection Agency (OEPA)

And

Ravenna Army Ammunition Plant (RVAAP)

2001 Correspondences

OhioEPA
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 3, 2001

Re: Ramsdell Quarry Landfill
Ravenna Army Ammunition Plant

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

Dear Mr. Jent:

The Ohio Environmental Protection Agency has reviewed the document titled, "Final Report on the Groundwater Investigation of The Ramsdell Quarry Landfill" dated August 2000, and received by Ohio EPA on August 28, 2000. Ground water at this site is being monitored under the 1990 municipal solid waste rules (OAC 3745-27-10).

Upon review of this report it has been determined that all previously recommended Ohio EPA comments concerning modifications to the text of this report have been adequately addressed and the report should be considered to be a final product. Please be aware that resolution of two additional issues generated by information contained in the report (i.e. the adequacy of the upgradient well (OAC 3745-27-10(B)(1)(a)) and the need to enter assessment monitoring), are beyond the scope of this report and will be addressed through additional correspondence.

If you have any technical questions regarding this review, please contact Diane Kurlich at 330-963-1150. 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

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

JS:cl

pc: Murat Tukel, DSIWM-NEDO
Dianne Kurlich, DDAGW-NEDO
Eileen Mohr, Site Coordinator, DERR-NEDO
File: [LAND/Ramsdell/GRO/67]
Steven Uecke, Portage Co. HD
Mark Patterson, IOC-RVAAP

OhioEPA
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 6, 2001

Re: Ramsdell Quarry Landfill
Ravenna Army Ammunition Plant

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

Dear Mr. Jent:

The Ohio Environmental Protection Agency has reviewed the document titled, "Letter of Non-confirmation of Original Determination of a Significant Change, in accordance with OAC 3745-27-10 (D)(8)(c)," received by Ohio EPA on March 21, 2001. The purpose of this letter was to inform the director that the confirmation sampling conducted on February 6, 2001, of monitoring well RQLMW-07 for TDS and TOC, did not confirm the statistical difference from background observed in the samples collected during the regular semi-annual sampling event conducted on December 14, 2000. Ground water at this site is being monitored under the 1990 municipal solid waste rules (OAC 3745-27-10).

The owner/operator therefore, may resume detection monitoring of the Ramsdell Quarry Landfill in accordance with the approved Ramsdell Landfill Ground Water Monitoring Plan for the next scheduled sampling event. No further action is required of the owner/operator with respect to the December 2000 statistical "trigger."

If you have any technical questions regarding this review, please contact Diane Kurlich at 330-963-1150. 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

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

JS:cl

pc: Murat Tukel, DSIWM-NEDO
Dianne Kurlich, DDAGW-NEDO
Eileen Mohr, Site Coordinator, DERR, NEDO
Steven Uecke, Portage Co. HD
Mark Patterson, IOC-RVAAP
File: [LAND/Ramsdell/GRO/67]

Subj:	**RQL - Initial Sampling Letter to the Director**
Date:	11/9/01 9:00:07 AM Central Standard Time
From:	NEALNes@cs.com
To:	mkmcercla@yahoo.com, Rickcall1
CC:	SHWASSOC
File:	**RVAAP-RQL-initial sampling 11-01.doc** (43008 bytes) DL Time (52000 bps): < 1 minute

Attached is our draft of the letter to be sent to OEPA.

Some portions of the text "match" specific regulatory language. Although I would like to re-word some text, I feel its best to leave it alone based on Diane's positions.

You will need to attach the groundwater data from wells 6 & 7 as well as the QA/QC information.

Before making plans for sampling wells 8 & 9, we would like to talk to you about the wisdom of doing some additional sampling and well development of well 7.

After you have had a chance to review the letter/report, give us a call.

November , 2001

Christopher Jones, Director
Ohio Environmental Protection Agency
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049

Re: 9/11/01 Groundwater Assessment Plan for the Ravenna Army Ammunition Plant's (RVAAP) Ramsdell Quarry Landfill – Initial Sampling Event

Dear Director Jones:

On September 11, 2001, in accordance with O.A.C. 3745-27-10, effective March 1, 1990, (hereafter referred to as O.A.C. 3745-27-10) the Ravenna Army Ammunition Plant (RVAAP) submitted a ground water assessment plan for the closed solid waste landfill known as the Ramsdell Quarry Landfill. In accordance with O.A.C. 3745-27-10 the plan called for the sampling of wells RQL MW-006 and RQL MW-007 and the analysis of the resultant samples for all parameters listed in Appendix II to O.A.C. 3745-27-10 as well as a list of specific explosive materials and propellants. Further, the plan and O.A.C. 3745-27-10, required that the sampling be conducted by September 25, 2001 and that the analytical results be submitted to you not more that 60 days after the sampling event and not more than 15 days after receiving the results of the analysis. On September 20, 2001, the RVAAP sampled RQL MW-006 and RQL MW-007. On November 2, 2001, the RVAAP received the analytical results from this sampling event. Today, via this letter and attachments the RVAAP is submitting these analytical results to you in accordance with O.A.C. 3745-27-10.

A copy of the results obtained from the September 20, 2001, sampling of RQL MW-006 and RQL MW-007 as well as duplicate sampling results and field blank results are attached for your review.

Following sampling and analysis of the samples from RQL MW-006 and RQL MW-007, the plan and O.A.C. 3745-27-10 requires the sampling of all monitoring wells not sampled in the initial sampling event and the analysis of these samples for those leachate or leachate derived constituents found to above background. Following is a table, which identifies the potential constituents that were identified as being numerically higher in RQL MW-007 (the down gradient well) than in RQL MW-006 (the above gradient well).

11/2/01 - RQL MW-007 Analytical Results that were Numerically Higher than RQL MW-006 Analytical Results

Parameter	RQL MW-006 Analytical Result	RQL MW-007 Analytical Result
Arsenic	0.019 mg/L	0.053 mg/L
Barium	0.021 mg/L	0.039 mg/L
Iron	8.3 mg/L	39.0 mg/L
Potassium	Not Detected	9.1 mg/L
Magnesium	45.0 mg/L	140.0 mg/L
Sodium	Not Detected	14.8 mg/L
Zinc	Not Detected	0.056 mg/L
Chloromethane	Not Detected	0.030 ug/L
Chloride	1.9 mg/L	7.0 mg/L
Sulfate	224.0 mg/L	267.0 mg/L

The RVAAP does not believe that all of these parameters represent leachate or leachate derived constituents above background. Chloromethane was reported as a J value of 0.30 ug/L. The laboratory reporting limit for Chloromethane was 1.0 ug/L. Thus, while the laboratory reported detecting Chloromethane in the sample from RQL MW-007 the amount reported must be viewed with skepticism. In addition, Chlormethane was also detected in the field blank with a reported J value of 0.15 ug/L. Additionally, Chloromethane is routinely analyzed quarterly as part of the Ramsdell Quarry Landfill detection monitoring program. Over a period of 2 years and 11 sampling events Cholormethane has never been detected in a sample from RQL MW-007. Thus, it is believed that any Chloromethane reported as detected in the RQL MW-007 sample was due to laboratory contamination.

Also, a number of the parameters noted in the above chart while numerically higher in the well RQL MW-007 were lower than the established RVAAP Bedrock Ground Water Facility-wide Background Data developed during the Phase II Remedial Investigation (RI) for the Winklepeck Burning Grounds (USACE 1999b) as can be seen in the following table.

11/2/01 - RQL MW-007 Analytical Results that were Numerically Higher than RQL MW-006 but Lower than RVAAP Bedrock Ground Water Facility-wide Back Ground

Parameter	RQL MW-007 Analytical Result	RVAAP Bedrock Ground Water Facility-wide Background Concentration
Barium	0.039 mg/L	0.241 mg/L
Sodium	14.80 mg/L	49.70 mg/L
Zinc	0.056 mg/L	0.193 mg/L

Thus, the RVAAP does not believe that these parameters constitute leachate or leachate derived constituents found to be above background for the purposes of O.A.C. 3745-27-10.

Based upon the above data, the assessment plan and O.A.C. 3745-27-10 the RVAAP will, upon the concurrence of the Ohio EPA, develop a schedule for sampling RQL MW-008 and RQL MW-009 for Arsenic, Iron, Potassium, Magnesium, Chloride and Sulfate.

Several other points should also be noted. While the RVAAP believes it is appropriate at this time to sample RQL MW-008 and RQL MW-009 for the above listed parameters, at the same time the RVAAP does not believe that the existing data support a theory that these parameters constitute leachate derived constituents that are impacting the groundwater. For example, the turbidity in RQL MW-007 during the recent sampling event was very high when compared to RQL MW-006. This can result in the detection of elevated metals. Additional well development in the future may produce different results. In addition, historically it has been the RVAAP's position that Iron, Potassium and Magnesium are not leachate derived constituents related to the Ramsdell Quarry Landfill. Finally, the results for the parameters that were numerically higher in RQL MW-007 than in RQL MW-006 in this sampling event were generally consistent with the numerical historical results obtained in RQL MW-007. A more thorough analysis of these results may well show that they too do not actually represent values that are above background. The RVAAP believes a more appropriate time to address these issues and other issues more fully is following the sampling of RQL MW-008 and RQL MW-009 and the analysis of those samples.

Sincerely,

Attachment

cc: (Copies to appropriate Army, OEPA, MKM and NES staff)

OhioEPA
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 14, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
DRAFT-FINAL ERIE BURNING GROUNDS
PHASE I 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 following document: "Draft Final, Phase I Remedial Investigation Report for the Erie Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated May 2001 and received at NEDO on May 21, 2001, was prepared by the contractor for the U.S. Army Corps of Engineers (USACE) - Louisville District under contract number DACA-62-94-D-0029, delivery order 0072.

The draft-final document was reviewed compared to the draft document dated April 2000 (received at NEDO on April 10, 2000); Ohio EPA comments on the draft document dated June 6, 2000 and July 24, 2000; the comment resolution table received via e-mail on January 24, 2001; and the comment resolution meeting held at the Ravenna Army Ammunition Plant (RVAAP) on February 14, 2001.

In order for Ohio EPA to consider the document a final submission, the following revisions must be made and replacement pages submitted to the Agency:

1. Please provide revised sheets for the binder (cover and spine) that indicate that the report represents a final version of the Phase I remedial investigation (RI) work conducted at the Erie Burning Grounds (EBG).

2. Please revise the flow chart (figure 5-1), located on page 5-2, that provides an overview of the risk-based screening process, or remove the flow chart (Ohio EPA's preference) until it is discussed by the RVAAP team members. In particular, the risk based screens that are referred to should be referenced; there should be a footnote describing the caveats regarding essential human nutrients; the box indicating "no background concentration" needs to be revised, as background was set at "zero" if a particular constituent was not detected during the background determination process; the "explosives" box needs to be revised to include propellants, etc.

3. Revise the last sentence in the first bullet in Section 6.3 (page 6-11) to read as it did in the draft report; i.e., remove the reference to preliminary remediation goals (PRGs).

4. In reviewing Appendices B and C, it is apparent that a number of pages from the sediment and surface water sampling logs were inadvertently omitted. These need to be re-submitted, such that they can be inserted into the final report.

5. In future investigations, please ensure that the person accepting the samples either signs the chain of custody (COC) forms, or provide the waybills (used as an extension of custody), to ensure that sample custody has not been breached.

Further discussion is requested with Army personnel regarding the timely re-sampling of sample location EBG-114. This sampling site represents a location near the installation fenceline just west of State Route 534. This surface water sample contained the following site-related constituents: 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); and, Nitrobenzene (0.066J ug/L).

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: Rod Beals, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
John Cicero, RVAAP
Bob Whelove, OSC
Steve Selecman, SAIC
Steve Love, NEDO, DERR
Brian Tucker, CO, DERR
LTC Tom Tadsen, RVAAP
David Seeley, USEPA Region V
Kevin Jago, SAIC

MKM

MKM Engineers, Inc.

Safe, Quality Work Perfomed With Pride

February 07, 2001

Facility Management

Turnkey Environmental

Unexploded Ordnance

Radiological Services

Ms. Eileen Mohr
Project Coordinator
DERR, NEDO
2110 East Aurora Road
Twinsburg, OH 44087

Subject: Technical Memorandum – Stockpile Sampling for OD-1 Soils.

Dear Ms. Mohr:

The following presents a summary of our telephone meeting of February 02, 2001 to discuss the sampling scheme to be implemented for the stockpiled soils from OD-1 as part of the Interim Removal Action (IRA). The purpose of sampling is to evaluate the fate of stockpiled soils from OD-1. The total volume of soil that will be excavated and stockpiled for further remediation during the IRA is estimated to be 1600-1800 cubic yards. Based on laboratory analytical results from the SAIC Phase I RI, the stockpiled soils are contaminated with explosives and/or metals and are primarily from the 0-1 ft. depth. Soils contaminated with metals only have been stockpiled separately.

The fate of the stockpiled soils will be determined based on the concentrations of explosives and metals. Based on the laboratory analytical results, the soils could either be bioremediated using windrow composting, or disposed at an off-site facility in accordance with the federal, state and local rules, regulations and laws.

One (1) sample for every 100 cy of stockpiled soil will be field tested using Jenkins Analysis for explosives (TNT and RDX). A composite of three (3) field-tested samples will be sent to a laboratory for explosives and metals analysis. This will result in a maximum of 18 samples for field analysis by Jenkins Method and a maximum of 6 samples for Laboratory Analysis. Based on the results, the following options will be exercised as needed:

1. Soils contaminated with explosives above Region IX Industrial PRGs will be bioremediated using Windrow Composting.
2. Soils contaminated with Metals only will be disposed at an off-site facility in accordance with the federal, state and local rules, regulations and laws.
3. Soils contaminated with explosives above Region IX Industrial PRGs and above background levels of metals will also be bioremediated using Windrow Composting as long as the concentrations of metals are below levels that are inhibitory to the bioremediation process. This will be determined based on available literature and in consultation with the U.S. Army Environmental Center (Dr. Wayne Sisk) and other known academic resources.
4. Soils containing metals at concentrations consistent with installation-wide background levels and are non-detect for explosives will be permanently stored on-site following a full suite analysis (number of samples to be sent to the laboratory for the full suite analysis will be determined later) and concurrence from Ohio EPA.

4153 Bluebonnet Dr. Stafford, Texas 77477 Phone: 281.277.5100 Fax: 281.277.5205 e-mail: mkm@mkmeng.com

The soil from Grid 5 that is suspected to contain VOCs has been stockpiled separately and will be disposed at an off-site facility in accordance with the federal, state and local rules, regulations and laws.

We would appreciate your help in reviewing the proposed sampling scheme and would be happy to incorporate any changes or suggestions you may have. A work plan for the Bioremediation and Transportation and Disposal of the OD-1 Soils will be submitted separately. Should you have any questions please call me at 281-277-5100 or 281-703-1582 or Rick Callahan at 330-358-1716.

Thank You,

Sincerely,

Srini Neralla, Ph.D.
Project Manager

CC: Mark Patterson, Environmental Coordinator, RVAAP-OSC
Rick Callahan, Program Manager, MKM

MKM Engineers, Inc.

Safe, Quality Work Perfomed With Pride

March 29, 2001

• *Facility Management*

• *Turnkey Environmental*

• *Unexploded Ordnance*

• *Radiological Services*

Ms. Eileen Mohr
Project Coordinator
DERR, NEDO
2110 East Aurora Road
Twinsburg, OH 44087

Subject: Technical Memorandum – Stockpile Sampling Results for OD-1 Soils.

Dear Ms. Mohr:

The following presents a summary of our meeting of March 01, 2001 at the Ravenna Army Ammunition Plant to discuss the results from the stockpile samples from OD-1 as part of the Interim Removal Action (IRA). The objective of sampling the stockpiled-soil was to determine the fate of the soil from OD-1. The total volume of soil that will be excavated and stockpiled for further remediation during the IRA is estimated to be 1600-1800 cubic yards. Based on laboratory analytical results from the SAIC Phase I RI, the stockpiled soils may have been contaminated with explosives and/or metals and are primarily from the 0-1 ft. depth. Soils suspected to be contaminated with metals only have been stockpiled separately.

The fate of the stockpiled soils will be determined based on the concentrations of explosives and metals. Based on the laboratory analytical results, the soils will either be bioremediated using windrow composting, or disposed at an off-site facility in accordance with the federal, state and local rules, regulations and laws or stored permanently on-site following approval from Ohio EPA.

One (1) sample for every 100 cy of stockpiled soil was field tested using Jenkins Analysis for explosives (TNT and RDX). All samples tested negative for TNT and RDX in the field test. A composite of three (3) field-tested samples was sent to a laboratory for explosives and metals analysis. Based on the results from the laboratory, the following conclusions were drawn at the March 01 meeting.

Stockpile Sample 1: No explosives were detected in this sample. Cadmium (0.69 ppm), Thallium (0.21 ppm), and Vanadium (81.2 ppm) were the metals that were considered as in-consistent with the background levels for Ravenna. Concentrations of other metals were concurred as being consistent with background levels.

Stockpile Sample 2: No explosives were detected in this sample. Cadmium (0.57 ppm), Thallium (0.20 ppm), and Vanadium (71.9 ppm) were the metals that were considered as in-consistent with the background levels for Ravenna. Concentrations of other metals were concurred as being consistent with background levels.

Stockpile Sample 3: No explosives were detected in this sample. Barium (118 ppm), Cadmium (0.60 ppm), and Vanadium (98.1 ppm) were the metals that were considered as in-consistent with the background levels for Ravenna. Concentrations of other metals were concurred as being consistent with background levels.

4153 Bluebonnet Dr. Stafford, Texas 77477 Phone: 281.277.5100 Fax: 281.277.5205 e-mail: mkm@mkmeng.com

Based on the results, the following options were discussed and will be implemented following concurrence form Ohio EPA:

1. None of the stockpile soil samples contained explosive concentrations that warrant bioremediation using Windrow Composting. Hence the option of bioremediation of stockpiled soils does not need any consideration at this stage.
2. Soils containing metals at concentrations consistent with installation-wide background levels and are non-detect for explosives will be permanently stored on-site following concurrence from Ohio EPA.

The concentrations of Barium, Cadmium, Thallium and Vanadium in the three stockpile samples were only slightly higher than the background levels, and are significantly lower than the Region IX Residential PRGs. The concentrations of these four metals do not seem to pose any threat to the human or ecological receptors at the site. Ohio EPA's concurrence is requested for consideration of concentrations of the four metals as being consistent with the background levels. If Ohio EPA concurs that the four metals in question are consistent with background levels, the soil will be stored permanently on-site. If Ohio EPA does not concur with this, the fate of the stockpiled soil that is currently stored at Load Line 4 will be decided after the Remedial Goal Options (RGO) are finalized for the facility.

The soil from Grid 5 that is suspected to contain VOCs has been stockpiled separately and will be disposed at an off-site facility in accordance with the federal, state and local rules, regulations and laws.

We would appreciate your help in reviewing the minutes of the March 01 meeting as summarized in this letter and the enclosed summary of laboratory results. We Should you have any questions please call me at 281-277-5100 or 281-703-1582 or Rick Callahan at 330-358-1716.

Thank You,

Sincerely,

Srini Neralla, Ph.D.
Project Manager

CC: Mark Patterson, Environmental Coordinator, RVAAP-OSC
Rick Callahan, Program Manager, MKM

TABLE 1.0
OPEN DEMOLITION AREA #1
STOCKPILE SAMPLE RESULTS
OCTOBER-DECEMBER 2000 IRA

ANALYTE**, UNITS, METHOD NO.	Background Criteria (0 to 1 ft) mg/kg	Region 9 PRG Data (Residential Soil) mg/kg	OD1-STOCKPILE-001-SO	OD1-STOCKPILE-002-SO	OD1-STOCKPILE-003-SO
Sample Date			2/13/01	2/13/01	2/13/01
Explosives 8330 ug/kg					
HMX	--	3100.0	BRL	BRL	BRL
RDX	--	4.4	BRL	BRL	BRL
1,3,5-Trinitrobenzene	--	--	BRL	BRL	BRL
1,3-Dinitrobenzene	--	24.0	BRL	BRL	BRL
Nitrobenzene	--	20.0	BRL	BRL	BRL
2,4,6-Trinitrotoluene	--	16.0	BRL	BRL	BRL
Tetryl	--	610.0	BRL	BRL	BRL
2,4-Dinitrotoluene	--	120.0	BRL	BRL	150
2,6-Dinitrotoluene	--	61.0	BRL	BRL	BRL
2-Nitrotoluene	--	370.0	BRL	BRL	BRL
4-Nitrotoluene	--	370.0	BRL	BRL	BRL
3-Nitrotoluene	--	370.0	BRL	BRL	BRL
TAL Metals 6010B mg/kg					
Silver	0.00	390.00	BRL	BRL	BRL
Aluminum	17700.00	76000.00	11400	10900	12300
Arsenic	15.40	22.00	9.5	9.2	9.4
Barium	88.40	5400.00	70.3	58.1	**118**
Beryllium	0.88	150.00	0.65	0.49	0.66
Calcium	15800.00	--	10700	5320	3610
Cadmium	0.00	37.00	**0.69**	**0.57**	**0.60**
Cobolt	10.40	4700.00	7.3	8.1	8.5
Chromium	17.40	210.00	14.2	15.8	16.5
Copper	17.70	2900.00	22.1	27.0	27.6
Iron	23100.00	23000.00	19000	20100	21800
Mercury	0.04	23.00	BRL	BRL	BRL
Potassium	927.00	--	1290	1030	1420
Magnesium	3030.00	--	3420	2530	2790
Manganese	1450.00	1800.00	500	424	610
Sodium	123.00	--	99.7	BRL	74.3
Nickel	21.10	--	15.1	15.7	16.7
Lead	26.10	400.00	19.5	19.4	16.9
Antimony	0.96	31.00	0.23	0.45	0.61
Selenium	1.40	390.00	0.37	0.74	0.55
Thallium	0.00	5.20	**0.21**	**0.20**	BRL
Vanadium	31.10	550.00	**81.2**	**71.9**	**98.1**
Zinc	61.80	23000.00	65.7	73.3	77.9
Cyanide mg/kg					
Cyanide, Total	0.00	11.00	NT	NT	NT
Propellants 8330 mg/kg					
Nitroglycerin	--	35.00	NT	NT	NT
Nitroguanidine	--	6100.00	NT	NT	NT
Nitrocellulose	--	--	NT	NT	NT

TABLE 1.0
OPEN DEMOLITION AREA #1
STOCKPILE SAMPLE RESULTS
OCTOBER-DECEMBER 2000 IRA

ANALYTE**, UNITS, METHOD NO.	Background Criteria (0 to 1 ft) mg kg	Region 9 PRG Data (Residential Soil) mg kg	ODI STOCKPILE-001-SO	ODI-STOCKPILE-002-SO	ODI-STOCKPILE-003-SO
Sample Date			2 13 01	2 13 01	2 13 01
VOCs TCL 8260B ug/kg					
Toluene	--	520.00	NT	NT	NT
Benzene	--	0.65	NT	NT	NT
Ethyl Benzene	--	230.00	NT	NT	NT
Xylene (total)	--	210.00	NT	NT	NT
SVOCs TCL 8270 C ug/kg					
Naphthalene	--	56.00	NT	NT	NT
Pesticides TCL 8081A ug/kg					
alpha-BHC	--	0.09	NT	NT	NT
beta-BHC	--	0.32	NT	NT	NT
delta-BHC	--	0.32	NT	NT	NT
gamma-BHC (Lindane)	--	0.44	NT	NT	NT
Heptachlor	--	0.11	NT	NT	NT
Aldrin	--	0.029	NT	NT	NT
Heptachlor epoxide	--	0.053	NT	NT	NT
Endosulfan I	--	370.0	NT	NT	NT
Dieldrin	--	0.03	NT	NT	NT
4,4-DDE	--	1.7	NT	NT	NT
Endosulfan II	--	--	NT	NT	NT
4,4-DDD	--	2.4	NT	NT	NT
Endrin	--	18.0	NT	NT	NT
Endosulfan sulfate	--	--	NT	NT	NT
4,4-DDT	--	1.7	NT	NT	NT
Methoxychlor	--	310.0	NT	NT	NT
Endrin ketone	--	--	NT	NT	NT
Endrin aldehyde	--	--	NT	NT	NT
alpha-Chlodane	--	--	NT	NT	NT
gamma-Chlordane	--	--	NT	NT	NT
Toxaphene	--	0.44	NT	NT	NT
PCB TCL 8082 ug/kg					
Aroclor-1016	--	3.90	NT	NT	NT
Aroclor-1221	--	0.22	NT	NT	NT
Aroclor-1232	--	0.22	NT	NT	NT
Aroclor-1242	--	0.22	NT	NT	NT
Aroclor-1248	--	0.22	NT	NT	NT
Aroclor-1254	--	0.22	NT	NT	NT
Aroclor-1260		0.22	NT	NT	NT

** = Only detected compounds listed
-- = Data not available
BRL = Below reporting limits
ND = Not detected
PRGs = Preliminary Remediation Goals
mg kg = milligrams per kilogram (parts per million - ppm)
ug/L = micrograms per Liter (parts per billion - ppb)
NT = Not Tested
= concentrations greater than background - Awaiting OEPA Comments

MKM

MKM Engineers, Inc.

Geotechnical, Environmental and Remediation Services

May 09, 2001

Ms. Eileen Mohr
Project Coordinator
DERR, NEDO
2110 East Aurora Road
Twinsburg, OH 44087

Dear Eileen:

The following pertains to the stockpiling of 0-1 foot soils from the seven remaining grids to be excavated at the OD-1 site as part of the Interim Removal Action (IRA). The total volume of soil remaining to be excavated is estimated to be 2800 cubic yards. Of that total, approximately 900 cubic yards come from the 0-1 ft. interval. Two of the seven remaining grids are contaminated with both explosives and metals (red grids #11 & 16 on attached map) and five with metals only (blue grids #7, 8, 9, 10, & 12) based on laboratory analytical results from the SAIC Phase I RI.

As discussed in our March 01, 2001 meeting, the laboratory analytical results of the previously stockpiled 0-1 ft. soils indicated that the soils were non-detect for explosives and typically consistent with background for metals. Based upon these results, we would like to consider stockpiling the 0-1 ft soils from the remaining grids at OD-1. This will simplify the management of the soil backfill operations for the duration of the project. Two separate areas will be established to manage the stockpile from explosive and metals contaminated grids separately from the stockpile from metals only contaminated grids. The stockpiles will be placed on top of grids that have already been excavated, tested and backfilled with clean soil. This will be done to ensure the stockpiles will not become mixed with soil that has not yet been sifted for UXO items. Additionally, silt fence will be placed around the stockpiles to contain any runoff that may occur as a result of rain. Once the stockpiles are complete, they will be sampled and sent for laboratory analysis and managed accordingly upon receipt of the results.

We appreciate your time in considering this course of action for the completion of the OD-1 IRA. Should you have any questions, do not hesitate to call me at 330-358-7135 or Rick Callahan at 330-358-1716.

Thank you.

Sincerely,

Michael G. Samelak
QA Manager

CC: Mark Patterson, Environmental Coordinator, RVAAP-OSC
Rick Callahan, Program Manager, MKM

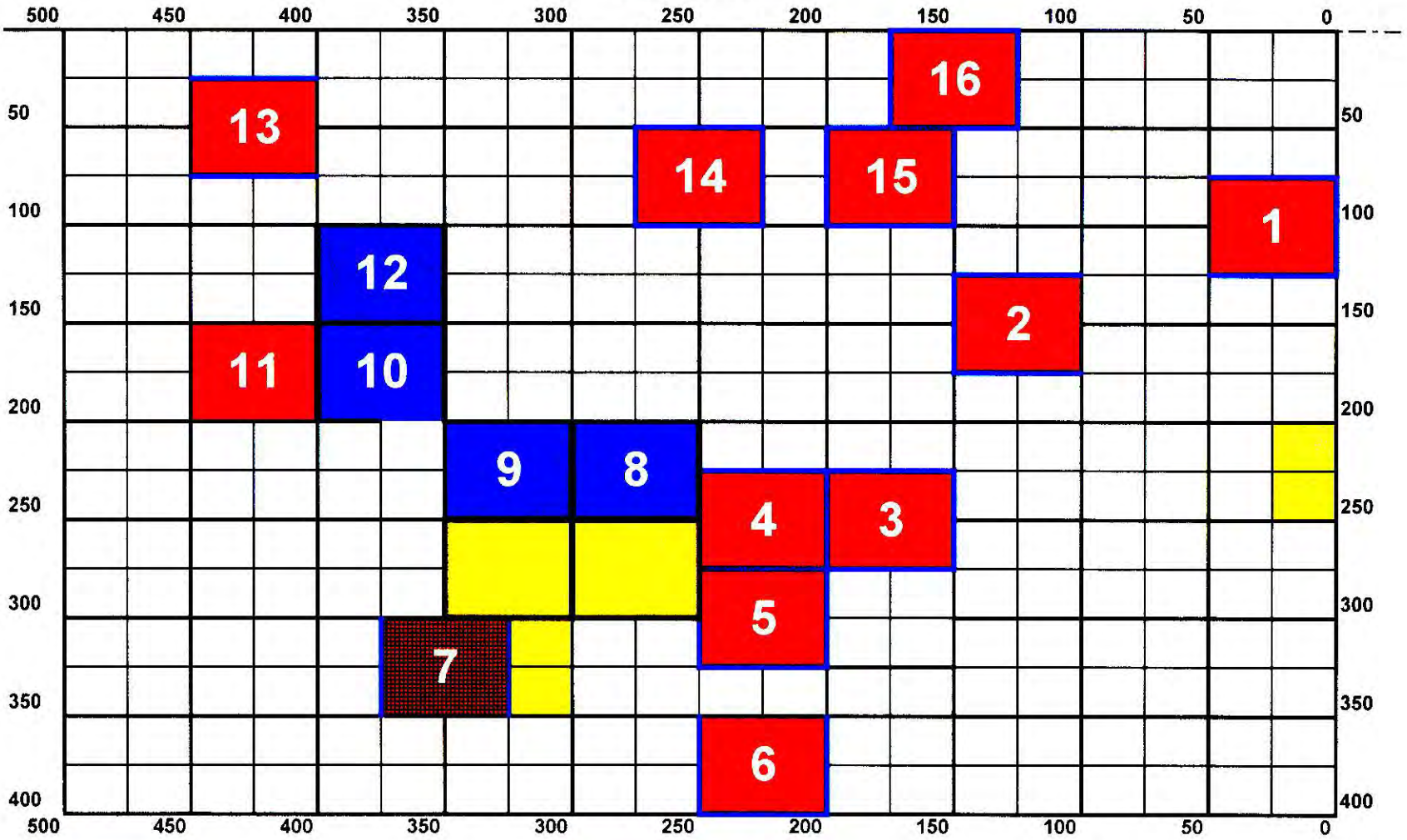
Ravenna Army Ammunition Plant, Building 1038, St. Rt. 5, Ravenna, OH 44266
Phone: (330) 358-2920 Fax: (330) 358-2924

MKM

Grid Layout of OD -1 showing the Priority Grids with Explosives, Lead and Surface OE/UXO Contamination (Surface)

N

ABANDONED AIRSTRIP



Grids contaminated with Metals

Grids contaminated with Explosives and Metals

High Lead - Stockpile this grid along with the grids contaminated with metals for stabilization

Grids with high surface contamination with OE and OES only (Excavate only upto 2 feet BGS)

OhioEPA
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 6, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
ODA # 1 DRAFT-FINAL 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-Final, Phase I Remedial Investigation Report for Demolition Area 1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated June 2001, and received at Ohio EPA, NEDO, on June 20, 2001, was prepared by Science Applications International Corporation (SAIC) for the United States Army Corps of Engineers (USACE) - Louisville District, under contract number DACA62-94-D-0029, delivery order 0076.

The draft final document was reviewed compared to the draft document (dated June 2000), the comment resolution meeting held on February 14, 2001, and the final comment resolution document resulting from the February 14, 2001 meeting. Comments in this correspondence are divided into two distinct types:

A. Comments that are more general in nature and that will ultimately need to be resolved between the Army and Ohio EPA and/or comments that impact on future investigations that will be conducted at other Areas of Concern (AOCs) at the Ravenna Army Ammunition Plant (RVAAP). These comments require no text changes; and

B. Comments that are specific to this document and which require text changes.

Due to the minimal number of changes that are required to the text of the draft-final report, Ohio EPA would suggest that, instead of issuing another complete document, replacement pages and new cover sheets for the report be prepared. This would minimize the amount of time required for the review of the final document. Replacement pages would need to be submitted to all reviewers and, in addition, be inserted into the documents that are located in the Newton Falls, OH and Ravenna, OH document repositories.

Ohio EPA has the following comments on the draft-final report:

GENERAL COMMENTS (no text change required):

1. Ohio EPA is requesting that the surface water at HC-2 be sampled prior to the institution of a facility-wide surface water initiative. The purpose of the additional sampling would be to confirm whether or not the explosive compound detected in the surface water as part of this Phase I remedial investigation (RI) at this location exists. As the installation-wide initiative is perhaps two years in the future, the question of whether or not site-related contaminants are exiting the facility at this location needs to be determined on a more timely basis. Further discussion of this issue is warranted.

2. In future investigations conducted at the RVAAP, the State of Ohio Water Quality Standards (WQS) located in Ohio Administrative Code (OAC) are to be utilized as the primary surface water screening/regulatory values.

3. Please refer to the information regarding various groundwater models that was submitted to you, USACE, and SAIC on June 28, 2001. Although no text change is required on page 4-47, please be advised that SESOIL may not be the preferred groundwater model. Additional discussions regarding this modeling issue should be incorporated into the scoping efforts for the combined Open Demolition Area (ODA) # 1 and NACA Test Area (NTA) Phase II RI.

SPECIFIC COMMENTS (text change required):

1. Please remove the statement on page xiv (lines 6-7) regarding slag. It is not clear why this text was added to the draft-final report. (Also page 1-7 lines 46-48)

2. On page xiv (line 43), please specify what "background levels" are being utilized.

3. On page xvi (line 42), please specify how many subsurface soil samples were analyzed for PCBs.

4. Based upon the unexploded ordnance (UXO)/ordnance and explosive (OE) project being conducted by MKM Engineers at this AOC, please revise the text on page xxi (lines 47-50) to be less definitive that the vertical and horizontal extent of contamination has been determined. At least one area of concentrated OE waste has been excavated on the western side of this AOC, which was not detected by previous environmental investigations. This comment is also applicable to other constituents. For example, an area of volatile organic compound (VOC) contamination in the southern portion of the AOC was also discovered by MKM during excavation activities. As such, it is not unreasonable to suspect that additional areas of concentrated explosives or other constituents may exist at this AOC. This text change could be accomplished by removing the above-referenced text lines.

5. On Figure 2-3 (page 2-4), please provide an explanation for removing the approximate boundaries of the suspected buried valley. This feature should remain on this map, especially in light of the fact that it is referenced on page 2-5 (line 2 and 2-7 line 48).

6. Please revise the text on page 4-12 (lines 36-37) to reflect that background concentrations were determined during the Winklepeck Burning Grounds (WBG) Phase II RI. As such, it is incorrect to indicate that no background concentrations exist. (Also page 4-45 line 27)

7. Please remove or modify the text on page 4-46 (lines 6-7) that indicates that "the background criteria is assumed to be the detection limit for these compounds." This statement is incorrect. As indicated in the comment above, facility-wide background concentrations were determined during the WBG Phase II RI, and the statement in the text was not one of the decision criteria utilized.

8. On Figure 5-1 (page 5-2), which was newly added to the draft-final report, please add propellants to the "explosives" box. In addition, remove or modify the text in the box which states, "no background concentration." Again, facility-wide background was determined during the WBG Phase II RI.

9. Please revise the text on page 5-9 (line 10) to read: "For this Phase I RI, the groundwater medium is not evaluated, as monitoring wells were not installed."

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: Rod Beals, NEDO, DERR
Steve Love, NEDO, DERR
Brian Tucker, CO, DERR
Bonnie Buthker, OFFO, SWDO
Diane Kurlich, NEDO, DDAGW
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Bob Whelove, OSC
Steve Selecman, SAIC
Kevin Jago, SAIC

OhioEPA
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, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
ODA # 2 SOW

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, Scope of Work for the Phase II Remedial Investigation of Demolition Area 2, Ravenna Army Ammunition Plant." This document, dated and received on January 10, 2001, was prepared by VISTA Technologies, Inc.

Ohio EPA has the following comments on the scope of work (SOW). None of the comments require text changes on the draft SOW, yet are presented in order to memorialize the Agency's position on the following three issues:

1. As was discussed during a conference call on August 16, 2000, the fencing of Open Demolition Area (ODA) # 2 is a viable option given the inherent safety issues and the potential for utilizing this area of concern (AOC) in the future for additional demolition of unexploded ordnance (UXO). However, that is not to say that fencing is the only option for this AOC, i.e., other remedial activities must be considered and ultimately enacted. For example (these are not all inclusive), there should be a removal of the UXO/suspected UXO that is spilling down the embankment and into Sand Creek. In addition, there should be discussion regarding the remediation/UXO removal of the "poppy fields" that were surveyed and flagged at this AOC. The northwestern portion of the AOC, where bomb disposal has occurred and the southwestern portion where there has been the reported burial of white phosphorous (WP), needs to be evaluated. Finally, subsequent to the performance of the proposed Phase II Remedial Investigation (RI) sampling and evaluation of the results of the human health and ecological risk assessments, we will be able to determine whether or not we have adequately evaluated the site constituents of concern (COCs) in addition to the safety hazards posed by the UXO/suspected UXO, the applicable pathways and the potential receptors.

2. The intent of a Phase II RI is to determine the nature and extent of contamination. How will the extent of vertical contamination be determined if no environmental soil samples will be collected from a depth greater than three feet? If contamination is detected in the 1.0 - 3.0' interval, it necessarily follows that there may be contamination present at a greater depth. This is true, especially in light of the fact that many of the on-site detonations took place in pits that were four feet (and greater) in depth.

   In addition, the estimated number of proposed samples for explosives and propellants detailed on the sampling table may not be adequate. If this is the case, how will additional funding be obtained to collect the necessary samples?

3. Please be aware that only a cursory review of the risk assessment procedures attached to the SOW was conducted. All risk assessments conducted at the Ravenna Army Ammunition Plant (RVAAP) installation must be conducted in accordance with the methods, assumptions, exposure estimates (etc.) agreed upon by the RVAAP environmental team.

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
Steve Love, NEDO, DERR
Todd Fisher, NEDO, DERR
Greg Orr, NEDO, DHWM
Bonnie Buthker, OFFO, SWDO
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
John Jent, USACE Louisville
Sue McCauslin, VISTA

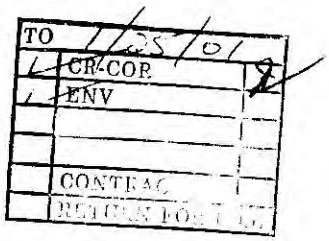
OhioEPA
State of Ohio Environmental Protection Agency
Northeast District Office

2110 E. Aurora Road
Twinsburg, Ohio 44087-1969

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

Bob Taft, Governor
Christopher Jones, Director

January 22, 2001



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

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

Dear Mr. Cicero:

Thank you for submittal, dated December 21, 2000, regarding the Ravenna Army Ammunition Plant's (RVAAP) Open Detonation Area (ODA) #2 well installation/abandonment. This documentation is a response to my December 11, 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, all concerns listed in my December 11, 2000 have been addressed.

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
Susan McCauslin, VISTA Technologies

OhioEPA
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 4, 2001

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

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, Workplan and Sampling and Analysis Plan Addenda for the Phase II Remedial Investigation of Demolition Area # 2 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." The document, dated January 2002 and received at Ohio EPA, NEDO, DERR, on January 28, 2002, was prepared for the U.S. Army Operations Support Command (OSC) by SpecPro under contract number DAAA09-01-G-0009, delivery order number 0003.

The DERR project coordinator for the Ravenna Army Ammunition Plant (RVAAP) was the sole reviewer for this document. Although copies of the draft workplan were provided to personnel in Ohio EPA's Division of Drinking and Ground Waters (DDAGW) and the Office of Federal Facilities Oversight (OFFO), Southwest District Office (SWDO), they were for informational purposes only. As such, this correspondence represents the Agency's comments on the draft document.

Comments in the draft workplan will follow the same format as the workplan itself:

Workplan (WP) and Sampling and Analysis Plan (SAP):

1. Please ensure that the mileage from the City of Ravenna to the RVAAP are consistent between the WP/SAP on page 10 (line 14) and the health and safety plan (HASP) on page 9 (line 7).

2. Figure 2-1 indicates that the contract analytical laboratory that will be utilized is GPL Laboratories (located in Gaithersburg, MD). Page 75 lines 6-7 indicates that the analytical laboratory is located less than 80 km from the installation. Please reconcile this discrepancy.

3. Please revise the text on page 22 (line 15) to read as follows: "...site 2-foot contour topographic maps..."

4. On page 27 (line 22), please change the term "evaluated" to "elevated."

5. On page 28 (line 5), please add additional clarifying text that the subsurface soil intervals are: 1-3', 3-5' etc..

6. In the data evaluation section on page 29 (lines 37-41), please ensure that the screen utilizing both the residential and industrial Region 9 Preliminary Remediation Goals (PRGs) is the PRG X 0.1. This makes the screen consistent with all other CERCLA investigation work being conducted at the installation.

7. Please change the text on page 30 (lines 4-5) as follows: Future land-use at this Area of Concern (AOC) may be as an active training and explosives demolition area..." As the Ohio Army National Guard (OHARNG) and OSC have not formally agreed upon the future land use, and as there are no land use controls (LUCs) in place, the future use of this site needs to be expanded to include other possibilities.

8. In section 3.4 (page 30, lines 4-20), given comment # 7 detailed above, please also include the other receptors utilized in other RVAAP baseline risk assessments (BRA), for example: residential, resident-farmer, industrial, etc. This would also include evaluating potential groundwater usage and disturbance of the AOC at depths greater than two feet.

9. On page 30 (lines 16-18), please provide additional information as to the reason behind conducting an exposure assessment and risk characterization on the background concentrations. Contributions from background are not to be "subtracted out" as part of the risk assessment process.

10. On page 39 (lines 30-31), please insert the name of the laboratory chosen to perform the analyses of the quality assurance/quality control (QA/QC) samples, or indicate that the laboratory is still to be determined (TBD).

11. On page 41 (lines 31-33), please ensure that the collection of soil samples from the boreholes at different depths (0-2', 2-4', etc.) from the proposed additional soil sampling depths (0-1', 1-3' etc.) will not adversely impact upon the resulting risk assessment.

12. With respect to hexavalent chromium samples (page 42, line 32), please check with Stan Levenger and/or Brian Stockwell of MKM regarding recent literature that they have looked into regarding the sampling collection equipment that is to be utilized when analyzing for hexavalent chromium.

13. In section 4.2.1.5 (page 43), please ensure that if samples are collected for volatile organic compound (VOC) analyses, that a trip blank is inserted into the cooler that transports the samples. (Also applicable to section 4.4.2.5 on page 55)

14. Whenever the full suite for analytical testing is referenced, please ensure that target analyte list (TAL) metals are included. (Page 45 lines 8-10, page 52 lines 40-41 and page 53 lines 3-4)

15. Please revise the text on page 51 (lines 38-40) to read as follows: "In addition, 15% of the samples from the surface soil interval and 15% of the samples from the sub-surface soil interval...."

16. Please revise the text on page 52 (line 39) to read: "Ten percent of surface soil samples collected at ODA 2..."

17. Please provide the figure number in the revised text for the water sampling locations. (Page 54 line 15)

18. On Tables 5-1, 5-2, 5-3, and 5-4, please revise the heading to read "TAL metals."

19. On Table 5-2, please add to the legend what is denoted by the designations TOC and GS.

20. On Table 5-4, please add to the legend what is denoted by the designations BD and P.

21. On page 76, lines 19-20, please confirm that drums (instead of a poly container) will be utilized to containerize the development and purge water from the installed monitoring wells. (Also applicable to page 76 lines 42-43)

22. Please revise the text on page 77 (line 30) to read: "A FSA will be designated at ODA#2..."

23. In Appendix B (page 5) in the first bullet in section 5.0, please change the contractor name to SpecPro.

Quality Assurance Project Plan (QAPP):

24. On page 11 (line 13), please change the contractor name to SpecPro.

25. In section 8.1 (page 20 lines 15-16), please revise the text to read as follows: "Volatile organic trip blanks will accompany all shipments containing volatile organic samples."

Health and Safety Plan (HASP):

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

26. On Table 2-3 (Potential Exposures) and in an appropriate portion of the text, please add a discussion regarding white phosphorous.

27. In section 12.0, please add additional text to the HASP which indicates that directions and maps to Robinson Memorial Hospital will be posted in conspicuous places that are readily available to all on-site workers.

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: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Todd Fisher, Ohio EPA, NEDO, DERR
Conni McCambridge, Ohio EPA, NEDO, DDAGW
Laurie Eggert, Ohio EPA, OFFO, SWDO
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Susan McCauslin, SpecPro

ec: Mike Eberle, Supervisor, Ohio EPA, NEDO, DERR

OhioEPA
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 7, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
OH5-210-020-736
PORTAGE COUNTY
GROUND WATER MONITORING
OPEN DETONATION AREA 2

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

Dear Mr. Cicero:

On January 26, 2001 the Director of the Ohio EPA received notification of statistical triggers for ground water monitoring at the Open Detonation Area #2 (ODA2), at the Ravenna Arsenal Ammunition Plant (RVAAP), located at located at 8451 State Route 5, Ravenna, Ohio.

As required by OAC 3745-54-98 (G)(1), the RVAAP notified the director that statistically significant differences between upgradient and downgradient concentrations of certain site specific constituents were detected during the most recent sampling event conducted on December 18, 2000. The following statistical "triggers" were noted: arsenic (DET-2 and DET-3), selenium (DET-4), specific conductance (DET-4), and HMX and RDX (DET-4). RVAAP is monitoring ground water in accordance with OAC 3745-54-90 through OAC 3745-55-01. RVAAP indicated that these triggers may be the result of surface water infiltration due to faulty surface seals on the downgradient wells. Based on this belief, the facility proposes to conduct a confirmation sampling of the affected wells after the surface seals have been repaired. Based on this information, the Ohio EPA has the following comment.

COMMENT

The Ohio EPA agrees with the facility that confirmation sampling should be conducted following the repair of the surface seals. RVAAP should also ensure that the wells are redeveloped following the completion of the repair work and prior to the resampling event. If the resampling of the wells confirms these statistical triggers, RVAAP should enter compliance monitoring as per OAC 3745-54-99. If the statistical triggers are not confirmed, the facility should remain in detection monitoring as per OAC 3745-54-98 and its approved ground water monitoring program plan.

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
Closure Section, DHWM, CO
Director's Office, CO
Diane Kurlich, DDAGW, NEDO
Eileen Mohr, DERR, NEDO
Mark Patterson, RVAAP

OhioEPA
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 7, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
OH5-210-020-736
PORTAGE COUNTY
GROUND WATER MONITORING
OPEN DETONATION AREA 2

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

Dear Mr. Cicero:

On January 31, 2001, the Ohio EPA's Division of Hazardous Waste Management (DHWM) received a well-head modification request from the Ravenna Arsenal Ammunition Plant (RVAAP). RVAAP submitted the document detailing proposed modifications to the downgradient monitoring wells at Open Detonation Area #2 (ODA2) at RVAAP, located at 8451 State Route 5, Ravenna, Ohio. The modifications are necessary to ensure that the integrity of the wells is maintained and the threat of surface water infiltration is minimized. Ground water at the site is monitored in accordance with OAC 3745-54-90 through OAC 3745-55-01. The Ohio EPA has reviewed the document and recommends that RVAAP proceed with the proposed modifications of the downgradient wells at ODA2, to ensure that the integrity of the wells is maintained, and the threat of surface water infiltration is minimized.

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
Jeremy Carroll, DHWM, CO
Diane Kurlich, DDAGW, NEDO
Eileen Mohr, DERR, NEDO
Mark Patterson, RVAAP

OhioEPA
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 13, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
OH5-210-020-736
PORTAGE COUNTY
MONITORING WELL REPORT

TO	2/14/01
1	CR-COR
1	ENV
	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:

On October 5, 2000, the Ohio EPA received a document entitled "Final Report: Monitoring Well Installation, Well Abandonment, and Well Survey." The Army submitted the above referenced document, which details the abandonment of monitoring well DET-1 and the installation, development, and sampling of monitoring well DET-1b, at the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. The replacement of DET-1 was necessary because ordinance had been detonated in close proximity to the well. DET-1 was formerly the upgradient well for the RCRA ground water monitoring system at Open Detonation Area #2. DET-1b is now the upgradient well for this program. Ground water at the site is monitored in accordance with OAC 3745-54-90 through OAC 3745-55-01.

RVAAP has adequately documented the abandonment of DET-1 and the installation, development, surveying, and sampling of DET-1b. No additional action is required by the facility concerning this report.

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

Sincerely,

for Gregory Orr
Environmental Specialist
Division of Hazardous Waste Management

GO:ddw

cc: Natalie Oryshkewych, DHWM, NEDO
Jeremy Carroll, DHWM, CO
Diane Kurlich, DDAGW, NEDO
Eileen Mohr, DERR, NEDO
Mark Patterson, RVAAP

OhioEPA
State of Ohio Environmental Protection Agency
Northeast District Office

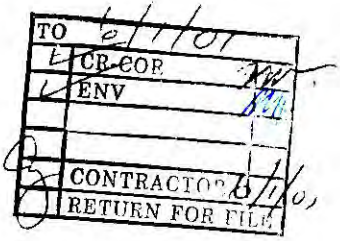
2110 E. Aurora Road
Twinsburg, Ohio 44087-1969

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

Bob Taft, Governor
Christopher Jones, Director

May 30, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
MONITORING WELLS (DET-2 and DET-4)
OPEN DETONATION AREA #2
PORTAGE COUNTY
OH5-210-020-736



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

Dear Mr. Cicero:

On April 9, 2001 the Ohio EPA received a letter from the Ravenna Arsenal Ammunition Plant (RVAAP) as notification that the resampling of monitoring wells DET-2 and DET-4 had confirmed triggers associated with the December 2000 ground water monitoring data.

In accordance with Ohio Administrative Code (OAC) rule 3745-54-98(G)(2), the monitoring wells DET-2 and DET-4 at the Open Detonation Area-2 (ODA-2), shall immediately be sampled for the constituents found in the appendix to this rule, as modified during an April 2, 2001, conference between the Ohio EPA and RVAAP representatives. Specifically, it was determined during the conference call that the monitoring wells at the site should be sampled for VOCs, SVOCs, TAL metals, propellants, explosives, pesticides and PCBs. This abbreviated list of analytes includes the same constituents being analyzed in ground water samples collected from the other facility monitoring wells associated with the CERCLA investigations currently being conducted.

In addition, be advised, as per OAC rule 3745-54-98(G)(4), that within 90 days of RVAAP's April 2, 2001 notification letter, a compliance monitoring program plan that includes the information required by OAC 3745-54-98(G)(2)(a) through (d), and which establishes a ground water monitoring program at the site that meets the requirements of OAC rule 3745-54-99 should be sent to the director of the Ohio EPA.

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:ddw

cc: Mark Patterson, RVAAP
Pam Allen, DHWM, CO
Ed Lim, DHWM, DHWM, CO
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

OhioEPA
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 12, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
MONITORING WELLS (DET-2 and DET-4)
OPEN DETONATION AREA #2
PORTAGE COUNTY
OH5-210-020-736

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

Dear Mr. Cicero:

On July 2, 2001, the Ohio EPA received Ravenna Army Ammunition Plant's (RVAAP) document regarding the compliance monitoring program for Open Detonation Area #2 (ODA2), dated June 2001.

OD2 at the RVAAP has entered the compliance phase of ground water monitoring (OAC 3745-54-99) based on confirmed statistically significant differences between the concentrations of arsenic and specific conductance detected in the upgradient well (DET-1B) and downgradient wells DET-4 and DET-2, respectively. The uppermost aquifer at the site is found at the interface between glacial tills composed of clayey silt and the underlying, Pennsylvanian age, shale bedrock. Based upon review of the compliance monitoring plan (CMP), the Ohio EPA has the following comments. The below comments should be addressed. The CMP should be modified accordingly and should be resubmitted for review.

COMMENTS:

1. The Introduction should be modified to state that the ground water monitoring program at the site is being conducted in accordance with OAC 3745-54-90 through OAC 3745-55-02.

2. The purpose of Section 1.1 is unclear. A large portion of this section is devoted to justifying why the documented triggers at the site are not important. The reality is that the site has had statistical triggers for specific conductance, arsenic, selenium, zinc, HMX, and RDX. Regardless of whether the concentrations detected are above or below any applicable MCLs or other health advisories, the fact remains that the concentrations detected in the downgradient wells are statistically elevated to a significant level above the concentrations detected in the background well. Therefore, RVAAP has affected the quality of ground water at the site and, as per OAC 3745-54-98 (G), must initiate a compliance monitoring program. This section should be modified to simply report the statistically significant differences that have been documented.

3. Several places in the document (e.g., Section 1.1.5 and 1.1.6) state that HMX and RDX are not hazardous constituents because they are not specifically listed in the Appendix to OAC 3745-54-98 or in the provisions of OAC 3745-51-11. This is incorrect. The compound's RDX and HMX are characteristic hazardous wastes (reactivity). This also would apply to other explosive and propellant compounds that may be part of the site specific contaminants of concern but which are not listed specifically in the cited sections of the OAC. The CMP should be modified accordingly.

4. Throughout the document, Appendix ix is referenced. Since this monitoring plan is in accordance with Ohio regulations, all references to "Appendix ix" should be changed to "the Appendix to OAC 3745-54-98."

5. The second and third paragraphs of Section 2.1 should be modified to state that the additional testing required is for the hazardous constituents found in the Appendix to OAC 3745-54-98. This is a ground water monitoring list and is not an all inclusive list of hazardous wastes as implied by the current wording in these two paragraphs.

6. Throughout the CMP (e.g., Sections 2.1; 2.3 C; 2.1 G), a document is referenced as "April 20, 1999 (as approved May 20, 2001)." It is unclear what document is being referenced. This should be clarified. If this reference is to the Facility-wide Sampling and Analysis Plan (FWSAP), then this should be stated. In addition, if it is the FWSAP that is being referenced, the date of the document is March 2001, not "April 20, 1999 (as approved May 20, 2001)."

7. The last several sentences in the first partial paragraph on page 10 should be modified to state that the list of analytes used during detection monitoring included indicator parameters and site specific hazardous constituents. Differentiating between RCRA and CERCLA hazardous constituents is not necessary.

8. The first complete paragraph on page 10 should include a summary of what parameters were included when the facility sampled for substances included on the Appendix to OAC 3745-54-98.

9. In setting the ground water protection standard as required by OAC 3745-54-92, the following points should be noted:

   a. Tthe establishment of a ground water protection standard has four components: the list of hazardous constituents to be monitored, the concentration limits for these constituents, the compliance point at which monitoring will occur and the compliance period during which monitoring will be completed.

During compliance monitoring, a ground water protection standard must be established for all hazardous constituents that are being monitored. Section 2.2 (A)(1) should be modified accordingly. In establishing the Ground Water Protection Standard required by OAC 3745-54-92, concentration limits must be established for all of the hazardous constituents being monitored. These limits may be equal to background, MCLs, or some other risk-based concentration (e.g., Closure Plan Review Guidance (CPRG) generic risk table). Section 2.2 (A)(2) should be modified accordingly.

In addition, the CMP should document whether any of the concentration limits have been exceeded during detection monitoring.

b. In Section 2.2 (A)(2), it states that the concentration limit for arsenic is 50 ug/L and 1000 ug/L for barium as per Table 1 in OAC 3745-54-94. It should be noted that the concentration limits included on Table 1 in OAC 3745-54-94 are based on the MCLs for the listed contaminants when the rule was promulgated. It should be noted that the concentration limits set by RVAAP for barium and arsenic are acceptable at this time. However, should there be a change in the MCL for either of these constituents, RVAAP will have to modify the CMP such that the concentration limits do not exceed the revised MCL. This is particularly pertinent for arsenic. Present discussions at both the state and federal levels indicate that the arsenic MCL may be lowered in the near future.

c. In Section 2.3 (A)(3), the compliance point is set as the downgradient boundary of the RCRA unit as defined by monitoring wells DET-2, DET-3, and DET-4. This RCRA unit is surrounded by a much larger CERCLA area of concern (AOC). In addition, the RCRA unit, as well as the larger AOC, are not located near the facility property boundary. Therefore, this definition of the compliance point is adequate at this time.

d. In Section 2.3 (A)(4), the compliance period continues throughout the active life of the waste management unit, assuming that corrective action is not required at some time in the future. This compliance period is acceptable.

10. Sections 2.3 C, D, and E are not acceptable. Each of these sections references three other documents as the basis for the procedures to be used during compliance monitoring. The CMP should be basically a stand alone document that establishes the entire compliance monitoring program for the RCRA unit. Field staff should be able to use it to determine what procedures to use for sampling and analytical procedures and support staff should be able to use it in preforming statistical analyses of the resulting data. To prevent confusion, staff should not be required to synthesize information from three different documents. This is

particularly important considering the constant flux of contractors and, thus, sampling personnel at the site. If the facility wants to incorporate sampling and analytical procedures as they are documented in the FWSAP (March 2001), specific sections of the facility wide document should either be referenced or copied into the CMP. In order to meet the requirements of OAC 3745-54-99 (C) through (F), the plan must be modified to document the sampling, analytical, and statistical procedures to be used during compliance monitoring.

For sampling activities, this should include, but not necessarily be limited to: procedures for measuring ground water elevations; collecting and handling ground water samples including well evacuation, sampling equipment, sample withdrawal, containers, preservation, filtration, and shipment; performing field analysis; recording raw data including forms with spaces for exact location, time, and facility specific considerations associated with the data acquisition; calibration of field instruments; decontamination of sampling equipment; and disposal of purge water. Other items that must be documented in the CMP include: constituents; analytical methods and detection limits; sample holding times; and QA/QC procedures including the use of field/lab/equipment blanks, duplicate samples, and potential interferences; and chain-of-custody procedures including standardized field tracking forms and sample labels.

For statistical analysis, this should include, but not necessarily be limited to: procedures for establishing whether the data are normally or log-normally distributed and the statistical test(s) that the facility plans to use in analyzing the data. Although the statistical program currently being used by the facility appears to be adequate, its use must be fully documented in the CMP. During compliance monitoring, data should be compared statistically to the established ground water concentration limits as well as to background concentrations. This should be documented in the CMP.

11. It is proposed in Section C on page 15 that specific conductance no longer be a sample parameter. This is unacceptable. Although the indicator parameters pH, specific conductance, and temperature will no longer be used for statistical analysis, the measurements must still be taken and reported along with turbidity. These parameters give important information needed to determine if basic changes are occurring in the aquifer or with a specific sampling point.

12. Section C should include complete lists of all parameters to be analyzed semi-annually and annually. This will avoid any confusion as to what is to be sampled. Proposed analytical methods and detection limits for each constituent also should be documented on these lists.

13. The proposed CMP does not include specific provisions for determining the full horizontal and vertical extent of contamination at the site as per OAC 3745-54-91 (A)(3) and OAC 3745-54-99 (A). It is mentioned on page 19, however, that

additional wells will be installed downgradient of the RCRA unit and will include a study of Sand Creek (also located downgradient of the RCRA unit) during CERCLA activities at the larger OD2 AOC. It is anticipated by the facility, as documented in the CMP, that this investigation will be initiated during the Spring of 2002. At this time, it is reasonable for the determination of the full horizontal and vertical extent of contamination at the RCRA unit to be conducted concurrently with this additional study of the larger AOC. However, if the proposed study of the larger AOC is delayed and is not initiated in 2002, the Ohio EPA reserves the right to require an investigation to determine the full horizontal and vertical extent of contamination associated with the RCRA portion of the AOC.

14. Section 3.0, "Summary," it states "that the presence, concentration, and frequency of occurrence of the constituents observed and reported during the mid-2000 to 2001 period does not appear to be of immediate concern nor recognizably impacting the general ground water quality in the OD2 area." This statement is incorrect. As per OAC 3745-54-98 (F), the statistical analysis of the detection monitoring data has indicated that there is evidence that the unit is affecting the quality of ground water at the OD2 area. Whether or not this contamination is of immediate concern will be determined with the establishment of ground water protection standards and the comparison of site specific data to these standards. Section 3.0 should be modified accordingly.

15. The following sections of OAC 3745-54-99 have not been addressed by RVAAP:

    a. In accordance with OAC 3745-54-99 (B), the CMP should specifically document the identities of the wells to be used for the compliance monitoring program (e.g., DET-1B, upgradient). The depths and the casing and constructions details for each well also should be documented. Well logs for the wells should be included.

    b. As per OAC 3745-54-99 (C)(2), the CMP should indicate that the ground water analytical data will be recorded as measured and in a form necessary to determine statistical significance as per OAC 3745-54-99 (G) and (H).

    c. As per OAC 3745-54-99 (D), the CMP should include provisions for the statistical comparison of the ground water data to the established ground water protection standards and background.

    d. As per OAC 3745-54-99 (F), the CMP should indicate that four samples will be collected from each well semi-annually during the compliance period. Alternatively, the CMP should document that sufficient historic data are available to perform valid statistical analysis and, thus, replicate samples are not necessary.

    e. As per OAC 3745-54-99 (G), the CMP should include provisions for what will occur should additional hazardous constituents be identified during the

annual sampling for the modified list of parameters from the Appendix to OAC 3745-54-98. This should include confirmation sampling, reporting to the Director, and adding the additional constituents to the list of ground water parameters monitored. If the facility does not plan to confirm any detections of additional parameters, this should be stated in the CMP along with provisions for reporting to the Director and adding the parameters to the ground water monitoring list.

f. As per OAC 3745-54-99 (H), the CMP should include provisions for what will occur if there is an exceedence of any of the ground water protection standards. This should include, but not necessarily be limited to: notification of the Director, submittal of a corrective action plan, or a demonstration that the observed contamination is originating from a source other than the regulated unit (OAC 3745-54-99 (I)).

g. As per OAC 3745-54-99 (J), the CMP should include provisions for submitting modifications of the plan when it is determined that the compliance monitoring program no longer satisfies the requirements of OAC 3745-54-99.

h. As per OAC 3745-55-02 (B), the CMP should specify that compliance ground water monitoring records will be kept and will be available during inspections. These records should include ground water elevations, ground water analytical data, annual determinations of ground water flow rate and direction, results of statistical comparisons, modifications to the ground water monitoring system, sampling and analysis plan, statistical methods, notices of intent to seek and ACL, any ACL demonstrations, any notices of intent and demonstrations to seek a source of contamination other than the regulated unit, and any engineering feasibility plans for corrective action programs.

i. As per OAC 3745-54-75 (F), the CMP should specify that annual reports for the compliance monitoring program will be completed in the format supplied by the Director and will be submitted by March 1 of each year.

16. The following comments concern the submittal of data from the May 2001 ground water sampling for the modified list of parameters from the Appendix to OAC 3745-54-98. The data was submitted as Appendix A of the CMP.

a. The chain-of-custody (COC) for the sample from DET-4 indicates that the sample was not field filtered. This deviation from the approved detection ground water monitoring plan should be explained.

b. On several of the COC forms (e.g, field blank; DET-2; DET-3; duplicate), the section documenting the condition of the samples upon receipt at the laboratory is not completed. This should be explained. In the future, the condition of the samples upon receipt by the laboratory should be fully documented.

c. Although the Tables of Contents that accompany each set of data submitted in Appendix A indicate that the laboratory provided full QA/QC summaries, this information has been omitted from the material submitted to Ohio EPA for review. So that the data can be evaluated and its accuracy verified, all QA/QC information should be submitted for review.

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:cl

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

Mark - optional copy

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

REPLY TO
ATTENTION OF

January 11, 2001

SMARV-CR

Subject: Emergency Hazardous Waste Permit No. 02-67-800E

Ms. Gretchen L. Fickle
Ohio Environmental Protection Agency
RCRA Engineering & Risk Assessment Section
Division of Hazardous Waste Management
Lazarus Government Center
122 S. Front Street
Columbus, Ohio 43215

Dear Ms. Fickle,

This is in regard to your letter dated December 15, 2000, to Ravenna Army Ammunition Plant (RVAAP) concerning Emergency Hazardous Waste Permit No. 02-67-800E issued on May 17, 2000, for the treatment of a 40 mm grenade. RVAAP has no record of receiving the hard copy of the permit you mention in your letter. Please forward another copy for our records.

In regard to Special Condition G, Required Notices, of the permit, RVAAP successfully detonated the 40mm grenade on May 22, 2000, using 5 feet of det cord. Inspection of the site following detonation revealed no untreated waste or residue.

You may call Mr. Mark Patterson, RVAAP Environmental Coordinator at (330) 358-7311 to discuss this matter if you need any additional information or have any questions. Thank you for your assistance in completing this project.

Sincerely,

John A. Cicero, Jr.
Commander's Representative

Printed on Recycled Paper

Original mailed 1/15/01

State of Ohio Environmental Protection Agency

Southwest District Office

401 East Fifth Street
Dayton, Ohio 45402-2911

TELE: (937) 285-6357 fax: (937) 285-6249

Bob Taft, Governor
Maureen O'Connor, Lt. Governor
Christopher Jones, Director

January 31, 2001

Mr. Steve Selecman, Vice President
Manager, Environmental Services Division
Science Applications International Corporation
800 Oak Ridge Turnpike
P.O. Box 2502
Oak Ridge, Tennessee 37831

Re: "Field-Observed Effects in Ecological Risk Assessments: The Road Less Traveled;" Society for Risk Analysis abstract; Winklepeck Burning Grounds; Ravenna, Ohio

Dear Mr. Selecman:

On December 3-6, 2000, the Society for Risk Analysis (SRA) held its annual meeting in Arlington, Virginia. A portion of this meeting was devoted to technical poster presentations. Last week, I was informed that several Ohio EPA staff, in their capacity as representatives of the Agency, were listed as co-authors of a poster presentation, entitled "Field-Observed Effects in Ecological Risk Assessments: The Road Less Traveled." The poster was presented by representatives of Science Applications International Corporation (SAIC), who have participated on a joint ecological risk assessment group that is evaluating potential adverse ecological impacts of the Winklepeck Burning Grounds at the Ravenna Army Ammunition Plant in Ravenna, Ohio. Representatives of the following entities have participated in this group: Ohio EPA; SAIC; U.S. Army Corps of Engineers (USACE); U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM); and the Environmental Coordinator for the Ravenna Army Ammunition Plant. An abstract describing the information presented in the poster was reprinted in the Final Program for the SRA meeting and it is my understanding that this information will soon be available internationally via the Internet at: http://www.riskworld.com/Abstract/.

SAIC, USACE, USACHPPM, and the Ohio EPA had a verbal agreement that the results of the field measurements were to be discussed as a group before conclusions were drawn at a joint meeting planned for February 2001. At this time, we have not been provided any of the data from which conclusions were drawn and did not have an opportunity to review the poster prior to its presentation. However, using the data presented on the poster, we can identify conclusions that are not defensible. Ohio EPA staff did not give permission for their names or their Agency affiliation to be used. In fact, Ohio EPA staff did not know of the existence of the poster until after the conclusion of the SRA meeting.

In addition to the unauthorized use of the names and affiliation of Ohio EPA staff, SAIC 's "Field-Observed Effects" poster suggests that Ohio EPA supports the conclusions presented on the poster. The poster also suggests that if the responsible parties have sufficient resources to support field investigatory activities, additional remedial work may not be necessary.

The purpose of this letter is to formally request that SAIC take immediate action to prevent the publication, via the Internet or other means, of the "Field-Observed Effects" poster, the results of the field measurements, the data from which conclusions were drawn, and all other written documentation regarding the joint ecological risk assessment group that is evaluating potential adverse ecological impacts of the Winklepeck Burning Grounds at the Ravenna Army Ammunition Plant. Please send written confirmation that the requested action has been taken to me by Wednesday, February 7th. Should you have any questions in this regard, you may call me, (937) 285-6018, or you may contact Mark Navarre, of the Ohio EPA Legal Office, (614) 644-3037.

Sincerely,

Graham Mitchell
Chief, Office of Federal Facilities Oversight

cc: Mark Patterson, Environmental Coordinator, Ravenna Army Ammunition Plant
John Jent, Program Manager, USACE, Louisville
Larry Tannenbaum, USACHPPM
Mark Navarre, Legal Office, Ohio EPA
Eileen Mohr, Ohio EPA, DERR, NEDO
Brian Tucker, Ohio EPA, DERR, CO
Laurie Eggert, Ohio EPA, OFFO, SWDO

OhioEPA
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 29, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
FINAL WBG STRATEGIC PLAN

Mr. John Jent
U.S. Army Corps of Engineers
Louisville District
ATTN: CELRL-ED-EE
600 Martin Luther King Jr. Place
P.O. Box 59
Louisville, KY 40202-0059

Dear Mr. Jent:

The Ohio Environmental Protection Agency (Ohio EPA), Division of Emergency and Remedial Response (DERR), has received and reviewed the following document: "Final, Summary and Technical Assumptions for Area, Volume and Cost Estimates for the Winklepeck Burning Grounds, Strategic Plan, Ravenna Army Ammunition Plant, Ravenna, Ohio." The document, dated March 2001 and received at Ohio EPA, NEDO, on March 26, 2001, was prepared by the contractor for the U.S. Army Corps of Engineers (USACE) under contract number DACA62-00-D-0001, delivery order CY07.

The revised document was compared to the draft document (dated June 2000) and the comment resolution table that was discussed during a meeting held at the RVAAP on February 6, 2001.

I have two comments on the revised document:

1. Although it is stated on page 1 that the risk-based human health remedial goal options (RGOs) are provisional in nature, this issue should have been addressed and emphasized in more detail in the "uncertainty" section. Although the Agency is not requiring any text change to this document, it is reiterated that as the RGOs are draft or provisional, they are subject to change. As such, any changes in the RGOs would necessarily have an impact on the strategic plan and may greatly influence the volume of soil removal, costs, etc.

2. Further discussion is warranted regarding the selection of RGOs and must necessarily include Agency personnel. No text changes required.

If you have any questions or comments 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: Rod Beals, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Todd Fisher, NEDO, DERR
Brian Tucker, DERR, CO
Walt Perro, USACE Louisville
John Cicero, RVAAP
Mark Patterson, RVAAP
Bob Whelove, OSC
LTC Tom Tadsen, RVAAP
David Seeley, USEPA Region V
Steve Selecman, SAIC Oak Ridge
Kevin Jago, SAIC Oak Ridge
Kathy Dominick, SAIC Tulsa

OhioEPA
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, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
DRAFT ECOLOGICAL FIELD TRUTHING 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) has received and reviewed the document entitled: "Draft, Report on the Biological Field-Truthing Effort at Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated April 2001 and received at Ohio EPA on April 20, 2001, was prepared 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 CK01.

The document was reviewed by the following Ohio EPA personnel: Brian Tucker, Central Office (CO), Division of Emergency and Remedial Response (DERR); Laurie Eggert, Office of Federal Facilities Oversight (OFFO), Southwest District Office (SWDO); and Eileen Mohr, Northeast District Office (NEDO), DERR. This correspondence represents a compilation of comments from all Ohio EPA reviewers. Please note that some of the comments are formatted slightly different, i.e., some have headings while others reference specific page numbers. This is a function of the number of reviewers of this report, however, each comment should easily be cross-referenced back to the original text by either method.

General Comment:

The report was well written and adequately described the methods used in the evaluation of possible field-level adverse effects as the result of chemical contamination. However, Ohio EPA does not agree with the conclusions drawn in the document. Generally, the project did not meet the statistical requirements agreed to by the project team. In addition, many of the studies are not valid based upon the assumptions used in the experimental designs.

In contrast to the comment format that is usually used where specific text is identified for revision, many of the comments below are more general in identifying the areas of concern. Given the level of concern with the report, detailed comments on text would be too burdensome to compose, and would require extensive and possibly unnecessary revision for the authors. It should also be noted that none of the comments given below on the field-truthing studies are

new to the team or project. Ohio EPA has in the past raised these issues, although not always at the level of detail described here, without resolution. The project was continued knowing that Ohio EPA had legitimate issues that were not resolved, and the Agency identified the consequences of a study that was not defensible.

SPECIFIC COMMENTS:

VEGETATION STUDIES

1. Executive Summary, Pages xi -xiii:
   The executive summary will need to be rewritten based on the specific comments on the various measurements and methodologies. In general, the executive summary contradicts itself and makes broad, unsubstantiated conclusions. For example, the executive summary identifies that none of the small mammal evaluations met the agreed upon statistical requirements, and then later in the summary it is stated that: "(n)one of the reproduction metrics for small mammals (*i.e.*, sperm motility, sperm counts, and sperm morphology) was significantly different between the WBG and the reference sites." Additional examples of contradicting text for the vegetation metrics can be identified in the executive summary. However the comment would be redundant. Consequently, the Agency does not agree with the conclusions given in the executive summary and a complete revision is necessary if approval by Ohio EPA of the document is contemplated.

2. On page ix, revise the text to read as follows: "...the field truthing effort applied at WBG was developed *in an attempt* to determine population - or community-based ecological effects in the field...."

3. On page xiii, please provide additional information regarding the statement that: "The burning pad and larger geographical scales are the only ones that have ecological meaning."

4. Section 1.1, Introduction:
   The paragraph beginning on line 44 of section 1.1 attempts to make broad conclusions about the ecological health of WBG, based on the reports cited in section 1.1 that described the biological abundance and diversity of the entire Ravenna Army Ammunition Plant (RVAAP). This comparison is misleading as the Winklepeck Burning Grounds (WBG) is only 200 acres in size, and the entire RVAAP is greater than 21,000 acres. In addition, the "observations of hawks made by Science Applications International Corporation (SAIC) samplers at WBG" does not have any scientific validity in inferring that adverse ecological impacts are not occurring at WBG. These types of statements should be clarified or removed from the document.

5. With respect to the ecological studies directed by the Ohio National Guard (OHARNG), please provide additional information as to whether these were installation-wide studies, or studies conducted in smaller than installation-wide areas, but exclusive of Areas of Concern (AOCs). If this is the case, this would have a definite impact on whether or not adverse ecological affects would be expected to be observed. Please revise the text as appropriate. (Pages 1-1line 49 and 1-2 lines 2-3)

6. With respect to the Winklepeck Burning Grounds (WBG) final Phase II RI report, please be advised that it is undergoing review by Agency personnel and, as such, is not considered to be a final document. (Page 1-2 lines 1 and 10, page 7-1 line 10)

7. Remove the reference in the text that indicates that the Deactivation Furnace Area (DFA) closure plan is undergoing review by Ohio EPA personnel. This closure plan was withdrawn by the Army. (Page 1-2 lines 45-46)

8. Please provide additional information in the report to support the conclusion in the report that the ecological ground truthing methodologies "add credibility" to the CERCLA process. (Page 1-3 lines 12-14)

9. Section 2.0 Scope and Objectives:
Section 2.0 identifies the scope and assumptions used in the field-truthing project. The section states: "(c)ertain assumptions were implicit in this ground-truthing effort." The term implicit is not correct. The assumptions listed, except for the sixth bulleted item, were actually agreed to by the team. In fact, the third bulleted item appears to cite the 1999 document entitled: "Vegetation Methods for Ground-Truthing of Ecological Risk at Winklepeck Burning Grounds, Ravenna, Army Ammunition Plant, Ravenna, Ohio." The vegetation and small mammal "methods" documents, and the out-standing comments on those documents by Ohio EPA, is the framework for which the investigation and ultimately the decisions on the results of the investigation were to be based. The current draft identifies less important areas of consensus during the process throughout the document, but did not identify this critical understanding by the team, including Ohio EPA.

   The development of the statistical requirements were specifically designed so decisions could be made on the results of the biological studies. It is important to clarify that the process used by the team to select and agree to the specific statistical and other requirements of the studies was time consuming and expensive for all parties involved. It was also made clear by Ohio EPA that if any of the results did not meet the specified requirement that no conclusions could be made on the study. This was the foundation of the decision-making approach agreed to by the team. It is not clear, at this time, why the authors are not adhering to the decisions that were entered into during the formulation of the studies. Revision of section 2.0 is necessary, as is the entire document, to clarify the process and to identify the decision-making criteria developed by the team.

10. Section 3.3 Selection of Statistical Criteria:
It is stated on lines 49 and 50 of page 3-2: "(t)hus, α level 5%, power of 95%, and significant difference of 20% were set during the planning stage as the deciding variables." The importance of this statement and the agreement made by the team to use the above criteria is critical to the decision-making process. The statistical criteria was, and is, the foundation of the use of the results obtained from the various biological measurements. The remaining text of section 3.3 describes a method to *estimate* the required number of samples required to meet the statistical criteria that were established by the team as the decision-making criteria. The method of selecting sample numbers based on a ratio of the significant difference to the coefficient of variation (CV) was introduced by the contractor after the initial decision on the statistical requirements was agreed to by the group. However, as comments by Ohio EPA noted (comment # 4, 2 June comments from Brian Tucker to Eileen Mohr, emailed to SAIC and the team on the same day), the sample numbers would be insufficient to meet the statistical requirements if the observed (measured) CV exceeded 20%. If sample numbers were insufficient to meet the statistical requirements, then no "conclusive evidence of risk or lack thereof" (Draft, Memorandum for Biological Measurements, Winklepeck, Ravenna, OH 8 February 2000) could be established. This fact is recognized by the authors as stated in lines 23 and 24 on page 3-3 where it is stated: "(I)f however, the measured CV is greater than 20%, our original goal will not be met." This is now the case for 16 out of a total of 18 vegetation sampling studies/results. It is not clear, based on the above, why many of the "conclusions" of study results that did not meet the statistical requirements, were made.

11. Sections 3.4 through 3.4.4:
Sections 3.4 through 2.4.4 describe the various statistical test that were used to analyze the data from the various biological measurements from the WBG biological measurements. At various locations throughout these sections, information is given that describes when differences between two data sets are "significant." These statements should be revised to include only "significant differences" based on the group's decision criteria. The statements in the text are confusing for the reader. Only significant differences based on the decision criteria set for the study should be provided. Please make the appropriate changes to sections 3.4 through 3.4.4.

It should also be noted that very little information was given in the sampling and analysis plan (May 2000) on the various statistical techniques that were to be used to analyze the data from the biological measurements. No discussions were held by the team prior to the completion of the draft report on the biological field-truthing effort. Presently, there has not been an agreement by the team as to what are the appropriate statistical techniques for data that have met the required criteria.

12. Section 3.5 Summary:
The sentence beginning on line 17 of page 3-6 should be revised to include information that identifies that the listed sample numbers are only sufficient if the measured CV is less than 20%.

13. Table 3-1, Number of Samples Required to Obtain Specified Alpha Level and Power for a Specified Percent Difference/Coefficient of Variation Ratio if Measurements are Normally Distributed:
Table 3-1 should be changed, or at least the report should include the tables that were given in the sampling and analysis plan that identity the number of samples needed to meet the required criteria of α level 5%, power of 95%, and significant difference of 20% set by the group. This new table is much more important to identify the **required** number of samples than Table 3-1 that was used to **estimate** the numbers by using a ratio of percent difference/CV.

14. Please correct the spelling of "fuses" on page 4-2 (line17); i.e., it should read "fuzes."

15. On page 4-2 (lines 24-28), please revise the text to clearly indicate that ordnance avoidance techniques were utilized during the WBG efforts.

16. Revise the fourth column on Table 4-1 (page 4-4) to read: "site description."

17. Please provide the historical documents that verify that munitions from other countries were treated/destroyed at the WBG. The Agency agrees that foreign munitions were received at the RVAAP, and that we have found evidence of them at Open Demolition Area (ODA) # 2, however, it is unclear as to whether or not this also occurred at the WBG. This is a critical piece of information in light of the fact that the presence of exotic vegetative species is being attributed to the foreign munitions.

18. Section 5.1, Rationale:
The term "*definitive,*" as given in line 11 on page 5-1, should be defined as a significant difference between data from the study pads and the reference locations, using the statistical criteria of α level 5%, power of 95%, and significant difference of 20%, as agreed upon by the group.

19. Section 5.2, Sampling Methods:
Additional information is needed in section 5.0 that discusses the sampling design and how the design is defensible given the sampling plot sizes (*i.e.*, 1 m^2 or 0.25 m^2), the sampling area (*i.e.*, the grid overlaid the burning pads or portions of the burning pads, approximately 300 m^2), and the contamination distribution at the burning pads. It is not clear, at this time, if the sampling design was adequate to evaluate potential adverse

impacts to vegetation caused by contamination at the burning pads. For example, there was a maximum of 20 plots sampled at each of the burning pads (maximum of 20 plots sampled on pad 67, minimum of 15 plots sampled on pad 38, table 5-2, page 5-14) out of a possible 300 plots for the $1m^2$ sample size, and a total of 1200 plots of the 0.25 m^2 size. Thus, only 7% of the potential area was sampled using the $1m^2$ plot sizes and less than 2% of the area was sampled using the 0.25 m^2 plot size. However, this is only true if the pad sizes are equal to the sampling area of $300m^2$. See below for additional concerns regarding the sample sizes and numbers. There has been no justification given as to whether these percentages are adequate. However, these values seem insufficient.

Discussion is also needed that relates the sample plot and pad locations with the known locations of chemical contamination. The "Draft, Phase 2 Remedial Investigation Report for the Winklepeck Burning Grounds at the Ravenna Army Ammunition Plant , Ravenna, Ohio, February 1999" provides detailed information on the types, concentrations, and location of contaminants at the burning pads, in addition to the sizes of burning pads. A review of the information in the Draft Remedial Investigation (RI) Report revealed the following information that is relevant to the above discussions:

a) Pad 37

- The contaminants of greatest concern at pad 37 include: lead, zinc, barium, and cadmium;
- The pad size given for pad 37 (Figure 4.8, Selected Metals in Soil at Pad # 37, Draft Phase II Remedial Investigation Report, February 1999, SAIC) is approximately 87.5 feet by 81.25 feet (this is equivalent to $660m^2$);
- Many of the surface soil (0-2ft) concentrations of concern were located outside of the boundary of pad 37;
- No information was provided in the report that relates the vegetation sampling locations and the areas of known contamination.

Therefore, the study area (300m2) was too small (*i.e.*, the sample area is ½ size of the pad) to evaluate pad 37. In addition, most of the contamination that was identified at pad 37 was located outside of the pad boundary and would not have been included within the sample area. Without confirmation that the 300 m^2 sample area was centered on the area(s) of greatest contamination, no results from pad 37 will be considered in the field-truthing results or subsequent risk management decision making process. Please identify the location of the 300 m^2 sampling area in relationship to the boundaries of pad 37.

b) Pad 38

- The contaminants of greatest concern at pad 37 include: lead, zinc, barium, and cadmium;

- The pad size given for pad 38 (Figure 4.10, Selected Metals in Soil at Pad # 38, Draft Phase II Remedial Investigation Report, February 1999, SAIC) is approximately 72.5 feet by 62.5 feet (this is equivalent to 421m^2);
- Only two soil contamination sampling locations were actually within the boundaries of pad 38;
- Contamination was identified in three locations outside of the boundaries of pad 38, (the greatest concentration of zinc was measured outside of pad 38);
- No information was provided in the report that relates the vegetation sampling locations and the areas of known contamination.

Therefore, the study area (300m2) may be too small (*i.e.*, the sample area is 71% the size of the pad) to evaluate pad 38. Discussion and justification is needed of the sampling area size and the relationship to the area of pad 38.

c) Pad 58

- The contaminants of greatest concern at pad 58 include: lead, zinc, cadmium, and mercury;
- The pad size given for pad 58 (Figure 4.15, Selected Metals in Soil at Pad # 58, Draft Phase II Remedial Investigation Report, February 1999, SAIC) is approximately 50 feet by 100 feet (this is equivalent to 465m^2);
- The soil sample location with some of the highest metal concentrations (WBGss-114) is located at the northern boundary of Pad 58 and, therefore, may have not been selected as a sampling location.

d) Pad 59

- The contaminants of greatest concern at pad 59 include: lead, zinc, cadmium, copper, and TNT;
- The pad size given for pad 59 (Figure 4.17, Selected Metals in Soil at Pad # 59, Draft Phase II Remedial Investigation Report, February 1999, SAIC) is approximately 50 feet by 100 feet (this is equivalent to 465m^2);
- The soil sample location with the highest lead concentration (WBGss-118) is located outside of the boundaries of Pad 59;
- Only two of a total of seven soil samples were taken within the boundaries of Pad 59.

Discussion is warranted that identifies the selected vegetation sampling locations with areas of known contamination. In addition, no discussion was presented regarding the possible confounding effects of the TNT contamination (WBGss-055) found in Pad 59.

e) Pad 66

- The contaminants of greatest concern at pad 66 include: HMX, RDX, TNT, and TNB;
- The pad size given for pad 66 (Figure 4.24, Explosives in Soil at Pad # 66, Draft Phase II Remedial Investigation Report, February 1999, SAIC) is approximately 44 feet by 75 feet (this is equivalent to 305m^2);
- Only three of seven soil samples were taken within the boundaries of pad 66;
- The greatest amount of contamination appears to be isolated to an area of approximately 58 m^2 in the central-eastern portion of Pad 66.

Given that the contamination appears to be isolated to a small subsection of Pad 66, discussion and justification is needed that explains the sampling locations selected for the vegetation field-truthing effort. It appears likely that a random sampling design (a random sampling design was employed for the vegetation measurements) could easily have missed the contaminated soils that were the focus of the investigation. Information is needed that confirms that enough vegetation samples to meet the required statistical criteria were taken in the contaminated areas of the burning pad. If no areas of contamination were sampled, or if only a limited amount of the samples were from contaminated media, then the results may not be of use in the report or in future decision making.

f) Pad 67

- The contaminants of greatest concern at pad 67 include: HMX, RDX, TNT, and TNB;
- The pad size given for pad 67 (Figure 4.26, Explosives in Soil at Pad # 67, Draft Phase II Remedial Investigation Report, February 1999, SAIC) is approximately 44 feet by 75 feet (this is equivalent to 305m^2);
- No contamination concentration greater than 2.3 mg kg^{-1} of TNT was identified on pad 67;
- The greatest concentrations of contamination was located outside the boundaries of pad 67.

Given that pad 67 had only two minor detections of explosives (2.3 mg kg^{-1} TNT and 0.28 mg kg^{-1} TNT) located within the boundaries, it should not have been included in the field-truthing study. Pad 67 was indicated as a burning pad of "highest potential risk." However, this designation was based on a single sample result (WBGss-070) that was located outside the boundaries of pad 67. Any information (sampling results) gathered from

pad 67 should not be included in the results, as the selection of the pad as exhibiting a "high potential for ecological risk" is false. It is true that an area outside of pad 67 has high levels of contamination, however, this area was not included in the study.

Given the information above, it is clear that the ground-truthing study did not take into consideration the size of the various burning pads in relationship to size of the sampling area. Nor was the contaminant distribution at the burning pads taken into account during the planning or sampling stages of the investigation. The report does not discuss the contaminant distributions or provide any evidence that the random vegetation samples actually sampled areas that were contaminated by chemicals of concern (COCs). In fact, it appears as though many of the random sample locations areas were likely in areas that have not been characterized for chemical contamination, and which possibly exhibit more characteristics of a reference area rather than an area of concern (AOC). If evidence cannot be provided that demonstrates that the samples were taken in contaminated areas, then a comparison between reference sites and contaminated soils was not made, and conclusions regarding the adverse impact of chemical contamination on various vegetation metrics cannot be drawn from the study.

Vegetation sample locations should be overlaid onto soil contaminant concentration maps (such as the maps cited above), to provide assurance that potential adverse ecological impacts (as determined by meeting the agreed upon statistical criteria) are the result of chemical exposure. Without this information, no conclusions can be drawn on the impact of COCs on the various vegetation metrics.

20. Section 5.3 Statistical Procedures:
Discussion of the various statistical procedures used to analyze any data that did not meet the agreed upon statistical criteria of an α level of 5%, power of 95%, and significant difference of 20% should not be included in the report. The report should be revised accordingly.

21. Section 5.4 Results:
Of all the vegetation measurements that were taken, only two sample results met the statistical criteria. Table 5-5, Percent Significant Difference of Vegetation Measurements Detectable with 95% Power at a 5% Alpha Level between Contaminated and Reference Sites at Winklepeck Burning Grounds, identifies that only percent cover measurements from burning pads 58/59 and 66/67 and their paired reference locations have a detectable significant difference of 20% or less. It is not clear why the draft report did not identify the significance of the Table 5-5. Section 5.4.1 through 5.4.5 listed many results that were identified as "significantly different," however, only two met the required criteria and should have been discussed in detail. Results that did not meet the required criteria can be listed, however, per the group's agreement, no conclusions can be definitively

made on such data. All statements or conclusions regarding "significantly different" data that did not meet the agreed upon statistical requirements are to be removed from the report.

22. Discussion is needed with respect to variability within the data sets and the effect that this variability has on the overall conclusions of the report.

23. Section 5.4.5 Community Composition:
Lines 14 through 17 on page 5-6 states: "(t)hese differences in species composition, however, are not necessarily caused by contamination at the site. The species composition on a plot surely depends on the sequence and type of physical disturbance at the site, the recovery period since the last disturbance occurred, and the availability and dispersal patterns of seed stock for the colonizing species." Two comments are warranted regarding this statement. First, the significant difference cited for the species composition between burning pads 58, 59, 66, 67 and their respective reference areas was based on data that did not meet the statistical criteria and, therefore, no conclusions can be made. Secondly, if the ability to compare the reference sites to the burning pads is questioned, as is done in the above quote, then all results for the vegetation studies are not definitive. Section 4.3 REFERENCE SITES, lists in great detail the effort that was used to identify reference sites that "duplicate as many of the WBG site characteristics as possible (Jent 2000a, 2000b, and Groton 2000 in SAIC 2001)" (line 36 and 37 of section 4.3). This is now contradicted by the author(s) of the draft report in Section 5.4.5. that lists reasons why the reference sites and burning pads are different, and that so called "significant differences" can be discounted.

24. Biomass, Percent Cover and Stem Density are all similar measures of the vegetative community, therefore, conclusions based on these measures should be discussed collectively. When interpreting the data, confounding factors should be discussed (i.e., one measure swings one way and the other measure says the opposite).

25. Section 5.5 Geographic Scale:
Section 5.5 reiterates the idea that differences between burning pads and reference sites that potentially identifies adverse ecological impacts (if the statistical criteria were met) can be discounted. As is done in the draft report, it is not an acceptable scientific practice to use data to prove contradicting opinions. These statements should be removed from the text.

26. Discussion of "scale" with respect to ecological relevance must be included in this report. Several scales are present in this study, plot to pad to all of WBG without defining these in terms of what is important from a biological perspective.

27. Section 5.6 Summary:
Ohio EPA does not agree with the conclusions of the vegetation studies as presented in the draft report. Based on the comments above and the results of the various metrics, it cannot be determined that adverse ecological impacts have not or are not occurring at the WBG. The studies generally did not meet the required statistical requirements, the sampling design did not account for the spatial distribution of contamination at the burning pads, the studies cannot confirm whether vegetation sample were taken in contaminated areas, and the report uses conflicting information regarding the use of reference locations. Presently, the report is unacceptable and without suitable justification, the results of the vegetation studies will not be used in any remedial decision making.

MAMMAL STUDIES:

28. Section 6.1 Rationale:
Section 6.1 explains a rationale that was used to select the various mammal metrics for the field-truthing effort at WBG. Section 6.1 identified that sperm parameters (*i.e.*, sperm motility, sperm counts, and sperm morphology) were the primary measurements of the study and would be used for "definitive" rather than iterative decision making regarding the effects of contaminants on small mammals. The fundamental principle of the study that the contaminants identified at WBG adversely impact sperm parameters has not been justified in the report and, therefore, the hypothesis cannot be proven. A cause and effect relationship of changes in sperm parameters as the result of exposure to the specific contaminants at WBG is needed for the study to be of use. Furthermore, the science of toxicology identifies that toxicants have specific modes and mechanisms of actions that cause specific responses to the exposed organisms. The second of the three laws that underlie the science of toxicology concerns the specificity of toxic effects of individual chemicals, a specificity due to the unique chemical structure of the agent and the laws of biology that govern the response. Thus, the mechanism of action of various compounds/contaminants needs to be identified before a study is developed, to ensure that the appropriate physiological measurement(s) can be made. No such identification or justification was given in the draft report or work plans that identified if any of the known contaminants have demonstrated effects on sperm, or sperm producing tissues. This justification that the site contaminants do, in fact, adversely impact sperm or sperm producing tissues, is essential for all compounds evaluated in such a study. If this cause-effect relationship cannot be verified, then the compound or compounds would not be expected to adversely impact the selected parameters and a false conclusion would be made regardless of the direction of the measurements.

While it is clear that reproduction is a measurement or assessment point of interest in ecological risk assessments, there can be many reasons why reproduction may be impaired by a particular compound and these reasons may or may not be associated with

sperm or sperm producing tissues. It is not appropriate to assume that sperm or sperm producing tissues are negatively affected by all compounds without a demonstration of this effect.

29. The text on pages 6-1 and 6-2 (lines 44-50 and 1-5 respectively) indicates that the small mammal studies were geared exclusively towards identifying reproductive impacts. The Agency reiterates that during several scoping meetings there were numerous discussions and the insistence of the Agency that additional potential impacts/areas should be explored. For example, a thorough literature search should be conducted to determine the toxicological points of impact, liver impacts (ex. liver weights) should be evaluated, verification of the assumption that the reproductive endpoint impact (if existent) would be on the male and not the female population of the species.

30. Please provide confirmation that the author (Chapin) referenced on page 6-2 (lines 7-8) determined that sperm parameters would be the appropriate measure for evaluating chemical exposures to the primary COCs that are existent at the RVAAP, i.e., explosives, propellants and TAL metals. In addition, is there any other pertinent literature from other authors regarding this issue?

31. Section 6.1 Rationale:
Line 27 of Section 6.1 states: "(t)he field truthing effort for small mammals was intended to be *definitive* rather than iterative in nature." Section 6.1 did not list the statistical requirements that were agreed upon as the "definitive criteria." See comments # 9 and # 11 above regarding this agreement and the effect on the results that did not meet these requirements. This information should be provided in the text.

32. Section 6.1 Rationale:
The sentence beginning on line 29 on page 6-2 is not clear. The sentence indicates that sperm measurements are "not easily subject to change." This implies that changes in sperm counts and morphology are not expected and that the measurements of sperm counts and morphology from study pads would be similar to reference locations, even if other adverse effects may be demonstrated. Clarification is needed as to the meaning of the sentence and justification, or suitable references should be given to support this statement.

33. Section 6.2.1 Study Sites:
Section 6.2.1 provides details on the home ranges of the various target small mammals and the selection of the 50m radius (7850 m^2) sampling area. As with the discussions on the sampling grid and plot sizes for the vegetation measurements above, no information was provided in section 6.2.1 on the likelihood of exposure by the target species to contaminants at the site. Given that the pad sizes varied from a maximum of 660 m^2 to a minimum of 305 m^2, only 8% to 4% of the sampling area consisted of the burning pad

and was considered contaminated. These numbers show that the home range of the test species is far too large to ensure exposure to the contamination on or near the burning pads. Given that some of the contamination was identified outside of the burning pad boundaries, these numbers are partially conservative, however, the point is still valid.

Tissue samples were not taken from the captured test species. The chemical results of those tissues samples would have helped identify whether the organisms were actually exposed to contamination. In addition, the selection of a test species with much smaller home ranges (*e.g.*, earthworms, soil microorganisms), as suggested by Ohio EPA and other members of the team, would have been beneficial to help ensure that test organisms were exposed to contamination.

It is also possible that small mammals avoid areas of contamination, thus, limiting their exposure. For example, Pad 67 contains an area of approximately 8 m^2 devoid of plant life (presumed to be caused by explosive contamination). Biologically, there is no reason for a vole or mouse to be in this area based on the fact that no food sources exist and, furthermore, the small mammals would be vulnerable to predation due to the lack of cover.

It is also likely that many target species home ranges overlapped the study area and test organisms that were captured and analyzed spent the majority of their time outside of the contaminated soils. The sentence beginning on line 39 of page 6-3 identified that a "Global Positioning System (GPS) was used to map target species trap locations for the purpose of co-locating these data from other field measurements (*e.g.*, soil)." However, none of this information was presented in the report. The locations of the trapped target species may help indicate whether the organisms were captured near contamination, or captured on the fringes of the study area. This information should have been presented in the report.

Based on the facts listed above, it is likely that the test organisms were not exposed, or only exposed infrequently, to the contamination at the various burning pads. Without confirmation that the test organisms were exposed, it is difficult, if not impossible, to draw meaningful or defensible conclusions on the results of the study.

34. Section 6.3 Statistical Procedures:
Please see the above comments on the statistical procedures. To reiterate, criteria were developed by the group that, if met, conclusions could be made on the resulting data and would be considered "definitive." Without the use of these criteria, the team members agreed that the results of the studies would not be defensible to the scientific community or public. Given that only six white-footed mice were captured at WBG sites and eight adult male mice were captured from the reference locations, the statistical criteria were not met and conclusions cannot be made on the results. Currently, unless demonstrated

otherwise, no results from the small mammal study will be used by Ohio EPA in future decision making.

35. Section 6.4.2 Reproductive Measures of Males from Laboratory Observations:
Section 6.4.2 discusses some statistical comparisons that are not appropriate. First, even with pooled data from the burning pads or reference sites, the statistical criteria are not met. Secondly, the type of contamination varies at the three groups of burning pads. Pads 37 and 38, and 58 and 59 exhibited high hazard quotient (HQ) values from metals, primarily aluminum, cadmium and lead. Pads 67 and 68 demonstrated high ecological HQ values from explosives and organic compounds (TNT, RDX, TNB, and HMX) and metals. The selection of Pads 67 and 68 was primarily based on the presence of organic contamination. Because the contamination is different at the various pairs of burning pads, the possible exhibited adverse effects would likely not be consistent and, therefore, the pooling of data is not appropriate to identify potential adverse impacts to test species based on the analysis used in the study.

36. The text on page 6-6 (lines 38-40) and throughout section 6.4.2 indicates that the agreed-upon statistical parameters were changed. This occurred without Agency input or concurrence. Please add additional text to the report that makes this situation clear.

37. Please provide supportive information in the text that substantiates the assertion that there is no evidence of ecological impact on higher organisms (ex. hawks) at the RVAAP (page 6-7 lies 25-27). This has not been definitively shown based upon this field truthing effort and, as such, the conclusion drawn in the text is premature. (Also page 8-8 lines 16-19)

38. In the text on page 6-9 (lines 42-48), there are statements made that indicate that perhaps the limited number of shrews, voles, chipmunks, etc., may be due to the lack of food at WBG (ex. earthworms and grubs). Perhaps the lack of food is due to the presence of contamination. The presence of chemical contamination at the WBG pads cannot be minimized.

39. Please provide additional information to corroborate what aerial size can be considered "ecologically meaningful." (Page 7-3 lines 17-18, page 9-1 lines 39-41)

40. Section 7.0 Summary Of Vegetation and Small Mammal Ground-Truthing:
The summary section restates the "conclusions" given in the previous sections. Based upon the criteria identified for the studies, and comments given above, it is highly unlikely that any conclusions can be made on the results from the vegetation and small mammal studies presented in the draft report. Ohio EPA does not agree with the draft report and identifies the last sentence in section 7.0 as indefensible and in disregard of the group process that was used throughout the development of the study. Please remove this statement from the draft text of the report.

ECOLOGICAL PROTECTION LEVELS (EPLs):

41. Please provide information in the text of the report to substantiate the use of tanks at WBG. (Page 8-1 line21)

42. Please clarify the section of the report (pages 8-2 and 8-6 lines 11-17 and 33-39 respectively) that details the soil sampling that was conducted as part of the ecological field truthing initiative. Specifically, only samples for explosives compounds are composited from three sub-samples located in a roughly equilateral triangle pattern. All other samples are collected from a discrete sample that is located in the center of the equilateral triangle, and the volatile organic compound (VOC) samples are never homogenized.

43. Clarify that the "Ecological Protection Levels" are based only on the plant data. The EPL implies that these levels are protective of all ecological receptors and, since the mammal data was not used to establish these levels, these are actually better referred to as "Plant Protection Levels."

44. Section 8.2.1 Field Sampling:
Given the importance of the development of ecological protection levels for soils, a very limited amount of samples (both vegetation and soil chemical) were collected and analyzed. The collection of additional samples would be beneficial if more precise protection levels were desired, and ones that would require lower or fewer safety or uncertainty factors to be applied to the threshold concentration. The lack of sufficient sampling numbers also helps explain the lack of statistical correlation with the various vegetation and the soil contaminant concentrations.

45. Section 8.3 Statistical Analysis:
Section 8.3 describes the various statistical procedures used during the analysis of the data. Generally, effects caused by the exposure to toxicants exhibit a threshold concentration. This is the concentration that is of interest when developing protection levels for various organisms. The dose-response curves generated by detailed experimental data generally follow a sigmoid shape and are not linear. The selection and evaluation of the data using only a linear regression should be re-evaluated. Additional evaluation of the data is required before the results of the study can be considered in any environmental decision making.

The approach taken in the draft report to determine ecological protection levels is not acceptable. Once suitable data has been pooled (see comments below), a curve can be developed that describes the dose response relationship. Both the dose and the effect need to be bounded by a confidence limit. If the uncertainty is too large, as is the case with the provided data, a linear extrapolation using the lower bound on the dose that

corresponds to the upper bound on the effect should be used to develop a suitably protective value. This method is commonly referred to as the linear dose model. This approach should be explored in the development of ecological protection levels.

46. Section 8.3 Statistical Analysis:
Section 8.3 did not fully explain the methods used in the derivation of ecological protection levels. In fact, no protection levels were identified in section 8 using the approach cited in the text. Much more detail is needed to explain how the various sampling data were grouped and how the confounding effects of multiple contaminants was identified and accounted for in the results. It appears that many of the analyses combined data from all three sets of burning pads. This is not appropriate, given that the contamination is not the same at each pad. To be consistent with the group's approach that has been used throughout the project, a meeting should be held as to how and if the data from the ecological protection levels should be used.

47. Section 8.3 Statistical Analysis:
Uncertainty was never addressed in the development of the ecological protection levels. This is an essential part of the evaluation of the data and results that were not completed by the authors. For example, confidence intervals should have been placed on both sides of the regression analysis lines, so protective levels could be determined. This concept was briefly identified in section 9.2. However, greater detail and explanation is required. An uncertainty section must be included in this report that discusses areas of uncertainty within this study. This must include, but is not limited to, uncertainty associated with the above comments, and uncertainty associated with sample size, statistical analysis, pooling data sets for statistical analysis, selection of reference locations, receptor selection, and development of EPL. Additional discussions of uncertainty should include the use of uncertainty factors, the limited sampling of biological and chemical characteristics, and other available remediation or "ecological protection values" (as requested by Ohio EPA) that have been developed for the contaminants identified at WBG. A comprehensive review of the available cleanup values and the calculation of preliminary remediation goals based on the HQ approach likely would have made objective 2 (the development of ecological protection levels) unnecessary. Ohio EPA has maintained throughout the project that if too much uncertainty exits with the studies (field-truthing or the development of ecological protection values), as presently is the case, decisions would be based on the HQ methodology. Refer to comment # 2 in the 24 January 2000 comment letter/memorandum from Ohio EPA, signed by Eileen Mohr DERR-NEDO and Brian Tucker DERR-CO, regarding ecological field-truthing efforts.

48. Please provide Ohio EPA with a copy of the data validation report and chemical data assurance report (CDAR) referenced on page 8-2 (lines 34-36).

49. Please provide supporting documentation to substantiate the assertion that the effect of the presence of slag at various pads on plant cover was mainly due to acting as a barrier to plant growth rather than chemical interference from the slag. (Page 8-7 lies 3-6)

50. Table 8-3. Summary of Analytes Detected in Biases Soil Samples at Winklepeck Burning Grounds:
Soil contaminant concentrations should be given for each pad. The results given in Table 8-3 are not useful in identifying the concentrations of various compounds at each pad. This information would help identify where specific compounds (*e.g.*, TNT) are and are not located. Only with this specific information can ecological protection levels for each compound be developed. Section 9.0 inappropriately included chemical information for all pads during the development of the ecological protection levels. These levels need to be re-calculated given the comments on the draft report.

51. On Table 8-3 (pages 8-11 through 8-13):

    A. Please provide the detection limits for those analytes listed as "non-detect";

    B. provide an explanation for why the concentrations are not listed on a pad by pad basis;

    C. provide the "number of detects" information for cadmium, cyanide, manganese, silver, thallium and vanadium; and

    D. if an analyte was not detected during background sampling, the background concentration for that constituent was set at zero. Please adjust the table accordingly;

    E. provide the source for this table. Specifically is this Phase I RI data from the ecological field truthing study, etc.

52. Section 8.4.4 Consideration of Trophic Transfer:
Many of the discussions given in section 8.4.4 are mere speculation and impossible to defend using the provided data. The text should be revised to indicate this fact. In addition, the "conclusions" given from the field-truthing efforts should be removed.

53. Section 9.1 Geographic Scale:
Section 9.1 needs to be revised based on the comments above regarding the field-truthing efforts and the ecological protection level comments.

54. Cost is only one factor that is considered when evaluating both human health and ecological potential remedial options. The text should be adjusted accordingly. (Page 9-1 lines 10-21)

55. Please provide additional information in the report as to how it was determined that the only four constituents (1,3,5-TNB, 2,4,6-TNT, HMX and cyanide) had an impact upon the vegetation. (Page 9-2 lines 19-22)

56. Section 9.3 Development of EPLS Based on Pad Scale Extrapolation:
Section 9.3 (paragraph beginning on line 32 on page 9-5) page identifies how acceptable EPLs would be used to compare other areas of concern to the EPLs in an effort to evaluate whether ecological harm is expected. This method is not acceptable. Once acceptable EPLs are developed or decided upon, those concentrations will be compared to a 95% UCL of the arithmetic mean using an appropriate data set of an AOC that has been delineated, so the nature and extent of contamination has been completed and approved by Ohio EPA. Please include the appropriate changes.

57. Section 9.4 Ecological Risk Assessment Decision-Making:
The sentence beginning on line 14 on page cites "Ohio EPA soil screening values." Ohio EPA does not have any specific screening values. Therefore, all references to Ohio EPA screening values should be removed.

58. Section 9.4 Ecological Risk Assessment Decision-Making:
Section 9.4 did not describe any decision points where remedial actions can be chosen in lieu of continued ecological risk evaluation. In many cases, it may be cost effective to remove contaminated soil or media in obliviously contaminated areas, or where contamination is limited in extent. Section 9.4 should include this option.

59. Section 9.4 Ecological Risk Assessment Decision-Making:
The fourth step discusses the elimination of any chemical that does not have a history at the site. Given the history of the RVAAP, this determination of no prior use will likely be impossible to substantiate. Step 4 should be removed form the decision tree.

60. Section 9.4 Ecological Risk Assessment Decision-Making:
Steps 5 through 8 are to be eliminated from the decision tree.

61. Section 9.4 Ecological Risk Assessment Decision-Making:
The Ohio Army National Guard (OHARNG) studies should be removed from step 10 (line 27 on page 9-7). Generally, a list of organisms identified throughout the entire RVAAP does not enter into AOC-specific decision making process regarding ecological risk.

62. Section 9.4 Ecological Risk Assessment Decision-Making:
Step 11 should be revised. It is not clear how the percentages have been decided upon, or if they are helpful in estimating a benefit. In addition, remedial decision making should be based on site or area-specific considerations and should not be forced into one method. Flexibility is needed in step 11.

63. Section 9.4 Ecological Risk Assessment Decision-Making:
Step 12 did not identify the possibility, or a decision on such a possibility, where an ecological study is completed and no conclusions can be approved from the study, as is the case for WBG. This possibility is very important to the decision- making process and should be identified in step 12.

64. Section 9.4 Ecological Risk Assessment Decision-Making:
The term WBG EPLs should be removed. Presently, no WBG EPLs exist, and it is likely none will be approved for use at the RVAAP, based on the results of the WBG study.

65. Section 9.4 Ecological Risk Assessment Decision-Making:
Section 9.4 did not discuss the possibility of interim or time critical removals/actions. These options are available at the discretion Ohio EPA.

66. A weight of evidence (WOE) evaluation should be included and discussed in this report. This weight of evidence evaluation must evaluate all information that is available to determine if ecological affects are present due to contamination. This WOE evaluation must include, but is not limited to, the information generated from the screening level ecological risk assessment, causality information from toxicology literature, and the results of the vegetation and mammal studies.

67. Please provide an explanation for not involving the Agency in the ecological risk assessment decision making process detailed in section 9.4, pages 9-6 through 9-9. As one of the key risk managers, the appropriate Ohio EPA personnel must necessarily be included in the process. Entire portions of this section may need to be re-written.

68. Table 9-5 (facility-wide background surface soil criteria) is incomplete. Please substitute the background concentration chart found in the WBG Phase II document with this chart.

69. Section 9.6 Summary:
Section 9.6 is not acceptable based on the above-comments and requires a complete revision.

70. The Agency does not recall that "background concentrations" were determined specific to WBG. Please remove this column from Table 9-6.

71. In addendum # 2, please provide signed and dated copies of the field change orders.

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: Bonnie Buthker, OFFO, SWDO
Laurie Eggert, OFFO, SWDO
Brian Tucker, CO, DERR
John Cicero, RVAAP
LTC Tadsen, RVAAP
Bob Whelove, OSC
John Jent, USACE Louisville
Glen Beckham, USACE Louisville
David Brancato, USACE Louisville
Elizabeth Ferguson, USACE Louisville
Larry Tannenbaum, USACHPPM
Steve Selecman, SAIC
Barney Cornaby, SAIC

ec: Mike Eberle, NEDO, DERR

OhioEPA
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 5, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
WINKLEPECK BURNING GROUNDS
FINAL PHASE II 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 three-volume document entitled: "Final, Phase II Remedial Investigation Report for the Winklepeck Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated April 2001 and received at Ohio EPA, NEDO, on April 10, 2001, was prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE) - Louisville District, under contract number DACA-62-94-D-0029, delivery order number 0060.

The submitted document was reviewed with respect to the draft-final document (dated August 1999), and the comment resolution matrices, dated June, 1999 and March, 2000. Please note that the comments in this correspondence solely reflect the review of Ohio EPA, NEDO, DERR, and does not include any comments from Central Office (CO), DERR, risk assessment personnel. (Please note that CO, DERR, will be addressing comments attributed to Brian Tucker, as well as any risk comments attributed to me.) These will be forwarded to your attention under separate cover as soon as they are received by this office.

It is requested that replacement pages be submitted for the portions of the text that need to be revised, rather than re-submitting the entire three-volume document. In addition to being more-cost effective, it will also facilitate review and finalization of the report. It is recommended that the contractor prepare the replacement pages subsequent to receiving comments from Ohio EPA, CO, DERR, personnel.

Unless otherwise detailed below, prior revisions made to the text are acceptable.

Comments Specific to Previous Ohio EPA Comments:

1. Previous Comment # 1: The Executive Summary (ES) continually utilizes 1E-4 as the point of departure for the excess lifetime cancer risk. The National Contingency Plan (NCP) has set the point of departure for excess lifetime cancer risk at 1E-6. As such, the use of 1E-4 as the point of departure to discuss the Area of Concern (AOC)-specific risk is not acceptable. Please revise the ES and portions of the summary and conclusions as needed.

2. Previous Comment # 3: Please correct the text on page ES-11 with respect to explosives concentrations in groundwater (i.e., "ppm" should actually read "ppb").

3. Previous Comment # 61: The March 2000 response to comment (RTC) matrix indicates that the following tables were added to the final document: 4-22d (background metals), 4-22e (background explosives), and 4-22f (background organics). Please be advised that these tables were not added to the final document. Please provide these tables and, in addition, adjust the table of contents accordingly.

Additional Comments:

4. Please ensure that in all future submissions that the correct spelling of "fuzes" is utilized. (Two places on page 1-3)

5. Figure 3-1 should be revised such that the approximate extent of the suspected buried valley is depicted.

6. The text on page 6-6 indicates that "...due to a lack of toxicity values, risks cannot be quantified for lead." Please confirm that this is indeed the case. If not, please remove this statement from the revised text.

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: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, CO, DERR
Bob Whelove, OSC
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
John Jent, USACE - Louisville
Glen Beckham, USACE-Louisville
David Seely, USEPA Region V
Steve Selecman, SAIC
Kevin Jago, SAIC

ec: Mike Eberle, Ohio EPA, NEDO, DERR

OhioEPA
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

December 15, 2000

Ravenna Arsenal
Attn: Mark Patterson
8451 St. Rt. 5
Ravenna, Ohio

Re: Emergency Hazardous Waste Permit No. 02-67-800E

Dear Mr. Patterson,

You requested an Emergency Permit on May 17, 2000, for the treatment of a 40mm grenade to be detonated at the Ravenna Arsenal facility in Ravenna, Ohio. The Special Condition G, Required Notices, of the permit requires that you notify Ohio EPA, Division of Hazardous Waste Management (DHWM), upon completion of the emergency treatment. The permit was sent to you in hard copy on or about August 14, 2000, but we have yet to receive the Special Condition G, Required Notices, of the permit. Please be advised, the Permittee should notify Ohio EPA, DHWM within 30 days upon receipt of the Emergency Permit letter.

If you submitted the required paperwork, and feel that you have received this letter in error, please contact me at (614) 644-2929.

Thank you in advance for your attention in this matter, Mr. Patterson.

Sincerely,

Gretchen L. Fickle
RCRA Engineering & Risk Assessment Section
Division of Hazardous Waste Management

EP-ConditionG/GF.aso

cc: Angela Scott-Owens

OhioEPA
State of Ohio Environmental Protection Agency
Northeast District Office

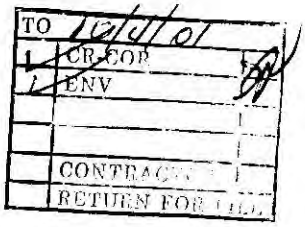
2110 E. Aurora Road
Twinsburg, Ohio 44087-1969

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

Bob Taft, Governor
Christopher Jones, Director

October 3, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
XRF



Mr. John Jent
U.S. Army Corps of Engineers
Louisville District
ATTN: CELRL-ED-EE
600 Martin Luther King Jr. Place
P.O. Box 59
Louisville, KY 40202-0059

Dear Mr. Jent:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document prepared by the US Army Corps of Engineers (USACE) entitled: "Analysis of XRF Data from Load Line I, Ravenna Army Ammunition Plant." This document, dated August 2001 was received at Ohio EPA, NEDO, DERR, on September 27, 2001. In addition, the pertinent sections regarding x-ray fluorescence (XRF) in the Load Line 1 Phase 1 report (dated May 2001) were reviewed.

Ohio EPA concurs with the conclusions reached in both of the above-referenced reports, and with your memo (dated September 25, 2001) that XRF field screening is not accurate or reliable enough to guide field investigations or soil removal activities at the Ravenna Army Ammunition Plant.

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: Bonnie Buthker, OFFO, SWDO
Brian Tucker, CO, DERR
John Cicero, RVAAP
Glenn Beckham, USACE
Steve Selecman, SAIC
Rick Callahan, MKM
Laurie Eggert, OFFO, SWDO
Mark Patterson, RVAAP
LTC Tom Tadsen, RVAAP
Bob Whelove, OSC
Gavin Armstrong, CO, DERR (document attached)

ec: Mike Eberle, NEDO, DERR

OhioEPA
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 19, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
LOAD LINE 1 DRAFT 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) has received and reviewed the three-volume document entitled: "Draft, Phase II Remedial Investigation Report for the Load Line 1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated May 2001 and received at Ohio EPA on May 10, 2001, was prepared for the US Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC) under contract number DACA-27-97-D-0025, delivery order number 0003.

The document was reviewed by personnel from Ohio EPA's Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) and Division of Drinking and Ground Waters (DDAGW), as well as Central Office (CO) DERR. This correspondence represents a compilation of comments from all Ohio EPA reviewers. The format may vary slightly as a function of each reviewer's style, however, each comment in this correspondence can be correlated back to the various portions of the text either through a section number or page number reference.

The Agency has the following comments on the draft report:

General Comments on Volume 1:

1. In a recent meeting which included representatives from USACE, the Ravenna Army Ammunition Plant (RVAAP) and Ohio EPA, it was decided to change the terminology utilized to describe the various reports which are submitted by the contractor. The following terminology is to be utilized for future submissions:

Old Terminology	New Terminology
Draft	Preliminary Draft
Draft-Final	Draft
Final	Final

The documents which are to be submitted to the information repositories in Newton Falls and Ravenna are the draft and final versions of the reports.

It is anticipated that for workplans, the format which the project team has been utilizing will remain in place. That is, there will be a draft workplan, and subsequent to comment

resolution (matrices and meetings) that the workplan will be revised and submitted as a final work product.

2. Throughout the text of the report, the term "significant" is utilized on a frequent basis to describe contaminant levels, or potential migration of contaminants to groundwater, etc. It is unclear as to the meaning of this term. It is requested that, at an appropriate place in the text, the term "significant" is defined, and an explanation provided as to what benchmark(s) the concentrations are being compared (for example, Ohio Water Quality Standards, Maximum Contaminant Levels, etc.). (Pages where this term is utilized include - but are not limited to - xxix, 1-12, 4-21, 4-28, 4-44, 4-79, 4-99, 4-101, 4-102, 8-5, and 8-13)

Specific Comments on Volume 1 (Main Text):

1. Please ensure that all requested revisions to the main text are incorporated into the executive summary.

2. On page xx, please add additional text to the report which indicates that the data obtained from the historical surface water sampling program may be of limited value due to the lack of quality assurance/quality control (QA/QC) information, method detection limits (MDLs), etc. (Also applicable to page 1-10)

3. On page xx, please revise the text to read as follows: "Ohio EPA's 1997 residential well groundwater survey detected no explosive concentrations in domestic water supplies." (Also applicable to page 1-10)

4. Executive Summary, Page xxii:
The last sentence of page xxiii should be changed to eliminate the phrase: "in the indigenous populations." This phrase could imply several meanings and therefore is not clear.

5. Please revise the last bullet on page xxiii to indicate that there are permanent residents to the east and south of the Load Line 1 (LL1) area of concern (AOC).

6. Revise the fourth bullet on the top of page xxvi to indicate that the cyanide background concentration is set to zero, as this constituent was not detected in any samples obtained from the designated background locations.

7. In the last bullet under the sediment section (page xxvii), if the PCBs detected in isolated sampling locations were not present as a result of soil erosion and dispersion, please provide an explanation for their presence in some of the drainage ditches.

8. Executive Summary, Page xxviii:
The fifth bullet on page xxviii identifies the presence of three volatile organic compounds (VOCs - chloroform, methylene chloride, and toluene) in several monitoring wells. The source of the contamination needs to be defined. If this is not related to laboratory contamination, the extent of contamination must be determined. In addition, if it does

represent laboratory contamination, the laboratory must initiate corrective measures to ensure that this does not occur on future projects.

9. Page xxi indicates that field investigation activities at LL1 included "... sampling of six existing monitoring wells," whereas, page xxvii indicates that five existing monitoring wells were sampled. This inconsistency should be corrected by modifying the text on page xxi to indicate that one well was dry and could not be sampled.

10. On page xxviii, please clarify the text to indicate that filtered and unfiltered samples were solely collected for target analyte list (TAL) metals; as all other analytical testing was conducted on unfiltered samples.

11. In the first bullet of this section (fate and transport, pg. xxix), the text indicates that "the potential for off-AOC migration of these contaminants (via the groundwater pathway) at LL1 is not significant." It is unclear as to what the definition of "significant" is, in terms of groundwater migration. Additional documentation of what is meant by "significant" should be added to this and all other sections where this term is used in the document. (Refer to general comment # 2 detailed above.)

12. Executive Summary, Page xxix:
The Baseline Human Health Risk Assessment (BHHRA) summary uses the excess lifetime cancer risk criterion of 1E-4 for "unacceptable risk." The point of departure for excess lifetime cancer risk is 1E-6 as set by the National Contingency Plan (NCP). Therefore, any excess lifetime cancer risk that exceeds the 1E-6 criterion is to be listed in the report and carried through the feasibility study. The use of the excess lifetime cancer risk value of 1E-4, as given in the executive summary and throughout the Phase II RI report, is not acceptable. The text in the Draft, Phase II RI Report needs to be corrected to use the appropriate point of departure for excess lifetime cancer risk of 1E-6. Please ensure that this correction appears in <u>all</u> future documents.

    In addition, the term "gray area," when used to describe the risk range of between 1E-6 and 1E-4 excess lifetime cancer risk, should be removed. Please see the NCP for appropriate terminology and use of the point of departure and risk range.

13. On Table ES-1(page xxx), please add a footnote to the table which designates the meaning of the checkmark.

14. In the surface water and sediment section (pg. xxxi), please provide an explanation for the use of 10^{-4} as the point of departure, rather than 10^{-6} which should be utilized. See comment # 12 detailed above.

15. Please provide additional explanation, and modify accordingly, the text on the top of page xxxii regarding the contribution of arsenic to the total risk for the National Guard and On-Site Resident Farmer scenarios. While it is correct to indicate that arsenic naturally occurs in groundwater, this is not the entire picture, as there is also the potential for site-related activities to add to the observed concentrations.

16. In the screening ecological risk assessment section on page xxxii, the Ohio Water Quality Standards (OWQS) should be more than "considered" when evaluating the potential impacts on surface water. As the OWQS are codified, they are the first standards to be utilized when evaluating surface water conditions. Please modify the text accordingly.

17. Executive Summary, Page xxxii:
The second bullet on page xxxii, should be corrected. The use of toxicologically-based screening values is not to determine persistent, bioaccumulative, and toxic (PBT) compounds as suggested by the text. It is true that PBT compounds cannot be screened from an ecological risk assessment by the use of screening values that do not consider exposure to higher trophic level organisms. In addition, PAHs are generally not considered PBT compounds, as stated on pages xxxii and xxxiii, because of the tendency for these compounds to be metabolized and excreted from organisms. Please correct the text.

18. Please revise the text on page xxxiii to read as follows: "Extrapolation (if agreed to by Ohio EPA) of the WBG biological field studies...."

19. Executive Summary, Recommendations, Page xxxiii:
The second paragraph under the RECOMMENDATIONS heading suggest that future land uses be decided before the "selection of the path forward for the site." This statement is not clear and suggests that certain decisions be made prior to the initiation of the feasibility study. The feasibility study should follow the guidelines set out in: Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA/540/G-89/004. Additional guidance may be used following initial agreement among the risk managers.

20. Section 1.0, INTRODUCTION (page 1-1):
The last sentence of the first paragraph states in part: "...following work plans reviewed and approved by the Ohio Environmental Protection Agency (Ohio EPA)." This statement is not entirely correct. First, please substitute "commented on" for "approved." The work plans were reviewed by Ohio EPA, as were the draft and final "Technical Memorandum, Human Health and Ecological Risk Assessment Approach for the Load Line 1 and 12 Phase 2 Remedial Investigations, Ravenna Army Ammunition Plant, Ravenna, Ohio, January 2001." These documents contain the human health and ecological risk assessment assumptions and methodologies that were to be used in the completion of the Remedial Investigation for Load Line 1. The Technical Memorandum (either draft or final) has not been approved by Ohio EPA. Due to concerns found in the technical memorandum and, therefore, in the draft RI report, the human health risk assessment given in the draft Phase II RI report for Load Line 1 and 12 needs to be revised and recalculated. Comments submitted by Ohio EPA on the "Technical Memorandum, Human Health and Ecological Risk Assessment Approach for the Load Line 1 and 12 Phase 2 Remedial Investigations, Ravenna Army Ammunition Plant, Ravenna, Ohio," will, in general, not be repeated in these comments. However, these comments do apply and corrections/revisions based on these comments are required before the approval of the risk assessment can be given.

21. Please correct the spelling of "fuzes" on page 1-5. (Also applicable to pages 8-2 and 8-3)

22. Please revise the text on page 1-6 (first full paragraph) to read as follows: "Potential contaminants at these AOCs include, but are not necessarily limited to, explosives..."

23. Please revise the second bullet on page 1-9 to read as follows: "disposing of dust and debris according to all applicable state, federal and local rules, laws, and regulations;"

24. On Table 2-1 (page 2-4), please provide an explanation for the entry for LL1mw-065 which indicated that there was insufficient data to determine the hydraulic conductivity.

25. *Table 2-2:* The slug-test-determined hydraulic conductivity (K) listed for LL1mw-085 does not correspond with the K value provided in Appendix E (Slug Test Solutions) for this monitoring well. This information should be verified and the table should be modified accordingly.

26. *Figure 2-2:* The report included the potentiometric map only for the September 30, 2000, data. A potentiometric map for the 1999 sampling event was not presented in the report to aid in the evaluation of the variability in groundwater flow conditions at the site area. These maps are needed to determine the following:

    a. Any seasonal or yearly variations in the groundwater flow direction near the site.

    b. The relative locations of the monitoring wells (upgradient, downgradient, and sidegradient) with respect to the potential source areas and monitoring wells with known contamination.

    c. The direction of potential migration of contaminants with a specific reference to the sources and source areas within LL1.

    In addition, the area in Figure 2-2 did not include the whole area of LL1. This figure also did not illustrate the locations of the monitoring wells LL1mw-059, LL1mw-060, LL1mw-064, and LL1mw-065. Please provide clarification.

    Although one set of water level data collected during the Phase II RI may give a general idea of the groundwater flow direction in the area of LL1, there could be localized variations in flow that have not been detected due to the limited number of monitoring well points and water level data. Groundwater flow direction represented in Figure 2-2 should be, at best, considered a "rough" estimate of the groundwater flow direction in LL1 and viewed with caution. The installation should provide a potentiometric surface map for each sampling event described within this report.

27. *Figure 2-2* (Groundwater Divide): The groundwater divide discussed in the Executive Summary (bullet 2, p. xxiii) was not evident in the potentiometric map of September 30, 2000 (Figure 2-2). Please provide clarification.

28. Section 2.5 Climate, Page 2-7:
Please correct the millimeter and/or the inch values given for annual mean rainfall data.

29. Please confirm whether or not Griggy's Pond is included in the catch and release program and modify the text accordingly. (Page 2-8)

30. Section 3.1.1 Rationale, Page 3-6:
The first paragraph in section 3.1.1 gives an example of vegetative stress as a field observation that helped in the identification of sampling locations. This may be in contrast to the statement given in the last sentence on page xxiii of the Executive Summary that states: "(n)o signs of ecological stress in the indigenous populations were noted in the filed investigation." Please revise the text to ensure the appropriate information is presented consistently in the document.

31. Section 3.1.2, Field Sampling Method, Page 3-7:
The last sentence of the first paragraph under section 3.1.2 states: "(c)omposite sampling data are considered acceptable to USEPA for use in risk assessment (USEPA RAGS 1998) where concentrations are expected to vary spatially." Please include a complete reference citation.

32. Section 3.1.2, Field Sampling Methods, Page 3-7:
The third sentence in section 3.1.2 states: "(d)isposal of outdated or off-spec materials by open detonation or open burning and facility wash down operations at the load lines have caused a variable dispersal of explosives across the ground." No discussion of open detonations or burning of materials occurring at the load lines has been given in the text. It is considered unlikely that open detonations or the burning of materials occurred at any of the load lines given the history and purpose of the AOC. Please revise the text as necessary.

33. The text on page 3-8 indicates that "In four borings, field laboratory results indicated a subsurface soil sample should be collected, but logbook documentation does not indicate why the subsurface sample was not collected." Please check back with the sampling team and determine (if possible) the reason for the lack of sample collection. In addition, please provide an explanation as to what impact, if any, this may have on one of the project objectives which is to determine the extent of contamination (both horizontally and vertically).

34. In section 3.2.2 (page 3-10), please clarify the text to indicate that samples obtained for volatile organic compound (VOC) analyses are not homogenized.

35. *Table 3-1*: This table lists a monitoring well with an ID Number of LL1mw-0884, whose location is indicated to be east of CA-6A. According to Figure 2-2, the only well located east of CA-6A is LL1mw-084. The list of monitoring wells in Table 3-1 should be corrected to read LL1mw-084 .

36. In the first paragraph on page 3-13, please provide additional discussion regarding the potential impact on the obtained groundwater samples due to the unsuccessful attempt to

recover the volume of water added during the drilling process. In addition, there should be a field change order (FCO) in the appropriate appendix.

37. On page 3-13 (section 3.4.2), the text states that "two rounds of groundwater sampling were performed - September 1999 and October 2000. Before sampling, the monitoring wells were purged until readings of pH, conductivity, dissolved oxygen, and water temperature reached equilibrium." However, records of groundwater field measurements for 2000 were not submitted in Appendix E. Additionally, water level measurements for the 1999 and 2000 groundwater sampling events were not submitted. Please submit this documentation.

38. In the second paragraph on page 3-13, please provide additional text which explains why LL1mw-085 and LL1mw-067 could not be sampled utilizing low flow sampling systems.

39. In the third paragraph on page 3-13, please provide an explanation as to why a full analytical suite was not collected during the September 1999 sampling event.

40. Section 3.5, SEWER LINE CAMERA SURVEY AND SAMPLING:
Additional information would be helpful for the readers that identifies the discharge points of the sewer lines discussed in section 3.5. There should also be information that discusses the sampling of the media associated with the discharge areas of the sewer lines.

41. In section 3.5.2, please add additional text to the report that describes what is meant by "significant obstructions" at some of the planned access points.

42. In section 3.6.2 (page 3-18), please provide an explanation for why the in-situ x-ray fluorescence (XRF) readings were based on the triangulation sampling scheme that is utilized for explosives.

43. In section 4.1.1, please revise the text (page 4-1, first paragraph) regarding human-made compounds (example: explosives, PAHs, etc.) to indicate that if these compounds are detected, they are considered to be site-related contaminants (SRCs), as the background concentrations for these constituents are set at zero. In addition, please revise the text to specify that installation-wide background was determined as part of the Winklepeck Burning Grounds (WBG) investigation.

44. Section 4.1.1, Site Chemical Background:
Additional information regarding the methods used to determine facility-wide background concentrations should be provided in the RI report. Section 4.1.1 only discusses the use of the upper 95 percent tolerance limit and does not mention that background values are to be capped at the maximum detected values.

The facility-wide background values that were developed in conjunction with the Winklepeck Burning Ground RI report and should be used for screening criteria, as these values have been developed based on a more rigorous identification of background locations and a more robust data set. In addition, an outlier test was used on the data set.

It should also be clarified whether background values for groundwater were based on either filtered samples or samples that have not been filtered prior to analysis.

The development and appropriate use of the groundwater, sediment, and soil background data should be accurately discussed and clarified in the RI report. Please make the appropriate corrections to the text.

45. In the revised report, please change the color (if possible) for the CB03/801 aggregate so that it is more visible, as it currently blends in with the perimeter aggregate. (Figure 4-1 on page 4-3)

46. Section 4.1.2, Definition of Aggregates:
Section 4.1.2 defines various aggregates and Figure 4-1 identifies the locations of these aggregates at Load Line 1. The aggregate of "Former Change Houses (CB-12, -23, -8, and -22)" is not identified on figure 4-1. Please identify this aggregate.

47. *Section 4.1.5:* In the fifth bullet for this section, the text states that "...whereas low explosives and organic compounds concentrations were measured in all monitoring wells except LL1mw-080." Elsewhere in the document and in the summary tables for groundwater data, monitoring wells LL1mw-083 and LL1mw-084 also report explosive and organic compound concentrations at similar values as LL1mw-080. Revise the text to be consistent with section 4.6.2 that indicates that the highest concentrations of explosives and propellants were in the above-referenced wells.

48. Section 4.2, SURFACE SOILS:
Section 4.2 discusses the results of the surface soil samples taken at Load Line 1. The goal of the sampling was to determine the nature and extent of contamination at Load Line 1. The results indicate the presence of various explosives, propellents, and metals in excess of background criteria. Although the extent of contamination has been determined adequately to provide values for the risk assessment purposes, it appears that the extent has not been fully defined, given that samples were not taken that identify the boundaries of the contaminated media. The extent of contamination, ideally, should be identified to non-detects or background for the COCs identified at a site. The full extent of contamination is required, so "that informed decisions can be made as to the level of risk presented by the site and the appropriate type(s) of remedial response (section 3.2.4 Determine the Nature and Extent of Contamination, Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA540/G-89/004, October 1988)." The extent of contamination is also needed as a necessary input to determine the volumes of soils that have been contaminated and that will be evaluated in the Feasibility Study (if needed) that follows the RI process. Additional sampling may be required to identify the full extent of contamination at Load line 1 to estimate precise and realistic cost estimates in the feasibility study (FS). Please include discussion in the Phase 2, RI report that describes how the full extent of the contamination will be identified at Load Line 1 or how the given data set will be sufficient to complete the FS.

49. In section 4.2 on page 4-8, in the third and fifth paragraphs, please confirm that the explosives colorimetry method can yield results with an apparent 0.01 mg/kg detection level.

50. On page 4-9, please revise the text in section 4.2.2.1 (first paragraph) to read: "Of the 17 compounds provided by the laboratory explosives/propellants analysis....."

51. In section 4.2.3 on page 4-21(second paragraph), please change "SRG" to read "SRC."

52. Section 4.2.3, Inorganic Constituents:
Section 4.2.3 and subsequent sections of the draft RI report, discuss the average concentrations of metals on an area-wide basis. Although this information is useful, it is most appropriate to be used in the uncertainty section. Please move the area-wide average discussion to the uncertainty section. In addition, it should be noted in the text that the background procedure does not use the average concentrations but instead uses the maximum concentrations of detected inorganic compounds. At no time for other areas of concern at RVAAP, have the average concentrations been used to eliminate a compound from the risk assessment process. This information should be given in the revised RI report. Please make the appropriate corrections.

53. In several portions of the text, there are statements such as (for example): "The metals cadmium, cyanide, and thallium have no site background value..." Please revise all portions of the text that indicate that organic or inorganic analytes "have no background value." Background concentrations for all organic constituents were automatically set at "zero," and if a certain metal (inorganic constituent) was not detected in the background determination investigation, this concentration was also set at "zero." This comment is also applicable to the following pages: 4-22, 4-28, 4-32, and 4-38, 4-75. (The prior page numbers may not be all inclusive.)

54. Throughout Chapter 4 where the analytical results are discussed, many of the results are compared to (in the text) and depicted (on figures) as 1-2x background, 2-5x background, 5-20x background, etc. Please provide a one-time explanation in the text as to how the various categories were determined.

    In addition, throughout Chapter 4, many of the figures follow the "protocol" detailed above, while other figures depict the actual concentrations. Please provide an explanation as to how it was determined what was detailed on the figures. As a point of information, it is confusing to not have a consistent manner of presenting the data.

55. Please clarify the text on page 4-28 (third paragraph in section 4.2.3.2) to indicate that chromium is still a site-related contaminant.

56. With respect to section 4.2.3.5 (top of page 4-39), please confirm that the majority of the soil material was removed from the change house areas prior to utilizing these areas as clean hard fill (CHF) disposal areas.

57. Please revise the text on the top of page 4-42 to read as follows: "Three volatile organic compounds were detected in the samples submitted for this analysis including 1,2-DCE, methylene chloride and toluene, with only 1,2-DCE detected in all four samples (Table 4-3)."

58. Please provide an explanation in the text on page 4-45 (section 4.3 fourth paragraph) as to why soil borings LL1-126, LL1-132, LL1-133, LL1-138, and LL1-272 were not advanced to retrieve subsurface samples. All of these sample locations tested positive for explosives in the field and auger refusal was not documented. As such, the vertical extent of explosives contamination at these locations has not been determined. In addition to providing an explanation for why the samples were not obtained, please remove the last sentence of this paragraph in the revised text. (Also applicable to page 4-52, section 4.3.5, third bullet under the "general" heading.)

59. At the sample locations detailed in the third paragraph of section 4.3.2.1 (page 4-46), please revise the text to indicate if additional samples were obtained at a greater depth or if refusal was encountered.

60. Please provide an explanation in the text as to why there is no sub-surface data associated with the building CB-3 and CB-801 aggregate. (Page 4-48 section 4.3.2.4)

61. Section 4.3.3.5, Track CB:
Section 4.3.3.5 identified that only cadmium exceeded its background criterion in soil beneath the railroad slag. This information is important to note given that past statements have suggested that metal contamination was associated with slag. This information should be emphasized in the report as it discounts the slag as a potential source of the metals contamination.

62. Section 4.3.4 (pages 4-51 and 4-52) indicates that organic compounds were not analyzed in sub-surface samples due to auger refusal at the four pre-selected sampling locations. Please provide an explanation as to why these sample locations were not re-assigned. In addition, this is a data gap that may need to be addressed in additional sampling conducted as part of the subsequent feasibility study (FS).

63. In section 4.4 (sediment) on page 4-53, please provide additional text in the report that explains the rationale behind the selection of certain sampling locations for two rounds of sampling.

64. Section 4.4, SEDIMENT:
Additional maps should be supplied with the RI report that locate the various sediment sample results. It is not clear as to whether the extent of sediment contamination has been fully defined. Please include an additional map or maps that identify the explosive and propellent sediment concentrations. It would be helpful if contamination gradients were also estimated and identified on the map.

65. Section 4.4.2.1, Drainage A and Figure 4-23 Explosive Concentrations in Sediment at Drainage A:
Section 4.4.2.1 discusses in part that the sediment distributions of explosives are presented in figure 4-23. The units however given in Figure 4-23 are in milligrams per liter and, therefore, are surface water concentrations and not sediment concentrations. In addition, the values given in Figure 4-23 are not consistent with the values discussed in section 4.4.2.1. Please correct Figure 4-23.

66. Please provide an explanation in the text on page 4-54 (Drainage A) as to how it was determined which explosives and propellant compounds were depicted on Figure 4-23.

67. Please provide a figure in the revised text which depicts the explosives compound distribution in the Drainage C and Ponds aggregate. (After page 4-56)

68. Please provide an explanation for why explosives and propellant compounds were not analyzed for in the North Area aggregate. (Page 4-56, section 4.4.2.4)

69. Please provide a figure in the revised text which depicts the explosives compound distribution in the off-AOC aggregate. (After page 4-56)

70. The text in section 4.4.3 (page 4-56) would seemingly indicate that not all of the sediment samples were analyzed for TAL metals, based upon the varying number of samples presented. Please clarify, as all samples were to be analyzed for TAL metals.

71. In section 4.4.3.1 (page 4-56), please provide an explanation in the text as to the rationale behind which TAL metals were presented on the accompanying figures. This is also applicable to section 4.4.3.2 (page 4-61), and section 4.4.3.3 (page 4-61).

72. In section 4.4.3.2 (page 4-61), please revise "L1-060" to read "LL1-060".

73. In section 4.4.4.2 (page 4-66), please revise "1,2-DEC" to read "1,2-DCE".

74. In future investigations conducted at the RVAAP, it needs to be ensured that l0% of the samples collected at a particular drainage system are analyzed for the full-suite of constituents. (In reference to the text for section 4.4.4.3 on page 4-66).

75. Section 4.4.5, Summary of Sediment Results:
Given that sediment samples were taken at a depth of up to 0.5 foot, it is not clear if sediment contamination is present at greater depths in the ponds. Sediment cores should be considered if "shallow" sediment samples indicate contamination. Please include further discussion in the report and possibly additional sampling to determine the full extent of site-related contamination.

76. Please revise the text in section 4.5.1 (page 4-68) to indicate that RDX is an explosives compound.

77. Please provide an explanation in the text as to why no surface water samples were collected from the Drainage E/F aggregate. (Section 4.5.1.3 on page 4-68). This comment is also applicable to section 4.5.2.3 on page 4-69 and section 4.5.3.4 on page 4-72.

78. Please provide an explanation in the text as to why no surface water samples were collected from the North Area Drainage aggregate. (Section 4.5.1.4 on page 4-68) This comment is also applicable to section 4.5.2.4 on page 4-69 and section 4.5.3.5 on page 4-72.

79. This text on page 4-72 (section 4.6) states that "monitoring well LL1mw-63 was not sampled during Phase II RI because it was dry." It is unclear if this well was dry during both Phase II groundwater sampling events (1999 and 2000). If so, the current and future inclusion of this monitoring well in the groundwater monitoring system should be discussed. Additionally, Figure 4-34 illustrates LL1mw-63 as reporting "non-detect" for explosive compounds during the sampling conducted during the Phase II RI. A discussion concerning the continued use of LL1mw-63 is warranted. In addition, the discrepancy between the text and figure should be corrected accordingly.

80. Throughout section 4.6, please confirm that the summaries of the results are representative of all Phase II sampling events. In addition, when concentrations of various analytes are reported in the text, there should also be a notation as to which sampling event(s) are being reported.

81. On Figures 4-34 (page 4-74), 4-35 (page 4-76) and 4-36 (page 4-77), please put a notation on each figure as to which Phase II sampling event is being depicted. In addition, on these figures, the background concentrations should be identified.

82. The text on page 4-75 (section 4.6.3) states that "in the two monitoring wells at the eastern AOC boundary, only cobalt was detected in a minor concentration at LL1mw-065." The cobalt concentration referred to in this statement was reported above facility-wide background during the 2000 ground water sampling event. Please revise the text accordingly. Additionally in 2000, both zinc and iron were also reported at concentrations above the facility-wide background for these two metals at LL1mw-064 and LL1mw-065, respectively. This sentence should be modified accordingly.

83. The second paragraph of section 4.6.3 (page 4-75) concluded that the "lack of contamination in the boundary monitoring wells (LL1mw-064 and LL1mw-065) could indicate that significant migration of contaminants has not occurred and/or that aquifer systems in bedrock and unconsolidated materials are not well connected." Page 4-79 further concluded that "significant detections of metals are generally not found in groundwater at the perimeter locations sampled." These conclusions are premature due to the following reasons:

    a. *Groundwater Flow Undocumented:* The groundwater flow direction near the eastern boundary of LL1 is not documented in the report. Two monitoring wells (LL1mw-064 and LL1mw-065) are located at two sides of Griggy's Pond. Groundwater flow to and from these well locations may be influenced by the water table elevation in Griggy's Pond. As such, it is unclear whether the groundwater flow path from the known areas of contamination connect with the locations of LL1mw-064 and LL1mw-065 based on submitted information.

    b. *Hydraulic Connection:* No impermeable layer is documented between the top of the Sharon Sandstone and the overlying unconsolidated sediments at LL1 area. Based on considerations of a sandy lithology, the range of hydraulic conductivities, and the presence of fractures in bedrock formation, the unconsolidated sands and Sharon Sandstone may be hydraulically connected.

The installation has also assumed that bedrock represents an unconfined aquifer. This seems to be inconsistent with the first of the two above-mentioned statements. Furthermore, there is no information on water table elevations from nested monitoring wells to support this statement. (See also page 5-6.)

c. *Monitoring Differing Hydrogeologic Zones:* The monitoring wells (LL1mw-064 and LL1mw-065) near the eastern boundary are screened in unconsolidated materials, whereas other monitoring wells to the west are screened in the Sharon Sandstone. There are elevation differences between these two areas. Thus, groundwater monitored at LL1mw-064 and LL1mw-065 are probably not monitoring the same hydrogeological zone as the other wells.

d. *Off-site Migration of Contaminants:* The two monitoring wells (LL1mw-064 and LL1mw-065) near the eastern boundary of the southern portion of LL1 are inadequate to rule out the possibility of off-site migration of contaminants. Based on the potentiometric map included in the report, there could be groundwater flow to the northeast or east through the eastern boundary of the northern portion of LL1.

84. Monitoring wells LL1mw-059 and LL1mw-060 are indicated (p. 4-75) to be upgradient wells. The potentiometric map included in the report did not cover the area where these two monitoring wells are located. Thus, whether the groundwater flow paths originating from these two locations actually pass through the locations of monitoring wells in LL1 could not be evaluated. Additionally, it is unclear why the "greatest percent increase in zinc occurred at LL1mw-080." Please provide an explanation.

The revised report should address the issue of monitoring the eastern boundary of LL1, the upgradient groundwater flow paths, and the increase in zinc concentrations between 1999 and 2000.

85. Please revise the second sentence in section 4.6.4 to read: "The SVOC bis(2-ethylhexyl)pthalate was detected in station LL1mw-079 (Table 4-52)."

86. *Figure 4-35 Arsenic Section:* It is unclear what groundwater sampling event results are being displayed for LL1mw-064 and LL1mw-065. Both the 1999 and 2000 results for these two monitoring wells are below the facility-wide background concentrations as listed in Tables 4-1 and 4-48. The discrepancy between the figures and tables should be clarified and modified accordingly.

In addition, on Figures 4-35 and 4-36, monitoring wells LL1mw-059 and LL1mw-060 are listed as LL2mw-059 and LL2mw-060, respectively. The figures should be corrected accordingly.

87. The fifth bullet (page 4-79) in section 4.6.5 (summary of groundwater results) indicated that chloroform, methylene chloride, and toluene were detected in several monitoring wells at LL1 and at LL1-059 and LL1-060. A review of the 2000 trip blank results noted detections of chloroform and methylene chloride in one sample (source water blank). The possibility

98. In Tables 4-2, 4-3, 4-4, 4-5, 4-6, 4-7, 4-8, 4-9, 4-10, 4-11, 4-13, 4-14, 4-15, 4-16, 4-17, 4-18, 4-19, 4-20, 4-21, 4-22, 4-23, 4-24, and 4-25 in the column entitled "Site Background Criteria," please add a "zero" into each row where the field is currently left blank.

99. On Table 4-20 (page 4-128), please add another column for the applicable OWQS.

100. On Table 4-25 (page 4-134), please provide a footnote that designates the meaning of "x".

101. On Tables 4-26 (page 4-138) and 4-27 (page 4-140), please add a footnote explaining any qualifiers. In addition, on Table 4-26, there should be an explanation for the blank fields under the column headed "Lab Flddupl."

102. On Tables 4-31, 4-33, 4-36, 4-38, 4-46, and 4-50, please provide a footnote to the tables explaining the significance of a blank field.

103. On Tables 4-38, 4-39, 4-42, 4-44, 4-47, 4-50, 4-51and 4-53, please provide a footnote to each table which explains the qualifier designated as "UJ."

104. In section 5.1 (page 5-1), please revise the text in the second paragraph to read: "Air quality modeling was not performed for this RI..."

105. Please provide an explanation for the use of Cleveland OH precipitation and temperature data for 1974-1978. More up to date information should be available. (Section 5.3.3 on page 5-6)

106. The text on page 5-7 (section 5.3.4) states that the "metals detected at LL1 have high K_ds and are not expected to leach into the groundwater at any significant rate" and that "significant metals concentrations are found in groundwater only in the main process areas and not in the perimeter locations sampled." As stated in previous comments, the definition of *"significant"* is unclear and needs a clarification. In addition, the latter observation cannot rule out the possibility of off-site migration of contaminants.

107. *Section 5.3.5 Natural Attenuation of Contaminants in LL1 AOCs*: The text states that based on site characterization (Chapter 4) ... LL1 may be "a candidate for natural attenuation remediation approach" and that "off-AOC migration of contaminants from LL1 will be limited due to natural attenuation..."

    a. Processes Considered: Are these conclusions based on the consideration of dilution alone or biodegradation, dilution, and other processes combined? A discussion and supporting documentation that natural attenuation is currently at work at the site have not been included.

    b. Favorable Hydrogeochemical Conditions: The site characterization in Chapter 4 did not adequately address whether hydrogeochemical conditions of the site are favorable for natural attenuation of the contaminants present at the site area. If natural attenuation is to be cited as a factor in reducing concentrations of contaminants in groundwater and in the migration of contaminants off-site, a

of a laboratory contamination should be investigated before a determination as to whether the presence of these two VOCs are related to site activities can be made. (Also applicable to section 4.10.5 on page 4-102 and section 8.1.5 on page 8-5)

88. In sections 4.7 (page 4-79) and 4.7.1.1 (page 4-80), please provide additional details in the text as to whether the debris that is referenced is demolition debris.

89. The text in section 4.7.3.2 (page 4-84) indicates that hexavalent chromium is readily transformed to trivalent chromium under natural conditions. Although no text change is warranted or required (because this is the prevailing thought), additional discussion should be held among the project team to discuss why we are seeing hexavalent chromium under several types of conditions and in several media (sediments, floor sweeps, etc.) at RVAAP.

90. Please change the title for Figure 4-41 (page 4-85) to indicate that it represents explosives and propellants distribution.

91. Please revise the last bullet in section 4.9.1.1 to read: "All samples collected, regardless of XRF results, were submitted to the laboratory for TAL metals analysis."

92. On page 4-92 (section 4.9.2.1), please define what is meant by "infrequently detected."

93. Based upon the information presented throughout section 4.9, and as summarized in section 4.9.2.4 (page 4-98), it is apparent that the XRF methodology is not sufficiently accurate to use as a field tool at the RVAAP. No text change is required.

94. Please revise the second bullet under the CB10/13 sub-heading (page 4-99) to read as follows: "The areas under the floor slabs are not contaminated, based upon limited sampling results."

95. Section 4.10.2 (page 4-99) indicates in various portions of the text that "29 subsurface soils were collected during the Phase II" investigation and also that "organic compounds were not evaluated in sub-surface soils." Please check the accuracy of the latter statement and, if correct, please provide an explanation for the lack of the sub-surface samples for organic analyses. At least 10% of the samples should have been analyzed for the full suite of constituents.

96. Please revise the text in section 4.10.6 (page 4-102) to read: "Isolated VOCs were detected at concentrations less than 0.01 mg/kg."

97. Please revise the title on Figure 4-1 (page 4-103) to indicate that the chart represents the inorganic background criteria for RVAAP. Or, add a footnote to the table to indicate that the background concentrations for all organic compounds are automatically set to "zero."

In addition, please review the entire table to ensure that the concentrations presented are correct. For example, the concentrations listed for both the filtered and unfiltered groundwater samples are the same, which is not correct.

discussion concerning the hydrogeochemical conditions of the site is appropriate. Appropriate documentation and discussion of the evidence supporting natural attenuation beneath the site area should be included in the report. This should include the specific and detailed technical procedures used to demonstrate the natural attenuation of explosives and organic compounds.

c. Biotransformation: Section 5.2.3 indicated that TNT and DNT may undergo biotransformation based on information from culture studies in the laboratory. It is not known under what conditions these transformations took place and whether such conditions exist in groundwater beneath the site. In addition to these two explosive compounds, there was RDX confirmed in groundwater. Whether RDX undergoes any transformation is not addressed.

Please provide substantiation for the statements in the text of the revised report by including appropriate discussions, documentation, and data.

108. An average pH value of 75 was indicated on page 5-8 (section 5.4.1) for the groundwater beneath the site. This value should be corrected.

109. With respect to the use of the models SESOIL and AT123D, please refer to the email previously distributed to the project team (dated 06/20/01) which makes several general remarks regarding these two models. In addition, Ohio EPA would request that before any additional work or funds are expended, that the appropriate personnel with expertise in various models meet to discuss model usage, limitations, assumptions, etc.

110. *Section 5.5 Contaminant Transport Modeling*: The initial COCs were evaluated using a SESOIL model for vertical migration, and a AT123D model for lateral migration to the receptor locations. The following comments are related to the two models:

a. SESOIL Model:

i. It is unclear as to the size of the source area used in SESOIL model. The installation should address whether the source size used for the model represents the area where groundwater contamination is known to exist.

ii. The analytical equation and the initial values used, along with the assumptions made to determine whether a COC would reach the groundwater table within 1,000 years (p. 5-11), should be discussed in the report.

iii. The Section 5.4.2 discussion, concerning the "Limitations and Assumptions of Soil Screening Analysis" (p. 5-9), indicated that this analysis assumed no biological and chemical degradation in the soil or aquifer, whereas, Section 5.5.2.1 indicated (p. 5-11) that SESOIL model output includes "...degradation/decay." This inconsistency should be corrected. The input values summarized in Table 5-2 (p. 5-14) did not include the value used for degradation/decay. Table 5-2 should include values of all the input parameters.

iv. Dilution Attenuation Factor (DAF): A DAF value of 20 was used. Dilution factors used in SESOIL models are based on the various hydraulic conductivities of the aquifer and the various sizes of the source of contamination. Is this value (DAF 20) appropriate for the hydraulic conductivity values indicated for the aquifer in Table 5-2?

b. AT123D Model:

i. *Aquifer thickness*: The report did not discuss the use of a 6 foot aquifer thickness.

ii. *Organic fraction data*: The report did not provide a documentation of organic fraction data, such as sample depth and location.

iii. *Model Input Values*: The report did not provide all model input values used for the AT123D model. What values were used for longitudinal, transverse, and vertical dispersivities? What was the value of the decay constant? What were the Kd and Rd values used?

iv. *Hydraulic gradient*: The report did not provide the potentiometric map used for calculating the magnitude of hydraulic gradient and did not address if the hydraulic gradient used in the model represents the maximum for the model area.

v. *Hydraulic Conductivity*: The report indicated a hydraulic conductivity ranging from 1.7E-03 to 9.8E-05 cm/day, based on a site-specific slug tests. It is unclear which hydraulic conductivity values were used during modeling. The installation should use the highest-lowest observed hydraulic conductivity values.

vi. *Heterogeneity*: The installation should consider the presence of heterogeneity beneath the site area and how heterogeneity could affect groundwater flow and contaminant migration in the site area. Because of heterogeneity, there could be preferential pathways which may allow contaminants to migrate. The possibility of the presence of preferential pathways beneath the site needs to be evaluated and its effect on groundwater flow and contaminant migration needs to be addressed. Based on the information presented in the report, the potential of the presence of preferential pathways beneath the site cannot be eliminated.

vii. *Sensitivity Analysis*: The effects of input value uncertainty on the model predictions are not evaluated and addressed in the report. A discussion should be provided as to how the chosen input values are appropriate for the site and a sensitivity analysis should be conducted in order to evaluate the effects of uncertainty in the input values on the model predictions. The installation should also identify the parameters that are sensitive, by considering a range of input values expected for each parameter at the site area.

viii. *Calculations*: The report did not present the retardation factor calculations used in the analytical model. These calculations should be documented in the submission.

ix. *Model Validation*: The report did not provide information to validate the model results. At present, no data is available between the presumed source area and the point of compliance to determine if there is a match between the model predictions and observed concentrations of COCs in the modeled area. With the available information, an evaluation of whether the model predictions are valid for the site area cannot be made.

x. *Type of Source*: The type of source used in the model should be indicated.

Because of these issues listed above, the predictions of the analytical models cannot be evaluated. Thus, based on available information, Ohio EPA cannot concur with the model conclusions that the COCs are not migrating from LL1 at concentrations that would pose unacceptable risks to human or ecological receptors. (Also applicable to section 8.6.1 on page 8-12)

111. *General Comment*: Please be advised that there are still unresolved issues and comments related to the Load Line 1 and 12 technical memorandum utilized in Chapters 6 and 7. These issues need to be resolved. These outstanding issues will impact upon the baseline human health and screening ecological risk assessments presented in the Load Line 1 report. Please note that the comments in this correspondence regarding risk assessment issues are consistent with Ohio EPA comments, dated June 21, 2001.

112. The text on page 6-2 (section 6.2) indicates that the data from the samples collected from the railroad beds were not included in the baseline human health risk assessment. Please provide an explanation.

113. The text on page 6-6 (section 6.3.1), please provide an explanation as to why the 1990 census figures were utilized instead of the 2000 census figures. Please use the newest census numbers in the revised report.

114. Please provide an explanation for not including groundwater in the open recreational land use scenario. (Section 6.2.3.2 on page 6-21)

115. Section 6.3.2, Exposure Pathways, and Figure 6-1. Conceptual Exposure Model for Load Line 1:
The following exposures in the Residential Farmer-Child scenario should be considered complete and, therefore, included in the risk assessment: a) inhalation of VOCs and dust from surface and sub-surface soil; and b) ingestion, dermal contact, and inhalation of VOCs from ground water. By eliminating these pathway evaluations, cumulative consideration of exposure via multiple pathways are not completely quantified and, therefore, not acceptable. Even though the values may be "off set," the cumulative exposure is reduced and not appropriately evaluated. Please include all complete exposure pathway evaluations in the risk assessment.

116. Figure 6-1, Conceptual Exposure Model for Load Line 1:
The footnote for Figure 6-1 does not give enough information regarding the "weighted average of the adult and child parameter values." All appropriate exposure pathways are to be considered in the risk assessment for both the adult and child resident farmer receptors (see comment # 115 above). Cumulative considerations of multiple chemical exposures for the two receptors would not be adequately evaluated using this weighted average approach. A complete evaluation for the adult and child receptors that includes consideration for all complete exposure pathways should be incorporated into the RI report.

117. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
Table 6-2, Surface Soil, lists 1 hour day^{-1} as the exposure time for the Security Guard/Maintenance Worker. This value should be justified or changed to 8 hours day^{-1} as this is considered an occupational exposure.

118. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
Values are required for exposure time (ET) in Table 6-2 for the open industrial worker and the resident farmer (child/adult) scenarios, or equation 1 given in section 6.3.3.1 will need to be modified from what is given in the draft report. These changes should also be made to other appropriate sections of Table 6-2 for exposure scenarios that use a 24 hour day^{-1} exposure time. Please make the appropriate changes.

119. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
The citation for the Exposure duration (child) value under the Child trespasser column (surface soil) appears as a q. Please ensure that the correct citation is given in Table 6-2.

120. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
The citation for the child body weight under Child trespasser (surface soil) is incorrect. Please correct the citation.

121. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
No value was given for skin surface area or soil to skin adherence factor for the resident child receptor. The values used most recently by Ohio EPA include 0.22 m^2 for skin surface area and 0.2 mg cm^{-2} for soil to skin adherence factor. Please include the appropriate values to the table.

122. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
Values for the resident child receptor are required for the exposure duration and averaging times to quantitate the exposure via inhalation of dust. Please include this information in Table 2 and ensure the risk and hazard calculations are completed for all appropriate media and pathways for the child receptor.

123. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
The use and evaluation of multiple exposures should be re-evaluated. It appears that many of the receptors that are exposed to multiple media are being assessed very conservatively. For example, the resident farmer child is evaluated using the assumption that complete exposure pathways exist for surface soil, sub-surface soil, and sediment. The soil ingestion rate for the resident farmer child for all three media is 200 mg day^{-1}, thereby estimating a total soil/sediment intake for the receptor at 600 mg day^{-1}. This evaluation is acceptable as being protective of human health. However, it may not be a realistic evaluation of potential intake and exposure. Additional discussion and evaluation of the input parameters should be considered prior to the completion if the human health risk assessment.

124. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
The exposure frequency for subsurface soil exposure for the National Guard trainee is listed as 28 days $year^{-1}$. This is in contrast to the exposure frequency of 180 days year-1 used for surface soil exposures. Although these values for estimating activities may be appropriate, the use and evaluation of separate surface and subsurface exposures is not clear. The standard practice is to estimate how deeply soils will be disturbed by various activities and then evaluate only one depth or type of soil exposure. For example, it is generally considered that soils for home construction are disturbed to a depth of 10 feet (this is considered the depth to which soils are dug for the installation of a basement). Therefore, residential exposure to soil (note: there is no differentiation between surficial and subsurface soils) is assumed to be from soils from 0-10 feet, and the site is evaluated (sampled) to the appropriate depth.

If the National Guard Trainees are exposed to soils only to a depth of 5 feet, due to activities such as digging "foxholes", concealing armor, or other activities that involve digging into soil (this needs to be justified and documented in the risk assessment), then the most appropriate and consistent method of evaluating soil exposure would be to consider one depth of soil exposure from 0-5 feet bgs. If this cannot be justified, then modifications are required to the Technical Memorandum and risk assessment. The same rationale that is used for exposure to soil in the residential scenario (soil brought to the surface and therefore are available for exposure) should be used in all scenarios that may include exposure to subsurface soils. If an argument can be made that National Guard Trainees are only exposed to specific strata of soil and that the sub-surface soils are returned to their original depth/location (*i.e.*, no mixing of soils occurs during the removal and replacement of soils), then separate evaluations for surface and subsurface soils would be appropriate.

It is understood that the majority of the soil contamination has been identified in the surface soil and therefore an evaluation of the top 1 foot would be a conservative and acceptable risk estimation. The addition of text that describes the process and identifies the conservative nature of the evaluation would be helpful. Another option would be to assess one soil depth for the National Guard Trainee scenario. Please correct/clarify the methods that will be used to evaluate exposure to surface and subsurface soils for the National Guard Trainee scenario.

125. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
The Inhalation rate for receptors in the various scenarios that may be exposed to either surface or subsurface soil needs to be clarified/justified. The inhalation rate for all receptors is listed as 20 m^3day^{-1}. This value is acceptable for receptors that spend long periods of time at the site and are involved in light activities. This inhalation rate should not be used for receptors that are expected to be involved in heavy or energetic activities with limited exposure (*i.e.*, short exposure durations). In addition, the inhalation rate for any receptor that is not spending 24 hours per day at a site should be given in units of m^3hour^{-1}. One example of a receptor that is involved in activities that are likely to produce inhalation rates greater than resting, include the construction worker scenario recently proposed by Ohio EPA-DERR. An inhalation rate of 1.85 $m^3\ h^{-1}$ was selected as the default value. The inhalation rate is a weighted average that estimated one-fourth of the time at work is spent doing light activities at an inhalation rate of 1.0 m^3hr^{-1}; one-half of the time at work is spent doing moderate activities at an inhalation rate of 1.6 m^3hr^{-1}; and one-fourth of the time at work is spent doing strenuous activities at an inhalation rate of 3.2 m^3hr^{-1}. This results in an estimated point value of 1.85$m^3\ hr^{-1}$ (0.25(1.0) + 0.5(1.6) + 0.25(3.2) = 1.85).

A similar technique could be used to develop an inhalation rate for the National Guard Trainee and possibly for the Hunter/Trapper who's current default value is 0.83 $m^3\ h^{-1}$.

126. Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 1:
The use of the listed volatilization factor for surface water is not appropriate, and also may not be appropriate for the evaluation of groundwater under the National Guard Trainee scenario. The volatilization factor listed in Table 2 (in all categories) has been cited from U.S. EPA, RAGS, Part B, Development of Risk-based Preliminary Remediation Goals, 1991. This "volatilization" constant (K, from Andelman 1990) is commonly referred to as Andelman's K, and is to be used to assess exposure to VOCs (specifically VOCs with a Henry's Law constant greater than $1x10^{-5}$ atm-m^3 $mole^{-1}$ and a molecular weight of less than 200g $mole^{-1}$) as the result of indoor/household use of potable water (*e.g.*, showering, laundering, dish washing, etc.). During the development of Andelman's K, certain assumptions had to be made to derive this volatilization factor that further render this value unsuitable for assessing exposures to unconfined air spaces and surface waters. These assumptions include; the volume of water used in a residence for a family of four (720 L day^{-1}), the volume of air contain within the house (150,000 L), and an air exchange rate (0.25 m^3hr^{-1}). Therefore, the method and cited volatilization factor is inappropriate to be used to estimate exposure VOC contaminated surface water. The cited volatilization factor given in Table 2 should be corrected and/or replaced with an appropriate method to evaluate exposure to VOCs from contaminated surface waters. The use of Andelman's K for exposure to VOCs from surface water would only be appropriate for the National Guard Trainee, if the surface water was being used as potable water and exposures within the barracks or housing units were consistent with the modeled exposures used to develop the constant. Please ensure the volatilization constant used in the risk assessment is appropriate and used consistently within the constraints of the model's limitations.

There are methods that would be considered appropriate to estimate the concentration of VOCs in air that moves across a contaminated surface water body. These methods are based on taking the Henry's Law constant of each VOC, and estimating the residence time of an air mass moving over the water body. By using this information, an estimate can be made as to the possible concentration of VOCs in the air mass. Further details can be provided upon request.

In addition to the inappropriate use of the Andelman's K consent to evaluate exposure to VOCs from contaminated surface water, the units given in Table 2 should be changed to better reflect the actual value. Andelman's K (0.0005) is a unitless constant. It is, however, commonly given with a conversion factor of 1000 Lm^{-3} that is used so the resulting air concentration is expressed in units of mg m^{-3}. When the use of Andelman's K is appropriate, it should be cited as given in the original paper or the U.S. EPA , RAGS, Part B, Development of Risk-based Preliminary Remediation Goals, 1991, guidance document as 0.0005 x 1000 L m^3.

127. Section 6.3.3.1, Soils and sediments exposure pathways:
The legend for equation 2 gives a description of the term ABS as chemical-specific absorption factor (0.1 percent for inorganics, 1.0 percent for VOCs, and 10 percent for SVOCs). This statement is not clear. The legend should describe that chemical specific absorptions values will be used when available, and class defaults will be used in the absences of such information. The statement as written describes the class defaults as chemical-specific values. Please correct the legend.

128. Section 6.3.3.1, Soils and sediments exposure pathways:
The legend for equation 3 gives a value for the particulate emission factor (PEF) of 9.24 x 10^8 m^3 kg^{-1}. Justification and derivation of the value should be briefly discussed in the document. This value deviates from the default value of 1.32 x 10^9 m^3 kg^{-1} given in U.S. EPA's Soil Screening Guidance which is similar to a value of 8.1 x 10^9 m^3 kg^{-1} that was calculated using a Q/C value of 55.9 from Cleveland, Ohio and assuming a 5 acre source area. Please include the source of the value given in the draft report and any information required to reproduce the value.

129. In section 6.3.4.1 (page 6-25), please change the acronym "BBC" to read "RBC." In addition, please refer back to previous Agency comments regarding the fate and transport models, and revise the first paragraph in this section accordingly.

130. Section 6.4.5, Chemicals without EPA Toxicity Values:
Section 6.4.5 needs additional clarification regarding the use of the lead models. The adult lead model should be used for all adult exposures. However, the use of the child IEUBK is warranted for childhood exposures for the residential scenario. Additional clarification is needed regarding the use of the IEUBK model. In addition, Appendix Q does not contain any lead model information as stated by the last sentence in section 6.4.5. A list of the input values should be given, as well as other parameters required to duplicate the calculations.

131. Section 6.5.2.1, Groundwater:
Arsenic should not be eliminated from further consideration on the basis of background risk levels. Section 6.5.2.1 identifies that arsenic background risks are not significantly different than the on-site concentrations. This statement is attempting to make a risk management decision which is not appropriate in the risk assessment report. Please remove the statement and ensure that the potential risks associated with arsenic exposure is fully evaluated in the risk assessment.

132. Table 6-5, Groundwater Hazards and other tables as appropriate:
The tables should have a legend that explains the various letters used in the COC column. Presently, it is not clear what the letters represent.

133. Section 6.5.2.3, Soil and other sections that apply:
If inorganic compounds exceed background criteria that were developed for the RVAAP, those compounds are to be carried through the risk assessment process. It is not appropriate to "not evaluate further" any compound that has exceeded its background criteria. Please remove all discussions of background risk of any site-related compound that exceed its background criteria.

134. Section 6.5.2.4, Summary of COCs for all media and receptors:
The use of the 1E-4 risk goal as the criterion for "large risks" should not be used. The RI/FS process that is being used at the site requires that all compounds that exceed the point of departure to be included in the feasibility study. The use of the 1E-4 excess lifetime cancer risk is not appropriate and should be removed from the document. The practice of using the 1E-4 excess lifetime cancer risk as a criterion to identify "important" compounds should not be continued. Chemicals may be identified as being categorized at various risk levels, however, the 1E-6 category should be presented as the excess cancer risk level that will be identified as the compounds that will be carried into the feasibility study process.

135. Section 6.5.3, Remedial Goal Options:
The RGOs for the child residential receptor need to be re-calculated based on the fact that all pathways were not considered to be complete. See previous comments that discuss the appropriate inclusion of multiple pathways for the child residential receptor.

136. RGO Tables:
Some of the values given in the RGO tables are not explained in the legend. For example, in Table 6-26, the on-site resident farmer ingestion RGO value of 1.0 is given. It is not clear why the "Total Across All Pathways" is the greater of the values given in the first column. The total or final RGO should be the lowest of the values. Please correct/explain the values given in the tables.

137. Section 6.5.3, Remedial Goal Options:
A cursory comparison of the RGOs given in the draft RI report for Load Line 1 with the U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) and the State of Ohio's Voluntary Action Program (VAP) generic numerical standards reveals some pertinent comparative information. Given that the exposure frequency and duration of the National Guard

receptor is comparable to an industrial exposure, it is considered appropriate to compare the values derived for these receptors. The table below gives potential remedial values from the three sources cited above.

Please note, the Voluntary Action Program (VAP) numbers are solely included as a point of comparison, i.e., they are not to be used at the RVAAP.

Chemical	Residential (total)	National Guard (total)	Industrial (total)	R9 Residential	R9 Industrial	VAP Residential	VAP Commercial
Antimony	250	1400	390	31 nc	820	18	240
Arsenic	0.34	2.5	1.6	0.39	2.7	0.69 c	11 c
2,4,6 TNT	11	100	57	16 c	82	na	na
2,4 DNT	0.51 c	44 c	2.5 c	120 nc 0.71 c	1800 nc 36 c	na	na
RDX	3.1	27	16	4.4 c	22	na	na
Benzo(a) anthracene	0.3	2.1	1.6	0.62	2.9	0.55 c	3.2 c
Benzo(a) pyrene	0.03	0.21	0.16	0.062	0.29	0.055 c	0.32 c
Dieldrin	0.022	0.18	0.11	0.03 c	0.15	Na	na
PCB 1254	0.13	0.94	0.66	0.22 c	1	na	na

c = cancer
nc = non-cancer
Region 9 PRG as of 10/99
VAP = Voluntary Action Program generic standards adjusted for a 1E-6 risk goal

With the exception of the values given for antimony, the values are fairly consistent within one half order of magnitude from the three sources. This comparison raises questions regarding the reason for the difference only with antimony. This is especially true given that the values for arsenic are so consistent from the three sources. Please explain the reason why the values for antimony are not consistent.

138. Section 6.5.3, Remedial Goal Options:
Information was not provided as requested that identified RGO values that have been generated for explosives and propellents at other munition or munitions-related sites. Comments made by Ohio EPA on March 30, 2000 regarding draft RGOs stated: "(o)hio 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 site/installations with similar contaminants and operations." RGOs for other sites should be given and evaluated as part of the process to develop or justify remedial clean-up values. Please include this information as requested.

139. Please clarify the text on page 7-6 that states: "There is uncertainty regarding the exact history of waste applications or spills at each exposure unit, thereby strengthening the rationale for the distinction between them." The meaning of this statement is not clear.

140. Section 7.3.3.1, Ecological habitats and plant communities:
Section 7.3.3.1 identifies in the first paragraph that wetlands are a type of habitat located within the boundaries of Load Line 1. However, no specific acreage values were given for wetlands in the draft RI report. The description given for the "seasonally flooded cold-deciduous forest (56 acres)," "semi-permanently flooded, cold-deciduous shrub land (2 acres)," and the "permanently flooded temperate or subpolar hydromorphic vegetation (6 acres)" all describe types or potential wetland habitats. This totals approximately 64 acres of potential wetlands that should be evaluated and classified. Please include additional information regarding the quantity and quality of the wetlands located within the AOC.

141. Section 7.3.3.3, Aquatic Habitats:
Griggy's pond was not evaluated in the screening ecological risk assessment. In addition, sufficient evidence has not been provided that excludes the evaluation of the pond. Given that a State of Ohio-listed endangered specie has been identified to use similar ponds located at the RVAAP installation, it is appropriate to evaluate the habitat and potential contamination of the pond. Please include this information in the revised RI report.

142. Section 7.3.3.4, Threatened and endangered species:
Section 7.3.3.4 states: "54 state-listed species are confirmed to be on the RVAAP property," this is in addition to state special interest and state declining species. The ecological risk assessment for Load Line 1 must include information that identifies if any of the above listed species are located within the boundaries of Load Line 1 or the exposure units. Please list all federal or state listed- threatened or endangered species and state special interest or declining species located within Load Line 1, or potentially impacted by releases of contaminants from Load Line 1.

143. Please provide clarification for the second paragraph on page 7-10 that describes comparison of the analytical results to the blank, in order to determine if it is carried through the risk assessment process. When was this screen added to the process?

144. On page 7-10, please change the term "disclosed" to "provided" in the fourth, fifth and sixth paragraphs.

145. Section 7.3.4, Identification of Preliminary Constituents of Potential Ecological Concern (Preliminary COPECs):
Ohio EPA should not be cited in the risk assessment report as having "preferences," or formal (*e.g.*, "the Ohio EPA ESVs") screening values. Please remove any reference to Ohio EPA regarding screening values.

146. Section 7.3.4, Identification of Preliminary Constituents of Potential Ecological Concern (Preliminary COPECs):
Section 7.3.4 lists a hierarchy for sediment and surface water screening values. It should be noted that surface water values are not screening values, but State Water Quality

Standards as given in Chapter 3745-1 of the Ohio Administrative Code (OAC). Other sources of surface water values are not acceptable as water quality standards. The secondary sources of water quality values given in the section 7.3.4 are only to be used to determine whether an Ohio water quality standard should be derived by the methods cited in chapter 3745-1 of the OAC to determine compliance of potentially contaminated water bodies. This information should be given in the report. Please make the appropriate changes in the report and risk assessment.

147. Section 7.3.4, Identification of Preliminary Constituents of Potential Ecological Concern (Preliminary COPECs):
Section 7.3.4 identified that the maximum chemical concentrations were compared to the respective screening values. This method is correct for all media except surface water. Given that the surface water standards are to be compared to a 30-day average value, the use of the maximum values are conservative, but not required by state law. The surface water results should be re-evaluated to determine compliance of the water bodies associated with Load Line 1 with the Ohio Water Quality Standards.

148. Section 7.3.4, Identification of Preliminary Constituents of Potential Ecological Concern (Preliminary COPECs):
The use of background screening values was not discussed in section 7.3.4. As a point of information, the use of a screen based on acceptable background constituents is acceptable in both the human health and ecological risk assessment process.

149. Section 7.4.2, Quantification of Exposure:
Page 7-31 states: "(t)he constituent- specific values for bioaccumulation for soil-to-plant uptake (Spv and Spr), soil-to-invertebrate uptake (BAFi), and animal tissue-to-mammal tissue uptake (BAFv) are detailed in Appendix S, Tables S-28 and S-29." It is also stated that: "(s)ediment-to-biota and water-to-biota bioconcentration factors (BCFs) are presented in Appendix S, Table S-30." The CD-ROM that was provided with the draft report has a file named "Tables 28-30,BAFs.xls." However, only the values for the "Aquatic Bioaccumulation Factors for Ecological Constituents of Potential Concern" were given. Therefore, the ecological risk calculations cannot be verified as being correct. Please include all appropriate information needed to confirm ecological risk calculations.

150. Section 7.4.2, Quantification of Exposure:
Section 7.4.2 cites "Risk Assessment Methodologies for Loring Air Force Base (HAZWRAP 1994)" as the source for most of the input values for the ecological hazard calculations. Pleas supply Ohio EPA with a copy of the final report. This will ensure that the cited values are current, and a reference will be available for review.

151. Section 7.6.1, Current Preliminary Risk to Ecological Receptors:
Section 7.6.1 identifies contaminants that exceeded an HQ of 1. In addition, section 7.6.1 listed compounds that did not exceed an HQ of 1 but because the contaminants were identified as PBTs were thus retained. The primary reason to identify PBT compounds is to ensure that these contaminants are not inappropriately eliminated during the screening step of the ecological risk assessment. Many of the values used in the toxicity-based screening do not model trophic transfer of contaminants. Following the screening step,

PBT compounds may be eliminated if appropriate food-web models are used to estimate exposure to higher trophic levels organisms, which are the receptors of most concern when these compounds are present at a site. Please ensure that the PBTs were appropriately retained or eliminated in section 7.6.1.

152. In section 7.8 (page 7-52), the text indicates that the screening ecological risk assessment "also considered" the OWQS. Please revise the text to indicate that the OWQS, which are codified, are the first to be utilized (i.e., they are more than "considered").

153. Given that the comment resolution meeting on the Winklepeck Burning Grounds (WBG) field truthing initiative is scheduled for December 2001, it is premature to indicate that the WBG study may be extrapolated to other portions of the installation. (Page 7-58) This is also applicable to section 8.4.2 on page 8-9.

154. Section 7.8, SUMMARY OF THE SCREENING OR PRELIMINARY ECOLOGICAL RISK ASSESSMENT:
The last paragraph in section 7.8 discusses the regulatory exit strategy for a baseline risk assessment. The paragraph discusses two options: 1) re-calculation of site risks based on more precise exposure parameters, and 2) use of RVAAP-specific biological measurements. This paragraph failed to discuss potential remedial or risk management options that often are cost effective and may potentially be completed in less time than completing a baseline ecological risk assessment. The selection of remedial or risk management options based on ecological impacts is often most effective when human health issues have also been identified (as is the case with Load Line1) and can be addressed with a single remedial or risk management strategy. The risk management or remedial option should be considered and discussed in the report.

155. *General Comment*: Please refer to comments made on the body of the text and adjust the summary and conclusions chapter accordingly.

156. Please provide additional explanation for the second bullet on page 8-2 that indicates that several contaminants may not be process-related, but rather reflect the "industrialization of the site." How is the terminology "industrialization of the site" being utilized?

157. Please clarify the text in the first bullet on page 8-4 regarding explosives contamination by revising the text as follows: "Track CB is generally free of explosives contamination, except for one laboratory detection at LL1so-241. Two of 10 samples collected for field explosives analyses from Track CB...."

158. In the first bullet on page 8-5 (section 8.1.5), the text states that "significant migration of explosives from soil to groundwater has not occurred." As stated in previous comments, the definition of "significant" is unclear. Additionally, in the first bullet, the text states that the "samples from off-AOC monitoring wells had no detections of explosive compounds." It is unclear as to which monitoring wells this sentence refers. Additional clarification should be included in this section.

159. In section 8.3 which summarizes the baseline human health risk assessment, please provide an explanation for the use of 10^{-4} in the majority of the discussion as the point of

departure, rather than 10^{-6} which should be utilized. Please revise the text to utilize 10^{-6}. (Also applicable to section 8.6.1 on page 8-12)

160. Section 8.3, SUMMARY OF THE BASELINE HUMAN HEALTH RISK ASSESSMENT: The use of the excess lifetime cancer risk level of 1E-4 should not be used as a criteria of concern as is done in section 8.3. Use of an excess lifetime cancer risk of 1E-6 may be used as a level for which, if below, may be eliminated from further concern. Please remove any reference to an excess lifetime cancer risk 1E-4 as a criteria for concern section 8.3.

161. The text on page 8-13 (section 8.6.3) indicates that the contaminants arsenic and bis (2-ethylhexyl)phthalate found in the off-AOC aggregate are not likely related to past activities at LL1. If this is the case, please provide additional text to indicate where these constituents most likely originated.

162. The text on page 8-13 (section 8.6.4) states that "the lack of explosives in the off-AOC monitoring wells indicates that migration in this direction is not occurring." It is unclear as to which monitoring wells and direction this sentence refers. This sentence should be modified and additional information should be provided to clarify this issue.

163. Section 9.0, RECOMMENDATIONS: The first paragraph in section 9.0 cites a U.S. EPA document (EPA 1993d) that is not listed in Section 10, "References." The reference section (Section 10) should be complete and accurate. Presently, section 9.0 needs to be revised. Please correct and complete section 9.0.

Volumes 2 and 3 (Appendices):

Given the relatively minor number of comments on volumes 2 and 3 of the Load Line 1 report, Ohio EPA requests that, for any necessary changes, replacement pages and new cover/spine sheets be submitted, rather than re-submitting the volumes in their entirety. If this is an issue, it can be discussed at the comment resolution meeting.

164. In the revised document, please provide all chain of custody (COC) forms related to this project.

165. In the revised document, please provide the laboratory data sheets. This could also be provided in an electronic format instead of a hard copy version. (Applicable to Appendix H)

166. Appendices A and B: It is noted on several of the sampling logs, that the data recorded is incomplete. For example, on several HTRW drilling logs and other drilling logs, the following was noted: sample location maps (there are references back to the sampling and analysis plan which were projected locations) are missing; the proper protocol for making changes to the log books were not followed; overburden depth is not recorded; the tops of the pages with the sample locations are being cut-off in the photocopying process; the dates of sampling are not recorded; the sampler has not signed the log; the sample

location (i.e., "hole no.") was not recorded; several sample locations are depicted on the same log (each location should have an individual form); and the end of boring (EOB) was not noted. Although the Agency is not requesting that the logs presented in this Appendix be modified, in future projects, please advise the sampling personnel to completely fill out the sampling and drilling logs.

167. Appendix C: Please provide an explanation for why the LL1-053 surface water sampling location was not documented in the field logbooks. In addition, as mentioned in the comment on appendices A and B, please ensure that the proper protocol is utilized when corrections are made (i.e., one line strike-out and initialed).

168. Appendix D: A discrepancy was noted in the date started/completed on page D-3 and the date begin/end on page D-8 for well log of LL1mw-078. This discrepancy should be corrected.

169. Appendix F: Please provide an explanation for not including the corrected logbook pages in the draft report. In addition, please provide additional text regarding what source(s) of information will be utilized to correct the text. (Page F-6)

170. Appendix F: Please clarify non-conformance report NCR-2001-RVAAP-005. It is unclear as to how a mistake on a chain of custody form could result in a sample arriving at the laboratory at room temperature. It is also unclear as to how the issue could be corrected in the field if the samples had already arrived at the laboratory.

171. Appendix F: On field change order (FCO) 04, please add to the form, the name of the person who added additional information to the document. In addition, there should be at least one additional FCO in this appendix regarding the well(s) in which development was stopped prior to retrieving all added water during the drilling process.

172. Appendix K: Please ensure that the proper protocol is utilized when corrections are made (i.e., one line strike-out and initialed).

173. Appendix M: Please ensure that the proper protocol is utilized when corrections are made (i.e., one line strike-out and initialed). In addition, it is noted on several logs that decisions were made to "stop tape... seen enough." Who made the decision to stop, and on what basis?

174. Appendix N: The text in IIIE (page 4) indicates that besides a summary of activities, a logbook was kept by the technician. Please provide a copy of the logbook in the revised report.

175. Appendix O: The investigation-derived waste (IDW) report was previously reviewed by Ohio EPA, and concurrence with disposal options was sent to RVAAP, USACE and the contractor via e-mail on 04/12/01.

176. Appendix S: Table S-37, Derivation of Toxicity Reference Values (TRVs):
No TRV was given for Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), CASRN 121-82-4.

This compound is identified as a contaminant of concern based on the human health evaluations and was used at Load Line 1. In addition, U.S. EPA cites a reference value on IRIS for this compound. The RfD_o was based upon a NOEL: 0.3 mg/kg/day as given in: U.S. Department of Defense, 1983, AD-A160-774 (available from Defense Technical Center, write to Documents; Cameron Station, Alexandria, VA 22314, or call 703-274-7633). This NOEL value should be used to develop a TRV for RDX for use in a quantitative evaluation of the hazards associated with exposure to this compound by ecological receptors.

177. Appendix S: Appendix Table S-37, Derivation of Toxicity Reference Values (TRVs): No TRV was developed for Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), CASRN 2691-41-0. This compound is identified as a contaminant of concern based on the human health evaluations and was used at Load Line 1. In addition, U.S. EPA cites a reference value on IRIS. The RfD_o was based upon a NOAEL: 50 mg/kg/day as given in: U.S. Department of Defense, 1985a, AD-A171 601 (available from Defense Technical Information Center, write to: Documents, Cameron Station, Alexandria, VA 22314, or call 703-274-7633). This NOAEL value should be used to develop a TRV for HMX and the value should be used to determine potential adverse effects to ecological receptors.

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: Bonnie Buthker, OFFO, SWDO
Brian Tucker, CO, DERR
Conni McCambridge, NEDO, DDAGW
Bob Whelove, OSC
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Glen Beckham, USACE - Louisville
John Jent, USACE - Louisville
Steve Selecman, SAIC
Kevin Jago, SAIC
David Seely, U.S. EPA Region V

ec: Mike Eberle, NEDO, DERR

OhioEPA
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 22, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
LOAD LINES 1 AND 12 TECH MEMO

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), Division of Emergency and Remedial Response (DERR), has received and reviewed the following document: "Final, Technical Memorandum, Human Health and Ecological Risk Assessment Approach for the Load Line 1 and Load Line 12 Phase II Remedial Investigations, Ravenna Army Ammunition Plant, Ravenna, Ohio." This documented, dated March 2001 and received at Ohio EPA on April 2, 2001, was prepared by the contractor for the U.S. Army Corps of Engineers (USACE) - Louisville District under contract number DACA62-00-D-0001, delivery order CY06.

The primary reviewer of this document for Ohio EPA was Brian Tucker of Ohio EPA, Central Office (CO), DERR. The Agency has the following comments on the document:

General Comment:

1. Please be aware that the comments on the above-referenced document will have an impact upon the recently-received draft Load Line 1 Phase II Remedial Investigation (RI) report, and the Load Line 12 report that is in the process of preparation.

Human Health Risk Assessment::

1. Section 2.2.1 Potential Exposure Media, Exposed Populations, and Exposure Pathways, Page 2:

   Section 2.2.1 lists the subsurface soil depth as 1-5 feet bgs. This depth of investigation or consideration is not appropriate for use in a residential or other scenarios for which the receptors are potentially exposed to soils found at depths greater than 5 feet bgs. In addition, the Superfund RI process that is being followed for all investigations at the Ravenna Army Ammunition Plant (RVAAP) requires that

the extent of contamination be determined during the RI before the risk assessments are completed. The extent of contamination is required for all directions which include vertical depth. Therefore, subsurface soils are to be evaluated in order to determine both the horizontal and vertical depth of contamination. It is also required, for human health risk assessments that evaluate a residential exposure scenario, to include soil contaminant concentrations up to a depth of 10 feet. If site conditions are such that subsurface soils are not present at depths less than 10 feet in all areas of the location under investigation, then this evidence is required in the risk assessment report. If only limited areas have subsurface soils at depths of up to 10 feet, then only those soils/depths would be required to be evaluated in a residential scenario.

The most common differentiation of soils used in human health risk assessments is 0-2 feet bgs for surface soils and 2-10 feet bgs for subsurface soils. For unique exposure scenarios (*e.g.*, National Guard Trainee, construction worker) the exposure to subsurface soils has to be defined and justified. No justification has been given regarding the depth of soils that may be disturbed during training/exercises and preparation of the training facilities/areas. These should be included in the revised Technical Memorandum, RI report, or facility-wide risk assessment work plan. Additional information/justification is required to support the use of the listed soil depths and, additional evaluations may be required based on the standard depths for surface and subsurface soils used in the risk assessment process.

2. Section 2.2.2 Exposure Point Concentrations, Page 3:

Non-detects should be eliminated from a data set if they are located outside a known or delineated area of contamination. All data should be evaluated before an exposure concentration is determined, to ensure that non-detects are not incorrectly included and, thus, dilute or affect the standard deviation of the data set. Please ensure that the data sets are handled appropriately.

3. Table 1. Conceptual Exposure Model for LL1 and LL12, RVAAP:

The category headings of subsurface soil and sediment are incorrect with respect to the listed exposure pathway column. Please correct.

4. Table 1. Conceptual Exposure Model for LL1 and LL12, RVAAP:

The following exposures in the Residential Farmer-Child scenario should be considered complete and, therefore, included in the risk assessment: a) dermal

contact and inhalation of volatile organic compounds (VOCs) and dust from surface soils (0-10 feet bgs); and b) ingestion, dermal contact, and inhalation of VOCs from ground water. The response to comment # 12 on page 12 states in part: "(t)he child is not evaluated separately for other exposure pathways where lower ingestion rate/inhalation rate/surface area are offset by the smaller body weight of the child." By eliminating pathway evaluations, cumulative consideration of exposure via multiple pathways are not quantified and, therefore, not acceptable. Even though the values may be "off set," the cumulative exposure is reduced and not appropriately evaluated. Please include all complete exposure pathway evaluations in the risk assessment.

5. Table 1. Conceptual Exposure Model for LL1 and LL12, RVAAP:

The footnote for Table 1 does not give enough information regarding the "weighted average of the adult and child parameter values." All appropriate exposure pathways are to be considered in the risk assessment for both the adult and child Resident Farmer receptors (see comment # 4 above). Cumulative considerations of multiple chemical exposures for the two receptors would not be adequately evaluated using this weighted average approach. This approach is not acceptable. A complete evaluation for the adult and child receptors that includes consideration for all complete exposure pathways should be incorporated into the RI report.

6. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

Table 1. Surface Soil, lists 1 hour day^{-1} as the exposure time for the Security Guard/Maintenance Worker. This value should be 8 hours day^{-1} as this is considered an occupational exposure.

7. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The citation for the Exposure duration (child) value under the Child trespasser column (surface soil) appears as a "q." Please ensure that the correct citation is given.

8. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The citation for the child body weight under Child Trespasser (surface soil) is incorrect. Please correct the citation.

9. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

No value was given for skin surface area or adherence factor for the child resident. The values used most recently by Ohio EPA include 0.22 m^2 for skin surface area and 0.2 mg cm^{-2} for soil to skin adherence factor. Please include the appropriate values to the table.

10. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

Values for the child resident receptor are required for the exposure duration and averaging times for dermal contact and inhalation of VOCs and dust. Please include this information in Table 2 and ensure that the risk and hazard calculations are completed for all appropriate media for the child receptor. Also, see comment # 4 above for additional information.

11. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The use and evaluation of multiple exposures should be re-evaluated. The rationale and input parameters used in the quantification of exposure to multiple media is not clear without the intended equations or algorithms. It appears that many of the receptors that are exposed to multiple media are being assessed very conservatively. For example, the Resident Farmer child is evaluated using the assumption that complete exposure pathways exist for surface soil, sub-surface soil, and sediment. The soil ingestion rate for the Resident Farmer child for all three media is 200 mg day^{-1}, thereby estimating a total soil/sediment intake for the receptor at 600 mg day^{-1}. This evaluation is acceptable as being protective of human health. However, it may not be a realistic evaluation of potential intake and exposure. Additional discussion and evaluation of the input parameters should be considered prior to the completion of the human health risk assessment.

12. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The exposure frequency for subsurface soil exposure for the National Guard Trainee is listed as 28 days $year^{-1}$. This is in contrast to the exposure frequency of 180 days year-1 used for surface soil exposures. Although these values for estimating activities may be appropriate, the use and evaluation of separate surface and subsurface exposures is not clear. The standard practice is to estimate how

deeply soils will be disturbed by various activities and then evaluate only one depth or type of soil exposure. For example, it is generally considered that soils for home construction are disturbed to a depth of 10 feet (this is considered the depth to which soils are dug for the installation of a basement). Therefore, residential exposure to soil (note: there is no differentiation between surficial and subsurface soils) is assumed to be from soils from 0-10 feet, and the site is evaluated (sampled) to the appropriate depth.

If the National Guard Trainees are exposed to soils only to a depth of 5 feet due to activities such as digging "fox holes," concealing armor, or other activities that involve digging into soil (this needs to be justified and documented in the risk assessment), then the most appropriate and consistent method of evaluating soil exposure would be to consider one depth of soil exposure from 0-5 feet bgs. If this cannot be justified, then modifications are required to the Technical Memorandum and planned risk assessments. The same rationale that is used for exposure to soil in the residential scenario (soil brought to the surface and therefore available for exposure) should be used in all scenarios that may include exposure to subsurface soils. If an argument can be made that National Guard Trainees are only exposed to specific strata of soil and that the sub-surface soils are returned to their original depth/location (*i.e.*, no mixing of soils occurs during the removal and replacement of soils), then separate evaluations for surface and subsurface soils would be appropriate. Please correct/clarify the methods that will be used to evaluate exposure to surface and subsurface soils for the National Guard Trainee scenario.

13. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The inhalation rate for any of the receptors in the various scenarios that may be exposed to either surface or subsurface soils needs to be clarified/justified. The inhalation rate for all receptors is listed as 20 m^3day^{-1}. This value is acceptable for receptors that spend long periods of time at the site and are involved in light activities. This inhalation rate should not be used for receptors that are expected to be involved in heavy or energetic activities with limited exposure (*i.e.*, short exposure durations). In addition, the inhalation rate for any receptor that is not spending 24 hours per day at a site should be given in units of m^3hour^{-1}. One example of a receptor that is involved in activities that are likely to produce inhalation rates greater than the resting rate include the construction worker scenario recently developed by Ohio EPA-DERR. An inhalation rate of 1.85 $m^3 h^{-1}$ was selected as the default value. The inhalation rate is a weighted average that estimated one-fourth of the time at work is spent doing light activities at an inhalation rate of 1.0 m^3hr^{-1}; one-half of the time at work is spent doing moderate

activities at an inhalation rate of 1.6 m^3hr^{-1}; and one-fourth of the time at work is spent doing strenuous activities at an inhalation rate of 3.2 m^3hr^{-1}. This results in an estimated point value of 1.85m^3 hr^{-1} (0.25(1.0) + 0.5(1.6) + 0.25(3.2) = 1.85).

A similar technique should be used to develop an inhalation rate for the National Guard Trainee and possibly for the Hunter/Trapper whose current default value is 0.83 m^3 h^{-1}.

14. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The soil to skin adherence factor for the Open Recreator and Hunter/Trapper (surface soil) of 0.07 mg cm^{-2} should be changed to something more consistent with the expected exposure at the site. The value was based on an appropriate activity (soccer playing). However, upon evaluation of the literature that was cited for the value, it was identified that two of the three groups of individuals that were playing soccer, from which the value was derived, were doing so on an artificial playing field made from sand and recycled/ground tires. Therefore, the "soil" adherence factor calculated from this study is not representative of actual soil exposure and should not be used. The soil to skin adherence factor of 0.2 mg cm^{-2} that is used for the Child Trespasser, or Open Industrial Worker, would be acceptable, or another value could be proposed. Please make the appropriate changes.

15. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The use of the listed volatilization factor for surface water is not appropriate, and also may not be appropriate for the evaluation of groundwater under the National Guard Trainee scenario. The volatilization factor listed in Table 2 (in all categories) has been cited from U.S. EPA , RAGS, Part B, Development of Risk-based Preliminary Remediation Goals, 1991. This "volatilization" constant (K, from Andelman 1990) is commonly referred to as Andelman's K, and is to be used to assess exposure to VOCs (specifically VOCs with a Henry's Law constant greater than $1x10^{-5}$ atm-m^3 $mole^{-1}$ and a molecular weight of less than 200 g $mole^{-1}$) as the result of indoor/household use of potable water (*e.g.*, showering, laundering, dish washing, etc). During the development of Andelman's K, certain assumption had to be made to derive this volatilization factor that further render this value unsuitable for assessing exposures to unconfined air spaces and surface waters. These assumptions include; the volume of water used in a residence for a family of four (720 L day^{-1}), the volume of air contained within the house (150,000 L), and an air exchange rate (0.25 $m^3hr^{-1)}$. Therefore, the method and cited volatilization

factor is inappropriate for use in estimating exposure to VOC contaminated surface water. The cited volatilization factor given in Table 2 should be corrected and/or replaced with an appropriate method to evaluate exposure to VOCs from contaminated surface waters. The use of Andelman's K for exposure to VOCs from surface
water would only be appropriate for the National Guard Trainee, if the surface water was being used as potable water and exposures within the barracks or housing units were consistent with the modeled exposures used to develop the constant. Please ensure the volatilization constant used in the risk assessment is appropriate and used consistently within the constraints of the model's limitations.

There are methods that would be considered appropriate to estimate the concentration of VOCs in air that moves across a contaminated surface water body. These methods are based on taking the Henry's Law constant of each VOC, and estimating the residence time of an air mass moving over the water body. By using this information, an estimate can be made as to the possible concentration of VOCs in the air mass. Further details can be provided upon request.

In addition to the inappropriate use of the Andelman's K consent to evaluate exposure to VOCs from contaminated surface water, the units given in Table 2 should be changed to better reflect the actual value. Andelman's K (0.0005) is a unitless constant. It is however commonly given with a conversion factor of 1000 Lm^{-3} that is used, so the resulting air concentration is expressed in units of mg m^{-3}. When the use of Andelman's K is appropriate, it should be cited as given in the original paper, or the U.S. EPA, RAGS, Part B, Development of Risk-based Preliminary Remediation Goals, 1991, guidance document, which is 0.0005 x 1000 L m^3.

16. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

No specific equations or algorithms were given in the technical memorandum regarding how the tissue contaminant concentrations were to be calculated. Therefore, some of the parameters are not clear in their use and cannot be verified as being acceptable. These parameters include: conversion factor (ingestion of venison), fat ratio (ingestion of venison), resuspension multiplier (ingestion of beef, pork), resuspension multiplier (ingestion of milk products), and, resuspension multiplier (ingestion of vegetables). Animal and plant tissue contaminant concentrations should be estimated using the same methods that are used to estimate these values for evaluating possible ecological risk. Many of the parameters listed do not appear to be consistent with the ecological risk

assessment methods. In addition, any "site-specific" citations should be given a source (person or department) and a rationale for why and/or how the values were estimated. Please make the appropriate changes to Table 2 and ensure the correct values are used in the subsequent risk assessments.

17. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The browse rate for the white-tailed deer listed in Table 2 is given as a dry weight per day. For convenience, a browse rate factor of 1.74 kg day^{-1} (wet weight) is offered and should be used.

18. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The venison ingestion rate of 0.03 kg day^{-1} given for the Hunter/Trapper and the Resident Farmer is consistent with an estimated intake of one meal per week. This value is acceptable. However, this value would not be consistent for use in the evaluation of a subsistence type exposure. If concerns are raised that a subsistence Hunter/Trapper should be evaluated, then this parameter will have to be increased accordingly. In addition, the value of 0.054 kg day^{-1} given for the "fish ingestion rate" is also considered a recreational exposure. Additional information regarding the type of exposure that is being evaluated (*e.g.*, recreational exposure) should be described in detail in the risk assessments and RI reports.

19. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The value of 0.46 given for the "fraction browse ingested from site" should be recalculated based on the home range (175 ha) of the receptor (white-tailed deer) and the exposure area (area or extent of contamination) of the site. This was agreed upon in the response to comment but not changed in the final version of the technical memorandum. Please correct the value.

20. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

Please provide a copy of the reference cited for "quantity of soil ingested by cow," which was cited as Darwin, 1990.

21. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

The title of section "ingestion of beef, pork," might be changed to reflect that only the cow is being evaluated as an exposure medium.

22. Table 2. Parameters Used to Quantify Exposures for Each Medium and Receptor at LL1 and LL12, RVAAP:

An explanation is required for the values given for the "fraction of cow's food from on-site" in the categories entitled ingestion of beef and pork, and ingestion of milk products, that explains why the values given for them are not consistent for the two evaluations. It would seem logical that the values should be consistent in the absence of justification. Please provide a justification other than "site specific (value assumed for site or value obtained from site personnel)" in the risk assessment report.

Ecological Risk Assessment:

23. Specific information regarding the ecological risk assessment process was not included in the Final Technical Memorandum, Human Health and Ecological Risk Assessment Approach for Load Line 1 and Load Line 12, Ravenna Army Ammunition Plant, Ravenna Ohio. Therefore, no comments are given regarding the specific calculations of proposed risk assessment.

24. Table 4. Policy Goals, Ecological Assessment Endpoints, Measurement Endpoints, and Decision Rules for LL1 and LL12:

The Decision Rule given for Assessment Endpoint # 6 "Maintenance of aquatic organisms, according to Ohio EPA chemical specific criteria or, when appropriate, according to biological criteria as specified by section 3745-01 of the Ohio Administrative Code" should be changed. No discussion of hazard quotient (HQ) values are appropriate when water quality criteria are used. The decision rule should state that surface waters will be in full attainment of the chemical specific and, when appropriate, biological criteria. This decision criteria will be used to determine whether a water body has been adversely impacted by site-related compounds. Please make the changes to the text.

25. Section 3.2.3, Estimating Intakes, Page 20:

The second sentence of the second paragraph on page 20 states: "(a)llometric conversion, using a 0.75 factor, will be done for mammals, but no allometric conversion will be done for birds." Although allometric conversions of toxicity data will not be done for birds, adjustments to toxicity values for birds may need to be made based on the exposure periods (*i.e.*, acute, sub-acute, sub-chronic, and chronic) used in the critical studies and taxonomic relationship (*i.e.*, interspecies adjustments) of the test species to the target receptor. Please ensure that the appropriate adjustments are made to toxicity values for avian receptors.

26. Section 3.3, Effects Assessment, Page 20:

Toxicity reference values (TRVs) are to be based on chronic NOAELs. When chronic NOAEL values are not available for any given receptor, then adjustments are to be made to extrapolate to a chronic NOAEL. See Attachment C of the Draft Level III Ecological Risk Assessment Guidance document for the preferred method of deriving acceptable toxicity criteria for use in ecological risk assessments. This draft guidance document also includes information on the appropriate use and selection of uncertainty factors.

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: Rod Beals, NEDO, DERR
Todd Fisher, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
John Cicero, RVAAP
John Jent, USACE Louisville
Steve Selecman, SAIC
Barney Cornaby, SAIC
Steve Love, NEDO, DERR
Brian Tucker, CO, DERR
Laurie Eggert, OFFO, SWDO
LTC Tom Tadsen, RVAAP
Elizabeth Ferguson, USACE Louisville
Kevin Jago, SAIC

OhioEPA
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 5, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
DRAFT LOAD LINE 12 PHASE II 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) has received the two-volume document entitled: "Phase II Remedial Investigation Report for Load Line 12 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated July 2001 and received at Ohio EPA's Northeast District Office (NEDO) on August 1, 2001, was prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE) - Louisville District under contract number DACA62-00-D-0001.

The comments in this correspondence solely represent the review of risk assessment personnel in Ohio EPA's Office of Federal Facilities Oversight (OFFO) in the Southwest District Office (SWDO). Comments from Ohio EPA, NEDO's Division of Emergency and Remedial Response (DERR) and Division of Drinking and Ground Waters (DDAGW), will be submitted to you under separate cover. As was discussed with USACE-Louisville project managers and risk assessment personnel on October 30, 2001, the current DERR project coordinator is on leave until the middle of December 2001. Upon his return, the rest of Ohio EPA's comments will be submitted. If this delay in the review process raises any issues or concerns, please do not hesitate to contact me.

The following are the comments from OFFO, SWDO:

General Comments

1. All references to the biological field studies conducted at the Winklepeck Burning Grounds should be removed from the draft report or qualified to inform the reader that these values are not currently being considered for use by Ohio EPA.

2. Ohio EPA evaluates risk within the range of 10^{-6} to 10^{-4}, with a point of departure at 10^{-6}. Risk at or greater than 10^{-6} must be presented and discussed in the risk assessment. Chemicals contributing to 10^{-6} risk or greater will be carried forward and evaluated in the feasibility study.

Specific Comments

3. **Executive Summary, Recommendations, Page xxxvii:** The second paragraph under the RECOMMENDATIONS heading suggest that future land uses be decided before the "selection of the path forward for the site." This statement is not clear and suggests that certain decisions be made prior to the initiation of the feasibility study. Information on future land use may be helpful, however, the feasibility study should follow the guidelines set out in: "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA/540/G-89/004). Additional guidance may be used following initial agreement among the risk managers.

4. **Section 1.0, INTRODUCTION:** The last sentence of the first paragraph states in part: "...following workplans reviewed and approved by the Ohio Environmental Protection Agency (Ohio EPA)." This statement is not entirely correct. The workplans were reviewed by Ohio EPA, as were the draft and final "Technical Memorandum, Human Health and Ecological Risk Assessment Approach for the Load Line 1 and 12 Phase II Remedial Investigations, Ravenna Army Ammunition Plant, Ravenna, Ohio, January 2001." These documents contain the human health and ecological risk assessment assumptions and methodologies that were to be used in the completion of the remedial investigations (RI) for Load Lines 1 and 12. The Technical Memorandum (either draft or final) has not been approved by Ohio EPA. Due to concerns found in the technical memorandum and, therefore, in the draft RI report, the human health risk assessment given in the draft phase II RI report for Load Line 12 needs to be revised and recalculated. Comments submitted by Ohio EPA on the "Technical Memorandum, Human Health and Ecological Risk Assessment Approach for the Load Line 1 and 12 Phase II Remedial Investigations, Ravenna Army Ammunition Plant, Ravenna, Ohio," will, in general, not be repeated in these comments. However, these comments do apply and corrections/revisions based on these comments are required before the approval of the risk assessment can be given.

5. **Section 3.1.2.1, Surface Soil and Dry Sediment, Page 3-18:** The first paragraph under this section states: "(c)omposite sampling data are considered acceptable to USEPA for use in risk assessment (USEPA RAGS 1998) where concentrations are expected to vary spatially." The citation is not specific and cannot be verified as written. Please include a complete reference citation.

6. **Section 4.1.1 Site Chemical Background:** Additional information regarding the methods used to determine facility-wide background concentrations should be provided in the RI report. This section only discusses the use of the upper 95 percent tolerance limit and does not mention that background values are to be capped at the maximum detected values.

7. **Section 4.2.4, Inorganic Constituents, Page 4-69:** This section and subsequent sections of the draft RI report discuss the average concentrations of metals on an area-wide basis. Although this information is useful, it is most appropriate to be used in the uncertainty section. Please move the area-wide average discussion to the uncertainty section. In addition, it should be noted in the text that the background procedure does not use the average concentrations but instead uses the maximum concentrations of detected inorganic compounds. At no time for other areas of concern at the Ravenna Army Ammunition Plant (RVAAP) have the average concentrations been used to eliminate a compound from the risk assessment process. This information should be given in the revised RI report. Please make the appropriate corrections.

Human Health Section

8. **Section 6.2.1.1 SRC Screening Process, Page 6-2, Line 21-22:** The first bullet of this section states:"(t)his screen is applied to all organic and inorganic chemicals with the exception of explosives and propellants." This exception should be expanded to include all chemicals expected to be present at the area of concern. Compounds that are detected infrequently and have been identified as being used in the area under investigation should not be eliminated based on a frequency of detection screen. See section 5.9.3, Evaluate Frequency of Detection, in U.S. EPA, Risk Assessment Guidance for Superfund (RAGS), Volume 1, Human Health Evaluation Manual, (Part A), 1989, for specific text regarding anticipated compounds and the retention of these compounds when detected infrequently. The text should be revised to include the appropriate changes.

9. **Section 6.2.1.1 SRC Screening Process, Page 6-3, Line 33-35:** The rationale (what you hope to accomplish) for comparing site specific data to industrial soil preliminary remediation goals (PRGs) should be presented in the report. Why this comparison is being conducted and how it will be used in this assessment should be discussed in the text.

10. **Section 6.2.2.1 COPC Screening Process, Page 6-3, Line 44-45:** During the contaminants of potential concern (COPC) screening process, were detection limits for chemicals flagged as non-detect evaluated against risk based screening values? Please provide discussion in the revised text.

11. **Figure 6-1 Conceptual Exposure Model for Load Line 12, Page 6-8:** The following exposures in the Residential Farmer-Child scenario should be considered complete and, therefore, included in the risk assessment: a) dermal contact and inhalation of volatile organic compounds (VOCs) and dust from surface soils (0-10 feet below

ground surface - bgs) and b) ingestion, dermal contact, and inhalation of VOC's from groundwater. Footnote "a" states in part "...In most cases, since the adult farmer produces larger risks and hazards than the child farmer, the adult is predominately evaluated." By eliminating pathway evaluations, consideration of cumulative exposure via multiple pathways is not quantified and, therefore, not acceptable. Exposure must be evaluated for both the adult and child and cumulative risk to this receptor must be quanitified. Please include all complete exposure pathways evaluations in the risk assessment.

12. **Figure 6-1 Conceptual Exposure Model for Load Line 12, Page 6-8:** Provide an explanation in the respective sections of the report for not including groundwater as a complete pathway in the open recreational and open industrial land use scenarios (i.e., Section 6.3.2.3 open recreational land use and Section 6.3.2.4 open industrial land use).

13. **Figure 6-1 Conceptual Exposure Model for Load Line 12, Page 6-8:** The footnote for this figure must provide a more thorough explanation of the "weighted average of the adult and child parameter values." All complete exposure pathways must be evaluated for both the child and adult receptors. By evaluating pathways using a weighted average approach, consideration of exposure to sensitive receptors is not adequately evaluated and quantified. In addition, cumulative exposure via multiple pathways is not quantified and, therefore, this approach is not acceptable.

14. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** Table 6-2, Surface Soil, lists 1 hour day^{-1} as the exposure time for the Security Guard/Maintenance Worker. This value should be justified or changed to eight (8) hours day^{-1} as this is considered an occupational exposure.

15. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** Values are required for exposure time (ET) in Table 6-2 for the open industrial worker and the resident farmer (child/adult) scenarios, or equation 1 given in section 6.3.3.1 will need to be modified from what is given in the draft report. These changes should also be made to other appropriate sections of Table 6-2 for exposure scenarios that use a 24 hour day^{-1} exposure time. Please make the appropriate changes.

16. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** The citation for the exposure duration (child) value under the child trespasser column (surface soil) appears as a "q". Please ensure that the correct citation is given in Table 6-2.

17. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** The citation for the child body weight under child trespasser (surface soil) is incorrect. Please correct the citation.

18. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** No value was given for skin surface area or soil to skin adherence factor for the resident child receptor. The values used most recently by Ohio EPA include 0.22 m^2 for skin surface area and 0.2 mg cm^{-2} for soil to skin adherence factor. Please include the appropriate values in the table.

19. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** Values for the resident child receptor are required for the exposure duration and averaging times in order to quantitate the exposure via inhalation of dust. Please include this information in Table 2 and ensure that the risk and hazard calculations are completed for all appropriate media and pathways for the child receptor.

20. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** The use and evaluation of multiple exposures should be re-evaluated. It appears that many of the receptors that are exposed to multiple media are being assessed very conservatively. For example, the resident farmer child is evaluated using the assumption that complete exposure pathways exist for surface soil, sub-surface soil, and sediment. The soil ingestion rate for the resident farmer child for all three media is 200 mg day^{-1}, thereby estimating a total soil/sediment intake for the receptor at 600 mg day^{-1}. This evaluation is acceptable as being protective of human health. However, it may not be a realistic evaluation of potential intake and exposure. Additional discussion and evaluation of the input parameters should be considered prior to the completion of the human health risk assessment.

21. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** The exposure frequency for subsurface soil exposure for the National Guard trainee is listed as 28 days $year^{-1}$. This is in contrast to the exposure frequency of 180 days year-1 used for surface soil exposures. Although these values for estimating activities may be appropriate, the use and evaluation of separate surface and subsurface exposures is not clear. The standard practice is to estimate how deeply soils will be disturbed by various activities and then evaluate only one depth or type of soil exposure. For example, it is generally considered that soils for home construction are disturbed to a depth of 10 feet (this is considered the depth to which soils are dug for the installation of a basement). Therefore, residential exposure to soil (note: there is no differentiation between surficial and subsurface soils) is assumed to be from soils from 0-10 feet, and the site is evaluated (sampled) to the appropriate depth.

If the National Guard Trainees are exposed to soils only to a depth of 5 feet due to activities such as digging "fox holes," concealing armor, or other activities that involve digging into soil (this needs to be justified and documented in the risk assessment), then the most appropriate and consistent method of evaluating soil exposure would be to consider one depth of soil exposure from 0-5 feet bgs. If this cannot be justified, then modifications are required to the Technical Memorandum and risk assessment. The same rationale that is used for exposure to soil in the residential scenario (soil brought to the surface and therefore are available for exposure) should be used in all scenarios that may include exposure to subsurface soils. If an argument can be made that National Guard Trainees are only exposed to specific strata of soil and that the sub-surface soils are returned to their original depth/location (*i.e.*, no mixing of soils occurs during the removal and replacement of soils), then separate evaluations for surface and subsurface soils would be appropriate.

It is understood that the majority of the soil contamination has been identified in the surface soil and, therefore, an evaluation of the top one foot would be a conservative and acceptable risk estimation. The addition of text that describes the process and identifies the conservative nature of the evaluation would be helpful. Another option would be to assess one soil depth for the National Guard Trainee scenario. Please correct/clarify the methods that will be used to evaluate exposure to surface and subsurface soils for the National Guard Trainee scenario.

22. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** The inhalation rate for receptors in the various scenarios that may be exposed to either surface or subsurface soil needs to be clarified/justified. The inhalation rate for all receptors is listed as 20 m^3day^{-1}. This value is acceptable for receptors that spend long periods of time at the site and are involved in light activities. This inhalation rate should not be used for receptors that are expected to be involved in heavy or energetic activities with limited exposure (*i.e.*, short exposure durations). In addition, the inhalation rate for any receptor that is not spending 24 hours per day at a site should be given in units of m^3hour^{-1}. One example of a receptor that is involved in activities that are likely to produce inhalation rates greater than resting, include the construction worker scenario recently proposed by Ohio EPA, DERR. An inhalation rate of 1.85 $m^3\ h^{-1}$ was selected as the default value. The inhalation rate is a weighted average that estimated one-fourth of the time at work is spent doing light activities at an inhalation rate of 1.0 m^3hr^{-1}, one-half of the time at work is spent doing moderate activities at an inhalation rate of 1.6 m^3hr^{-1}, and one-fourth of the time at work is spent doing strenuous activities at an inhalation rate of 3.2 m^3hr^{-1}. This results in an estimated point value of 1.85$m^3\ hr^{-1}$ (0.25(1.0) + 0.5(1.6) + 0.25(3.2) = 1.85).

A similar technique could be used to develop an inhalation rate for the National Guard Trainee and possibly for the Hunter/Trapper who's current default value is 0.83 $m^3 h^{-1}$.

23. **Table 6-2, Parameters Used to Quantify Exposures for Each Medium and Receptor at Load Line 12:** The use of the listed volatilization factor for surface water is not appropriate, and also may not be appropriate for the evaluation of groundwater under the National Guard Trainee scenario. The volatilization factor listed in Table 2 (in all categories) has been cited from U.S. EPA , RAGS, Part B, Development of Risk-Based Preliminary Remediation Goals, 1991. This "volatilization" constant (K, from Andelman 1990) is commonly referred to as Andelman's K, and is to be used to assess exposure to VOCs (specifically VOCs with a Henry's Law constant greater than $1x10^{-5}$ atm-m^3 $mole^{-1}$ and a molecular weight of less than 200g $mole^{-1}$) as the result of indoor/household use of potable water (*e.g.*, showering, laundering, dish washing, etc.). During the development of Andelman's K, certain assumptions had to be made to derive this volatilization factor that further render this value unsuitable for assessing exposures to unconfined air spaces and surface waters. These assumptions include: the volume of water used in a residence for a family of four (720 L day^{-1}), the volume of air contained within the house (150,000 L), and an air exchange rate (0.25 $m^3hr^{-1)}$. Therefore, the method and cited volatilization factor is inappropriate to be used in order to estimate exposure to VOC contaminated surface water. The cited volatilization factor given in Table 2 should be corrected and/or replaced with an appropriate method to evaluate exposure to VOCs from contaminated surface waters. The use of Andelman's K for exposure to VOCs from surface water would only be appropriate for the National Guard Trainee, if the surface water was being used as potable water and exposures within the barracks or housing units were consistent with the modeled exposures used to develop the constant. Please ensure the volatilization constant used in the risk assessment is appropriate and used consistently within the constraints of the model's limitations.

There are methods that would be considered appropriate to estimate the concentration of VOCs in air that moves across a contaminated surface water body. These methods are based on taking the Henry's Law constant of each VOC, and estimating the residence time of an air mass moving over the water body. By using this information, an estimate can be made as to the possible concentration of VOCs in the air mass. Further details can be provided upon request.

In addition to the inappropriate use of the Andelman's K consent to evaluate exposure to VOCs from contaminated surface water, the units given in Table 2 should be changed to better reflect the actual value. Andelman's K (0.0005) is a unitless constant. It is however commonly given with a conversion factor of 1000 Lm^{-3} that is used so the resulting air concentration is expressed in units of mgm^{-3}. When the use of Andelman's K is appropriate, it should be cited as given in the original paper or the

U.S. EPA, RAGS, Part B, Development of Risk-Based Preliminary Remediation Goals, 1991, guidance document as 0.0005 x 1000 L m^3.

24. **Section 6.3.3.1 Soils and Sediments Exposure Pathways, Page 6-22:** The variable ABS must be defined more clearly in equation 2. The legend states that this input is a chemical specific absorption factor. It is not clear that default values are presented in parentheses for those chemicals where chemical specific values are not available.

25. **Section 6.3.3.1, Soils and Sediments Exposure Pathways:** Justification and derivation of the value that is presented for the particulate emission factor (PEF) of 9.24×10^8 m^3 kg^{-1} (in equation 3) should be briefly discussed in the document. This value deviates from the default value of 1.32×10^9 m^3 kg^{-1} given in U.S. EPA's Soil Screening Guidance. Please include the source of the value given in the draft report and any information required to reproduce the value.

26. **Section 6.4.5, Chemicals Without EPA Toxicity Values:** Section 6.4.5 needs additional clarification regarding the use of the lead models. The adult lead model should be used for all adult exposures. However, the use of the child IEUBK is warranted for childhood exposures for the residential scenario. Additional discussion is needed regarding the use of the IEUBK model in this section. In addition, a list of the input values should be given, as well as other parameters required to duplicate the calculations for this model.

27. **Section 6.5.2.1, Groundwater**: Risk management decisions should not be made in the risk characterization section. The results of the risk assessment should be presented in this section and all risk management decisions must be reserved for the managers to make. Arsenic should not be eliminated from further consideration on the basis of background risk levels. The text identifies that arsenic background risks are not significantly different than the on-site concentrations. This statement is attempting to make a risk management decision which is not appropriate in the risk assessment report. Please remove the statement and ensure that the potential risks associated with arsenic exposure are fully evaluated in the risk assessment.

    If inorganic compounds exceed background criteria that were developed for the RVAAP, then those compounds are to be carried through the risk assessment process. It is not appropriate to "not evaluate further" any compound that has exceeded its background criteria. Please remove all discussions of background risk of any site-related compound that exceed its background criteria.

28. **Section 6.5.2.2 Surface Water and Sediment, Page 6-36:** Risk management decisions with respect to arsenic should not be presented in the risk assessment. The

results of the risk assessment should be presented for review and consideration by the risk managers. See comment above.

29. **Section 6.5.2.4 Summary of COCs for All Media and Receptors, Page 6-44:** Ohio EPA evaluates risk within the range of 10^{-6} to 10^{-4}, with a point of departure at 10^{-6}. Risk at or greater than 10^{-6} must be presented and discussed in the risk assessment. Chemicals contributing to 10^{-6} risk or greater will be evaluated in the feasibility study.

A table should be included that summarizes and presents total hazards/risks for cumulative exposures to each receptor via multiple pathways.

30. **Section 6.5.3 Remedial Goal Options, Page 6-47**: For contaminants that are suspected or known carcinogens, cleanup levels are governed by the risk range of 10^{-4} to 10^{-6}. The10^{-6} level is used as the point of departure for determining remediation goals for alternatives due to the presence of multiple contaminants at a site or multiple pathways for exposure. Cleanup levels for systemic toxicants must be developed at levels for which no adverse effects occur to health or the environment. The hazard index (HI) of 1 is considered the acceptable level for non-carcinogenic contaminants that is considered protective. Because risk from multiple contaminants is additive, these cleanup levels should apply to the combined level of contamination for multiple contaminants. The final cleanup goal and remedial alternative must be selected based on an evaluation against the nine criteria conducted during the feasibility study. The point of departure for developing remedial goals is 10^{-6} and not 10^{-4}. Remedial goals should be calculated at each target risk level (i.e., 10^{-6}, 10^{-5} and 10^{-4}) within the acceptable risk range to provide risk managers with a range of remedial goals to evaluate during the feasibility study.

31. **Section 6.5.3 Remedial Goal Options:** The tables in this section which present the site-specific RGO's include a column entitled "Total Across All Pathways". The development of the values presented in this column has not been explained in the text or as footnotes. Please explain how the values in this column were derived.

32. **Section 6.5.3, Remedial Goal Options:** Information was not provided as requested that identified RGO values that have been generated for explosives and propellents at other munition or munitions-related sites. Comments made by Ohio EPA on March 30, 2000 regarding draft RGOs stated: "(O)hio 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 site/installations with similar contaminants and operations." RGOs for other sites should be given and evaluated as part of the process to develop or justify remedial cleanup values. Please include this information as requested.

Ecological Risk Section

33. **Section 7.3.3.1, Terrestrial Habitats and Plant Communities:** This section identifies that wetlands are a type of habitat located within the boundaries of Load Line 12. The text describes types or potential wetland habitats and lists acreage associated with each. This equates to approximately 14.5 acres (total) of potential wetlands that should be evaluated and classified. Please include additional information regarding the quantity and quality of the wetlands located within the AOC.

34. **Section 7.3.3.3, Aquatic Habitats:** The small unnamed pond in the "Active Area Aggregate" was not evaluated in the screening ecological risk assessment. In addition, sufficient evidence has not been provided that excludes the evaluation of the pond. Given that a State of Ohio-listed endangered specie has been identified to use other, similar ponds located at the RVAAP, it is appropriate to evaluate the habitat and potential contamination of the pond. Please include this information in the revised RI report or justification for excluding this area.

35. **Section 7.3.3.4, Threatened and Endangered Species:** Section 7.3.3.4 states: "54 state-listed species are confirmed to be on the RVAAP property," this is in addition to state special interest and state declining species. The ecological risk assessment for Load line 12 must include information that identifies if any of the above listed species are located within the boundaries of Load Line 12 or the exposure units. Please list all federal or state listed, threatened, or endangered species and state special interest or declining species located within Load line 12, or potentially impacted by releases of contaminants from Load line 12.

36. **Section 7.3.4, Identification of Preliminary Constituents of Potential Ecological Concern (Preliminary COPECs):**

    A. Ohio EPA should not be cited in the risk assessment report as having "preferences," or formal (*e.g.*, "the Ohio EPA ESVs") screening values. Please remove any reference to Ohio EPA regarding screening values.

    B. This section lists a hierarchy for surface water screening values. It should be noted that surface water values are not screening values, but State water quality standards as given in Chapter 3745-1 of the Ohio Administrative Code (OAC). Other sources of surface water values are not acceptable as water quality standards. The secondary sources of water quality values given in the section are only to be used to determine whether an Ohio water quality standard should be derived by the methods cited in chapter 3745-1 of the OAC to determine compliance of potentially contaminated water bodies. This

information should be given in the report. Please make the appropriate changes in the report and risk assessment.

C. The use of site-specific background screening values was not discussed in this section. Was a site-specific background screen conducted as a step in selecting preliminary constituents of potential ecological concern (COPECs)? Text in section 7.3.6 of this reports states that ".....all constituents detected above background levels...." which implies that a background screening step took place to select preliminary COPECs. Please be advised that the use of a screen based on acceptable background constituents is acceptable in both the human health and ecological risk assessment process.

37. **Section 7.4.2, Quantification of Exposure:** Page 7-31 states: "(t)he constituent-specific values for bioaccumulation for soil-to-plant uptake (Spv and Spr), soil-to-invertebrate uptake (BAFi), and animal tissue-to-mammal tissue uptake (BAFv) are detailed in Appendix T, Tables T-26 and T-27." It is also stated that: "(s)ediment-to-biota and water-to-biota bioconcentration factors (BCFs) are presented in Appendix T, Table T-28." A CD-ROM was included with this report, but did not included the above stated tables. Therefore, the ecological risk calculations could not be verified. Please include an electronic copy of all appropriate information needed to confirm ecological risk calculations.

38. **Section 7.4.2, Quantification of Exposure**: This section cites "Risk Assessment Methodologies for Loring Air Force Base (HAZWRAP 1994)" as the source for most of the input values for the ecological hazard calculations. Please supply Ohio EPA with a copy of the final report for review to ensure that the cited values are current.

39. **Section 7.6.1, Current Preliminary Risk to Ecological Receptors:** Section 7.6.1 identifies contaminants that exceeded a hazard quotient (HQ) of 1. In addition, section 7.6.1 listed compounds that did not exceed an HQ of 1, but because the contaminants were identified as PBTs were, thus, retained. The primary reason to identify PBT compounds is to ensure that these contaminants are not inappropriately eliminated during the screening step of the ecological risk assessment. Many of the values used in the toxicity-based screening do not model trophic transfer of contaminants. Following the screening step, PBT compounds may be eliminated if appropriate food-web models are used to estimate exposure to higher trophic levels organisms, which are the receptors of most concern when these compounds are present at a site. Please ensure that the PBTs were appropriately retained or eliminated in section 7.6.1.

40. **Section 7.8, SUMMARY OF THE SCREENING OR PRELIMINARY ECOLOGICAL RISK ASSESSMENT**: The last paragraph in this section discusses the regulatory exit

strategy for a baseline risk assessment. The paragraph discusses two options: 1) re-calculation of site risks based on more site-specific exposure parameters, and 2) use of RVAAP-specific biological measurements. Potential remedial or risk management options are often cost effective and may potentially be completed in less time than completing a baseline ecological risk assessment. Risk management or remedial options should be considered and discussed in this section.

41. **Section 8.3, SUMMARY OF THE BASELINE HUMAN HEALTH RISK ASSESSMENT:** The point of departure for evaluating cancer risks is 1E-6. Excess lifetime cancer risks which fall below the point of departure of 1E-6 may be eliminated from further concern. The use of the excess lifetime cancer risk level of 1E-4 should not be used as a criteria of concern. Please remove any reference to an excess lifetime cancer risk 1E-4 as a criteria for concern in this section.

42. **Section 9.0, RECOMMENDATIONS**: Please include information in the reference section regarding the U.S. EPA document (EPA 1993d) that is cited in the first paragraph of this section. This information was not included in Section 10, References.

If you have any questions concerning this correspondence, or regarding the anticipated schedule for the receipt of additional comments, 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: Todd Fisher, Ohio EPA, NEDO, DERR
Bonnie Buthker, Ohio EPA, OFFO, SWDO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Glen Beckham, USACE - Louisville
David Brancato, USACE Louisvillle
David Seely, U,S, EPA Region V
Bob Whelove, OSC
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
John Jent, USACE-Louisville
Steve Selecman, SAIC
Kevin Jago, SAIC

ec: Mike Eberle, Ohio EPA, NEDO, DERR

OhioEPA
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 13, 2001

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

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: "Draft-Final Completion Report for the Bioremediation Pilot Study for Soils from Former Building FJ 904 at Load Line 12 (AOC 12)." The document, dated May 2001 and received at Ohio EPA, NEDO, on May 29, 2001, was prepared by MKM Engineers, Inc. for the Operations Support Command (OSC), Rock Island, IL.

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

General Comment:

1. It is requested that replacement pages for the two volume workplan (dated March 2000) that were revised in accordance with the response to comment (RTC) document, dated May 09, 2000, be submitted to the Agency. The replacement pages will be inserted into the March 2000 document, and the workplan will be considered final.

Specific Comments:

1. In section 1.1 (page pg. 1), please confirm whether or not the U.S. Environmental Protection Agency (U.S. EPA) established requirements for the bioremediation pilot project. If not, the reference to U.S. EPA should be removed from the text of the report.

2. In section 1.2 (page 1), please revise the text to read as follows: "In addition, RVAAP also had several areas used for burning, demolition and testing of munitions, buildings/areas designated for cleanup and decontamination activities for production equipment, landfills and dump sites."

3. In section 1.2 (page 1), in addition to the Preliminary Assessment (PA), please add the appropriate references for the two U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) Relative Risk Site Evaluations (RRSE) which were conducted at the Ravenna Army Ammunition Plant (RVAAP).

4. In section 1.4 (page 2), please correct the spelling of "fuze."

5. In section 1.4 (page 3), the text in the first paragraph indicates that the effluent contained "TNT, HMX, Composition B, Ammatol, lead, chromium, mercury, and other explosives." Please provide additional information as to the source of the effluent characteristics. In addition, please confirm that the only detected metals were lead, chromium, and mercury.

6. In the second paragraph of section 1.4 (page 3), the text indicates the presence of two explosives compounds in sediment samples obtained from Cobbs Pond. In the revised text of the report, please indicate from what historical record source(s) the data were obtained.

7. The text in section 2.1 (page 4) indicates the following: "It is during the process of degradation of organic matter that explosives or any other contaminants of concern that may be present in the mixture are also degraded." Please confirm the accuracy of this statement, especially with respect to the other constituents of concern (COCs) that may be present in several media at the RVAAP facility (for example: propellants; metals; PCBs; semi-volatile organic compounds - SVOCs; volatile organic compounds - VOCs; and pesticides) and adjust the text accordingly.

8. The text in section 3.1 (page 5) reads as follows: "The primary objective of the SI was to further define the concentrations of the COPCs previously identified in the soil immediately under and around the former Building FJ-904." Given the relatively limited number of samples obtained for laboratory analysis, this objective has not been achieved. More accurately, the primary objective of the SI was to determine potential areas contaminated with explosives compounds for use in the pilot bioremediation project. (Also applicable to section 4.3 on page 13 and section 5.2 on page 24).

9. At an appropriate point in section 4.0, which describes the bioremediation field activities, please add two figures to the revised report which details the grid sampling locations and the areas of excavation.

10. In section 4.1.1 (page 8), please revise the text in two places to read as follows: "Floor sweepings were retained for potential future use...." and "Wash fluids and decontamination fluids.... were containerized (based on laboratory analytical results)

for potential future use...." These revisions are especially pertinent, given that neither the floor sweepings nor the wash fluids were utilized in the pilot project.

11. The text in section 4.2.1.1 (page 10) indicates that the organic amendments were analyzed individually prior to the start up of the pilot project. This statement does not agree with the text on pages 18 and 22 (sections 4.4.1.2 and 4.4.2.5 respectively) or the analytical results reported later in the report which would tend to suggest that the amendments, while analyzed separately from the contaminated soil, were analyzed as a composite sample. Please adjust the text, or the analytical results charts, such that there is agreement between the sources of information.

12. In section 4.2.1.1 (page 10), the text indicates that compost units 14 and 15 represent recipes devoid of any potatoes. In cross-referencing Table 4-1, it appears that recipes 19 and 20 were also devoid of potatoes. Please adjust the text accordingly. (Also applicable to section 5.1 on page 24)

13. In section 4.2.1.1 (page 11), the text states in the second paragraph that "...given that all ingredients were contaminated natural materials..." Should "contaminated" actually read "uncontaminated?"

14. In section 4.3.1.1 (page 14), please add additional text to the report which indicates why it was necessary to utilize soils with concentrations greater than the Region 9 Industrial Preliminary Remediation goals (PRGs). (Also applicable to section 5.2 on page 25)

15. In the revised report, please add a reference to the analytical results from materials obtained from the sedimentation tanks at Load Line 1 (section 4.3.1.1 on page 14) and add the analytical results to the appropriate appendix.

16. Section 4.3.1.2 (page 14) indicates that "certain soil samples" were selected for submission to the field laboratory for analysis of TNT and RDX. Please provide additional text in the revised report which describes the basis on which it was decided which samples were analyzed in the field laboratory. Also, please cross-reference and revise section 4.3.1.3 (page 15), which indicates that all 111 soil samples were analyzed in the field laboratory.

17. The text in section 4.3.1.2.3 (page 16) indicates that no soil samples were submitted to an off-site laboratory for further chemical analyses. This contradicts the first bullet on page 14, which indicates that a composite sample for a full suite of analyses was submitted to the laboratory. Please adjust the text in section 4.3.1.2.3.

18. In section 4.3.1.2.5 (page 16), please specify that one duplicate sample was collected as part of the pilot project and that it was a duplicate of a sample collected from the windrow on Day 28. (Also applicable to sections 4.4.1.5 on page 19 and 4.4.2.7 on page 22)

19. Please revise the text in section 4.4 (page 17) to read: "The final concentration of total explosives in the soil with the amendments added was 256 ppm, with 91.5 ppm TNT and 85.5 ppm RDX."

20. The text in section 4.4.1.2 (page 18) indicates that the contaminated soil windrow was field monitored for temperature twice per day and that ammonia, methane, hydrogen sulfide, oxygen and carbon monoxide were measured three times per day. In cross-referencing the field logs in Appendix E, this goal was apparently not achieved. Please adjust the text in section 4.4.1.2 to be less definitive. Specific comments on Appendix E can also be found in this correspondence. (This comment is also applicable to section 4.4.2.3 on page 21 and section 5.3.1 on page 25)

21. Please add additional text to the revised report in section 4.4.1.2 (page 18) that describes how the windrow was sampled and the sample location and depth.

22. The text in section 4.4.1.3 (page 19) indicates that soil samples obtained from the windrow could not be subjected to the field (Jenkins) analyses, due to the interference from humic substances present in the chicken manure. Subsequent to the completion of the pilot project, a method that would overcome the stated interference was obtained from Dr. Jenkins. Three issues:

    a. Were the obtained samples from the windrow still within the appropriate holding time? And, if so, were the analyses conducted? (This comment is also applicable to section 4.4.2.3 on page 21.)

    b. This is a substantial departure from the workplans which were in place for this pilot study. There is no record of technical change (ROTC) in Appendix B which documents that the Agency was made aware of, or approved, this departure from the workplans. Please provide additional details regarding this departure from the workplan and what impact, if any, this has on the results of the pilot project. (This comment is also applicable to section 4.4.2.3 on page 21)

    c. The field data was to be used to supplement the limited laboratory analytical data. What is the confidence that can be placed in the relatively low number of laboratory samples obtained to determine the effectiveness of the bioremediation process?

23. In section 4.4.2.5 (page 22), please provide additional information in the revised text as to the depth of the soil samples which were obtained from the plane oriented vertically along the central axis of the windrow.

24. The text in section 4.4.2.5 (page 22) indicates that all soil samples were analyzed for the full suite of laboratory analyses presented in section 4.4.1.2. However, this is only correct for the samples obtained from the windrow on days 0 and 28 (not including the duplicate); as the sample on day 16 was analyzed solely for explosives and target analyte list (TAL) metals . Please revise the text accordingly.

25. On Table 4-1, please ensure that the chart corresponds to the text which details which recipes contain potatoes. (Refer to comment # 12 above.) In addition, in the footnote section, there is the indication that any cell in the chart with a "**" footnote would contain two numbers (i.e., one for chicken manure and one for cow manure). As this is not the case, either adjust the footnote or the entries in the applicable cells.

26. In section 5.2 on page 25, please provide additional information regarding the following: whether or not the excavation conducted in 1999 was part of the MKM demolition project; the volume of soil excavated and incineration location; and source of the backfill material.

27. In the revised text (after section 5.3.4), please provide an additional section which details the effect of the bioremediation process on other COCs which have been identified at the RVAAP installation.

28. Please revise the text in section 5.4 (page 26) to read as follows: "Reduction in windrow volume is a major outcome..." (This clarification is requested because there is actually an increase in volume from the original soil volume due to the addition of amendments). In addition, please provide an estimate as to the volume of bioremediated material for which disposition currently needs to be determined.

29. In the Bioremediation Pilot Study Air Monitoring Report:

    a. Please revise the text to indicate that the pilot project was a 28-day cycle and not 31 days. This correction should be made in at least two separate sections of the air monitoring report.

    b. Reference previous comments in this correspondence regarding the number of field measurements made each day and adjust the text accordingly.

    c. The text references a Table 1 which was not included in the report. Please provide this table in the revised report.

30. With respect to Table 5-1, why weren't propellants analyzed for in the Day 16 sample?

31. On Table 5-2 (these comments are also applicable to the chart in Appendix F):

    a. Please clarify that the background criteria listed in this table are specific to RVAAP. In addition, please specify whether the concentrations represent surface or sub-surface background concentrations.

    b. Please revise the background criteria column to indicate that background for explosives, propellants, VOCs, SVOCs, pesticides and PCBs is zero, not "NA" as the table indicates.

    c. Please provide an explanation for the higher concentrations of explosives and propellants in the sample obtained on Day 0 from the windrow with the amendments vs. the windrow without the amendments. Was the windrow adequately homogenized?

    d. Please provide an explanation for why 2-Amino-4,6-Dinitrotoluene and 4-Amino-2,6-Dinitrotoluene were not among the analytes tested on day 28.

    e. Provide an explanation for why 1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene were not reported.

    f. Provide an explanation for the elevated detection limits for SVOC analyses on Day 0 (with amendments).

    g. Please provide an explanation for the lack of a full suite of analyses for the Day 28 sample.

32. In section 6.1 (page 27), please provide additional text in the revised report which discusses the types of results that might be expected if initially higher levels of explosives concentrations were found in the on-site soils and bioremediated in this manner. Would the same efficiency/effectiveness be achieved?

33. In section 6.1 (page 27), please provide additional discussion in the text that substantiates the assertion that a maximum of 300 cubic yards of contaminated soils could be treated in a 7 - 10 day time frame. (Also applicable to section 6.3 on page 28)

34. In section 6.2 (page 28), Ohio EPA concurs that a better strategy would be to conduct sampling on days 1, 5, 10, 15 and 28. This would ensure that, if the temperature and

moisture content are kept within the optimal ranges, the optimal composting time frame could be more precisely determined.

35. If readily available, in section 6.4 (page 30), please compare the bioremediation costs on a per cubic yard basis with other options such as off-site disposal, incineration, etc.

36. Appendix C: Please provide an explanation for why coolers 19 and 20 (variations of the Crane IN recipe) were not started in the bench scale process at the same time as the variations on the Weston recipe.

37. Appendix D: Please provide the details on who logged and reviewed the Jenkins field screening collection forms.

38. Appendix E: On many of the daily field measurement logs, the following is noted (may not be all inclusive): there is no log for Day 1; there is no indication as to who prepared the logs and who conducted the actual field measurements and who reviewed the logs (all); there is missing temperature data for various sample locations (day 2); there are missing temperature measurement times based upon a 2x/day schedule (days 4, 5, 11, 18, 19, 25, 26); on some of the days where two sets of temperature data were obtained, not all sampling times were listed; several days are missing afternoon NH_3, CO, H_2S and oxygen readings (days 4, 5, 11, 12, 14, 18, 19, 25 and 26). Please revise the logs to add in the missing information.

39. Appendix F:

    a. Please provide confirmation that the data in this appendix went through the verification process. Was any of the data validated by an independent third party?

    b. On the summary of results in the beginning of this appendix, please provide the corresponding sample numbers on the table for ease of correlation with the analytical data sheets.

    c. On the sample receipt checklist (for samples received on 08/04/00), please provide an explanation for the elevated cooler temperature.

    d. On the 09/08/00 explosives case narrative, please provide an explanation for the tetryl recoveries which were not within control limits.

    e. Please provide an explanation for the case narrative from STL Sacramento (project number G0I050214), which indicates that the initial shipment of

samples was received on 09/05/00 at eighteen degrees Celsius and that replacement samples were received on 09/07/00 at two degrees Celsius.

f. Please provide an explanation for why two different laboratories (i.e., GPL and STL) were utilized for analyses.

g. Please provide an explanation for the poor surrogate recoveries for 2,4 - Dinitrofluorobenzene and 3,4 - Dinitrotoluene (client lot # G0I050214).

40. Appendix G: In future investigations, please ensure that the proper protocol for making changes to a document are followed (i.e., one line strike-out with initials) and that all field forms should be completely filled out. The latter part of this comment is also applicable to Appendix J.

41. Appendix J: Has the modified Jenkins methodology (to reduce humic acid interferences) been utilized and, if so, what were the results? In addition, this appendix contains a daily report log for Day 0 which does not appear in volume 1. Please correct the discrepancy. Also the following reports are missing: daily reports for days 27 and 28 and the final weekly report. Please provide these in the revised document.

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: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Jarnal Singh, Ohio EPA, NEDO, DSIWM
Brian Tucker, Ohio EPA, CO, DERR
Angel Arroyo-Rodriguez, Ohio EPA, CO, DSIWM
Bob Whelove, OSC
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
John Jent, USACE - Louisville
Srini Neralla, MKM - Sacramento

Science Applications International Corporation
An Employee-Owned Company

23 February 2001

Mr. Gregory Orr
Ohio Environmental Protection Agency
Northeast District Office
Division of Hazardous Waste Management
2110 E. Aurora Road
Twinsburg, OH 44087

Reference: **Final Closure Plan for the Deactivation Furnace Area Hazardous Waste Treatment Unit at the Ravenna Army Ammunition Plant, Ravenna, Ohio**

Subject: **Final Plan Submittal**

Dear Mr. Orr:

Enclosed for distribution are three copies of the Final Closure Plan for the Deactivation Furnace Area Hazardous Waste Treatment Unit at the Ravenna Army Ammunition Plant. Two of these copies are for your records, and one is for Ms. Eileen Mohr. This deliverable is being submitted in accordance with Task 16 (Deactivation Furnace Closure Plan Revision) of the Ramsdell Quarry Groundwater Investigation task order performed by SAIC for the U.S. Army Corps of Engineers (USACE) Louisville District. Copies of the document are being distributed concurrently to those named below.

If you have any questions, please call me at 918-625-7614, or Steve Selecman at 865-481-8761.

Sincerely,
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Kathryn L. Dominic
Environmental Projects Manager

Enclosure

Cc: Mark Patterson – RVAAP (2 copies)
Eileen Mohr - Ohio EPA
Walter Perro – USACE (2 copies)
David Sennett - USACE
LTC Tom Tadsen - OHARNG
Bill Ingold - U. S. Army OSC
Bob Whelove – U. S. Army OSC
Karl Van Keuren - IT Corp.
Ernie Neal – Neal Environmental Services
Kathy Dominic - SAIC
Project File
SAIC CRF

Cc w/o enclosure: Ike Diggs - SAIC

OhioEPA
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 20, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
AOC RVAAP-23

Colonel Bill Radford
Ohio Army National Guard
Facilities Management Officer
2825 West Dublin-Granville Rd.
Columbus, OH 43255-2789

Dear Colonel Radford:

The March 2000 Installation Action Plan (IAP) for the Ravenna Army Ammunition Plant (RVAAP) outlines the multi-year restoration program for the installation. This plan defines Installation Restoration Program (IRP) requirements and proposes an approach and associated costs necessary to conduct future remedial actions at each identified Area of Concern (AOC) on the installation.

The March 2000 IAP references AOC RVAAP-23, which is the Unit Training Equipment Site (UTES) Underground Storage Tank (UST). The text for this AOC indicates that this UST, which was utilized to store waste oil, had a preliminary assessment (PA)/site investigation (SI) conducted and that the tank and any associated contaminated soils were removed in 1989.

I would appreciate it if you would send me copies of the above-referenced PA/SI and the closure reports/documents for the waste oil tank. This information will greatly aid the RVAAP environmental restoration team in evaluating whether or not this AOC can be removed from the DSERTS database.

Thank you in advance for your assistance. If you have any questions concerning this request, please do not hesitate to contact me at 330-963-1221.

Sincerely,

Eileen T. Mohr

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

ETM/kss

cc: Rod Beals, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Mark Patterson, RVAAP

OhioEPA
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 28, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
COBBS POND PHASE II RI

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:

A. "Draft Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29), Ravenna Army Ammunition Plant;"

B. "Draft Workplan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29), Ravenna Army Ammunition Plant;" and,

C. "Draft Site-Specific Safety and Health Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29), Ravenna Army Ammunition Plant."

The documents, dated May 2001 and received at Ohio EPA, NEDO, on June 1, 2001, were prepared by MKM Engineers, Inc. for the U.S. Army Operations Support Command (OSC), AMSIO-ACE-D, Procurement Directorate in Rock Island, IL.

This correspondence represents a compilation of comments from Ohio EPA, NEDO, DERR, and Ohio EPA, NEDO, Division of Drinking and Groundwater (DDAGW), personnel and follows the format of the documents. If a comment is applicable to one or more of the documents, the comment will also reference the additional document(s) under the Sampling and Analysis Plan section as follows: Sampling and Analysis Plan (SAP); Quality Assurance Project Plan (QAPP); Health and Safety Plan (HASP); and, Workplan (WP), along with the corresponding page number of the comment. Comments that are specific to one particular portion of the three-volume workplan will not be included under the SAP comments.

The Agency has the following comments on the documents:

General Comments:

1. It is incumbent upon the contractor to adhere to the procedures and standard operating procedures (SOPs) that are detailed in the facility-wide documents (2001). The site-specific workplans tier under the facility-wide workplans, and one cannot be implemented without the other.

2. For future projects, please provide Ohio EPA with a draft copy of the Scope of Work (SOW) that is submitted to the OSC. The ability of the involved agencies (Ohio EPA, United States Army Corps of Engineers - USACE) to review and comment upon the SOW prior to workplan development allows the team members to provide critical input into the number and types of samples in each environmental medium, sampling depths, etc. This "up-front" involvement generally makes the workplan development and review process proceed much more efficiently. Review of the draft SOW is a key part of the process, which also includes the scoping meetings, site walk-overs, etc.

3. Grid sampling should be added to the draft workplans in order to more clearly delineate the extent of contamination at the Cobbs Pond Area of Concern (AOC). This is an integral part of Remedial Investigations (RIs) conducted at the Ravenna Army Ammunition Plant (RVAAP), which was unfortunately over-looked during the scoping meeting.

4. During a telephone conversation with MKM personnel on June 20, 2001, the Agency advised the contractor not to proceed with field work at the Central Burn Pits (CBP) until all outstanding comments on the workplan are resolved. This would include resolving comments/issues presented by the USACE. This position is also applicable to the Cobbs Pond RI. If work proceeds prior to comment resolution, the contractor is proceeding at his own risk, and the Agency may require that additional work be conducted.

Sampling and Analysis Plan (SAP):

5. As a separate appendix to the SAP, please add the summary of the data and text narrative from the Phase I RI report.

6. Please revise the list of attendees and the date of the Cobbs Pond scoping meeting. Personnel from MKM and Ohio EPA attended the meeting that was held on April 3, 2001. (Page 1-1)

7. At some point in the text (perhaps page 1-6, bullet # 2), please add text to the SAP that indicates that the methodologies, assumptions (etc.) employed for conducting risk assessments will be consistent with the methodologies (etc.) utilized at other Areas of Concern (AOCs). (Also - WP page 8-2 Section 8.4, which may or may not be consistent with the 01/20/00 meeting.)

8. One of the main activities referenced as part of this Phase II RI is to conduct a risk assessment. Although no text change is required, please be aware that if we are unable to determine the vertical and horizontal extent of contamination at this AOC (i.e., in the sediment and soil samples), that it may have an impact upon the planned risk assessment. (Also - SAP page 3-1, SAP page 3-4, SAP page 3-5, WP page 2-5 Sections 2.1.5 and 2.2)

9. Please provide clarification as to whether or not any soil samples will be collected for Jenkins analyses of explosives. If Jenkins samples are planned, please insert this information into the appropriate section of the text (perhaps as an additional bullet in Section 3.1) and add the agreed upon methodology as a separate appendix to the SAP. If no Jenkins samples are planned, no text changes are required. (Also - WP page 2-1 Section 2.0 or 2.1)

10. Please revise the text on page 3-1 (Section 3.1.2) to read: "These monitoring wells will be installed to assess the groundwater quality associated with potential sources of contamination and to establish *upgradient* water quality conditions *at this AOC.*" Installation-wide background monitoring wells have already been established at the RVAAP. Monitoring wells that are established at various AOCs (whether located in source areas or in upgradient positions) will be evaluated in light of the installation-wide background. (Also - SAP page 3-4, SAP page 4-3, SAP page 4-4, WP page 2-4, HASP page 2-5 Section 2.1.3)

11. See comments detailed below under the Draft Workplan Comments regarding drilling and soil/bedrock sampling. Sections 3.1.1 and 3.1.2 of the SAP should be modified accordingly. It should be noted that the descriptive, lithologic logging of the boreholes from drill cuttings is unacceptable.

12. Please revise the text on page 3-3 (Section 3.1.3) to indicate that filtered groundwater samples will be obtained for target analyte list (TAL) metals analyses. (Also - SAP page 3-4, WP page 2-4, WP page 2-5 Section 2.2, HASP page 2-6 Section 2.1.4)

13. At what depth interval will the surface water samples be obtained? Are they planned for near the surface water/sediment interface? (Page 3-3)

14. During a conversation between MKM and Ohio EPA personnel on June 12, 2001, the depths at which the sediment samples would be obtained was discussed. It was agreed that deeper samples would be more representative of the historical operations of the installation and the time frame for when Load Lines 3 and 12 effluent would have discharged to Cobbs Pond. As such, samples will be obtained from a coring device to its effective range of approximately two feet below the surface water/sediment interface. Please confirm with the ecological risk assessors that these samples would also be applicable and usable for determining potential impact upon aquatic species during the subsequent ecological risk assessment. (Page 3-3 Section 3.1.5, WP page 2-5 Section 2.1.6)

15. Please confirm that contingency samples have been scoped into this field initiative, and add the text to the appropriate sections of the text (for example, create an additional subsection numbered 3.1.7). This comment is made especially in light of the lack of subsurface soil samples and lack of deeper coring samples from the sediments in Upper and Lower Cobbs Pond. The ability to scope in and utilize contingency samples allows both the Agency and the contractor to make field decisions, in order to more completely determine the nature and extent (horizontal and vertical) of contamination,

thus, fulfilling a major goal of the RI and precluding the need for another field effort. (Also - SAP page 3-4, SAP page 4-1, QAPP Table 1-1 page 1-2, WP page 2-1 Section 2.1)

16. Please provide additional clarification in the text (Section 3.1.6) on page 3-3, as how the four soil samples were selected for semi-volatile organic (SVOC) analyses. (Also - SAP Table 4-1 page 4-2, SAP page 4-3, WP page 2-5 Section 2.1.5)

17. In Section 3.2, please add an additional bullet that indicates that 10% of the soil samples for each medium will be analyzed for the RVAAP full-suite of constituents, i.e., volatile organic compounds (VOCs), SVOCs, TAL metals, explosives, propellants, pesticides/PCBS, and cyanide. (Also - WP page 2-5 Section 2.2, HASP Surface Water Section 2.1.5 on page 2-6.)

18. The text on page 3-5 (Section 3-4) indicates that subsurface soil samples will be obtained. Please correct the discrepancy between this portion of the text and other parts of the SAP. This would be an area where planned contingency samples could be utilized to collect subsurface soil samples.

    Or please confirm/clarify that the term "shallow" is being utilized in such a manner that it is inclusive of surface (0-1') and sub-surface (1-3', 3-5' etc.) intervals.

19. Please confirm that the text on page 3-6 (Section 3.11) is correct, which indicates that the field data will also undergo the data verification and validation processes.

20. Adjust the text in Section 4.1 (page 4-1) to indicate that the shallow/surface soil samples are obtained from a 0 - 1 foot interval. (Unless the second portion of comment # 13 is the correct interpretation of "shallow.")

21. In Table 4-1 (page 4-2), please adjust the surface water section to indicate that unfiltered samples will be obtained for TAL metals analyses. (Also SAP page 4-6)

22. The parameters for which ground water will be analyzed are listed in Section 4.4. These parameters should be listed in the order in which the sample aliquots will be collected (i.e., most volatile first).

23. Section 4.4.1 should be modified to indicate that ground water sampling will be conducted in accordance with Sections 4.3.4 through 4.3.8 of the FSP.

24. The third bullet in Section 4.4.2 of the SAP should be modified in accordance with Sections 4.3.4.1 and 4.3.4.2 of the FSP concerning the use of indicator parameters and total well volumes removed to determine when a well is sufficiently purged.

25. Provide additional details in the SAP (Section 4.5 page 4-6) as to the surface water sampling methodology(ies) that will most likely be employed.

26. Provide additional details in the SAP (Section 4.6 page 4-7) as to the sediment sampling methodology(ies) that will most likely be employed.

27. Section 4.9 (page 4-8) regarding waste disposal characterization needs to be re-written to be more reflective of the investigation-derived waste (IDW) sampling strategy. For example, the following segregation and sampling scheme is generally followed: one sample from water utilized to decon large equipment (surfactants but no added organics); one sample from the decon fluids that most likely contain organic compounds; one sample from the monitoring well development and purge water (one poly tank assumed to contain all the fluids from the six monitoring wells); samples from the segregated cuttings (saturated v. unsaturated) from the monitoring wells and and soil samples; and a composite from the residual sediments. In many cases, the correlative environmental samples have been utilized to characterize the samples. It is incumbent upon the facility and contractor to test in accordance with the accepting disposal facility's requirements and to dispose of all IDW in accordance with all applicable State, Federal and local rules, laws, and regulations. (Also - SAP Section 7.0 page 7-1, WP page 6-1 Section 6.0)

Quality Assurance Project Plan (QAPP):

28. Please confirm that trip blanks are required for the soil and sediment VOC samples. (QAPP page 1-2)

Workplan (WP):

29. It should be noted that although Ohio EPA may agree at this time with the proposed locations and numbers of monitoring wells, this does not preclude the need for additional wells in additional locations at this AOC in the future. For example, as additional soil samples are collected and analyzed, additional sources of contamination may be identified. This may warrant the installation and sampling of additional ground water monitoring wells at this AOC. In addition, if ground water contamination is detected during the initial sampling and analysis activities, additional wells may be needed to define the full rate and extent of contamination.

30. In Sections 2.1.1 and 2.1.2, it states that the proposed soil borings will be advanced to a "depth of 40 feet below ground surface (bgs) or until ground water is encountered, which ever comes first." Because it also is proposed that a monitoring well will be installed in each soil boring, this workplan should document what contingency plans are in place for the proposed well if a depth of 40 feet is attained and ground water has not been encountered. (Also - SAP Section 4.2)

31. In order to evaluate the proposed drilling and well construction information, the expected site conditions (e.g., depth to bedrock and ground water; contaminants and concentrations), with references to the data supporting these expectations, should be documented in Section 2.1.1.

32. In Section 2.1.1, the rationales for the proposed locations of the monitoring wells are documented. It is unclear why three of the six proposed wells are upgradient of the ponds. This should be clarified in this section. The rationales (e.g., areas of high concentrations of soil contamination, expected areas of high soil contamination, etc.) for the proposed locations of the other three wells also should be documented in this section. It is recommended that the majority of the six wells be located in areas of known or suspected contamination. (Also - SAP Section 4.2)

33. In Section 2.1.1, it states that the boreholes will be advanced using hollow stem augers. This workplan should document what drilling method(s) will be used if bedrock is encountered prior to attaining a depth of 40 feet and before ground water is encountered. The expected drilling scenario, as per the approved Facility-wide Sampling and Analysis Plan (FSP), also should be documented.

34. The method of obtaining soil and, if necessary, bedrock samples should be documented in Section 2.1.1 of this workplan.

35. In Sections 2.1.2 and 2.1.3 it states that drilling, construction, and surface completion details as well as development and sampling and analysis procedures are included in the SAP. It is unclear which SAP is being referenced, i.e., the approved Facility-wide Sampling and Analysis Plan (FSP) or the AOC- specific sampling and analysis plan. This should be clarified. If the specifications for these procedures differ from those already approved in the FSP, the facility should document why variations from the approved protocol are being proposed.

36. Please revise the text on page 2-6 (Section 2.2) that indicates that all shallow soil samples will be analyzed for SVOCS, as this directly contradicts the SAP.

37. In the comment resolution document, please confirm that small sampling equipment (for example, bowls, spoons, hand augers, etc.) will not be decontaminated at the pad utilized for drill rigs, rods, etc.). The point of this clarification is to ensure that the organic and acid rinses that are required for the smaller sampling equipment will not be co-mingled with and potentially contaminate large volumes of decon water. (WP page 3-3 Section 3.3.5)

38. It should state in Section 3.4, that monitoring wells will be surveyed in accordance with the FSP.

39. What materials as part of this project are anticipated to be deemed clean hard fill (CHF)? If there are no materials that will potentially be CHF, please remove this sentence from the text found in Section 4.6 (page 4-2).

40. In Section 4.8 (page 4-2), please cross-reference the document cited in Section 4.18.

41. Please remove the reference to the U.S. EPA document regarding the management of IDW. (WP page 6-1 Section 6.0 and WP page 9-1 Section 9.0)

42. In Section 7.0 (page 7-1), please revise the text to indicate that chemicals of potential concern (COPCs) are determined (in part) by comparing the contamination concentrations to the installation-wide background and the Region 9 Preliminary Remediation Goals X 0.1.

Health and Safety Plan:

Although the Agency does not have regulatory authority over HASPs, the following comments are offered for your consideration:

43. In Section 1.0 (page 1-1), please add additional text to the HASP that indicates that neither the facility-wide HASP nor the AOC-specific HASP can be implemented without the other, i.e., the AOC-specific addendum tiers under the facility-wide document.

44. On Table 5.1 (page 5-2), please be advised that the list of PCOCs is probably not all inclusive. This is true due to many factors including: the limited sampling conducted at Upper and Lower Cobbs Pond during the Phase 1 RI; the lack of TAL metals analyses at most Phase 1 Sampling locations, and the lack of propellant analyses during the Phase 1 initiative. (Also - HASP Table 5.2, HASP Table 9-1)

45. In Section 6.1 (page 6-1), please separate out the routes of exposure from the recognition of signs and symptoms, thus, making it a different item.

46. Please clarify that any accidents/incidents will be reported to the MKM RVAAP Site Safety Manager within eight hours. This notification time frame seems too long. (HASP page 6-3 Section 6.10.2)

47. Please ensure that cited sections exist. For example Section 6.12.9 (page 6-6) cross-references Section 6.11.2, which does not exist in this HASP.

48. Section 7.4.2 (page 7-4) references several qualitative fit testing techniques. Please confirm that MKM employees and sub-contractors are also quantitatively fit tested.

49. Please provide additional details on how a containment system consisting of straw bales will be capable of collecting and holding spills. Will poly liners of a specified thickness also be used? (HASP page 10-1 Section 10.1.2)

50. What bulk materials are anticipated to be staged? All IDW should be properly containerized. It is incumbent upon the installation and the contractor to not create a situation in which a RCRA closure may need to be undertaken. (HASP page 10-1 Section 10.1.2)

51. Remove the statement from the text that indicates that drill cuttings and soils from excavations will be stockpiled on-site pending final site remediation. The IDW from the Cobbs Pond investigative activities must be containerized. (HASP page 10-2 Section 10.2)

52. In Section 11.2 (page 11-1), please clarify the statement that indicates that high pressure washes may be used instead of solvent and acid rinses. This is solely for larger equipment, such as drill rigs and rods (etc.) and is not applicable to smaller non-dedicated sampling equipment. Adjust the text accordingly.

53. Please ensure that key telephone contact numbers and the route to the hospital are posted in conspicuous places prior to the commencement of the RI activities. (HASP page 12-1)

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: Rod Beals, NEDO, DERR
Steve Love, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Diane Kurlich, NEDO, DDAGW
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Bob Whelove, OSC
Rick Callahan, MKM
Brian Stockwell, MKM
Stan Levenger, MKM

OhioEPA
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 12, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
COBBS POND PHASE II REVISED 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:

A. "Final Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29), Ravenna Army Ammunition Plant;"

B. "Final Work Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29), Ravenna Army Ammunition Plant;" and

C. "Final Site-Specific Safety and Health Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29), Ravenna Army Ammunition Plant."

The documents, dated July 2001 and received at Ohio EPA, NEDO, DERR, on July 11, 2001, were prepared by MKM Engineers, Inc. for the U.S. Army Operations Support Command (OSC), AMSIO-ACE-D, Procurement Directorate in Rock Island, IL.

The final document was reviewed compared to the draft document (dated May 2001), the comment resolution matrix, dated June 27, 2001, and the comment resolution conference call held on the same date.

The following items are noted in the revised document:

1. With respect to the workplan, please note that there is a contradiction between the text in Section 3.1.4 (page 3-3) and in Section 4.6 (page 4-7) regarding the depth of the surface water sampling. Section 4.6 is the section that is to be followed during field activities.

2. With respect to the section describing investigation-derived wastes (IDW), please ensure that Section 7.0 (pages7-1 to 7-2) of the sampling and analysis plan is followed, rather than Section 6.0 (pages 6-1 to 6-2) of the workplan. In future documents, please ensure that sections from one volume to another are consistent.

3. In the future, please ensure that the reference to the USEPA IDW document (workplan Section 9.0) is removed.

4. In the health and safety plan (Section 2.1.5 on page 2-6), please note that the location of one of the proposed surface water samples is not referenced. As such, either the workplan or the sampling and analysis plan should be utilized.

No text changes are being requested to the final Cobbs Pond documents. As such, work may commence as planned on July 13, 2001 or July 16, 2001.

If you have any questions, please do not hesitate to contact me at 330-963-1221 or Todd Fisher (330-963-1148) during my absence from the office.

Sincerely,

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

ETM/kss

cc: Todd Fisher, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Diane Kurlich, NEDO, DDAGW
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Bob Whelove, OSC
Rick Callahan, MKM
Brian Stockwell, MKM
Stan Levenger, MKM

ec: Mike Eberle, NEDO, DERR

Date: Thu, 01 Mar 2001 22:24:53 -0500

To: mkmcercla@yahoo.com

From: Eileen Mohr <emohr@sssnet.com> | Block address | Add to Address Book

Subject: SOWs for Paris Windham and Sand Creek Removals

CC: eileen.mohr@epa.state.oh.us.rod.beals@epa.state.oh.us.todd.fisher@epa.state.oh.us.bonnie.bu

Hi Brian

I just finished reviewing the scopes of work (SOWs) for the Paris-Windham Road Dump and the Sand Creek Disposal Road Landfill that we received today. I'm sorry that I won't be able to participate in the comment resolution meeting on March 2, 2001, but please feel free to give me a call as you are talking with Todd if you have any questions on these comments. You did a really good job of capturing the numbers of samples etc. that we discussed during the 01/29/01 scoping meeting.

I have a few comments on the documents. Most are applicable to both Paris Windham (PW) and Sand Creek (SC). I will note which comment goes with which (or both) and note the applicable page number (if available).

1. The SOW should indicate which version of the facility wide HASP is being referenced. We just got finished with comment resolution on the 2000 version during a 2/12/01 meeting, so we should probably reference that version and indicate that the final facility wide document is in press. (SC pg 5; PW pg 5)

2. Same comment as number 1 above but with respect to the facility-wide SAP. (SC pg 6, PW pg 6)

3. Change IOC to OSC. (SC pg 7, PW pg 7)

4. I think using geophysics after the removal is complete is a good idea, but as it would only help with metallic objects I would also recommend the following: have the on-site geologist make notations/confirm that the debris is removed and it looks like we are down to an area that is

relatively undisturbed (if possible). (SC pg 11, PW pg 10)

5. The specs that Tim Morgan has drafted up regarding grass seed mixtures for site restoration should be referenced in the SOWs. (SC pg 11, PW pg 11)

6. "Full suite" analyses should be biased towards what we suspect to be the worst case areas based upon field screening (ex PID) and visual observation. This is especially true if drums are encountered at the Sand Creek site. (SC pg 12, PW pg 12)

7. Remove the reference to IDW in the sediment section (SC pg 13, PW pg 13). Create a separate section for IDW issues alone as it is a stand alone task.

8. Scope in some contingency samples as was discussed during the scoping meeting. (SC pg 17, PW pg 17)

9. At some place in the text for the Paris Windham project, reference the age of the dredged sediments in order to support why these dredge piles are not being sampled (ie they pre-date the disposal timeframe based upon aerials).

10. Sand Creek - for this AOC to have been ranked high as a result of the RRSE, there has to be some data somewhere. Please clarify this seeming contradiction on page 3.

11. Sand Creek - on page 10 there is the indication that a roadway will be constructed in order to conduct the proposed work. How close will the road come to Sand Creek? The concern is that constituents from the ballast/slag could leach into Sand Creek which would not be acceptable. Also why will the road be permanent? Please clarify these issues.

12. Sand Creek - small scrap will be salvaged/sold if possible. Also does the concrete have paint on it and do we need to start looking at potential issues related to PCBs and whether or not we will be able to continue to handle the painted concrete as before? (SC pg 11)

13. Both SC and PW.... please add in dissolved oxygen as a field parameter for all surface water sample locations as we discussed during the scoping meetings.

Again, good job Brian in capturing the scoping meetings. Thanks. Call if you have questions.

OhioEPA
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, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PARIS-WINDHAM ROAD DUMP
SAND CREEK DISPOSAL ROAD LANDFILL
DRAFT DECISION DOCUMENTS

Mr. Mark Patterson
Environmental Project 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 draft "Decision Documents" for the Paris Windham Road Dump (PW) and the Sand Creek Disposal Road Landfill (SC). These documents were received from you, via email on March 28, 2001, and written on behalf of the Ravenna Army Ammunition Plant (RVAAP).

The issues and comments relayed in this correspondence not only refer specifically to the PW and SC documents, but also to the use of the term "decision documents" in general throughout the cleanup process at RVAAP.

General Comments:

1. The "decision document" terminology in these submissions (as well as any other documents) must be used consistently with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.

   The CERCLA process is described, in general, as follows:

   Pre-Remedial Process: Activities include the preliminary identification of site hazards, and evaluation of the need for action under the Superfund remedial program.

   Remedial Investigation/Feasibility Study (RI/FS): Activities include gathering information sufficient to support an informed risk management decision regarding which remedy appears to be the most appropriate for a given site.

   Remedy Selection Process: This stage involves an initial identification of a Preferred Alternative based upon the preliminary balancing of tradeoffs among alternatives utilizing the nine (9) criteria.

   Proposed Plan: This stage of the process involves the presentation of the preferred alternative.

   Public Comment: A minimum 30-day public comment period is held on the Proposed Plan, RI/FS, and other comments of the Administrative Record file.

Remedy Selection: In this part of the process, a final determination is made on the remedy.

Record of Decision (ROD): This phase certifies that the remedy complies with CERCLA, outlines the technical goals of the remedy, provides additional background information on the site, summarizes the analysis of alternatives, and explains the rationale for the remedy selected.

Remedy Implementation: This phase consists of designing and constructing the remedy utilizing information contained in the ROD and other relevant documents. An Explanation of Significant Differences (ESDs) or ROD Amendments are written, if appropriate.

Long-Term Remedy Maintenance: This phase consists of operating and maintaining the remedy and ensuring protectiveness through 5-year reviews.

2. Given comment # 1 above, the term "decision document" needs to be removed from the submitted PW and SC documents and should be replaced with terminology such as "removal action." This terminology would be more consistent with the CERCLA process, as "removal action" does not imply that the CERCLA process has been strictly followed up to this point in time, or that (potentially) additional work would not be conducted. In addition to changing the terminology in these documents, I would strongly recommend that this overall terminology issue be discussed and agreed-upon during our scheduled September 2001 Installation Action Plan (IAP) meeting, as this will not be a one-time issue.

3. The Agency also recommends that (after review of both the PW and SC workplans are completed, reviewed and any comments resolved) that the proposed work continue to proceed on the scheduled time frames. It is my understanding that the PW documents have been reviewed by Mr. Todd Fisher (Ohio EPA, NEDO, DERR), comments were transmitted to the contractor and subsequently resolved, and that the documents are undergoing revision. Also, it is my understanding that the SC documents are currently being reviewed by Mr. Fisher, and it is my expectation that the comment resolution process and re-issuance of the SC documents will run as smoothly as the PW process. It is the Agency's position that the work that is proposed for these projects is valuable and beneficial to the environmental cleanup process at the RVAAP.

Specific Comments to the PW and SC Removal Action Documents (applicable to both areas of concern - AOCs) - not all inclusive:

1. In applicable sections, replace the term "remedial action" with "removal action."

2. Cost should only be one factor in determining the actions taken at an AOC.

3. Cross-reference both workplans to more accurately characterize the work at each AOC. For example, there is the potential that more than the surface will be subject to the removal action; i.e., if contamination is detected at a 1' level, additional 1' lifts of soil/debris will be excavated. Surface water will also be sampled as part of these efforts. In addition to

confirmation soil samples, both areas will have limited geophysical survey conducted and any metallic anomalies will be flagged.

4. Any references to groundwater and natural attenuation should be removed.

5. As a point of information (section 3.0, last paragraph) in both documents, please be advised that the actions proposed in both workplans may or may not result in the final AOC cleanup. (This comment is also applicable to the "declaration section.")

6. At this point in time, there is no guarantee that the proposed actions will result in an AOC that "... will allow for unlimited use and unrestricted exposure..."

7. Please provide confirmation that the Commanding Officers Representative (COR) is the appropriate level for sign-off on the removal document.

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: Rod Beals, NEDO, DERR
Todd Fisher, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Bob Whelove, OSC
John Cicero, RVAAP
Rick Callahan, MKM, RVAAP

OhioEPA
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 19, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
WORK PLANS FOR SAND CREEK
DISPOSAL ROAD LANDFILL

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 Work Plan for the RD/RA at the Sand Creek Disposal Road Landfill; Draft Site-Specific Safety and Health Plan for the RD/RA at the Sand Creek Disposal Road Landfill; and Draft Sampling and Analysis Plan Addendum for the RD/RA at the Sand Creek Disposal Road Landfill." These three documents are dated March 2001, and were received by Ohio EPA, NEDO, on March 20, 2001, and were prepared by MKM Engineers, Inc. for the US Army Operations Support Command (OSC) under contract number DAAA 09-98-G-0001.

Ohio EPA, NEDO, DERR, has generated the following comments on the above-referenced documents.

Ohio EPA Comments on the Draft Work Plan for the Remedial Design / Removal Action at the Sand Creek Disposal Road Landfill (AOC 51):

Comment # 1: As mentioned in Section 3.3.2 Erosion Control, all erosion and sedimentation control measures shall be planned and executed in accordance with "Ohio's Standards for Stormwater Management, Land Development, and Urban Stream Protection Document, Second Edition (Ohio EPA, ODNR, USDA, 1996)." If you have questions or concerns regarding erosion control, please call Dan Bogoevski, in our Division of Surface Water (DSW), at (330) 963-1145. Ohio EPA, DERR, has consulted with Mr. Bogoevski prior to review and comment on these documents.

Comment # 2: There is no mention in the report regarding dissolved oxygen monitoring in the creek. Please add this reference to the text in the appropriate section(s).

Comment # 3: Section 3.4, page 3-5, title - "Loctions" should be changed to "Locations."

Comment # 4: Section 4.13, page 4-3 - In the paragraph, please remove the word "oxides" after the word "sulfur."

Comment # 5: Section 4.18, Erosion and Sedimentation Control, page 4-4, sentence - The wrong section is referenced in this sentence. Please change the text to read, "Section 3.3.2 of this document."

Ohio EPA Comments on the Draft Sampling and Analysis Plan Addendum for the Remedial Design / Removal Action at the Sand Creek Disposal Road Landfill (AOC 51):

Comment # 6: QAPP, Section 1.2, page 1-1 - Please add a reference to Section 1.4 in the text.

Comment # 7: Page 1-6, bulleted items - Please remove Data Validation bullet, since it is not a type of debris material identified.

Comment # 8: Section 4.1, Shallow Soil Sampling, Page 4-1 - The sentence "the depth interval over which soils will be collected using this method will be limited to a depth of 5.0 feet bgs (if needed)" is confusing. Please clarify in this sentence that 5.0 feet is a limitation of the sampling device, and not the maximum depth at which a sample will be collected.

Ohio EPA Comments on the Draft Site-Specific Safety and Health Plan for the Remedial Design / Removal Action at the Sand Creek Disposal Road Landfill (AOC 51):

Comment # 9: Figure 2-1 (or a similar Figure numbered 4-1) should precede immediately after Page 4-1.

Comment # 10: Section 5.2 Physical Hazards, page 5-3 - In the bulleted list, please include slope stability/failure.

If you have any questions concerning these comments, 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

TRF/kss

cc: Rod Beals, NEDO, DERR
Eileen Mohr, NEDO, DERR
Dan Bogoevski, NEDO, DSW
Brian Stockwell, MKM, RVAAP
John Cicero, RVAAP
Bonnie Buthker, OFFO, SWDO
LTC Tom Tadsen, RVAAP
Rick Callahan, MKM, RVAAP

OhioEPA
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

May 2, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
WORK PLANS FOR SAND CREEK DISPOSAL
LANDFILL RESPONSE TO COMMENTS

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 MKM Engineers, Inc. response to comments for the: "Draft Work Plan for the RD/RA at the Sand Creek Disposal Landfill; Draft Site-Specific Safety and Health Plan for the RD/RA at the Sand Creek Disposal Landfill; and Draft Sampling and Analysis Plan Addendum for the RD/RA at the Sand Creek Disposal Landfill." The contractor comment response matrix is dated May 1, 2001, and was received by Ohio EPA, NEDO, via e-mail.

Ohio EPA finds these responses acceptable and recommends that all agreed changes be incorporated into the final report.

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

TRF/kss

cc: Rod Beals, NEDO, DERR
Eileen Mohr, NEDO, DERR
Dan Bogoevski, NEDO, DSW
Brian Stockwell, MKM, RVAAP
John Cicero, RVAAP
Bonnie Buthker, OFFO, SWDO
LTC Tom Tadsen, RVAAP
Rick Callahan, MKM, RVAAP
John Jent, USACE, Louisville

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Wednesday, June 27, 2001 7:44 AM
To: Whelove, Robert W
Cc: Bonnie Buthker; Rod Beals; PattersonM@ioc.army.mil
Subject: Sand Creek and Paris Windham Dump Sites

Bob

This is the email that I referenced in my voice mail message to you this morning.

I was speaking with Mark last night before the RAB meeting, and he mentioned the phone conversations that you and he had had regarding the above-referenced sites, specifically whether they should be RCRA-regulated and how the RRSE applies to sites, etc.

Here is the State's opinion on the issues that were raised:

1. Both Sand Creek and Paris Windham are CERCLA AOCs.

Given the age of these two sites, they are not RCRA-eligible. Even if they were (which they aren't)... going into the RCRA program would not either reduce the amount of time or efforts expended nor would it lessen any proposed clean-up levels. The only thing it would accomplish is shifting the needed funding from the IRP side of OSC to the other side of the Army house. We will get a faster clean-up under the CERCLA program.

2. The RRSE is not a risk assessment.

Under the DSMOA, the State accepts the RRSE as a tool to be utilized solely for prioritizing sites for work. Ohio has never accepted, and will not accept the RRSE as being equivalent to conducting a risk assessment. Among other issues, the sampling in a RRSE is too minimal in terms of numbers and oftentimes analytes of interest to be used for risk purposes. A risk assessment is performed after the nature and extent of contamination has been determined at a site. Clearly, a RRSE package which may have only 2 or 3 samples in various media at a site is not acceptable for risk purposes.

3. As with the work that was conducted at Building T-5301, after the removal actions are completed at these AOCs, confirmation sampling will be conducted. The confirmation data will used to determine if any further action is needed at the 2 AOCs. Again, we (the RVAAP team) will objectively analyze the data to see if further work is needed, if no further action is required, or if any additional action could be tied into installation-wide initiatives (for example, a sitewide surface water initiative). This is the same process used at T5301, another CERCLA AOC.

I have to frankly say that I am disappointed that these two projects have languished. After the State received the workplans, I had Todd review them on an expedited basis, so that work could commence on March 1 and April 1 respectively. These projects should have been completed by now.

I am in meetings the next two days and will not be available via phone. Feel free to contact me on Friday if you want to discuss this issue... but I will be honest with you up-front and state that our position on the RRSE and the applicable regulatory program will not change.

Thanks Bob.

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

OhioEPA
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 22, 2001

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

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response, has reviewed the document entitled: "Draft Final, Phase I Remedial Investigation Report for the NACA Test Area at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio." The document, dated June 2001 and received at Ohio EPA, NEDO, on June 5, 2001, 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 No. 0077.

The NACA Phase I Draft Final RI report is a revised report and includes all revisions to the text which were recommended during the comment resolution meeting held at RVAAP on February 14, 2001. Ohio EPA has reviewed the final document and it appears that all Agency recommendations have been adequately addressed and the appropriate changes have been made to this report.

If you have any questions regarding this letter, 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

TRF/kss

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

OhioEPA
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 18, 2001

RE: LOAD LINE 11 IRA TECHNICAL SCOPE CHANGE, RAVENNA ARMY AMMUNITION PLANT, PORTAGE COUNTY

Mr. Stan Levenger
Project Manager
MKM Engineers, Inc.
Ravenna Army Ammunition Plant
Building 1038
8451 State Route 5
Ravenna, OH 44266

Dear Mr. Levenger:

Ohio EPA, Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has reviewed the Load Line 11 Interim Removal Action (IRA) Technical Scope Change (TSC), dated January 9, 2001, and received by NEDO/DERR on January 10, 2001. The following comments were generated from the review:

Comment # 1: SUMP AND SEWER WATER HANDLING/DISPOSAL, 1st bullet, page 3 - Before the sumps are removed, the water pooling at the ground surface around AP-5 and AP-6 should be redirected to the adjacent drainage way prior to excavating, in order to minimize surface water from entering the excavation. This can be accomplished by using a small width trenching tool, or similar device. This method was discussed during a site visit to LL-11 on January 12, 2001 with MKM, their contractor Graham Excavation, and Ohio EPA.

Comment # 2: SUMP AND SEWER WATER HANDLING/DISPOSAL, 2nd bullet, page 3 - The location of the discharge point for the sump and sewer water was selected by MKM and Ohio EPA during the LL–11 site visit, on January 12, 2001. At no time should this water be permitted to channel and/or enter a surface water body. Discharge rates should be kept at a minimum. Any accidental release to a surface water body must be reported immediately to Ohio EPA.

Comment # 3: SUMP AND SEWER EXCAVATION/REMOVAL, 1st bullet, page 4 - The text indicates that the sewer lines will be cut at the sumps then plugged by mechanical packers and cement

grout. This is acceptable to Ohio EPA, however, any Pb lines left in the ground and connected to the buildings will need to be addressed during building demolition.

Ohio EPA believes, based on these technical scope changes, that IRA work can commence as scheduled on January 22, 2001.

If you have any questions regarding these comments, please do not hesitate to call me at (330) 963-1148.

Sincerely,

Todd R. Fisher
Project Coordinator
Division of Emergency and Remedial Response

TRF/kss

cc: Eileen Mohr, NEDO, DERR
Bonnie Buthker, SWDO, OFFO
Bob Princic, NEDO, DERR
John Cicero, RVAAP
Mark Patterson, RVAAP
John Jent, USACE, Louisville District
Francis Zigmund, USACE, Kansas City District
LTC Tom Tadsen, RVAAP, Ohio Army National Guard, RTLS

MKM Engineers, Inc.

Safe, Quality Work Perfomed With Pride

February 07, 2001

- *Facility Management*
- *Turnkey Environmental*
- *Unexploded Ordnance*
- *Radiological Services*

Ms. Eileen Mohr
Project Coordinator
DERR, NEDO
2110 East Aurora Road
Twinsburg, OH 44087

Subject: Technical Memorandum–Sediment/Organic Debris from Building T-5301.

Dear Ms. Mohr:

The following presents a summary of our telephone meeting of February 02, 2001 to discuss the fate of the sediment/organic debris from the two sedimentation tanks at Building T-5301. Building T-5301 and the adjoining structures such as the sedimentation tanks were demolished and the soil underneath excavated as part of the Interim Removal Action (IRA). The sediment/organic debris was sampled and sent for a laboratory analysis to determine the proper disposal route for the waste stream.

Enclosed please find the laboratory results for sediment/organic debris sample. Results indicate that the waste stream has residual amounts of explosives (17.9 ppm total explosives), 1270 ppm of Nitrocellulose, 2.3 ppm of Nitroguanidine. The only other contaminant in the waste stream was Arochlor 1260 (0.33 ppm). The two routes for disposal of this waste stream would be either Bioremediation by Windrow Composting or Incineration. Based on results from the Bioremediation pilot study, the best available option would be to bioremediate the sediment/organic debris along with the soil from OD-1 that requires bioremediation. Post-bioremediation confirmatory samples will determine the final disposition of the bioremediated soils.

We would appreciate your help in reviewing the proposed plan to remediate the sediment/organic debris and would be happy to incorporate any changes or suggestions you may have. If the Ohio EPA concurs with this plan, an addendum will be included in the work plan being prepared for Bioremediation of OD-1 Soils, specifying the inclusion of the sediment/organic debris from Building T-5301 in the compost pile. Should you have any questions please call me at 281-277-5100 or 281-703-1582 or Rick Callahan at 330-358-1716.

Thank You,

Sincerely,

Srini Neralla, Ph.D.
Project Manager

CC: Mark Patterson, Environmental Coordinator, RVAAP/OSC
Rick Callahan, Program Manager, MKM

4153 Bluebonnet Dr. Stafford, Texas 77477 Phone: 281.277.5100 Fax: 281.277.5205 e-mail: mkm@mkmeng.com

TABLE 2.0
BUILDING T-5301 - RVAAP
SUMP CONTENTS SAMPLE RESULTS
MARCH 2000 IRA

ANALYTE**, UNITS, METHOD NO.	Regulatory Limit mg/L	5301ss-sump(wc)-0001
Sample Date		5/4/00
Explosives 8330 mg/kg		
HMX	--	2.0
RDX	--	10
1,3,5-Trinitrotoluene	--	BQL
1,3-Dinitrtoluene	--	BQL
Nitrobenzene	--	BQL
2,4,6-TNT	--	1.1
Tetryl	--	BQL
2-Amino-4,6-dinitrotoluene	--	2.6
2,6-Dinitrotoluene	--	BQL
2,4-Dinitrotoluene	--	BQL
4-Amino-2,6-dinitrotoluene	--	1.2
2-Nitrotoluene	--	BQL
4-Nitrotoluene	--	1.0
3-Nitrtoluene	--	BQL
TCLP Metals mg/L		
Silver	5.0	BQL
Arsenic	5.0	BQL
Barium	100.0	0.824
Cadmium	1.0	BQL
Chromium	5.0	BQL
Mercury	0.2	BQL
Lead	5.0	0.120
Selenium	1.0	BQL
Propellants 8330 mg/kg		
Nitroglycerin	--	BQL
Nitroguanidine	--	2.30
Nitrocellulose	--	1270
BTEX 8260B mg/kg		
Benzene	--	BQL
Ethylbenzene	--	BQL
Toluene	--	BQL
Xylene	--	BQL

-- = Data not available
mg/kg = milligrams per kilogram (parts per million - ppm)
mg/L = milligrams per liter (parts per million - ppm in water)
BQL = Below Quantitation Limit

PCBs = Aroclor 1260 = .33 ppm

Settling Basin Contents

GP Work Order # 0005060

SAMPLE ANALYSIS REPORT

Prepared For:

MKM ENGINEERS
8451 STATE RT 5
RAVENNA, OH 44266

BLDG T5301

Prepared By:

GPL Laboratories, LLLP
202 Perry Parkway
Gaithersburg, MD 20877

June 7, 2000

for Yemane Yohannes, Laboratory Director

Project: BLDG T5301

GPL LABORATORIES, LLLP
ORGANIC ANALYSIS RESULTS

GP ID: 0005060-01A
Client ID: 5301-SLMP(WC)-0001
Collected: 05/04/00
Dilution: 1

Matrix: SOLID
Method: SW-846 8330
Units: ug/KG

Analyst: SS
Analyzed: 05/21/00
Prepared: 05/12/00

LIQUID CHROMATOGRAPHY TARGET COMPOUNDS

Parameter	Result	Rep.Lim.	Qualifier
1,3,5-Trinitrobenzene	BQL	250	
1,3-Dinitrobenzene	BQL	250	
2,4,6-Trinitrotoluene	1100	250	D
2,4-Dinitrotoluene	BQL	250	
2,6-Dinitrotoluene	BQL	250	
2-Amino-4,6-dinitrotoluene	2600	250	D
2-Nitrotoluene	BQL	500	
3-Nitrotoluene	BQL	500	
4-Amino-2,6-dinitrotoluene	1200	250	D
4-Nitrotoluene	1000	500	
HMX	2000	500	D
Nitrobenzene	BQL	250	
RDX	10000	500	D
Tetryl	BQL	500	

Project: BLDG 5301

GPL LABORATORIES, LLLP
METALS ANALYSIS RESULTS

GP ID: 000506C-01
Client ID: 5301-SUMP(WC)-0001

Matrix: SOLID
Collected: 05/04/00

Parameter	Method	Result	Rep.Lim.	Units	Di..	Prepared	Analyzed	By
TCLP Silver	SW846 6010T	BQL	30.0	UG/L	1	05/10/00	05/11/00	SL
TCLP Arsenic	SW846 6010T	BQL	50.0	UG/L	1	05/10/00	05/11/00	SL
TCLP Barium	SW846 6010T	824	50.0	UG/L	1	05/10/00	05/11/00	SL
TCLP Cadmium	SW846 6010T	BQL	30.0	UG/L	1	05/10/00	05/11/00	SL
TCLP Chromium	SW846 6010T	BQL	50.0	UG/L	1	05/10/00	05/11/00	SL
TCLP Mercury	SW846 7470T	BQL	2.0	UG/L	1	06/01/00	06/02/00	LCM
TCLP Lead	SW846 6010T	120	30.0	UG/L	1	05/10/00	05/11/00	SL
TCLP Selenium	SW846 6010T	BQL	50.0	UG/L	1	05/10/00	05/11/00	SL

Project: BLDG T5301

GPL LABORATORIES, LLLP
WET CHEMISTRY ANALYSIS RESULTS

GP ID: 0005060-01
Client ID: 5301-SUMP(WC)-0001

Matrix: SOLID
Collected: 05/04/00

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitrocellulose	IAAP	1270	120	mg/Kg	1	05/17/00	06/01/00 DCB
Percent Solids	CLP / D2216	27.9		%			05/12/00 MH

Project: BLDG 75301

GPL LABORATORIES, LLLP
ORGANIC ANALYSIS RESULTS

GP ID: 0005060-01
Client ID: 5301-SUMP(WC)-0001

Matrix: SOLID
Collected: 05/04/00

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitroguanidine	HPLC	2300	120	ug/kg	1	05/12/00	05/24/00 MW

-oject: BLDG 15301

GPL LABORATORIES, LLLP
ORGANIC ANALYSIS RESULTS

GP ID: C005060-01
Client ID: 5301-SUMP(WC)-0001

Matrix: SOLID
Collected: 05/04/00

Parameter	Method	Result		Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitroglycerin	SW-846 8332		BQL	17000	ug/Kg	1	05/12/00	05/19/00 DH

To: MKM-Ravenna AAP
8451 State Rt. 5
Bldg. 1038
Ravenna, OH 44266

Attn: Mr. Stan Levenger

Date: Monday December 18th, 2000

RE: 5301SS-SUMP(WC)
Project # 00000-000-000-0000
Lab ID: 9A12G042-001
Sample Date: 12/04/00
Date Received: 12/05/00
Units: UG/KG

PCBs by GC

Compound	Result	Reporting Limit	Flag
Aroclor-1016	BRL	51	U
Aroclor-1221	BRL	51	U
Aroclor-1232	BRL	51	U
Aroclor-1242	BRL	51	U
Aroclor-1248	BRL	51	U
Aroclor-1254	BRL	51	U
Aroclor-1260	330	51	

Project: BLDG T5301

GPL LABORATORIES, LLLP
ORGANIC ANALYSIS RESULTS

GP ID: 0005060-01C
Client ID: 5301-SLMP(WC)-0001
Collected: 05/04/00
Dilution: 1

Matrix: SOLID
Method: 8260B
Units: ug/Kg

Analyst: AK
Analyzed: 05/19/00
Prepared:

VOLATILE TARGET COMPOUNDS

Parameter	Result	Rep.Lim.	Qualifier
Benzene	BQL	18	
Ethylbenzene	BQL	18	
Toluene	BQL	18	
Xylenes	BQL	18	

OhioEPA
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 27, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
CENTRAL BURN PITS, WORK PLANS

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:

1. "Draft Sampling and Analysis Plan Addendum for the Remedial Investigation at Central Burn Pits (AOC 49), Ravenna Army Ammunition Plant;"

2. "Draft Workplan for the Remedial Investigation at Central Burn Pits (AOC 49), Ravenna Army Ammunition Plant;" and

3. "Draft Site-Specific Safety and Health Plan for the Remedial Investigation at Central Burn Pits (AOC 49), Ravenna Army Ammunition Plant."

The documents, dated May 2001 and received at Ohio EPA, NEDO, on May 31, 2001, were prepared by MKM Engineers, Inc. for the U.S. Army Operations Support Command (OSC), AMSIO-ACE-D, Procurement Directorate in Rock Island, IL.

This correspondence represents a compilation of comments from Ohio EPA, NEDO, DERR, and Ohio EPA, NEDO, Division of Drinking and Groundwater (DDAGW) personnel, and follows the format of the documents. If a comment is applicable to one or more of the documents, the comment will also reference the additional document(s) under the Sampling and Analysis Plan (SAP); Quality Assurance Project Plan (QAPP); Health and Safety Plan (HASP); and Workplan (WP), along with the corresponding page number of the comment. Comments that are specific to one particular portion of the three-volume set will not be included under the SAP comments.

The Agency has the following comments on the documents:

General Comments:

1. It is incumbent upon the contractor to adhere to the procedures and standard operating procedures (SOPs) that are detailed in the facility-wide documents (2001). The site-specific workplans tier under the facility-wide workplans, and one cannot be implemented without the other.

2. For future projects, please provide Ohio EPA with a draft copy of the Scope of Work (SOW) that is submitted to the OSC. The ability of the involved agencies (Ohio EPA, United States Army Corps of Engineers - USACE) to review and comment upon the SOW prior to workplan development allows the team members to provide critical input into the number and types of samples in each environmental medium, sampling depths, etc. This "up-front" involvement generally makes the workplan development and review process proceed much more efficiently. Review of the draft SOW is a key part of the process, which also includes the scoping meetings, site walk-overs, etc.

3. Grid sampling should be added to the draft workplans, in order to more clearly delineate the extent of contamination at the Central Burn Pits Area of Concern (AOC). This is an integral part of Remedial Investigations (RIs) conducted at the Ravenna Army Ammunition Plant (RVAAP), which was unfortunately over-looked during the scoping meeting.

4. During a telephone conversation with MKM personnel on June 20, 2001, the Agency advised the contractor not to proceed with field work at the Central Burn Pits (CBP) until all outstanding comments on the workplan are resolved. This would include resolving comments/issues presented by the USACE. If work proceeds prior to comment resolution, the contractor is proceeding at his own risk, and the Agency may require that additional work be conducted.

Sampling and Analysis Plan

5. Figures should be labeled in a manner that is clearly visible. Currently, figure number is located in small box below the title. The figure number should be large, and listed first before the title, and in a caption below the figure, i.e., Figure 2 - INSTALLATION MAP. Please update all the figures.

6. At some point in the text (perhaps page 1-6, bullet # 2), please add text to the SAP that indicated that the methodologies, assumptions (etc.) employed for conducting risk assessments will be consistent with the methodologies (etc.) utilized at other AOCs.

7. Page 1-6, Section 1.3 Background, 2nd bullet item - Although no text change is required, please be aware that if we are unable to determine vertical and horizontal extent of contamination at this AOC, that it may have an impact upon the planned risk assessment.

8. Please provide clarification as to whether or not any soil samples will be collected for Jenkins analyses of explosives. If Jenkins samples are planned, please insert this information into the appropriate sections of text (perhaps as an additional bullet in Section 3.1) and add the agreed upon methodology as a separate appendix to the SAP. If no Jenkins samples are anticipated, no text changes are required (see also - WP page 2-1 Sections 2.0 or 2.1).

9. Figure 5 - Since these plans are public documents and are made available for review and copy, different geometric symbols should be used, in conjunction with color, to define sample locations. Please add geometric symbols to both the legend and figure, to indicate type of sample media at each location.

10. Figure 5 - The figure shows 35 shallow sample locations while the text indicates there are 34. Please make the appropriate changes.

11. Figure 5 - Contour levels and Sand Creek flow direction should be labeled on the figure. At a minimum, a contour interval should be listed in the legends of Figures 3 and 5.

12. Page 3-1, Section 3.1.1 Soil Boring Sampling and Analysis, 3rd paragraph - Please add semi-volatile organic compounds (SVOCs) to the analyses of each boring sample.

13. Page 3-3, Section 3.1.2 Monitor Well Installation and Well Development - Please revise the text to read, "These monitoring wells will be installed to assess the groundwater quality associated with potential sources of contamination and to establish upgradient water quality conditions at this AOC." Installation-wide background monitoring wells have already been established at RVAAP. Monitoring wells that are established at various AOCs (whether located in source areas or in upgradient positions) will be evaluated in light of the installation-wide background. (See also - SAP page 3-4, SAP page 3-5, SAP page 4-4, SAP page 4-5, WP page 2-4, HASP page 2-6 Section 2.1.3).

14. Page 3-3, Section 3.1.3 Ground Water Sampling and Analysis - Please revise the text to indicate that filtered groundwater samples will be obtained for target analyte list (TAL) metals analyses. (See also - SAP page 3-4, WP page 2-4, WP pages 2-5 and 2-6 Section 2.2, HASP page 2-6 Section 2.1.4).

15. Page 3-3, Section 3.1.4 Shallow Water Sampling and Analysis - At what depth interval will the surface water samples be obtained? Are they planned for near the surface water/sediment interface? (See also SAP page 4-7 Section 4.5).

16. Page 3-4, Section 3.1 Project Objectives - Please confirm that contingency samples have been scoped into this field initiative, and add the text to the appropriate sections of the text (for example, create an additional subsection number 3.1.7). The ability to scope in and utilize contingency samples allows both the Agency and the contractor to make field decisions, in order to more completely determine the nature and extent (horizontal and vertical) of contamination, thus, fulfilling a major goal of the RI and precluding the need for additional field efforts. (See also - SAP page 3-4, SAP pages 4-1 and Table 4-1, Table 1-1 page 1-2, WP page 2-1 Section 2.1)

17. Page 3-3, Section 3.1.5 Shallow Soil Sampling and Analysis - Please add SVOCs to the analyses of each of the 68 soil samples to be taken.

18. Page 3-4, Section 3.2 Data Quality Objectives, bulleted section - Please add an additional bullet that indicates that 10% of the soil samples for each medium will be analyzed for the RVAAP full-suite of constituents, i.e., volatile organic compounds (VOCs), SVOCs, TAL metals, explosives, propellants, pesticides/PCBs, and cyanide. (See Also - WP page 2-5 Section 2.2)

19. Page 3-4, Section 3.2 Data Quality Objectives, bullets 2 and 7 - Please add SVOCs to the list of analyses for each sample taken.

20. Page 3-6, Section 3.11 Data Evaluation Methods - The text states that "Analytical data (both field and laboratory) will undergo a 100% verification process." Please confirm that this field data will also undergo the data verification and validation processes.

21. Page 4-2, Table 4-1 Summary of Sampling and Analysis - Please change "PCBs (6 samples)" to "PCBs (17 samples)" under the table heading "Laboratory Parameters" for shallow soil. Please add SVOCs analysis to all shallow soil and soil borings under the table heading "Laboratory Parameters."

22. Page 4-2, Table 4-1 Summary of Sampling and Analysis - Please adjust the surface water section to indicate that unfiltered samples will be obtained for TAL metals analyses. (See also SAP Section 4.5, page 4-7)

23. Page 4-3, Section 4.1.1 Hollow Stem Auger, 7th sentence - The text states "Two soil samples will be collected from each of the ten borings (16 total)." Please change ten borings to eight borings in the text.

24. Page 4-3, Section 4.1.1 Hollow Stem Auger, bulleted section - Please add SVOCs analysis and method as a bullet item.

25. Page 4-4, Section 4.1.2 Shallow Soil Sampling, bulleted section - Please add SVOCs analysis and method as a bullet item.

26. Page 4-4, Section 4.2 Monitoring Well Installation - The text states, "Based on field observation, site topography suggests that a groundwater flow trends north to south. Boring/monitoring well SB/MW-001 will be placed at an up-gradient location at Central Burn Pits. Boring SB/MW-008 will be placed at a down-gradient location at Central Burn Pits." According to Figure 5, SB/MW-008 will be placed at an up-gradient location and SB/MW-001 will be placed at a down-gradient location. Please make the appropriate changes to either the Figure or the text. (Also WP Section 2.1.1)

27. The parameters for which ground water will be analyzed are listed in Section 4.4. These parameters should be listed in the order in which the sample aliquots will be collected (i.e., most volatile first).

28. Section 4.4.1 should be modified to indicate that ground water sampling will be conducted in accordance with Sections 4.3.4 through 4.3.8 of the FSP.

29. Page 4-6, Section 4.2.2 Well Purging Methods, 3rd bulleted item - Please revise text to read "3 to 5 well volumes."

30. The third bullet in Section 4.4.2 of the SAP should be modified in accordance with Sections 4.3.4.1 and 4.3.4.2 of the FSP concerning the use of indicator parameters and total well volumes removed to determine when a well is sufficiently purged.

31. Page 4-7, Section 4.5 Surface Water - Please provide additional details in the text as to the surface water sampling methodology(ies) that will most likely be employed.

32. Page 4-7, Section 4.6 Sediment Sampling - Please provide additional details in the text as to the sediment sampling methodology(ies) that will most likely be employed.

33. Page 4-8 - Please add a section regarding waste disposal characterization.

Quality Assurance Project Plan (QAPP)

34. Page 1-2, Table 1-1 - Please confirm that trip blanks are required for the soil and sediment VOC samples.

35. Page 1-2, Table 1-1 - Please change table to reflect that all shallow soils and soil boring samples will be analyzed for SVOCs.

36. Page 3-2, Table 3-1 - Please change Table title and Page headers to "Central Burn Pits Remedial Investigation" instead of "Upper and Lower Cobbs Pond Phase II Remedial Investigation."

Work Plan

37. On page 1-4, it states that, "it is unknown if there are any wells directly downgradient from the site and groundwater from near the AOC may be used for irrigation or drinking water." Considering this AOC is within the central portion of the RVAAP facility, this statement is incorrect. According to Figure 2, this AOC is more that a mile from the facility boundary. Therefore, the land use directly downgradient of the unit is known and is controlled by the facility. Thus, it is known that ground water directly downgradient is **not** used for irrigation or drinking water. This section should be modified accordingly. (Also revise SAP Sections 1.4 and 3.4)

38. The second sentence in the second paragraph of Section 2.0 states that there are two burn areas on the **western** portion of the site. The third sentence of this section states that a third area is **"also** on the **eastern** portion of the site. . ." This apparent discrepancy should be corrected.

39. Figures should be labeled in a manner that is clearly visible. Currently, figure number is located in small box below the title. The figure number should be large, and listed first before the title, and in a caption below the figure: i.e., Figure 2 - INSTALLATION MAP. Please update all the figures.

40. The acronym FSP (Facility-wide Sampling and Analysis Plan (?)) is first used in the first sentence on page 2-2. This acronym should be defined when it is first used and/or it should be included in the list of acronyms in the front of the document.

41. Page 2-1, Section 2.0 Project Description, 2nd paragraph - According to the text, the "three main, negatively impacted areas were identified within the confines of the site. Two burn areas (100' x 70' and 250' x 90') were noted on the western portion of the site just north of Lumber Yard Road; each characterized by distressed vegetation, scattered debris, and scrap articles. The third area (150' x 200'), which exhibits discolored soil and some distressed vegetation and debris is also on the eastern portion of the site but is positioned just south of Lumber Yard Road." Please show approximate location of these three impacted areas on Figure 4.

42. Page 2-2, Section 2.1.1 Soil Boring and Sampling and Analysis - Please remove the "and" between "Boring" and "Sampling" in the section heading.

43. Page 2-2, Section 2.1.1 Soil Boring and Sampling and Analysis, 4th paragraph, 2nd sentence - The text states "all soil boring samples will be sent to subcontractor laboratory for explosives, TAL metals, PCBs, and cyanide analysis." Please add SVOCs to this list of analyses.

44. Page 2-2, Section 2.1.1 Soil Boring and Sampling and Analysis, 2nd paragraph - The text states, "Based on field observation, site topography suggests that a groundwater flow trends north to south. Boring/monitoring well SB/MW-001 will be placed at an up-gradient location at Central Burn Pits. Boring SB/MW-008 will be placed at a down-gradient location at Central Burn Pits." According to Figure 4, SB/MW-008 will be placed at an up-gradient location and SB/MW-001 will be placed at a down-gradient location. Please make the appropriate changes to either the Figure or the text.

45. The third paragraph of Section 2.1.1 indicates that the auger size will be selected to minimize the volume of drilling cuttings and still be of sufficient size to allow for a minimum 2-inch annular space all around the inner casing of the well. Auger sizes are specified in the FSP. If a different size auger is being proposed to accomplish the goals of this study, then the proposed size should be specifically documented in this workplan. If the augers will be chosen in accordance with the FSP, then it should be so stated in this section.

46. It should be noted that although Ohio EPA may agree at this time with the proposed locations and numbers of monitoring wells, this does not preclude the need for additional wells in additional locations at this AOC in the future. For example, as additional soil samples are collected and analyzed, additional sources of contamination may be identified. This may warrant the installation and sampling of additional ground water monitoring wells at this AOC. In addition, if ground water contamination is detected during the initial sampling and analysis activities, additional wells may be needed to define the full rate and extent of contamination. (Also SAP Sections 3.1.1 and 4.1.1)

47. In Section 2.1.1, it states that the proposed soil borings will be advanced to a "depth of 40 feet below ground surface (bgs) or until ground water is encountered, which ever comes first." Because it also is proposed that a monitoring well will be installed in each soil boring, this workplan should document what contingency plans are in place for the proposed well, if a depth of 40 feet is attained and ground water has not been encountered. (Also SAP Sections 3.1.1 and 4.1.1)

48. In Section 2.1.1, it states that the boreholes will be advanced using hollow stem augers. This workplan should document what drilling method(s) will be used if bedrock is encountered prior to attaining a depth of 40 feet and before ground water is encountered. The expected drilling scenario, as per the FSP, also should be documented. (Also SAP Sections 3.1.1 and 4.1.1)

49. In order to evaluate the proposed drilling and well construction information, the expected site conditions (e.g., depth to bedrock and ground water; contaminants and concentrations), with references to the data supporting these expectations, should be documented. (Also SAP Sections 3.1.1 and 4.1.1)

50. The method of obtaining soil and, if necessary, bedrock samples should be documented in Section 2.1.1 of this workplan.

51. In Section 2.1.2 and 2.1.3, it states that drilling, construction, and surface completion details as well as development and sampling and analysis procedures are included in the SAP. It is unclear which SAP is being referenced, i.e., the approved Facility-wide Sampling and Analysis Plan (FSP) or the AOC- specific sampling and analysis plan. This should be clarified.

52. Figure 4 - Since these plans are public documents and are made available for review and copy, different geometric symbols should be used, in conjunction with color, to define sample locations. Please add geometric symbols to both the legend and figure, to indicate type of sample media at each location.

53. Figure 4 - The figure shows 35 shallow sample locations while the text indicates there are 34. Please make the appropriate changes.

54. Figure 4 - Contour levels and Sand Creek flow direction should be labeled on the figure. At a minimum, a contour interval should be listed in the legends of Figures 3 and 4.

55. Page 2-5, Section 2.1.5 Shallow Soil Sampling and Analysis, 1st paragraph, 4th sentence - Please add SVOCs to the list of analyses.

56. Page 2-6, Section 2.2 Data Quality Objectives, bullets 1 and 6 - Please add SVOCs to the list of analyses.

57. It should state in Section 3.4, that sampling locations will be surveyed in accordance with the FSP.

58. The acronyms FW SAP and FW SSHP used in Section 3.6 should be defined and added to the list of acronyms in the front of the document. It appears that two different acronyms are being used for the same document (e.g., FW SAP and FSP for the Facility-wide Sampling and Analysis Plan). If this is true, this workplan should be modified so that only one acronym is used consistently for the same document.

59. Page 4-2, Section 4.6 Disposal of Waste Materials - The text states "materials suitable for use as clean hard fill will be transported to the George Road Landfill area on the RVAAP." What materials as part of this project are anticipated to be deemed clean hard fill (CHF)? If there are no materials that will potentially be CHF, please remove this sentence from the text found in this section.

60. Page 4-2, Section 4.8 Protection of Water Resources - In the text, please cross-reference the document cited on page 4-4, Section 4.18 Erosion and Sedimentation Control.

61. Page 6-1, Section 6.0 Disposition of IDW, 2nd paragraph - Please remove the reference to the U.S. EPA document regarding the management of IDW.

62. Page 7-1, Section 7.0 Clean Up Levels - Please revise the text to indicate that chemicals of potential concern (COPCs) are determined (in part) by comparing the contamination concentrations to the installation-wide background and the Region IX Preliminary Remediation Goals X 0.1.

63. In Section 7.0, it mentions comparing bedrock ground water concentrations from the Central Burn Pit AOC to the facility-wide ground water concentrations. No mention is made as to what will be done if the ground water is obtained from the unconsolidated materials. This section should be modified to state that the ground water data will be screened against the previously determined facility-wide background concentrations for similar geologic materials (i.e., unconsolidated or bedrock).

64. Page 9-1, Section 9.0 References - Please remove the reference to the U.S. EPA document regarding the management of IDW.

65. The Facility-wide Sampling and Analysis Plan should be added to the list of references (Section 9).

Health and Safety Plan

Although the Agency does not have regulatory authority over HASPs, the following comments are offered for your consideration:

66. Figures should be labeled in a manner that is clearly visible. Currently, figure number is located in small box below the title. The figure number should be large, and listed first before the title, and in a caption below the figure, i.e., Figure 2 - INSTALLATION MAP. Please update all the figures.

67. Page 1-1, Section 1.0 Introduction - Please add additional text to the HASP that indicates that neither the facility-wide HASP nor the AOC-specific HASP can be implemented without the other, i.e., the AOC-specific addendum tiers under the facility-wide document.

68. Page 5-2, Table 5-1 Chemicals of Potential Concern, Exposure Limits, and Monitoring Instrumentation - Please be advised that the list of chemicals of potential concern is probably not all inclusive.

69. Page 6-1, Section 6.1 Site-Specific Training - Please separate out the "routes of exposure" from the "recognition of signs and systems," thus, making them both different bullet items.

70. Page 6-3, Section 6.10.1 Accident/Incident Report, 2nd paragraph - The text states that, "The accident/incident will be reported by the fastest means possible (usually the telephone) within eight hours to the RVAAP Site Safety Manager. This notification time frame seems too long.

71. Page 7-4, Section 7.4.2 Fit Testing for APRs - This text references several qualitative fit testing techniques. Please confirm that MKM employees and sub-contractors are also quantitatively fit tested.

72. Page 10-1, Section 10.1.2 Decontamination and Containment - Please provide additional details on how a containment system consisting of straw bales will be capable of collecting and holding spills. Will poly liners of a specified thickness also be used?

73. Page 10-1, Section 10.1.2 Decontamination and Containment - What bulk materials are anticipated to be staged? All IDW should be properly containerized. It is incumbent upon the installation and the contractor to not create a situation in which a RCRA closure may be required.

74. Page 11-1, Section 11.2 Decontamination Waste - Please clarify the statement that indicates that high pressure washes may be used instead of solvent and acid rinses. This is solely for larger equipment, such as drill rigs and rods (etc.) and is not applicable to smaller non-dedicated sampling equipment. Adjust the text accordingly.

75. Page 12-1, Section 12.0 Emergency Action Plan - Please ensure that key telephone contact numbers and the route to the hospital are posted in conspicuous places prior to commencement of the RI activities.

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, NEDO, DERR
Rod Beals, NEDO, DERR
Steve Love, NEDO, DERR
Mike Eberle, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Diane Kurlich, NEDO, DDAGW
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Bob Whelove, OSC
Rick Callahan, MKM
Brian Stockwell, MKM
Stan Levenger, MKM

OhioEPA
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 11, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
WORK PLANS FOR PARIS-WINDHAM DUMP

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 Work Plan for the RD/RA at the Paris-Windham Road Dump; Draft Site-Specific Safety and Health Plan for the RD/RA at the Paris-Windham Road Dump; and Draft Sampling and Analysis Plan Addendum for the RD/RA at the Paris-Windham Road Dump." These three documents are dated March 2001, and were received by Ohio EPA, NEDO, on March 14, 2001, and were prepared by MKM Engineers, Inc. for the US Army Operations Support Command (OSC) under contract number DAAA 09-98-G-0001.

Ohio EPA, NEDO, DERR, has generated the following comments on the above-referenced documents. *An e-mail containing these comments was sent to both RVAAP and MKM on April 03, 2001*:

Ohio EPA Comments on the Draft Work Plan for the Remedial Design / Removal Action at the Paris-Windham Road Dump (AOC 51):

Comment # 1: As mentioned in Section 3.3.2 Erosion Control, all erosion and sedimentation control measures shall be planned and executed in accordance with "Ohio's Standards for Stormwater Management, Land Development, and Urban Stream Protection Document, Second Edition (Ohio EPA, ODNR, USDA, 1996)." If you have questions or concerns regarding erosion control, please call Dan Bogoevski, in our Division of Surface Water (DSW), at (330) 963-1145. Ohio EPA, DERR, has consulted with Mr. Bogoevski prior to review and comment on these documents.

Comment # 2: Figure 1-3, title - Figure title should read "RVAAP" not "RAVVP."

Comment # 3: There is no mention in the report regarding dissolved oxygen monitoring in the creek. Please add this reference to the text in the appropriate section(s).

Comment # 4: Section 3.4, page 3-5, title - "Loctions" should be changed to "Locations."

Comment # 5: Section 4.13, page 4-3 - In the paragraph, please remove the word "oxides" after the word "sulfur."

Comment # 6: Section 4.18, Erosion and Sedimentation Control, page 4-4, sentence - The wrong section is referenced in this sentence. Please change the text to read, "Section 3.3.2 of this document."

Ohio EPA Comments on the Draft Sampling and Analysis Plan Addendum for the Remedial Design / Removal Action at the Paris-Windham Road Dump (AOC 51):

Comment # 7: Figure 1-3, title - Figure title should read "RVAAP" not "RAVVP."

Comment # 8: QAPP, Section 1.2, page 1-1 - Please add a reference to Section 1.4 in the text.

Ohio EPA Comments on the Draft Site-Specific Safety and Health Plan for the Remedial Design / Removal Action at the Paris-Windham Road Dump (AOC 51):

Comment # 9: Figure 2-1 (or a similar Figure numbered 4-1) should precede immediately after Page 4-1.

Comment # 10: Section 5.2 Physical Hazards, page 5-3 - In the bulleted list, please include slope stability/failure.

If you have any questions concerning these comments, 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

TRF/kss

cc: Rod Beals, NEDO, DERR
Eileen Mohr, NEDO, DERR
Dan Bogoevski, NEDO, DSW
Brian Stockwell, MKM, RVAAP
John Cicero, RVAAP
Bonnie Buthker, OFFO, SWDO
LTC Tom Tadsen, RVAAP
Rick Callahan, MKM, RVAAP

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Wednesday, June 27, 2001 7:44 AM
To: Whelove, Robert W
Cc: Bonnie Buthker; Rod Beals; PattersonM@ioc.army.mil
Subject: Sand Creek and Paris Windham Dump Sites

Bob

This is the email that I referenced in my voice mail message to you this morning.

I was speaking with Mark last night before the RAB meeting, and he mentioned the phone conversations that you and he had had regarding the above-referenced sites, specifically whether they should be RCRA-regulated and how the RRSE applies to sites, etc.

Here is the State's opinion on the issues that were raised:

1. Both Sand Creek and Paris Windham are CERCLA AOCs.

Given the age of these two sites, they are not RCRA-eligible. Even if they were (which they aren't)... going into the RCRA program would not either reduce the amount of time or efforts expended nor would it lessen any proposed clean-up levels. The only thing it would accomplish is shifting the needed funding from the IRP side of OSC to the other side of the Army house. We will get a faster clean-up under the CERCLA program.

2. The RRSE is not a risk assessment.

Under the DSMOA, the State accepts the RRSE as a tool to be utilized solely for prioritizing sites for work. Ohio has never accepted, and will not accept the RRSE as being equivalent to conducting a risk assessment. Among other issues, the sampling in a RRSE is too minimal in terms of numbers and oftentimes analytes of interest to be used for risk purposes. A risk assessment is performed after the nature and extent of contamination has been determined at a site. Clearly, a RRSE package which may have only 2 or 3 samples in various media at a site is not acceptable for risk purposes.

3. As with the work that was conducted at Building T-5301, after the removal actions are completed at these AOCs, confirmation sampling will be conducted. The confirmation data will used to determine if any further action is needed at the 2 AOCs. Again, we (the RVAAP team) will objectively analyze the data to see if further work is needed, if no further action is required, or if any additional action could be tied into installation-wide initiatives (for example, a sitewide surface water initiative). This is the same process used at T5301, another CERCLA AOC.

I have to frankly say that I am disappointed that these two projects have languished. After the State received the workplans, I had Todd review them on an expedited basis, so that work could commence on March 1 and April 1 respectively. These projects should have been completed by now.

I am in meetings the next two days and will not be available via phone. Feel free to contact me on Friday if you want to discuss this issue... but I will be honest with you up-front and state that our position on the RRSE and the applicable regulatory program will not change.

Thanks Bob.

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

OhioEPA
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

May 1, 2001

RE: FINAL, ENVIRONMENTAL INFORMATION MANAGEMENT SYSTEM (EIMS) PLAN AND RESPONSE TO OHIO EPA COMMENTS, RAVENNA ARMY AMMUNITION PLANT, RAVENNA, OHIO

Mr. Patrick F. Ryan
Task Manager
Science Applications International Corp.
800 Oak Ridge Turnpike
P.O. Box 2502
Oak Ridge, TN 37831

Dear Mr. Ryan:

The Ohio Environmental Protection Agency's Division of Emergency and Remedial Response (DERR), Northeast District Office (NEDO), has finished its review of the Environmental Information Management Plan (Final) and comment response matrix, dated March 2001. NEDO received both of these documents on March 28, 2001.

Ohio EPA, DERR, finds the comment responses acceptable and no additional comments were generated upon final review of the EIMS Plan.

If you have any questions regarding this letter, 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: Mark Patterson, RVAAP
Rod Beals, NEDO, DERR
Bonnie Buthker, SWDO, OFFO
Walter Perro, USACE, Louisville
Kevin Jago, SAIC, Oak Ridge, TN
John Cicero, RVAAP
Eileen Mohr, NEDO, DERR
John Jent, USACE, Louisville
LTC Tom Tadsen, RVAAP
Kathy Dominic, SAIC, Tulsa, OK

OhioEPA
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 11, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
FINAL FACILITY-WIDE WORKPLANS

Mr. Walt Perro
US Army Corps of Engineers
Louisville District
ATTN: CEORL-DL-B
600 Martin Luther King Jr. Place
P.O. Box 59
Louisville, KY 40201-0059

Dear Mr. Perro:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the following three documents: "Final, Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio"; "Final, Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, OH"; and "Final, Standard Operating Procedure for Colorimetric Analysis of Explosives." These documents, dated March 2001 and received at Ohio EPA, NEDO, on March 19, 2001, were prepared by the contractor for the United States Army Corps of Engineers (USACE) - Louisville District under contract number DACA 62-00-D-0001, delivery order number CY02.

The final documents were reviewed compared to the draft facility-wide workplans (dated July 2000 and received at Ohio EPA, NEDO, on July 19, 2000); Ohio EPA comments on the draft documents (dated September 7, 2000); the comment resolution meeting held on February 12, 2001; and the comment resolution document received at the previously referenced comment resolution meeting.

The final documents have incorporated all of Ohio EPA comments into the final workplans, and the documents are acceptable to Ohio EPA. However, please be advised of the following issue related to the pad construction at monitoring wells (section 4.3.2.3.9 page 4-21). It is the position of Ohio EPA that regardless of the design of the monitoring wells, it is incumbent upon the Army to maintain the integrity of all monitoring wells installed at the Ravenna Army Ammunition Plant (RVAAP).

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: Rod Beals, NEDO, DERR
Todd Fisher, NEDO, DERR
Diane Kurlich, NEDO, DDAGW
Bonnie Buthker, OFFO, SWDO
John Jent, USACE Louisville
Mark Patterson, RVAAP
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Steve Selectman, SAIC Oak Ridge
Kevin Jago, SAIC Oak Ridge
Kathy Dominic, SAIC Tulsa
Rick Callahan, MKM RVAAP

OhioEPA
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, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
USGS HYDROGEOLOGIC INVESTIGATION
PROPOSAL FOR RTLS

Mr. Charles W. Schalk
Hydrologist, Ohio District
U.S. Department of the Interior
U.S. Geological Survey
6480 Doubletree Avenue
Columbus, OH 43229-1111

Dear Mr. Schalk:

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: "Proposal, Phase 2 - Regional Hydrogeologic Investigation of Ravenna Training and Logistics Site, Ohio." The proposal, dated June 27, 2001 and received by Ohio EPA on October 31, 2001 during a meeting held at the Ravenna Army Ammunition Plant (RVAAP), was prepared by personnel from the United States Geological Survey (USGS).

At the conclusion of the meeting, it was requested that the various agencies in attendance submit comments to the USGS on the Ravenna Training and Logistics Site (RTLS) hydrogeologic investigation proposal. As such, here are Ohio EPA's comments:

1. All work should be conducted in accordance with the following documents:

   a. "Final, Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant" (March 2001),

   b. Final, Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant" (March 2001),

   c. Ohio EPA's "Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring" (February 1995).

   These documents (especially 1a and 1b) contain pertinent information related to monitoring well construction, installation and development; field measurement procedures and criteria; sampling methods, sample containers and preservation techniques; field quality control procedures; decontamination procedures for non-dedicated equipment; analytical methods; disposition of investigation-derived wastes (IDW), etc.

2. Subsequent to receipt of funding for this project (which has been delayed to fiscal year 04), a scoping meeting to discuss the development of the workplans would be warranted. We have found that by having all partners present at a scoping meeting and reviewing the resulting scopes of work (SOWs), that the development of the necessary workplans proceeds much more efficiently and is (as a result) more cost-effective. This also makes sense as

installation-wide surface water and groundwater initiatives will be conducted under the Installation Restoration Program (IRP), and the two initiatives could be coordinated.

3. In the introduction section, the first paragraph should be revised to more accurately reflect the current acreage utilized by the Ohio Army National Guard (OHARNG) for training purposes.

4. One of the stated goals in the introduction section is to define and document the presence or absence of contamination in groundwater and surface water on military installations. If this is one of the study's objectives, then the constituent list cited in objective # 2 on the third page would need to be expanded. Currently the constituent list for IRP groundwater investigations at the RVAAP includes the following: explosives, propellants, target analyte list (TAL) metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, PCBs, and depending upon the location of the well and area of concern (AOC) history - hexavalent chromium. In addition, the laboratory analytical methods utilized in the IRP program should be used in this hydrogeological investigation. (This comment is also applicable to objective # 2 detailed on page 3.)

5. In the objectives and scope section, the background monitoring wells installed as part of the IRP program may assist in reaching/defining the second objective.

6. In the approach section (objective # 1):

   a. The delineation of the unconsolidated aquifer may be difficult to achieve due to lateral discontinuities.

   b. Although the surficial unit is heterogeneous and discontinuous, for the most part, it is a dependable water supply for the residents that use this aquifer as their potable water source.

   c. In addition to searching the Ohio Department of Natural Resources (ODNR) records for well logs, the Portage County and Trumbull County Health Departments should also be contacted. In addition, RVAAP has on file well logs for several water supply wells that used to exist at the installation.

   d. Refer to comment # 1 detailed above with respect to monitor well installation, development, and sampling.

   e. If wells are being drilled in areas of known contamination, care must be taken to not "drag down" contamination into the underlying aquifer.

   f. IDW should be handled in accordance with the facility-wide workplans and the November 03, 1997 Ohio EPA correspondence to the Industrial Operations Command (IOC).

7. In the approach section (objective # 2):

   a. Please refer to comment # 4 detailed-above regarding proposed analytical work.

b. Will Eh be measured in the groundwater?

c. What geochemical models are proposed for use?

8. In the approach section (objective # 3):

a. With respect to stream headwaters issues, the USGS is encouraged to contact Ohio EPA to discuss the Agency's new headwaters initiatives.

b. Additional information should be provided as to what biocriteria will be utilized as part of the surface water initiatives.

c. Will the locations selected for biocriteria work also have co-located surface water/sediment samples?

The IRP team at RVAAP looks forward to working with the USGS on the regional hydrogeologic investigation of the RTLS. 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

EM/kss

cc: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Mark Patterson, RVAAP
LTC Tadsen, RVAAP
Tim Morgan, RVAAP
John Cicero, RVAAP
John Jent, USACE - Louisville

ec: Mike Eberle, Ohio EPA, NEDO, DERR

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY MATERIEL COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA 22333-0001

REPLY TO
ATTENTION OF

AMCSF-P

5 February 2001

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Army Radiation Permits (ARPs)

1. Reference AR 11-9, 28 May 1999, The Army Radiation Safety Program.

2. This is a reminder to Army Materiel Command (AMC) Major Subordinate Commands (MSC) and installations that Army Radiation Permits are required for non-Army agencies using radiation sources on Army Land.

3. The purpose of an Army Radiation Permit is to supply a mechanism to protect the Army from responsibility in cleaning up land and facilities contaminated with radiation by a non-Army agency while occupying Army land.

4. What is a "non-Army agency?"

a. An activity with any organization except the Army.

b. The activity could be with a private company, a contractor, the U.S. Department of Defense (other armed services/agencies), other agencies of the Federal Government, or a state/local governmental entity.

c. These non-Army agencies could operate ammunition plants, come on to an installation short term to do work on roads or other facilities, or operate short term/long term maintenance activities.

d. All of these enterprises may involve bringing in radiation sources which are licensed by the Nuclear Regulatory Commission or an Agreement State (radioactive material or machine produced). These sources must be tracked, inventoried, and safeguarded. Hence, the ARP.

5. The procedures for issuing ARPs are found in Chapter 2 of AR 11-9 (reference 1, enclosure 1).

a. In accordance with the regulation, the installation commander is responsible for issuing the ARP based on an application (sample at enclosure 2) from the non-Army agency.

b. The installation commander should have a technical consultant (normally the installation safety officer [IRSO]) review the ARP application and, if necessary, request more information from the applicant. The IRSO could also refer the application to higher headquarters for a more detailed radiation safety review.

c. After the radiation safety review, the application should be staffed at the installation level with, as a minimum, the contracting, legal, environmental, and surgeon's offices.

d. After a thorough staffing, the permit is then issued by the installation commander.

(1) The radiation safety program of the non-Army entity should then be monitored by the installation radiation safety officer to ensure adequate attention is paid to the public health and safety as well as the Army's interests.

(2) Such monitoring could be performed through a variety of mechanisms.

5. The MSC should have cognizance of the status of ARP goings-on at the installation level. The MSC should periodically monitor installation ARP activities, perhaps during command inspections or periodic radiation program reviews.

6. I ask your help to ensure the thorough coordination with the radiation safety officer of contracts involving the use of radiation sources on Army land.

a. Radiation Safety Officers sometimes receive notification of the arrival of a non-Army organization with a radiation source who has not applied for an ARP and knows nothing about the process.

b. A hurried ARP action must then occur so that work may start on time.

c. This can be avoided with proper planning and prior coordination.

7. Please pass this correspondence to your subordinate organizations as applicable.

8. Point of contact is Mr. John Manfre, DSN 767-9340, fax 9469, email ManfreJ@alexandria-emh1.army.mil.

AMCSF-P
SUBJECT: Army Radiation Permits (ARPs)

9. AMC -- Army READINESS Command . . . Supporting Every Soldier Every Day.

FOR THE COMMANDER:

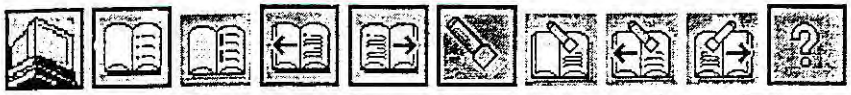
DONALD A. PITTENGER
Chief
Safety Office

Encl
as

DISTRIBUTION:
COMMANDER
AMCOM, ATTN: AMSAM-SF
CECOM, ATTN: AMSEL-SF
OSC, ATTN: AMSOS-SF
SBCCOM, ATTN: AMSSB-RA
STRICOM, ATTN: AMSTI-EO
TACOM, ATTN: AMSTA-CM-PS
ARDEC, ATTN: AMSTA-AR-QAW-R

Director, TMDE, ATTN: AMSAM-TMDE-SR

CF:
HQDA, DACS-SF
Commander, CHPPM, ATTN: MCHB-TS-OHP (LTC Melanson)



2.4 Army radiation permits

Non-Army agencies (including civilian contractors) require an Army radiation permits (ARP) to use, store, or possess ionizing radiation sources on an Army installation (32 CFR 655.10). (For the purpose of this paragraph, ionizing radiation source means any source that, if held or owned by an Army organization, would require a specific NRC license or ARA.)

a. The non-Army applicant will apply by letter with supporting documentation (para b below) through the appropriate tenant commander to the installation commander. Submit the letter so that the installation commander receives the application at least 30 days before the requested start date of the permit.

b. The ARP application will specify start and stop dates for the ARP and describe for what purposes the applicant needs the ARP. The installation commander will approve the application only if the applicant provides evidence to show that one of the following is true.

(1) The applicant possesses a valid NRC license or Department of Energy (DOE) radiological work permit that allows the applicant to use the source as specified in the ARP application.

(2) The applicant possesses a valid Agreement State license that allows the applicant to use RAM as specified in the ARP application, and the applicant has filed NRC Form-241, Report of Proposed Activities in Non-Agreement States, with the NRC in accordance with 10 CFR 150.20. An ARP issued under this circumstance will be valid for no more than 180 days in any calendar year.

(3) For NARM and machine-produced ionizing radiation sources, the applicant has an appropriate State authorization that allows the applicant to use the source as specified in the ARP application or has in place a radiation safety program that complies with Army regulations.

(4) For overseas installations, the applicant has an appropriate host-nation authorization as necessary that allows the applicant to use the source as specified in the ARP application and has in place a radiation safety program that complies with Army regulations. (Applicants will comply with applicable status-of-forces agreements (SOFAs) and other international agreements.)

c. All ARPs will require applicants to remove all permitted sources from Army property by the end of the permitted time.

d. Disposal of RAM by non-Army agencies on Army property is prohibited. However, the installation commander may authorize radioactive releases to the atmosphere or to the sanitary sewerage system that are in compliance with all applicable Federal, DOD, and Army regulations. (The installation commander also will give appropriate consideration to State or local restrictions on

such releases.)

e. A sample ARP is in figure 2-2.

DA FORM 2028

The Electronic Publications POC

Return to the USAPA home page.

B.0 Appendix B. Sample application for Army Radiation Authorization (DA Form 3337)

APPLICATION FOR ARMY RADIATION AUTHORIZATION

For use of this form, see AR 11-9; the proponent agency is DAIS

1. THIS IS AN APPLICATION FOR: (Check appropriate item.)
   - [ ] NEW ARA
   - [ ] AMENDMENT TO ARA NUMBER _____
   - [ ] RENEWAL OF ARA NUMBER _____

2. NAME, MAILING ADDRESS, AND E-MAIL ADDRESS OF APPLICANT (Include ZIP Code)

3. ADDRESS(ES) WHERE AUTHORIZED RADIATION SOURCES WILL BE USED OR POSSESSED

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

5. TELEPHONE NUMBER AND FAX NUMBER

Items 6 through 12 may be combined on the following page or on 8 1/2 x 11 inch paper. The type and scope of information to be provided should be adequate to show examples compliance with applicable regulations and guidance. (If you can limit use of radioactive material to a unit with a Nuclear Regulatory Commission (NRC) license, provide number and expiration date of the license and only those items that differ from the NRC license application and associated documents.)

6. RADIATION SOURCE(S)

a. RADIOACTIVE MATERIAL (Isotope and mass number, chemical and/or physical form, and maximum activity that you will possess at any one time.)

b. ACCELERATOR(S) AND X-RAY SYSTEM(S) CAPABLE OF PRODUCING A HIGH RADIATION AREA OR A VERY HIGH RADIATION AREA (Describe)

7. PURPOSE(S) FOR WHICH RADIATION SOURCES WILL BE USED

8. INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE

9. TRAINING FOR INDIVIDUAL WORKERS IN OR PERSONNEL ENTERING RESTRICTED AREAS

10. FACILITIES AND EQUIPMENT (Describe rooms or areas, shielding, safety devices, monitoring equipment, and how used.)

11. RADIATION SAFETY PROGRAM

12. WASTE MANAGEMENT

13. CERTIFICATION

The applicant understands that all statements and representations made in this application are binding upon the applicant. The applicant and any official executing this certification on behalf of the applicant, named in Item 2, certify that all information contained in this application is true and correct to the best of their knowledge and belief.

14. NAME, RANK, AND TITLE OF CERTIFYING OFFICIAL

15. SIGNATURE

16. DATE (YYYYMMDD)

DA FORM 3337, MAR 00 IS OBSOLETE

SAMPLE

Figure B-1. Sample application for Army Radiation Authorization (DA Form 3337)

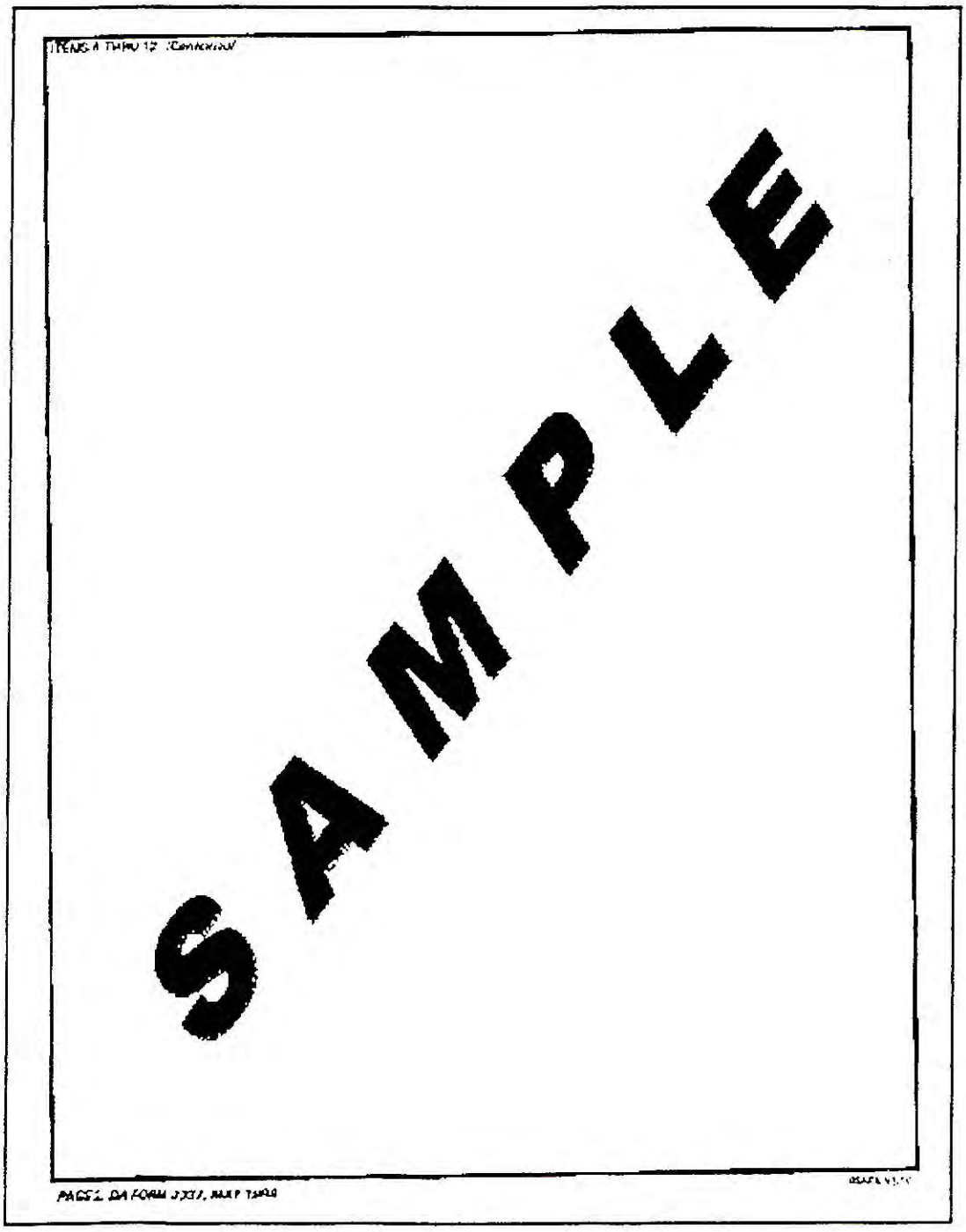
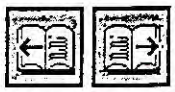


Figure B-2. Sample application for Army Radiation Authorization (DA Form 3337 (page 2)



DA FORM 2028

The Electronic Publications POC

Return to the USAPA home page.

GUIDELINES FOR PREPARING A DEPARTMENT OF THE ARMY RADIATION PERMIT (ARP)

Please ensure that the following information is provided to the Directorate for Safety (DS):

____ 1. Name of Applicant/User/Requester (Contractor).

____ 2. Mailing address and telephone number of the individual or organization identified in Item 1.

____ 3. Army Installation/exact location(s) where radioactive material will be stored or used.

____ 4. Government department, unit, branch etc., using radioactive material.

____ 5. DA Authorization/Permit, NRC and/or Agreement State License numbers currently held. (Attach copy)

____ 6. Name and title of individual user(s). Attach a copy of credentials and/or equivalent experience (Training certificate, resume, etc.)

____ 7. Name of designated Radiation Safety Officer (RSO) if other than individual user. Attach a copy of the resume.

____ 8. Radiation-producing devices (list voltage and amperage).

____ 9. Chemical and/or physical form and maximum amount (in millicuries) of activity. If sealed source(s), state name of manufacturer, model number, number of sources and maximum activity per source.

____ 10. State purpose for which radioactive material or sources will be used.

____ 11. Radiation detection instruments that will be used by radiation safety personnel (*if required*).

____ 12. List method, frequency and standards used in calibrating instruments listed above in Item 11.

____ 13. Thermoluminescent dosimeter, pocket dosimeter and bioassay procedures used (specify exchange frequency and name of supplier/processor) (*if required*).

____ 14. Describe project, experiment, etc. Include major facilities and equipment to be used.

____ 15. Radiation Safety Program Regulation or Standing Operating Procedure (SOP) applicable to the installation(s) named listed in Item 3. (attach a copy)

Encl 3

____ 16. Waste Disposal. (*Applicants must remove all permitted sources from Army property by the end of the permitted time).*

____ 17. Duration. Specify the start and stop dates of the required work.

____ 18. Sign and date the application letter. (THIS IS MANDATORY).

____ 19. ARE THE REQUIREMENTS OF AR 200-2 ADDRESSED? The National Environmental Policy Act (NEPA), 1969 (Public Law 91-190) requires that the appropriate environmental documents be completed: Record of Environmental Consideration (REC), Environmental Impact Statement (EIS), etc. (Attach a copy of this information)

____ 20. IS NRC FORM 241 ATTACHED, if applicable? The NRC Form 241 is required by Agreement State Licensees who use their licensed sources on federal exclusive use jurisdiction. The time limit is 180 days per calendar year. (Attach a copy of this form)

(to be completed by DS)
DARA/DARP #: _____
DOCKET #: _____
EXPIRATION DATE: _____

DEPARTMENT OF THE ARMY
ARMY RADIATION PERMIT (ARP)

In reliance on statement and representation made by the applicant, authority is hereby granted to receive, produce, transfer, possess, use, and store the material(s) designated in item 5. This authority is subject to conditions specified below.

1. ACTIVITY GRANTED AUTHORITY	3a. AUTHORITY/PERMIT NUMBER
**********	**********
2. **********	3b. DOCKET NUMBER
**********	N/A
********** *****	4. EXPIRATION DATE
	1 January 2000

5. MATERIAL	6. CHEMICAL AND/OR PHYSICAL FORM	7. QUANTITY LIMITATION NOT TO EXCEED PER ITEM TOTAL
a. Thorium-232	a. Solid (Thorium-fluoride coating on optical systems)	a. Not to Exceed (NTE) 3 grams (0.33 microcuries (uCi) per optical system

8. AUTHORIZED USE:

Thorium-fluoride coated optics incorporated on thermal imaging lenses in Night Vision Devices (NVD).

Encl 4

DEPARTMENT OF THE ARMY
ARMY RADIATION PERMIT (ARP)
SUPPLEMENTARY SHEET

Permit No. **********	Docket Number: N/A

CONDITIONS

9. The Radiation Safety Officer (RSO) for this permit is **********, telephone No. ******* ext. ******.

10. The authorized place of use is **********.

11. Maintenance facilities/installations will operate under an MSC approved radiation safety program and under the supervision of the qualified RSO identified in Item 9 above. Maintenance and serviceability for thermal imaging devices will be limited to the necessary removal/exchange of the Thorium-fluoride coated optics. There will be no maintenance and/or serviceability performed which involves the grinding or removal of the Thorium-fluoride coatings from the lens.

12. Requests for termination, disposal, or transfer of any radioactive material authorized under this document will be made through the appropriate command channels to CECOM, ATTN: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024; DSN 987-3112, Commercial (732) 427-3112, or Facsimile (732) 542-7161, within 60 days of the proposed change.

13. If there is radiological contamination as a result of authorized operations, Army facilities will be decontaminated by the owning organization identified in Item 10 above.

14. Army property will be restored to pre-operational conditions that meet NRC and/or state/local release criteria for unrestricted use.

15. The user will be responsible for ensuring funds are available to conduct all necessary decontamination requirements.

16. Copies of this document and any amendments will be retained by the organizations identified in Items 1 and 10.

17. All authorized material will only be disposed of IAW Army Regulation (AR) 11-9 and AMCCOM Pamphlet 385-1.

18. Quarterly health physics surveys (radiation level and contamination) will be performed in areas where radioactive materials are maintained/stored.

19. The user will maintain a current radioactive materials inventory of all sources authorized under this permit. Radioactive material incorporated into Night Vision Devices is identified in Technical Bulletin (TB) 43-0116, "Identification of Radioactive Items in the Army."

DEPARTMENT OF THE ARMY
ARMY RADIATION PERMIT (ARP)
SUPPLEMENTARY SHEET

Permit No. *********	Docket Number: N/A

CONDITIONS

20. Personnel will abide by the radiation warning statements contained in the appropriate Technical Manuals (TM) and Technical Bulletins (TB) for these devices.

21. Unless specifically provided otherwise, the materials described in Items 5, 6, and 7 shall be possessed and used in accordance with statements, representations, and procedures contained in the DA Form 3337 application dated ********, signed by ********, Director, **********; Regulation (AMC-R) 385-25, and Army Regulation (AR) 11-9.

DATE:	APPROVED

APPLICATION FOR DEPARTMENT OF THE ARMY RADIATION AUTHORIZATION OR PERMIT

For use of this form, see AR 385-11; the proponent agency is DARCOM.

☐ AUTHORIZATION

☐ PERMIT

READ ATTACHED INSTRUCTIONS BEFORE COMPLETING THIS FORM

1. NAME OF APPLICANT	2. ADDRESS *(Include ZIP Code)*

3. ARMY INSTALLATION AND EXACT LOCATION(S) WHERE RADIOACTIVE MATERIAL WILL BE STORED OR USED

4. DEPARTMENT TO USE RADIOACTIVE MATERIAL	5. DA AUTHORIZATION/PERMIT NUMBERS, NRC AND/OR AGREEMENT STATE LICENSE NUMBERS CURRENTLY HELD

6. INDIVIDUAL USER(S) *(Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in items 11 and 12.)*	7. RADIATION PROTECTION OFFICER *(RPO) (Name of person designated as RPO if other than individual user. Attach resume of training and experience as in items 11 and 12.)*

8. RADIATION DEVICES *(List voltage and amperage.)*	9. CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM AMOUNT OF RADIOACTIVE MATERIAL *(List chemical and/or physical form and maximum amount (in millicuries) of each radioactive material that you will possess at any one time.) (If sealed source(s), also state name of manufacturer, model number, number of sources, and maximum activity per source.)*

10. STATE PURPOSE FOR WHICH RADIOACTIVE MATERIAL OR SOURCES WILL BE USED *(Include the make and model number of the storage container and/or device in which the source(s) will be stored and/or used.)*

11. TRAINING *(Indicate training of each individual named in item 6.) (Use supplemental sheets if necessary.)*

TYPE OF TRAINING	WHEN AND WHERE TRAINED *(Give name of person or school providing training.)*	DURATION OF TRAINING	ON THE JOB		FORMAL COURSE	
			YES	NO	YES	NO
a. Principles and practices of radiation protection.						
b. Radioactivity measurement standardization and monitoring techniques and instruments.						
c. Mathematics and calculations basic to the use and measurement of radioactivity.						
d. Biological effects of radiation.						

12. EXPERIENCE WITH RADIATION *(Indicate actual use of radioisotopes or equivalent experience.)*

ISOTOPE	MAXIMUM AMOUNT	WHEN AND WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE

13. RADIATION DETECTION INSTRUMENTS *(FOR USE BY RADIATION PROTECTION PERSONNEL)*
(Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS *(Make and model number of each)*	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE *(mr/hr)*	WINDOW THICK-NESS *(mg/cm^2)*	USE *(Monitor - Survey - Measure)*

14. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

15. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED *(For film badges, specify method of calibrating and processing, or name of supplier.)*

16. DESCRIBE PROJECT, EXPERIMENT, ETC. *(Include major facilities and equipment to be used.)*

17. RADIATION PROTECTION PROGRAM *(Applicable to use at the installation(s) named in item 3)*

18. WASTE DISPOSAL *(NOTE: No radioactive material may be ultimately disposed of at Army installations except as provided in para 5-15, AR 385-11.)*

19. STATEMENT

THE APPLICANT OR ANY OFFICIAL FILING THIS APPLICATION ON BEHALF OF THE APPLICANT NAMED IN ITEM 1 STATES THAT ALL INFORMATION CONTAINED HERE, AND IN ATTACHED SUPPLEMENTS, IS CORRECT.

20*a*. DATE	20*b*. TYPED NAME AND TITLE	20*c*. SIGNATURE

DETACH INSTRUCTIONS SHEET BEFORE SUBMITTING APPLICATION

INSTRUCTIONS FOR PREPARING DA FORM 3337

GENERAL INSTRUCTIONS

An applicant for a DA Radiation Authorization or Permit should complete DA Form 3337 in detail. The completed form will be submitted through channels to Chief, Safety Office, DARCOM, ATTN: DRCSF-P, 5001 Eisenhower Avenue, Alexandria, VA 22333. Four signed and dated copies of the application are required.

Complete items 1 through 20c of DA Form 3337 if this is an initial application or a renewal application. Information for items 8 through 15 contained in previous applications filed with the Chief, Safety Office, DARCOM may be included by reference provided references are clear and specific. Use supplemental sheets when necessary to provide complete information. Items 19 through 20c must be completed on all applications.

Ensure that applications are completed and detailed. Submitting an incomplete application will result in a delay in issuing the DA authorization or permit.

After the application is approved, the applicant will receive a DA authorization or permit according to the general requirements of AR 385-11.

SPECIFIC INSTRUCTIONS

Check appropriate box to indicate whether application is for a DA "Authorization" or "Permit."

ITEMS 1 AND 2. - The "Applicant" is the organization or person legally responsible for possession and use of the radiation source(s) listed in the application.

ITEM 3 - Indicate the address(es) where the radiation source(s) will be used or stored if different from that listed in item 2. A Post Office box is not acceptable.

ITEM 4 - The "Department" is the department or similar subdivision that has field responsibility for the radiation source(s).

ITEM 5 - Show whether numbers denote an NRC license or DA authorization or permit.

ITEM 6 - The "Individual User" is the person who will be responsible for the use and safe handling of radiation source(s).

ITEM 7 - Include name of Army or Contractor RPO.

ITEM 8 - List by name each radioactive material needed, such as Ra-226, etc. List electronic radiation devices by type and parameters, such as industrial X-ray, 150 KVP, 20 MA.

ITEM 9 - List chemical and/or physical form for each radioactive byproduct material. List the quantity in millicuries of each material the applicant needs to have authorized for use. If more than one chemical or physical form of a particular radioisotope is needed, a separate possession limit will be stated for each form. For example, an applicant needing two chemical forms of Radium-226 must list both forms and the possession limit for both.

EXAMPLE:

Ra-226	Ra Sulphate *(Sealed Source)*	10 millicuries
Ra-226	Radium Chloride in Solution	1 millicurie

If the radioactive material is to be obtained as a sealed source(s), specify the amount of activity in each sealed source, the manufacturer's name, and the model number.

EXAMPLE:

Ra-226	2 sealed sources, 25 mc each 50 millicuries *(US Radium Corp., Model 3-124)*

ITEM 10 - State the use of each radioactive material and chemical form specified in items 8 and 9.

ITEMS 11 AND 12 - These items must be completed for each individual named in items 6 and 7. If more than one individual is listed in items 6 and 7, clearly key the name of each individual to his or her experience. Work experience or on-the-job training should be commensurate with proposed use.

ITEMS 13 THROUGH 16 - Self-explanatory.

ITEM 17 - Include procedures for property decontamination and restoration.

ITEM 18 - Self-explanatory.

ITEMS 9 THROUGH 20c - Application must be signed by responsible official, e.g., Commander or Corporate President.

TCR with Greg Orr
7/29/98 1550
Subject: Statistical Analysis of GWM data for site specific analytes

Greg consulted with Diane Kurlich while he was on the phone.Statistical analysis will have to be run on all specific analytes to determine if there is a significant difference. The type of statistical test is chosen by the facility based on guidance in the following documents:

> Statistical Analysis of Groundwater monitoring at RCRA facilities. 4/89 (US EPA Document).
>
> Statistical Analysis of Groundwater monitoring at RCRA facilities Addendum. 4/92 (US EPA Document).

Test(s) have to be run every time data is submitted.

Mark Patterson

OhioEPA

State of Ohio Environmental Protection Agency

Southwest District Office

401 East Fifth Street
Dayton, Ohio 45402-2911

TELE: (937) 285-6357 FAX: (937) 285-6249

Bob Taft, Governor
Maureen O'Connor Lt. Governor
Christopher Jones, Director

September 24, 2001

TO 9-27-01
CR-COR
ENV
LAND MGR
CONTRACTOR
RETURN FOR FILE

Mr. Rick Newsome
Assistant for Environmental Restoration
Office of the Deputy Assistant Secretary
Environment Safety and Occupational Health
1A875 Army Pentagon
Washington, DC 20310-0110

Dear Mr. Newsome:

On September 11 and 12, Ohio EPA attended the Installation Action Plan (IAP) Workshop for the Ravenna Army Ammunition Plant (RVAAP) that was facilitated by representatives from the Army Environmental Center (AEC). Also present at this workshop were representatives from the installation, Army Operation Support Command (OSC), the Army Corps of Engineers, the Ohio Army National Guard and community members from the Restoration Advisory Board. The purpose of this letter is to relay our concerns about this meeting to you, in hopes that these issues can be addressed by the Army before any additional IAP workshops are held.

At the Ravenna Army Ammunition Plant, the project team (installation project manager, OSC representative, the state project managers, and the Army Corps representatives) is excellent. They value and practice honest and open communication and are committed to working with one another to resolve issues that arise throughout the course of their work. Ohio EPA feels that the participation by AEC representatives at the IAP workshop had the potential to subvert the progress that the RVAAP team members have worked very hard to accomplish. If at another installation, a team was less strong or committed to partnering with one another, an experience like this could be destructive.

Our concerns are discussed in detail below:

1. The statements made by AEC staff at the IAP workshops are in direct conflict with concepts presented in the "Principles of Environmental Restoration Workshop," sponsored by AEC. Throughout the two days of meetings, AEC individuals implied they had the authority to overrule any previous decisions made by the RVAAP project team, even if the state would not agree with AEC's decision. For example, during the workshop, there were heated discussions between Ohio EPA and AEC about whether or not two open dump sites within the flood plain of a creek should be removed. Solid waste and potential

hazardous substances from these dumps have the potential to discharge into this creek, which contains a state endangered species. Ohio EPA had to relay several times during the meeting that these dumps would have to be addressed. At another site where mustard agent may be buried, AEC's attitude was that a few soil gas samples will be taken, and if nothing was found, the Army could walk away from this site without even an institutional control like a fence (it was clearly conveyed to both the Army and AEC officials that Ohio would not be a signatory to such a decision). Lastly, AEC stated several times that they would have no problem with over-riding risk management decisions made by the RVAAP team.

2. In opening remarks made by the Army Environmental Center, they stated that they were going to be antagonistic in questioning the team about the approaches they developed to investigate the Ravenna Army Ammunition Plant. None of the RVAAP project team members has an issue with someone questioning their approach for the investigation and clean-up of RVAAP However, the individual questioning the team should at least have knowledge of (or ask) how the team reached their decision on a site For example, at the Paris Windham and Sand Creek Dump sites, the project team has been debating with OSC for almost a year on the best approach (environmentally and economically) for dealing with these two areas of concern They finally had agreement from OSC on how to proceed before the IAP meeting was held. However, during the IAP meeting, AEC representatives told the team that they needed more sampling before they would agree their approach was sound even though the team stressed that additional sampling will lead them right back to the previous approach that they had already decided for these sites. This is not an effective use of limited environmental clean-up funds.

3. During the meeting, the team was asked to defend such details as the number of wells and the number of years of monitoring necessary on sites where very little (if any) data have been collected. Ohio EPA agrees that project planning is a necessary tool for RVAAP, and we have been participating for several years in such planning with the rest of the project team However, Ohio EPA feels that the practice of the IAP where we debate such details with AEC representatives provides no benefits to the team, especially when there is no data to define the magnitude of the problem at most of this facility. This only serves to artificially lower the projected budget for the short term, and in the future, we feel that budget may have to increased. And because of the confrontational tone at this meeting, Ohio EPA felt that we had to repeatedly state that if the assumptions used to develop estimates for a site are incorrect, we will not be limited to the

proposed approach for the site in the future. In addition, other costs such as maintenance of institutional controls on the installation, including those areas with unexploded ordnance, are not included in the overall estimate. These long-term costs will continue to be a major expense for the Army.

4. The last concern involves inappropriate statements made by AEC representatives during the meeting. These included derogatory comments about other branches of the military, including the Army Corps of Engineers. Ohio EPA feels such behavior is not only unprofessional, but is a bad reflection on the Army.

Last year, the RVAAP project team went through the entire IAP process without AEC involvement. It was a positive and constructive experience. In light of these issues, Ohio EPA suggests that the Army evaluate AEC's role in these meetings, and whether their participation is beneficial. We hope that, by bringing these issues to your attention, the Army can address them so that the IAP process again becomes a positive and constructive experience

If you have any questions or wish to discuss this matter further, please contact me at (937) 285-6018.

Sincerely,

Graham E. Mitchell
Chief, Office of Federal Facilities Oversight

CC: Eileen Mohr, DERR/NEDO
Todd Fisher, DERR/NEDO
Bonnie Buthker, OFFO/SWDO
Marcia Read, HQ Army

Mr. Graham E. Mitchell
Chief, Office of Federal Facilities Oversight
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Mitchell,

I have read and discussed with my staff your recent letter to me dated September 24, 2001 concerning the Ravenna Army Ammunition Plant (RVAAP) Installation Action Plan (IAP) workshop held on September 11 and 12, 2001.

First, let me express my appreciation for your agency's participation in the IAP process. The Army feels that your contributions in helping develop the RVAAP IAP are invaluable and vital to the success of the Installation Restoration Program (IRP). Furthermore, the Army recognizes and plans to continue the constructive and cooperative relationship that has developed among all members of the project team and the other stakeholders at the RVAAP. I believe the concerns expressed in your letter can be resolved by assigning a different Army facilitator to future RVAAP IAP workshops. Army Environmental Center (AEC) representatives will be present at the workshops to provide technical assistance and advice to the team. However, my staff will remind them that their role is to serve as advisors to the RVAAP the project team. Most importantly, they will be instructed to respect the excellent working relationship that exists between the Army, the Ohio EPA, and the other stakeholders at the RVAAP.

Thank you again for your support of the Army IRP. I look forward to an effective teaming with your office in successfully completing the project at the RVAAP.

Sincerely,

Mr. Rick Newsome
Army Assistant for Environmental Restoration

OhioEPA
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 21, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
LOAD LINES 2,3,4 PHASE II RI

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 Lines 2, 3, and 4 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 Lines 2, 3, 4 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." These documents, dated May 2001 and received at Ohio EPA, NEDO, on May 29, 2001, were prepared by the contractor for the U.S. Army Corps of Engineers (USACE) - Louisville District, under contract number F44650-99-D-0007, delivery order CY01.

The documents were reviewed by personnel from Ohio EPA, NEDO, DERR; Ohio EPA NEDO, Division of Drinking and Ground Waters (DDAGW); and Ohio EPA, Central Office (CO), DERR. This correspondence represents a compilation of comments from all reviewers.

The Agency has the following comments on the two-volume document:

Sampling and Analysis Plan:

1. The potential constituents of concern (PCOCs) listed in section 1.2 are not all inclusive. Please revise the list. (Page 1-1 lines 39-40)

2. At Load Line 2, subsequent to the removal of the contaminated sawdust from the filtration unit, was it taken to Winklepeck Burning Grounds (WBG) for treatment/destruction? (Page 1-5)

3. In section 1.2.2 (or in another appropriate section), there should be a reference to the current status of the Defense Logistics Agency (DLA) storage tanks at Load Line 3. (Page 1-5)

4. Please provide clarification as to whether or not the text in section 1.3 (summary of exiting data) is taken verbatim from the Phase I Remedial Investigation (RI) report. If not, it is requested that the following changes be made to the text of the workplan:

   a. Please clarify in the text that the term "expanded metals suite" is, in actuality, the target analyte list (TAL) of metals. (Page 1-9 lines 23-24, page 1-9 line 36, page 1-10 line 21, page 1-10 line 37, page 1-11 line 9, and page 1-11 line 20)

   b. Please remove or modify the text on page 1-10 (lines 2-4). Given that a low level concentration of an explosive (TNT) was detected in one of the two perimeter wells, the statement cannot be made that:"Overall, explosives contamination from Load Line 2 and Kelly's Pond do not appear to have migrated to the groundwater at the perimeter of the AOC..."

   c. Is the term "site-related" being utilized synonymously with "process-related?" Please clarify. (Page 1-10 line 4, page 1-10 line 8, page 1-10 line 42)

   d. The text on page 1-10 (lines 8-10) should be modified by making it clear that only two monitoring wells were installed at the perimeter of this Area of Concern (AOC).

   e. Remove the reference to the use of the U.S. Geological Survey (USGS) reference values. (Page 1-10 line 28)

   f. The text of the report should clearly indicate that the "background concentrations" that are referenced refer to the limited background sampling conducted during the Phase I RI. (Page 1-11 line 24)

5. In a portion of section 1.3.1 (or another appropriate section), the position of Ohio EPA regarding groundwater samples from temporary well points should be stated. Specifically, the Agency considers groundwater samples obtained from temporary well points to solely represent screening values. If contaminants are detected in the groundwater sample, they are considered by Ohio EPA to represent a minimum concentration of contamination and, if no contaminants are detected, the Agency does not accept the results as definitive proof that no groundwater contamination exists.

6. Please modify section 3.1 of the text that discusses the use of historical data. (Page 3-1 line 20) Historical data will most likely be of limited value, given the lack of: corresponding quality assurance/quality control (QA/QC) data, information on detection limits, whether or not the data went through verification and validation processes, etc.

7. In section 3.1 (page 3-1 lines 22-31), please provide additional information on the remedial goal options (RGOs) that are referenced in the text. Specifically, the RGOs that were drafted over a year ago have not been finalized, and if there are draft RGOs in the recently-received Load Line 1 report, they have not been reviewed as of this date. (Also, page 3-10 Figure 3-1, page 3-15 line 7)

8. The fourth bullet under section 3.1 states: "(c)haracterize nature and extent of contamination at Load Lines 2, 3, and 4 such that screening risk assessments (SRAs) can be conducted and the results compared to that from baseline risk assessments at a reference site (Load Line 1)." The sentence should be revised and clarified. The use of a screening risk assessment is not clear. If the risk assessment assumptions, scenarios, and algorithms from the baseline risk assessment conducted for Load Line 1 are used, and only the site specific chemical data from Load lines 2, 3, and 4 are used in place of the load Line 1 data, then essentially, a baseline risk assessment would be the result. This use of the assumptions from Load Line 1, once approved, can be used for subsequent risk assessments for other areas of concern with similar contamination types, distribution patterns, and expected future use. This is no different than the concept of a site wide risk assessment assumptions document that has been discussed over the last three years. In addition, the third sentence of the fourth bulleted paragraph is not clear on how COCs will be compared to the "reference site," what and how the numbers will be used and, in general, does not follow the "standard" method of evaluating potential risk at a site. See comment # 22 below for additional information. (Section 3.1 page 3-1)

9. The term reference site should not be used to mean a previously completed risk assessment for any AOC. Reference site should only be used to identify areas that have not been impacted by site related contamination. Please make the appropriate changes to the text. (Section 3.1 page 3-1)

10. The concept of developing generic RGOs for use at multiple AOCs throughout the entire site is acceptable. However, a case will have to be made at each AOC for the use of the generic RGOs. The evidence should identify that the conditions at the AOC are consistent with the exposures and, therefore, would use similar exposure parameters that were used in the development of the GROs. If exposure patterns, scenarios, or other circumstances at any particular AOC differ from the assumptions used to produce the "generic" RGOs, then area specific RGOs would be required to be developed. (Section 3.1 page 3-1)

Please clarify section 3.1 to identify how the risk assessments are to be conducted, or how the assumptions from previously approved risk assessments are to be used in the evaluation of Load Lines 2, 3, and 4.

11. Please revise the text on page 3-5 (lines 3-5), such that the topography of Load Line 2 is more clearly stated.

12. In section 3.2.2 (page 3-5), please add additional text to the workplan that states that during the Phase I RI, none of the obtained environmental samples were analyzed for propellants. Given the nature of activities that took place at these various load lines, there is the strong possibility that propellants may be another PCOC.

13. In section 3.2.9, page 3-7 lines 19 through 21, please revise the text, such that the guidelines more clearly state that the extent of contamination will be delineated (horizontally and/or vertically) as follows: >/= 1 mg/kg explosives; >/= 100 mg/kg lead and >/= 35 mg/kg of chromium; and, >/= 1 mg/kg PCBs. (Also page 4-16 line 34, page 4-16 line 45, page 4-17 line 6, page 4-20 line 12, page 4-29 lines 18-19, page 4-30 line 1, page 4-30 line 7)

14. The data validation process on page 3-7 lines 43-44 needs to be expanded. Ten percent of the data is submitted to a USACE subcontractor for full-independent, third-party validation; however, if problems or issues are identified, then an additional 10% of the data is submitted for validation. This process continues as necessary.

15. The first sentence beginning on line 47 of page 3-8 could be eliminated. (Section 3.3.3, Data Screen, page 3-8)

16. The paragraph beginning on line 20 of page 3-9 should be qualified to inform the reader that the essential nutrient exemption is only to be used in human health risk assessments. Screening based on essential nutrients is not conducted for ecological risk assessment purposes. This is clear in the ecological risk assessment section. However, to help eliminate any confusion, please include the additional information in the paragraph. (Section 3.3.3, Data Screen, page 3-9)

17. The sentence beginning on line 28 of page 3-9 is not clear in identifying the source of the risk assessment methodologies. The citation only refers to a scope of work, a date, and related technical assumptions and clarifications. Please include the full reference when appropriate. In addition, all assessment procedures should be given in the sampling and analysis plan, which also functions as a risk assessment assumptions document. See comment # 22 below for additional information. (Section 3.4 Human Health Risk Assessment, page 3-9)

18. Line 40 on page 3-9 states: "compare the COPCs identified at Load Lines 2, 3, and 4 with COPCs evaluated at Load Line; and...." This statement is not clear. A simple comparison would not be considered a risk assessment under any current U.S. EPA guidance documents. Please indicate that an appropriate use of risk assessment

methodology will be used to evaluate potential health risks and hazards that may be associated with the AOCs. This indication may be additional information that states how the COPCs are going to be compared to the Load Line 1 human health risk assessment process. Please see comment # 22 below for additional information. (Page 3-9)

19. Line 42 states: "identify appropriate health-based RGOs from the Load Line 1 BHHRA or identify the need for additional risk characterization for Load Lines 2, 3, and 4." The concept of using RGOs from Load Line 1 that is based on similar expected exposures, future and present use scenarios, and exposure assumptions is acceptable. Presently, the RGOs for Load Line 1 have not ben approved and need further evaluation before they will be considered for use in future remedial decision making. (Page 3-9)

20. The sentences beginning on line 17 on page 3-11 indicates that when samples are diluted, two analytical measurements will be performed and recorded. This will result in two chemical values being produced for each sample that is diluted. The "duplicate" values should be clearly identified in the tables whenever samples are diluted. It would be acceptable to use a combination of data, both diluted and those that have not been diluted, to complete the screening step of the COPCs selection process, as long as the process is clearly identified, reasonable, and that the data for the two samples were presented in the same tables. (Section 3.4.1, Selection of COPCs, page 3-11):

21. The sentence beginning on line16 should be clarified to indicate that the 95% ucl of the **arithmetic mean** will be used as the exposure point concentration of the COPCs. In addition, the citation of EPA 1992, is incorrect. EPA 1989 (Risk Assessment Guidance for Superfund, Volume 1, Human health Evaluation Manual [Part A]) should be cited as the source of the information. Also, EPA 1992 (Supplemental Guidance to RAGS: Calculating the Concentration Term, PB92-963373), should be listed as the source of the information and specific equations for calculating a 95% UCL of the arithmetic mean. Please correct the text. (Section 3.4.2.3, Exposure Point Concentration, page 3-13).

22. The concept of comparing Load Lines 2, 3, and 4 contaminant concentrations to Load Line 1 concentrations in lieu of conducting a risk assessment is not clear. If a decision has been made to remediate any contaminated medium found above RGOs that have been developed for Load Line 1, then that information is needed in the document. Without performing a quantitative risk assessment and exceeding acceptable risk and hazard requirements, there is no justification, per the Superfund process, for any remedial action. The determination of unacceptable potential or actual risks or hazards associated with site-related contamination is the criterion for requiring

remedial action at a site. Without risk and hazard values, it may also be difficult to satisfy or use the nine criteria of the National Continency Plan (NCP) to select the appropriate remedial or risk management approach for an impacted AOC. Therefore, if a binding agreement that indicates that all media that exceed RGOs (please note that these have yet to be approved) will be remediated to at or below RGO values, then the use of the RGOs as comparison values may be acceptable. (Section 3.4.2.4 Quantification of Exposure, Page 3-13)

If future risk assessment calculations are made, then the appropriate sections that describe the various steps in the process (*e.g.*, exposure assessment, toxicity assessment, risk characterization, etc.) would have to be modified from what is presently given in the "Draft Sampling and Analysis Plan for the Phase I RI Investigation of Load Lines 2,3, and 4 at the Ravenna Army Ammunition Plant."

23. Line 25 on page 3-15 should add the word "important" before the word ecological. The phase I ecological risk assessment (ERA) requirements are such that the presence or potential impact on important ecological resources is needed to trigger an ecological investigation. The draft sampling and analysis plan only states that any ecological resources are required for an investigation. Please review the definition of "important ecological resources," which includes the term "sensitive environment," and ensure they are used appropriately to trigger an ecological evaluation and that this information is consistent in the draft RI report. (Section 3.5, Screening Ecological Risk Assessment, Page 3-15)

24. Please remove the reference in the text on page 3-16 (lines 29-31) that indicates that the biological portion of any stream studies conducted would be performed by personnel from Ohio EPA, or modify it in such a way that it is less definitive. At this point in time, there is no guarantee that sufficient funding would be present for personnel from Ohio EPA to conduct any proposed biological studies.

25. The text on page 3-17 (lines 36-37) indicate which media are assumed to be the exposure media for the screening ecological risk assessment (ERA). Additional text needs to be added to the draft workplan that specifies that subsurface soil may also need to be considered as an exposure medium. Given that no subsurface soil samples were obtained during the Phase I RI and, as such, no data exists, it is premature to exclude the subsurface soil as a potential exposure medium. Sub-surface soils should, where appropriate, also be included as a source medium throughout the document and risk assessment process.

26. Section 3.5.1.2 presents, more or less, an example on how the screening ERA for Load Lines 1 and 12 were planned/completed and fails to describe how risk assessments will be conducted on Load Lines 2, 3, and 4. Section 3.5.1.1 states:

"(m)ethods for extrapolation of HQs from Load Line 1 and/or 12 - to Load Lines 2, 3, and 4 are assumed to be developed by the USACE and agreed to by Ohio EPA prior to execution of the risk evaluation." Section 3.5.1.1, line 5 and 6 on page 3-17 states: "(t)his is only an example, and USACE will be responsible for developing the exact methods according to the current scope." No methods on how the risk assessments and HQs that were developed for Load Line 1 and/or 12 are to be used to evaluate Load Lines 2, 3, and 4 have been presented. Therefore, the SAP is incomplete and cannot be approved without major modification and the inclusion of the methods, in detail, that will be used to evaluate the potential threats to ecological and human receptors as the result of uncontrolled site-related contamination. In addition, if methods are being considered that do not follow the traditional RI/FS process, such as those suggested in this document, then additional information is required that discusses how final remedial decisions will be made for the AOCs and how these decisions will be approved by Ohio EPA. Please clarify the risk assessment methodologies for the evaluation of Load Lines 2, 3, and 4. (Section 3.5.1.1, Chemicals of potential ecological concern, page 3-16 -3-17, and section 3.5.1.2, conceptual site model, including potential exposure media, exposed populations, and exposure pathways.)

27. During scoping meetings, it was agreed that the USACE would be conducting radiation surveys at the various load lines. In an appropriate section of the field activities section of the draft workplan, please insert a section into the report that describes the surveys, the techniques/equipment to be utilized, etc.

28. It should be noted that although Ohio EPA may agree at this time with the proposed locations and numbers of monitoring wells, this does not preclude the need for additional wells in additional locations at these load lines in the future. For example, depending upon the ground water monitoring results from the Phase II investigation, additional monitoring wells may be needed along the southern boundaries of these load lines. Also, as additional soil samples are collected and analyzed, additional sources of contamination may be identified. This may warrant the installation and sampling of additional ground water monitoring wells at these load lines. No text change currently required.

29. Information was provided in the draft sampling plan that discussed the depths of subsurface soil samples. It has been discussed in previous risk assessment work (*e.g.*, Winklepeck Burning grounds) that for unrestricted land use (*i.e.*, protective for residential use), soils should be characterized to a depth of 10 feet. No information was given on the rationale for the selected sampling depths or on the future use of deed restrictions at the various AOCs or the at the Ravenna Army Ammunition Plant. This information should be presented in the risk assessments for each AOC, or be

presented in an official acknowledgment/document of some kind. Please provide the pertinent information in the risk assessment report or other appropriate document. (Section 4.2 Subsurface Soil)

30. On Tables 4-1, 4-2, and 4-3 (pages 4-2 through 4-9):

a. Please ensure that 10% of the samples that are obtained are analyzed for the agreed-upon full suite of constituents: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/PCBs, TAL metals, explosives and propellants. The charts seemingly contradict the agreement that had been reached between all involved parties and the system that has been in place at all other AOCs. These tables suggest that instead of a specific location being designated as the "full-suite," that there may be several samples, that when looked at as a group, would result in a full suite. For example, at one location, in addition to the explosives and TAL metals, there may be samples obtained for VOCs and SVOCs, another sample may have explosives and metals and PCBs, etc. (This comment is also applicable to tables 5-1 through 5-11)

b. The tables are referred to later on in the text of the report as providing the specific rationale for the sample locations. However, the descriptions in the workplan are more general than the text would seemingly indicate. The text that corresponds to these particular charts needs to be revised, such that there is not an over-reliance on these tables for determining the rationale for sample location selection. (Also page 4-10 line10, page 4-22 lines 32-33, page 4-23 lines 8-9)

c. The tables should indicate that there are contingency samples scoped in for each of the load lines. This is especially true in light of the fact that there are numerous subsequent references to contingency samples in the text of the report that reference back to these tables.

d. The charts indicate that several soil samples will be collected in areas that may potentially be utilized in the future for the disposal of clean hard fill (CHF). Please contact Mr. Jarnal Singh (Ohio EPA, NEDO, Division of Solid and Infectious Waste Management), to ensure that there are no issues with utilizing areas on post for CHF, given the information regarding the concentrations of PCBs found in the various paints utilized by the Army. (Page 4-21 lines 36-38, page 4-22 line 23)

e. Please ensure that the total number of samples specified in these tables are consistent with the numbers previously scoped by the team members.

f. Please revise table 4-3 to include the following sample locations that are in the SOW: Buildings G-17, G-14, G-7, G-5, and G-2.

31. The text states that bedrock coring is not anticipated to occur at Load Line 4, as the depth to bedrock may be greater than 50 feet. If bedrock is encountered during the drilling of the monitoring well(s), bedrock coring would necessarily need to occur, therefore, funding would need to be obtained for this additional initiative. (Page 4-10 lines 42-43)

32. The third reason for collecting sub-surface soil samples during the initiatives at Load Lines 2, 3, and 4 is to determine the vertical extent of contamination at the various AOCs. Please revise the text accordingly. (Page 4-16 line 13)

33. The Agency acknowledges that for planning purposes, a certain number/percentage of subsurface soil samples needs to be assumed. However, it is the position of the Agency that if there are not enough samples scoped in to define the vertical extent of contamination, that an additional field effort will be required. No text change required. (Page 4-17 lines 21-27, page 4-20 lines 32-34 and the footnotes to tables 5-1 through 5-11)

34. The text on page 4-17 (section 4.2.1.3) should also state that 15% of the soil samples that field test non-detect for explosives will also be sent off-site for laboratory analyses. (Also page 4-19 after lines 7-8)

35. Revise the text on page 4-18 (lines 1-2) to read as follows: "Requirements for sample containers and preservation techniques for subsurface soil samples are presented in section...."

36. Please provide clarification for the text on page 4-20 lines 22-30. At some point in this portion of the text, it should be clearly stated that 10% of the collected samples will be analyzed for the agreed-upon full suite of constituents. Refer to comment # 30a detailed above. (Also page 4-29 lines 28-35, page 4-29 after line 48)

37. Please provide additional text in the draft workplan to describe how various Phase I RI locations were chosen for re-sampling. (Page 4-24 lines 11-12, line 4-24 lines 36-37, page 4-25 lines 7-8, page 4-30 lines 14-15, page 4-32 lines 32-33)

38. Please provide additional text in the report to describe how the various manholes and/or ejector stations were chosen for sampling. (Page 4-24 lines 16-19, page 4-24 lines 41-42, page 4-25 lines 14-18, page 4-32 line 19, page 4-32 lines 35-38)

39. Sediments that are sampled from streams that have water throughout the year should include a grain size analysis as part of the analytical procedure. The information provided by the grain size analysis will ensure that sediments have been sampled from depositional zones in lotic surface water bodies. Please include a grain size analysis on sediments that have been sampled from lotic surface water bodies. (Section 4.3.1.4 sample collection for field and laboratory analysis)

40. In section 4.3.2.5, text should be added to the draft workplan which indicates that sediment samples (except those obtained from the manholes and ejector stations) will also be analyzed for total organic carbon (TOC) and grain size.
(This is also applicable to tables 5-2, 5-6 and 5-10)

41. Section 4.3.2.5 identifies that 10 percent of soil samples collected at each load line will be submitted for pesticide and PCB analysis. This 10 percent criterion is assumed for both surface and sub-surface samples. What was not discussed in the document is the method envisioned to select the 10 percent of the soil samples. Given that PCBs are anticipated to be detected at the load lines, the sampling for PCBs should be conducted in a manner to identify the extent as well as the concentrations of these compounds. It is not clear in the document how the PCBs/pesticides sampling locations will be determined and that a sufficient quantity of soil samples will be taken to identify the extent of PCBs/pesticide contamination at the various load lines. (Section 4.3.2.5 sampling for chemical analysis)

42. Several sections of the text on page 4-33 state that various samples will be collected based upon field conditions (lines 29, 34, and 39). Please provide additional detail (if possible) in the text as to what field conditions may determine which samples are obtained.

43. The text on page 4-33 (section 4.4.2.3) must clearly state that 10% of the obtained samples will be analyzed for the full-suite of constituents agreed-upon by the project team members.

44. With respect to the proposed trenching, it is Ohio EPA's understanding that this will occur in areas that are not suspected to be impacted by the facility's operations. Please confirm. In addition, please reference previous Ohio EPA comments regarding the initiation and timing of corrective actions, should problems arise due to the trenching operations. (Page 4-37)

45. Please notify Ohio EPA prior to conducting the facility-wide water level measurements and well maintenance survey, as the Agency would like to be present. No text change required.

46. On Figure 4-1, LL2wp-059 should actually be LL2mw-059. This should be corrected.

47. In comparing the results of the soil sampling completed during Phase I of the remedial investigation at Load Line 4 with the proposed locations of the monitoring wells to be installed during the Phase II remedial investigation, it appears that there should be a monitoring well in the vicinity of building G-12A. Provisions for an additional monitoring well located in the vicinity of building G-12A at Load Line 4 should be added to this workplan. (Please add to the appropriate section of the text).

48. A table summarizing the rationale for the placement of the proposed wells shown on Figures 4-1 through 4-3 would aid greatly in evaluating the proposed locations. Such a table should be added to this document.

49. On Figures 4-7 (page 4-45), 4-11 (page 4-49) and 4-13 (page 4-51), and 4-14 (page 4-52), please provide the basis for the exposure units (EUs) that are delineated on the maps. (This could also be inserted into the appropriate corresponding sections of the draft workplan.

50. On figure 4-15 (page 4-53), please confirm that there isn't any surface water drainage from Load Line 2 to the northeast that could potentially impact the unnamed surface water bodies on the perimeter of the AOC.

51. It is recommended that verifying the presence of a cap on the inner casing be added to the well inspection checklist (Figure 4-21 page 4-59).

52. On Tables 5-4, 5-8, and 5-12, the abbreviation "GF" should be defined.

53. Please provide justification for solely sampling the soils in the vicinity of the former DLA tanks for antimony. Are there definitive records to indicate the tanks were solely utilized for the storage of asbestos and antimony? What would the cost differential be analyzing only for antimony and not TAL metals? Would it be just as cost effective to analyze for TAL metals, in addition to providing the project team with additional environmental information?

54. It is unclear why additional Shelby tube samples are being proposed for collection and analysis at Load Line 4 (see Table 5-12). These extra samples should be explained and reasons why similar samples are not needed at the other load lines should be documented.

55. In section 7.5 (lines 25-28), please insert text that states that all investigation-derived wastes (IDW) will be disposed of in accordance with all applicable state and federal rules, laws, and regulations.

56. In a 06/06/01 conversation, it was indicated that some of the rust inhibiting compounds used on the above-ground steam lines, etc., may have contained hexavalent chromium. As such, we discussed the possibility for utilizing some of the contingency samples, or scoping in additional samples, for hexavalent chromium analyses. Please confirm whether or not this is a possibility.

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:

1. Tables 1-1 (page 1-3) and 2-3 (pages 2-17 - 2-18) should be expanded to include the maximum concentrations of all PCOCs at Load Lines 2, 3, and 4, based upon the Phase I RI data.

2. Please add the west Nile Virus to the biological hazards section of table 2-2 (hazards analysis).

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: Rod Beals, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Diane Kurlich, DDAGW, NEDO
John Jent, USACE Louisville
LTC Tom Tadsen, RVAAP
David Seely, USEPA Region V
Kevin Jago, SAIC
Steve Love, NEDO, DERR
Brian Tucker, DERR, CO
Jarnal Singh, DSIWM, NEDO
John Cicero, RVAAP
Bob Whelove, OSC
Steve Selecman, SAIC

OhioEPA
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 9, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
FINAL, LOAD LINES 2,3,4 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:

1. "Final, Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Lines 2, 3, and 4 at the Ravenna Army Ammunition Plant, Ravenna, Ohio," and

2. "Final, Site Safety and Health Plan Addendum No. 1 for the Phase II Remedial Investigation at the Ravenna Army Ammunition Plant, Ravenna, Ohio."

The documents, dated July 2001 and received at Ohio EPA, NEDO, on July 19, 2001, were prepared for the U.S. Army Corps of Engineers (USACE) Louisville District by Science Applications International Corporation (SAIC), under contract number F44650-99-D-007, Delivery Order CY01.

The above-referenced documents were reviewed compared to the draft workplans, the comment resolution table, and the agreements reached during the comment resolution meeting held at the Ravenna Army Ammunition Plant (RVAAP) on June 28, 2001.

The contractor for the USACE did an excellent job in revising the final document in accordance with the comments that were received from the various agencies. Although no text changes are required, the following points on the final workplans are noted:

1. On page 1-10 (second paragraph) the text of this section (i.e., 1.2.1 which summarizes the existing data for Load Line 2), there should have been a notation that TNT is a site-related constituent (SRC) that was detected in groundwater (as 0.34 ug/l of TNT was detected in a water sample obtained from monitoring well LL2mw-059).

2. The text on page 3-9 (first paragraph) should read: "Diluted samples may be used in the determination of contaminant nature and extent if the detection limits are not elevated....."

3. The last bullet in section 4.2.2.2 should read: "Of subsurface soil samples...."

During the June 28, 2001 comment resolution meeting, Ohio EPA gave verbal permission for mobilization and sampling activities to proceed on July 23, 2001, if the draft documents were revised in accordance with the agreements reached during that meeting. This correspondence serves to memorialize that agreement and to confirm that the final workplans were revised as requested by Ohio EPA.

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: Bonnie Buthker, OFFO, SWDO
Brian Tucker, CO, DERR
Conni McCambridge, NEDO, DDAGW
Bob Whelove, OSC
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
John Jent, USACE Louisville
Kevin Jago, SAIC
Steve Selecman, SAIC
David Seely, USEPA Region V

ec: Mike Eberle, NEDO, DERR

OhioEPA
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 20, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
LOAD LINES 2,3,4 FSS RAD SURVEY

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: "The Final Status Survey for Load Lines 2, 3 and 4 Plan, Ravenna Army Ammunition Plant, Ravenna, OH, September 2001." This document, dated August 08, 2001 and received at Ohio EPA, NEDO, via e-mail on August 14, 2001, was prepared by the U.S. Army Corps of Engineers (USACE) - Buffalo District for USACE-Louisville.

A copy of the draft workplan was submitted to the Ohio Department of Health (ODH) for their review and comment, as ODH is the lead regulatory agency for radiation issues in the State of Ohio. Please be advised that the comments in this correspondence solely represent the review of the draft workplan by Ohio EPA, and that comments from ODH personnel will be submitted to your attention under separate cover.

Ohio EPA has the following comments on the draft workplan:

1. There are several acronyms in the draft workplan that are not clearly defined, for example, FSS, SP, etc. Please ensure that the first time an acronym is used that it is "spelled-out" in the text of the document, and is added to the "abbreviation" list found at the back of the draft workplan. (Applicable throughout the document)

2. Please revise the text on page i to indicate that Mr. David Hayes is employed by the USACE.

3. On page ii (draft schedule), please provide an estimation of the amount of time that will be required to conduct the proposed field activities. In addition, please be advised that under the Defense-State Memorandum of Agreement (DSMOA) that 30 days is the standard Agency review time for reports and, as such, the two-week turn around that is specified for the review of the draft report may not be achieved.

4. Please correct the spelling of Trumbull County. (Page 6)

5. Please change all references to the Industrial Operations Command (IOC) to Operations Support Command (OSC). (Pages 6 and 14)

6. The text on pages 6 and 7 indicate that radiography sources were located in building 10A at Load Line 3 and that "other load lines reportedly utilized industrial x-ray machines, however, this information has not been verified." The text additionally indicates that a final survey status (FSS) will be conducted at Load Lines 2 and 4 in addition to Load Line 3. Please add text to the draft workplan which discusses how it will be determined what areas in Load Lines 2 and 4 will be surveyed, given the lack of historical information. (Also applicable to section 1.9)

7. Please add additional text to section 1.4.2 to indicate why the Monazite Sand area and Buildings 2F4 and 120 are not included in this plan.

8. The text in section 2.3 indicates that the sample test (Sign Test) could be utilized to demonstrate compliance for release of survey units with Co-60 as a potential contaminant. However, the text further indicates that instead of this test the measurement technique will consist of a gross beta count, so that the Wilcoxin Rank Sum Test can be used to demonstrate compliance. Please provide additional information in the text as to the rationale for selecting one method over another.

9. In section 2.4, please provide additional information as to the source of the Derived Concentration Guidelines (DCGLs) for structures and equipment of 5000 dpm/100 cm^2 for total activity and 1000 dpm/100 cm^2 for removable contamination (also section 1.9).

10. Please check the section numbering in the draft workplan, as it is not consistent throughout the document. For example on page 8, the section numbering proceeds as follows: 2.4, 1.5, 1.6, 2.7, 2.9, 1.9, etc. As such, some of the sections referenced in this correspondence may not be accurate.

11. In section 1.6, please confirm what types of samples will be obtained.

12. In section 2.7, please provide additional information in the text as to how the reference area will be selected.

13. Please provide the reference described in section 2.8, i.e., CELRB-SO385-1-1.

14. In section 1.9, please provide the following information:

    a. How many areas will be scanned and what area will the scanned areas cover;

    b. Will walls be scanned in addition to floor areas;

    c. How many areas will have direct measurements taken;

    d. Are the direct measurements and wipe sampling phased based upon the results of the scans; and

    e. How many estimated wipe samples will be scoped in for the purposes of project planning?

15. Will back-up instrumentation be available in the event that a primary instrument malfunctions? (Sections 1.10 and 3.2.4)

16. Please provide the basis for the wipe sample LLD/MDA referenced in section 2.11.1.

17. Section 2.11.3 appears to be incomplete. Please revise as necessary.

18. In section 2.10.2, please provide details as to the frequency of replicate and duplicate sampling. (Also section 2.1 of the quality control section)

19. In the quality assurance/quality control section (QA/QC), please specify what laboratory will be utilized.

20. Please remove the reference to the Monazite Sand area in section 2.3.1 of the QA/QC section.

21. Please ensure that the warning limits of 15% and control limits of 20% of the mean value are the industry standards. (Section 3.2.2)

22. Please revise the text in section 3.2.4 to read: "... recalibrated or the cause for the out of control reading is identified and corrected."

23. In section 3.3, please provide details of the decon procedure that will be utilized.

Subsequent to the revision of this workplan, based upon the above-referenced comments and the comments that will be submitted by the ODH, please submit a hard-copy version of the revised document for Ohio EPA and ODH files.

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: Bonnie Buthker, OFFO, SWDO
Joe Crombie, ODH
John Jent, USACE Louisville
John Cicero, RVAAP
Craig Rieman, USACE Buffalo

OhioEPA
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, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
LOAD LINES 2, 3, 4 RAD SURVEY

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: "Radiation Final Status Survey Plan for Load Lines 2, 3, & 4, Ravenna Army Ammunition Plant, Ravenna, OH, September 2001." This document, received via email on September 6, 2001, was prepared by the U.S. Army Corps of Engineers (USACE) Buffalo District for USACE - Louisville.

The revised document was reviewed compared to the draft document that was received on August 14, 2001, and Ohio EPA correspondence on the draft workplan, dated August 20, 2001.

The following is noted on the revised workplan:

1. Ohio EPA comments # 7 and 18 (section 2.2.13.2) were not addressed in the revised workplan, as the comment response package (CRP) indicated. Especially, for item # 7, the text in the draft survey report must contain this information.

2. Ohio EPA comment # 23 was inadequately addressed in the CRP and not at all in the revised workplan. It is incumbent upon the USACE to ensure that all equipment utilized during this field effort is properly decontaminated, such that there is no resulting cross-contamination.

3. The text detailed in the CRP for Ohio EPA comments # 9, 11, 12, 14b, 14c, 14e, 15, and 19 should have been added to the revised document. Please ensure that this information is contained in the draft survey report.

4. All other comment responses were acceptable.

Science Applications International Corporation
An Employee-Owned Company

January 3, 2001

Ms. Sharon K. Evans
Department of the Army
U.S. Army Engineer District, Louisville
Corps of Engineers
P.O. Box 59
Louisville, KY 40201-0059

Subject: Response to December 14, 2000, Letter Regarding Notices of Violation at the Ravenna Army Ammunition Plant, Ohio

Dear Ms. Evans:

Science Applications International Corporation (SAIC) is in receipt of your letter dated December 14, 2000, regarding recent notices of violation (NOVs) at the Ravenna Army Ammunition Plant (RVAAP), Ohio, where we are currently performing HTRW services under contract to the U.S. Army Corps of Engineers (USACE), Louisville District. SAIC acknowledges responsibility for one NOV related to an incorrectly marked drum containing floor sweepings and paint chips from the interior of Building 1036.

In May 2000, SAIC initiated minor repairs and improvements to Building 1036, which was furnished to SAIC by RVAAP for staging field operations during the performance of remedial investigations at RVAAP. As part of this activity, our employees swept the building floor in an effort to improve worker safety by reducing exposure to dust and other airborne materials, including paint chips from the walls and bird and rodent feces. The floor sweepings were placed in a 55-gallon, DOT-regulation (UN1A2) drum, labeled as floor sweepings, and classified as "Non-hazardous materials, pending analysis" due to the presence of paint chips that might contain lead because of the age of the building. SAIC employees were attempting to implement "best management practices" by containing the floor sweepings that included the paint chips from the building's walls rather than disposing of the material as sanitary waste. We also believed that the drum was correctly labeled due to our lack of historical process knowledge or analytical information suggesting that the paint chips were of lead-based origin. In fact, representatives from the Ohio Environmental Protection Agency, on-site during the inspection when the NOV was issued in September 2000, supported this position and argued against the issuance of a NOV. Nevertheless, the U.S. Environmental Protection Agency representative was firmly of the opinion that the drum should have been labeled as "hazardous" based on process knowledge, and, consequently, a NOV was issued. SAIC accepts responsibility for the delay in performing analysis of the drum's contents or seeking clarification from RVAAP regarding the appropriate hazard classification for paint used at RVAAP. Following the inspection SAIC immediately contracted for the disposal of the drum's contents as hazardous waste at a permitted disposal facility, and such disposal has taken place.

SAIC is fully committed to conducting every aspect of our business in a high-quality and compliant and safe manner. In that regard, we approach any failure or situation that is adverse to

quality, compliance, or safety most seriously. Our established Corporate Quality Assurance Program requires that a Nonconformance Report (NCR) be issued on every occurrence, not just NOVs, found to potentially jeopardize the integrity of our work. The NCR process ensures that the root cause is identified and that corrective actions are implemented immediately to resolve the situation to our customer's satisfaction and to prevent a recurrence. SAIC has initiated an NCR in response to the NOV issued at RVAAP, and we are currently in the process of documenting the root cause(s) and implementing corrective actions to prevent the same or another situation from occurring at RVAAP. As soon as we have documented the cause(s) and actions proposed to correct and prevent the same or a similar situation from re-occurring, we plan to submit the NCR to you for final concurrence to ensure that we have satisfactorily met your expectations for adequately resolving this situation. In the interim the following steps have been taken:

1. An investigation into this incident has been initiated by a working group consisting of SAIC's Corporate Quality Assurance Officer, Compliance Officer, Health and Safety Officer, and senior management.
2. All of the project personnel have been notified of the incident.
3. A meeting has been scheduled with project personnel to review the incident and working group findings to reiterate SAIC's commitment to performing the highest quality work at RVAAP in the future.

Another component of our Corporate Quality Assurance Program is the client assessment process, which is intended to independently assess our performance, customer satisfaction, and areas for improvement and to implement proactive measures for improving work quality and customer satisfaction. Our last client assessment for RVAAP was conducted on October 28, 1999, by our USACE Louisville District contract program manager, Ike Diggs, and resulted in a score of 9.5 out of a maximum score of 10. We would like to personally meet with you and your RVAAP staff in Louisville to conduct another client assessment and independently assess our performance at RVAAP. We will contact you in the near future to arrange a date and time that is convenient for you and your staff.

I would like to close by reaffirming to you and to your customer at RVAAP, SAIC's deep commitment to meeting your collective program objectives under the Installation Restoration Program (IRP) at RVAAP in a high-quality, compliant, and safe manner. It has been SAIC's privilege to support the IRP mission at RVAAP since its inception in 1994, and we are proud of the success that we have enjoyed supporting the USACE in making RVAAP's IRP a model for partnering and quality execution. You have my personal commitment that SAIC will take whatever steps are necessary to preserve this relationship and ensure our mutual success at RVAAP.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Kurt P. Oschman
Corporate Vice President

C: Walt Perro, USACE
Kathy Dominic, SAIC
John Jent, USACE
Mark Patterson, RVAAP
Joe Craver, SAIC
Steve Selecman, SAIC
Ike Diggs, SAIC
Martha Turpin, SAIC
Glen Cowart, SAIC
Steve Davis, SAIC
Jerry Truitt, SAIC
Rich Shank, SAIC
Jeff Dick, SAIC

OHIO DEPARTMENT OF HEALTH

246 North High Street
Post Office Box 118
Columbus, Ohio 43216-0118
Telephone: (614) 466-3543
www.odh.state.oh.us

BOB TAFT
Governor

J. NICK BAIRD, M.D.
Director of Health

To: Ohio Radioactive Waste Generators
From: Bureau of Radiation Protection
Date: January 8, 2001
RE: Annual Waste Generator Report

Any Ohio Department of Health (ODH) or NRC licensee (in Ohio) that generates, possesses, or stores low level radioactive waste (LLRW), must return a report. The federal Low Level Radioactive Waste Policy Act, as amended, holds states responsible for the disposal of low-level radioactive waste generated within that state, except for certain waste generated by the federal government. This report will assist the state in fulfilling this responsibility by providing a profile of such waste.

If your facility did not generate, possess, or store any low-level radioactive waste in calendar year (CY) 2000 then complete the top third of the enclosed Licensee Information sheet and check the box indicating that no LLRW was generated, possessed, or stored. Return only the Licensee Information sheet to the ODH Bureau of Radiation Protection.

The enclosed low-level radioactive waste (LLRW) generator annual report form is provided by the Director of the Ohio Department of Health in accordance with Ohio Administrative Code (OAC) Rule 3701:1-54-02 effective February 13, 1999, which requires the reporting of LLRW generated or planned to be generated. By the same rule, the completed annual report covering the January 1, 2000 through December 31, 2000 reporting period must be submitted by April 30, 2001. The above rule does not cover NARM radioactive waste and is not to be reported on this form.

The low-level radioactive waste (LLRW) report supplies the Ohio Department of Health with information for reporting to the public in general terms the generation, treatment, disposal and storage of low-level radioactive waste in the State of Ohio during the 2000 calendar year.

The generators of low-level radioactive waste will be assessed a fee in accordance with OAC rule 3701:1-54-02 paragraphs C, D, E, F, and G upon receipt of the 2000 LLRW report. No fees will be assessed for the LLRW generated or placed in storage before January 1, 1998, in accordance with 3701:1-54-02(G). Fee surcharges are applied to Class B or C waste generated under 3701:1-54-02(C). High volume LLRW, defined in 3701:1-54-02(D), is assessed a separate fee. No fees are assessed for waste volumes associated with sanitary sewer disposals.

A generator reporting requirement exemption exists for facilities that exclusively use byproduct radionuclides with half-lives of one day or less in accordance with OAC 3701:1-54-02(E).

A copy of the rules may be found at the department's website
http://www.odh.state.oh.us/Rules/Final/Chap1_54/fr54lst.htm
or you may call the phone number below and request that a copy be sent to you.

Also available through the above website is a copy of the LLRW generator report in PDF and MS Word 97 formats for downloading.

The Director may annually review LLRW generator sites regarding the information and documentation supplied by the generator in this report as authorized by OAC 3701:1-54-02(I). If a review is determined to be necessary, you will be notified individually.

Please send the completed low-level radioactive waste annual report to:

Ohio Department of Health
Bureau of Radiation Protection
Attn: Technical Services
PO Box 118
Columbus, Ohio 43266-0118

The enclosed Supplemental Instructions provide additional information in completing the LLRW Generator Report. Questions regarding the completion of this report should be directed to the Technical Services Section of the Bureau of Radiation Protection at 614-644-2727.

Jago

Questions for Meeting with Ohio EPA to Discuss Waste Management Issues at RVAAP

January 23, 2001

MKM – Brian Stockwell

1. Is it necessary to perform the weekly inspections when no hazardous waste is stored in the less than 90-day storage area?

2. What will be the closure requirements for the less than 90-day storage areas at RVAAP?

3. What are the security requirements for the less than 90-day storage areas at RVAAP?

4. Before waste characterization results are received from the laboratory, is it necessary to mobilize all drums/containers of IDW (soil cuttings, purge water, PPE etc.) from RI and IRA sites to the less than 90-day storage area?

   Instead - is it acceptable to stage the drums on site in a temporary waste accumulation area (lined and bermed for containment) and label each drum with a description of the type of waste (soil cuttings, purge water etc.), start accum. date, project and location along with an indication that waste characterization results are pending? Then upon receipt of the waste char. results, only mobilize the haz waste drums (if any) to the less than 90-day storage area. This would effectively reduce the costs associated with moving ALL drums from RI and IRA work sites to the less than 90-day storage area.

5. In light of question no. 4 - Can well development water, purge water, and decon water be staged on site or does it have to be labeled "hazardous waste" and staged in a less than 90-day storage area while pending analysis?

Sue McCauslin - SpecPro

1. When does the 90-day clock start on waste that you have no reason to believe is hazardous, but upon receipt of analytical data, is in fact hazardous? Does the clock start when the waste was generated, or when it was identified as hazardous?

Jim McGee/Christy Esler

1) Location of Spill Response equipment/Supplies relative to actual location of Less than 90 day Haz. Waste Storage Site.

2) Are these Supplemental plans acceptable? Exhibit 11 Tab A-C in the ISCP.

Mark Patterson

1. Does RCRA regulate recyclable materials (e.g. lead plate and silver from film negatives)? If so, are there manifest, labeling, testing, shipping requirements?

2. When do munitions become Haz Waste?

3. Can the TCLP standards be applied to decon water? If so, is 100% of the total contaminants in the liquid considered "leachable"?

4. Generator Scenario: 5000 lbs of Haz waste is generated in January. 4500 lbs. Of the 5000 lbs. is shipped off-site in February and the remaining 500 lbs. Is shipped in March. Was the facility an LQG until the last 500 lbs. was shipped in March?

5. What signs are required for a <90-day storage area?

6. Can a <90 storage area be part of an occupied building.

7. Do RCRA rules (specifically <90 day) apply if haz waste is left on-site until shipping?

8. P. 7-10 of Ohio EPA Haz Waste Handbook, Bullet 2. Does a separate training outline need to be maintained in addition to the one in the contingency plan?

9. Is there a minimum requirement for spill control equipment based upon the volume of waste stored? Same question for secondary containment?

10. What, if any, are the requirements (testing, labeling, containment) for using large poly tanks? Is there a minimum volume to classify a container as a "tank"?

11. P. 7-11. of Ohio EPA Haz Waste Handbook. Emergency Equipment Requirement. What exactly does "water in adequate volumes and pressures for fire control" mean?

OhioEPA
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 6, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
PARTNERING AT THE RVAAP

Colonel William Radford
Facilities Management Officer
The Adjutant General's Department
ATTN: AGOH-FMO
2825 West Dublin-Granville Road
Columbus, OH 43235-2789

Dear Colonel Radford:

As one of the designated Ohio Environmental Protection Agency (Ohio EPA) project coordinators overseeing investigative and remediation activities being conducted under the Installation Restoration Program (IRP) at the Ravenna Army Ammunition Plant (RVAAP), I would like to take this opportunity to update you on the partnering relationship that exists among the stakeholders at the RVAAP. This relationship has developed over the years between representatives from the: United States Army Corps of Engineers (USACE); RVAAP; Operational Support Command (OSC); Ohio Army National Guard; Ohio Environmental Protection Agency (Ohio EPA); various consulting firms; and the general public.

The commitment of the environmental team to engage in honest dialogue, information-sharing and working through difficult issues has resulted in:

- the continuity of personnel assigned to various projects;
- a stream-lined approach to workplan development due to the in-depth project scoping meetings;
- the initiation of an effective Restoration Advisory Board (RAB) which has kept the public informed and updated on all the investigative and restoration activities at the RVAAP. This has resulted in a positive association with the general public and with elected representatives of all the counties and townships from which the RVAAP was created;
- the utilization of field techniques for explosives determination which has resulted in obtaining real-time data for determining approximate vertical and horizontal extent of contamination. In addition, this technique has been utilized to determine (along with a few laboratory confirmation samples) the depth of soil excavation for several projects;

- Ohio EPA sampling twenty-five (25) off-site residential wells in the vicinity of the RVAAP in November, 1997. No site-related explosives compounds were detected in any of the sampled wells;

- the initiation of an innovative ecological field truthing effort at the Winklepeck Burning Grounds (WBG);

- the re-arranging of installation-wide priorities such that areas of concern (AOCs) that are of particular interest to the OHARNG for continued training are investigated on a more expedited basis (for example, NACA Test Crash Area, Open Demolition Area # 1, and Building T-5301);

- the continued coordination of demolition activities with environmental activities;

- the conduct of a pilot bioremediation project to study the efficiency of microbial activities on the degradation of explosives compounds in soil and sediment;

- the use of video camera surveys and shaped charges to more safely cut pipes and steel beams that are contaminated with explosives compounds;

- the location of an on-site clean hard fill (CHF) disposal site within the installation in order to dispose of demolition debris from the Load Lines and ancillary buildings; and

- the installation of a flashing furnace on-site such that metal material can be thermally decontaminated to a 5x condition, so that it can be freely sold, recycled, or given to industry as scrap metal with no restrictive control.

Although I would not be able to provide you with monetary figures, the partnering relationship which has resulted in the above-detailed projects and innovations has resulted in a significant cost savings to the Army and the taxpayers. In addition, the stream-lining of the investigative processes on-site and the involvement of the general public from the beginning will result in investigative and remediation efforts being completed in a timely fashion (funding dependent).

Both LTC Tom Tadsen and Mr. Tim Morgan have been integral parts of the RVAAP environmental team. LTC Tadsen, in addition to serving as the RAB co-chair, provides critical insight into the training needs of the modern Army, and clearly articulates the OHARNG's plans for increased use of the installation as a training and logistics site. Mr. Morgan was instrumental in establishing the RAB and has provided key information to all stakeholders regarding the cultural and natural resources of the property. Both Mr. Morgan

and LTC Tadsen have an extensive knowledge base regarding the installation's history and demonstrate a clear understanding and knowledge of potentially applicable environmental rules and regulations.

I look forward to the continued interaction between all the stakeholders on this project and the continuation of progress on the investigation and remediation of the RVAAP installation.

If you have any questions concerning this correspondence or would like to discuss the RVAAP project, 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: Rod Beals, NEDO, DERR
Todd Fisher, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Bob Whelove, OSC
Mark Patterson, RVAAP
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Tim Morgan, RVAAP
John Jent, USACE Louisville
David Seely, U.S. EPA Region V

OhioEPA
State of Ohio Environmental Protection Agency

STREET ADDRESS:
Lazarus Government Center
122 S. Front Street
Columbus, OH 43215-1099

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

MAILING ADDRESS:
P.O. Box 1049
Columbus, OH 43216-1049

4/30/01
CONTRACTOR
RETURN FOR FILE

04/20/2001
U.S.ARMY RAVENNA ARMY AMMUNITION PLT
ATTN: JOHN CICERO JR
8451 STATE ROUTE 5
RAVENNA, OH 44266

Re: Receipt of Closure Plan
U.S. EPA ID No. OH5210020736

Dear Sir/Madam:

This is to inform you that the Ohio EPA, Division of Hazardous Waste Management, has received a closure plan from your company. Please note the following details:

Facility Name:	U.S.ARMY RAVENNA ARMY AMMUNITION PLT
Facility Address:	8451 STATE ROUTE 5 RAVENNA, OH 44266
Date Received:	03/09/2001
Public Notice:	WEEK OF 04/25/2001 RECORD COURIER
Library Availability:	REED MEMORIAL LIBRARY 167 EAST MAIN STREET RAVENNA OH 44266
Comment Period Ends:	06/01/2001
District Office Contact:	GREG ORR

If you have any questions, please contact the Ohio EPA district inspector at:
The Ohio EPA
Northeast District Office
Attn: GREG ORR
2110 Aurora Road
Twinsburg, Ohio 44087
Tel: (330) 963-1200

Sincerely,

M. Lonnie Terry
Information Technologies & Technical Support Section
Division of Hazardous Waste Management

cc: GREG ORR
Closure Unit

PUBLIC NOTICE

PORTAGE COUNTY

RECEIPT OF HAZARDOUS WASTE PARTIAL CLOSURE PLAN

Notice is hereby given of the receipt on March 9, 2001 of an amended partial closure plan from the Ravenna Army Ammunition Plant, 8451 State Route 5, Ravenna, Ohio 44266, U.S. EPA I.D. No. OH5210020736. The plan concerns the hazardous waste deactivation furnace area at the site indicated above. A copy of the facility's amended closure plan will be available for public review at the Reed Memorial Library, 167 East Main Street, Ravenna, Ohio 44266, and at the Northeast District Office, 2110 E. Aurora Road, Twinsburg, Ohio 44087, tel: (330) 963-1200. Comments concerning the partial closure plan may be submitted within 30 days of this notice to the Ohio EPA, Division of Hazardous Waste Management, Attn: Information Technologies and Technical Support Section, Lazarus Government Center, 122 South Front Street, Columbus, Ohio 43215, tel: (614) 644-2977, fax number (614) 728-1245, e-mail address dhwmcomments@epa.state.oh.us

OhioEPA
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

May 4, 2001

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

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: "Release of TNT Bioreporter Strains at the Ravenna Army Ammunition Plant." This information was prepared by personnel from the Environmental Sciences Division of Oak Ridge National Laboratory (ORNL), and was received by Ohio EPA via email on April 24, 2001.

GENERAL COMMENTS:

1. During meetings held at the Ravenna Army Ammunition Plant (RVAAP) on December 6, 2000 and April 5, 2001, Ohio EPA had requested additional background information on the proposed project from either the ORNL or the U.S. Army Topographic Engineering Center (USATEC). This information would include items such as (not all inclusive): correspondence from the various state and Federal EPA regions that have previously been involved in similar projects; supporting technical papers for this type of study; specific details on the bacteria die-off rates; etc. As of this date, the requested information has not been received by the Agency.

2. I have forwarded to your attention previous e-mails received from regulatory personnel in California and Illinois for your review.

3. I have contacted the various divisions within Ohio EPA to determine whether or not they would necessarily need or want to be included in reviewing the proposed study and involved the subsequent field work. At this point in time, it appears as though NEDO, DERR, will be the primary reviewer of the project. However, the following information, provided from other divisions within the Agency, need to be adhered to:

   Division of Surface Water (DSW): Bacteria shall not be applied to surface waters of the state, nor shall any surface water run-off from the project enter into waters of the

state. The Ohio Revised Code (ORC) 6111 requires that any discharge of pollutants to surface waters of the state requires a National Pollutant Discharge Elimination System (NPDES) permit from the Director of Ohio EPA. If there is ANY possibility of surface water linkage, then the contractor must necessarily apply for a NPDES permit through Ohio EPA, DSW.

Division of Drinking and Ground Waters (DDAGW): As long as the bacteria is being applied to the surface soil, no special permission is required from DDAGW. However, if there is any subsurface work conducted, then the Underground Injection Control (UIC) program of DDAGW would necessarily need to be notified/consulted.

(If additional information is received from any other divisions regarding the proposed project, it will be forwarded to your attention, via e-mail, as soon as it is received.)

4. Risk assessment personnel from Ohio EPA, Central Office (CO), DERR, that had previously been involved in research and field testing (in another state) utilizing recombinant bacteria, indicated that the Department of Agriculture had interest in projects such as these. Dr. Elizabeth Ferguson (US Army Corps of Engineers - USACE - Louisville District) contacted colleagues at the Department of Agriculture in order to see if there was any interest on their part regarding this proposed study. We are still awaiting a reply from the Department of Agriculture. As I will be out of the office from May 15, 2001 - May 30, 2001, I would ask that RVAAP follow-up with USACE on this issue.

5. Workplans that are developed for this particular project should be structured in such a manner that they tier under or are written in such a manner that they are consistent with the installation-wide Sampling and Analysis Plan (SAP), Quality Assurance Plan (QAPP), and Health and Safety Plan (HASP), where applicable.

SPECIFIC COMMENTS:

6. There should be an acronym list attached to the application, as many of the acronyms are not defined in the text.

7. Throughout the course of the application, it should be clear as to what Agency is meant by "EPA." Is it headquarters for U.S. EPA, a regional U.S. EPA office, Ohio EPA, or another state EPA in which work such as this has been performed? (This is especially applicable to the references on page 2 which discuss such issues as abiding by the EPA's decision on scheduling, which Agency is "considering" the TSCA Environmental Release Application (TERA), the 60-day mandated review time, the previous review of this technology for field release, etc.

8. Please provide Ohio EPA with the name and location of the site where this technology was first tested. (Page 2)

9. Please provide Ohio EPA with a copy of the original application form and supporting instructions. This would aid in clarifying some of the responses made in this submission. (Page 2)

10. The text indicates that at the Edwards Air Force Base the "Site conditions were shown to be sub-optimal for using our Green Fluorescent Protein (GFP) bioreporter gene, so the test was postponed." Please provide additional information as to what constituted sub-optimal conditions. (Page 2)

11. Please define terminology such as "extremely high" and "high" levels/concentrations of explosives. (Page 2)

12. The text indicates that: "Using this method, RVAAP personnel could determine precisely where the contaminated soil is located, and thus show where areas require remediation resources." This determination would be made in conjunction with the appropriate regulatory personnel. (Page 2)

13. Please provide additional information as to the substance(s) used to encapsulate the Red Fluorescent Protein (RFP). (Pages 2 and 7)

14. The following comments are applicable to both the GFP and RFP bioreporters found on pages 3 through 7:

    A. Provide information in Section B (Subject Organism Characterization).

    B. Please provide the full citation for "Bergey's Manual." (Section D.1.a)

    C. Please provide additional information on the TOL plasmid. (Section D.1.g)

    D. Please provide additional information on the persistence of the two strains in soil and fresh water; the benefits of conducting a comparison study of the strain with the parent using soil from the site; how deeply (if at all) the bacteria penetrate the ground surface, etc. (Sections D.2.b, D.2.c and G.7.a)

15. Please provide additional information regarding the depth to which this technology may be accurately utilized. There should not be any potential for the bacteria to reach groundwater. (Page 7)

25. Revise the text on pages 18-19 (Section G.9) which indicates that "Sites displaying fluorescence will be saved electronically as stored images and mapped in relation to the blast site..." Neither Load Line 1 nor WBG are "blast sites", as such, revise the text accordingly.

26. Please provide the photographs and appendices that are referenced in this application.

As a point of information, I will be out of the office from May 8 - 10, 2001 and from May 15 - 30, 2001. As such, if the project is to proceed on schedule, it is incumbent upon USATEC and ORNL to address the issues and concerns detailed in this correspondence.

Please contact me at 330-963-1221, if you have any questions concerning this correspondence.

Sincerely,

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

ETM/kss

cc: Rod Beals, NEDO, DERR
Bonnie Buthker, OFFO, SWDO
Diane Kurlich, NEDO, DDAGW
Jarnal Singh, NEDO, DSIWM
Bob Davic, NEDO, DSW
Brian Tucker, CO, DERR
John Cicero, RVAAP
Rob Fisher, USATEC
John Anderson, USATEC
Bob Burlage, ORNL

OhioEPA
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

May 7, 2001

RE: Ravenna Army Ammunition Plant
Portage/Trumbull Counties
OFFO Position Paper on
Background

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

Dear Mr. Patterson:

Attached to this correspondence, please find a position paper from the Ohio Environmental Protection Agency (Ohio EPA), Office of Federal Facilities Oversight (OFFO) entitled: "The Role of Background in Risk Assessment and Risk Management, May 2001."

Any questions regarding the attached position paper should be addressed to Ms. Laurie Eggert (Ohio EPA, OFFO, Southwest District Office) at 937-285-6457 or Mr. Brian Tucker (Ohio EPA, Central Office, Division of Emergency and Remedial Response) at 614-644-3120.

Sincerely,

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

cc: Rod Beals, NEDO DERR
Todd Fisher, NEDO DERR
Mike Eberle, NEDO DERR
John Cicero, RVAAP
Laurie Eggert, OFFO SWDO
Brian Tucker, CO DERR
Bonnie Buthker, OFFO SWDO
Paul Zorko, USACE Louisville
Elizabeth Ferguson, USACE Louisville
Bob Whelove, OSC
David Brancato, USACE Louisville
John Jent, USACE Louisville
LTC Tom Tadsen, RVAAP

Ohio EPA Office of Federal Facilities Oversight
Position Paper: The Role of Background in Risk Assessment and Risk Management
May 2001

The following text provides the position of the Office of Federal Facilities Oversight (OFFO) of the Ohio EPA on the use of background risk and its role in risk assessment and risk management. Ohio EPA-OFFO is promoting a consistent approach and format for the baseline risk assessments at Federal sites. Consistency allows for easier review of the risk assessment and encourages consistent use of the results by managers and other decision makers, in addition to demonstrating that risk assessments are conducted using the same framework and the same procedures. The lack of consistency in the format can lead to slower review times, different interpretations of similar results, and the charge that risk assessments are being conducted inappropriately.

Risk assessment is a tool that supplies information to assist risk managers with decision-making at remedial sites. The information provided by site-specific risk assessments is generated to ensure that the decisions made for each remedial site will be protective of human health and the environment.

A screening step is often an initial component of a site-specific risk assessment. Ohio EPA- OFFO allows the use of screening values based on background and risk-based evaluations to aid in the selection of contaminants of potential concern (COPCs) that will be assessed in the baseline risk assessment. The COPCs that are retained are those compounds that exceed background ambient concentrations and/or risk-based screening values. Therefore, COPCs that are retained are assumed to be site-related and used in the quantification of excess cancer risks and health hazards. The concentrations of COPCs from the on-site data set is used to determine the exposure point concentration that is used in the risk model. This value includes both background levels of naturally occurring compounds and the additional contamination resulting from site-related activities.

Since many contaminants occur naturally in the environment, background sampling and the background screening step is used in the risk assessment to distinguish site-related contamination from naturally occurring levels of chemicals present in the environment. It is recognized that there are two main types of background: naturally occurring and anthropogenic background. Naturally occurring background is the ambient concentration of chemical present in the environment that has not been influenced by humans (*i.e.*, aluminum, manganese, arsenic, etc). The concentration of these naturally occurring compounds can vary based on location and the geological parent material. It is also recognized that naturally occurring constituents can be present in the

environment at concentrations greater than acceptable levels, therefore, site-specific background sampling is conducted to determine the ambient concentrations of these naturally occurring compounds at a specific site. Risk managers consider these ambient concentrations when making risk management decisions, developing cleanup standards, or implementing remedial strategies. In general, final cleanup standards are not less than ambient (background) concentrations for naturally occurring constituents.

Anthropogenic background reflects concentrations of chemicals that are commonly present in the environment due to human activities and are not present due to site-related handling or disposal of these compounds. Multiple sources of anthropogenic contamination are present in the environment. These sources include; automobiles, burning of trash and firewood, and other urban/industrial activities. Concentrations of anthropogenic compounds are influenced by many factors such as land use (urban/rural), population density, and other human activities. The concentrations of these compounds can also vary and, may be localized or ubiquitous in certain areas (e.g., pesticides in agricultural areas).

Since some compounds found in the environment can be present as a result of natural processes, anthropogenic activities, and site-related activities, Ohio EPA-OFFO uses "background" as a screening mechanism to distinguish site-related contamination from naturally occurring levels of chemicals present in the environment. In general, the background comparison is applicable only to inorganic chemicals, because the majority of organic chemicals found at sites are not naturally occurring even though they may be ubiquitous and/or anthropogenic. It is difficult to conclusively demonstrate the origin of anthropogenic chemicals present at a site. Therefore, all chemicals exceeding screening criteria (*i.e.*, risk-based and background) are retained and assessed in the risk assessment. Since Ohio EPA-OFFO acknowledges anthropogenic sources of contamination, it is acceptable for assessments conducted under the oversight of OFFO to discuss and evaluate the risks and hazards from background and anthropogenic sources in the uncertainty section of the risk assessment report. This section presents a forum for information to be presented to risk managers regarding the level of confidence in the risk estimates for the site and allows additional information to be presented to the risk managers that should be considered during decision-making (e.g., health assessments, additional studies, alternative risk calculations, etc.). Keep in mind that the baseline risk assessment is one tool that managers use to make risk management decisions at a site. Many other studies or sources of information may exist for the site and should be considered in the risk management decision.

In summary, the role of background is to assist in the selection of contaminants that will be evaluated in the baseline risk assessment. Information on background is used to assist risk managers with decision making and the development of cleanup standards. The use of background, as stated in this position paper, is applicable to federal facilities under the oversight of the Office of Federal Facilities.

May 7, 2001

OhioEPA
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

May 11, 2001

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

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 several documents related to the above-referenced proposed pilot project at the Ravenna Army Ammunition Plant (RVAAP). The purpose of the proposed project is to conduct a field test in order to demonstrate the combined use of laser induced fluorescence and genetically modified microbes for the detection of TNT contamination at the RVAAP.

The documents that were reviewed are:

1. "Release of TNT Bioreporter Strains at the Ravenna Army Ammunition Plant." This document provided the necessary information to the U.S. Environmental Protection Agency (USEPA) in support of a TSCA Experimental Release Application (TERA).

2. "Points to Consider in the Preparation of TSCA Biotechnology Submissions for Microorganisms," U.S. EPA, 2 June 1997.

3. "Test Report for the Microbial Mine Detection System (MMDS)," Defense Threat Reduction Agency, 15 November 1998.

4. "Draft, Experimental Test Plan, Field Test to Demonstrate the Use of Laser Induced Fluorescence and Genetically Modified Microbes to Detect TNT Contamination at the Ravenna Army Ammunition Plant," U.S. Army Topographic Engineering Center (USATEC) and Oak Ridge National Laboratory (ORNL), 7 May 2001.

On May 4, 2001, Ohio EPA sent correspondence to your attention that detailed comments on the information sent to the U.S. EPA in support of a TERA (item # 1 above). On May 8, 2001, I received responses to the Agency comments from Dr. Bob Burlage at ORNL. The

responses to comments received from Dr. Burlage are acceptable to the Agency. In addition, at this point in time, the Agency will not be looking to receive any of the associated confidential business information (CBI) related to the project.

On May 9, 2001, the draft workplan for the proposed project was received at Ohio EPA, NEDO, DERR, via email from Rob Fischer (USATEC). The Agency has two minor comments on the workplan:

1. In the references section, the most recent version (2001) of the facility-wide sampling and analysis plans should be cited; and

2. Please add a sentence to the workplan (in the appropriate section) to indicate that the facility-wide workplan sampling methods, health and safety procedures, etc., will be utilized during any applicable portions of the project.

At this point in time, it is acceptable to Ohio EPA that the project proceed on the time schedule proposed in the draft workplan. When it is received, please send a copy of U.S. EPA's approval to proceed to my attention.

I will be out of the office from May 15, 2001 through May 30, 2001; however, I look forward to working with USATEC and ORNL on this project upon my return. In addition, I appreciate USATEC's and ORNL's rapid responses to Agency questions and requests for additional information.

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: Rod Beals, NEDO, DERR
Bonnie Buthker, NEDO, DDAGW
John Cicero, RVAAP
Rob Fischer, USATEC
John Anderson, USATEC
Bob Burlage, ORNL

MEMO

TO: **Susan McCauslin, SPECPRO, Inc., Mark Patterson, RVAAP**

FROM: **Ernie Neal, Neal Environmental Services, LLC**

DATE: **July 17, 2001**

RE: **Response to the OEPA/RVAAP Consent Orders Conference Call - 7/11/01**

In follow-up to the Ravenna Army Ammunition Plant/Ohio EPA conference call regarding potential consent orders for the facility, it was requested that Neal Environmental Services summarize the most concerning issues as presented in the OEPA letter directed to Mark Patterson of 6/26/01 and further discussed on 7/11/01.

During the closing minutes of 7/11/01 conference call, Mark Patterson stated that the Army-OSC would require additional time to internally discuss **four** major issues presented by OEPA in their letter of 6/26/01. Following are the points of concern.

1. **Incorporation (where applicable) of site restoration during remediation activities to satisfy potential Natural Resources Damage Claims at the installation.**

   The telephone conference call discussion on this issue was only general in nature and requires much greater understanding regarding OEPA's position on the matter. Considering the fact that a major portion of the RVAAP facility is ultimately scheduled for Ohio National Guard occupancy and use, this issue deserves thorough attention. We suggest that the matter would best be addressed in greater detail in a face-to-face meeting with the agency.

2. **Clear definitions of roles and responsibilities of all parties involved under the Orders.**

   OEPA stated in the conference call that the purpose of this issue was to clarify how various remediation project documents would be presented, reviewed and ultimately approved between the two parties. Further, OEPA indicated that they have had good success with various parties entering into consent orders when general time lines are established for agency review, comment and finalization of remediation projects. During our conversation, there appeared to be some confusion as to whether the OEPA was really indicating that they were attempting to set deadlines for specific remediation accomplishments to be completed at the

RVAAP. The OEPA attempted to clarify the matter. However, we believe we can gain a clearer response on the issue in a future conference call or in face-to-face meetings with the agency staff.

3. **Enforceable schedules for investigation and remediation activities necessary at the installation (similar to language that we have under other Federal facilities.)**

   OEPA clarified this matter by first indicating that there was no intent to attempt to tie the Army to specific remediation commitments and firm schedules. They related that they were fully cognizant that specific schedules were out of the question due to the uncertainty of available funding and other associated federal issues. However, OEPA suggested that the matter could be adequately addressed by convening annual planning meetings between the two parties. The planned annual meetings would provide the opportunity for the Army to present the RVAAP's proposed plan for site remediation activities for the ensuing year. Of course, this activity would be dependent upon the availability of appropriate funding and other necessary support. We would expect the OEPA to present their specific ideas on this issue in future discussions with the agency.

4. **Though a wavier from permits for hazardous waste treatment may be appropriate, individual site permits for discharges to air or surface water (if necessary for the remediation) should be obtained.**

   Considerable time was spent on this question during the conference call. NES related to the OEPA that unless a multi-media environmental permitting exemption was obtained by the RVAAP for future site remediation, there was no reason to pursue consent orders between the parties. After lengthy conversation on this issue, OEPA became aware that the agency indeed has legal ability to provide a multi-media environmental permitting exemption. Considering this fact, the only associated question at hand was in regard to the possible need for an NPDES surface water permit. Specifically, the questions are: a) Is the RVAAP required to secure an NPDES permit for surface water discharges and b) would it be advantageous for the RVAAP to pursue an NPDES permit regardless whether or not a permit is required? NES believes that since the RVAAP has made appropriate notice and obtained a facility storm water permit and that the RVAAP is presently implementing a surface water-monitoring program, we believe that an NPDES permit, at present, is not required. However, considering that the RVAAP may wish to perform some sort of mobile wastewater treatment activity during remediation or create a direct discharge to the state surface waters, it may be advisable to obtain a "generic" NPDES permit early on. The purpose of gaining the surface water discharge permit would be to avoid an RVAAP remediation delay if the need arises. In any event, we believe that the agency would concur with either option upon further discussion.

In summary, it appears that the goal of providing an opportunity for the RVAAP to accelerate environmental restoration of the ammunition production facility by securing a universal environmental permitting exemption is indeed possible. Likewise, the Ohio EPA has indicated an interest in encouraging speedy remediation by providing assistance with timely reviews, comments and subsequent approval of environmental remediation work plans. In addition, the Ohio National Guard is now in a position to develop the RVAAP area into a necessary compliment for training, guard development and military readiness with which it is charged. NES believes that the effort expended to negotiate acceptable consent orders will be very beneficial to the RVAAP. If successful, it will result in a reward that reflects the Army's sincere commitment to environmental protection as well as accomplishing a superb task that has not been attempted by most sister facilities and state environmental agencies.

OhioEPA

State of Ohio Environmental Protection Agency

Southwest District Office

401 East Fifth Street
Dayton, Ohio 45402-2911

TELE: (937) 285-6357 FAX: (937) 285-6249

Bob Taft, Governor
Maureen O'Connor, Lt. Governor
Christopher Jones, Director

July 23, 2001

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

Re: Copy of NPDES Permit for Wright-Patterson Air Force Base

Dear Mr. Patterson:

Per your request from the July 11, 2001 conference call, attached are copies of both the current and past NPDES permits for Wright-Patterson Air Force Base's (WPAFB) remediation systems.

As discussed on the conference call, the original permit was for a ground water treatment system at the Area C boundary of the base, and is listed as OEPA Permit Number 1IN00156*AD, with the effective date of September 27, 1991 through September 24, 1996. When WPAFB needed a discharge permit for a free product recovery system, their original NPDES permit was modified, and the revised pages were added to the permit (listed as OEPA Permit Number 1IN00156*BD). After the free product system operated for about a year, it was destroyed in a fire. When their NPDES permit was up for renewal, WPAFB requested that this discharge point be removed from their permit. Ohio EPA granted WPAFB's request, and the renewed permit (listed as OEPA Permit Number 1IN00156*CD) became effective on October 1, 1997.

If you have any questions about these permits, please contact me at (937) 285-6469.

Sincerely,

Bonnie B. Buthker

Bonnie B. Buthker
Office of Federal Facilities Oversight

CC: Eileen Mohr, NEDO/DERR
Mark Navarre, Legal/CO

RCRA HAZARDOUS WASTE GENERATOR
INSPECTION CHECKLIST

Company: Ravenna Army Ammunition Plant EPA ID#: OH5 210 020 736

Street: 8451 State Rte 5 City: Ravenna, Ohio

County: _____ State: Ohio Zip: _____

Mailing Address: Same as above
(If different from above)

Telephone: 216-358-7311 Fax #: _____

Owner/ Operator: _____
(If different from above)

Street: _____

City: _____ State: Ohio Zip: 4266-9297

Inspection Date(s): August 22, 2021 Time(s): _____

Inspection Announced? ____ Yes ____ NO If so, how much advance notice given? _____

	Name	Affiliation	Telephone
Inspectors:	Cindy Dubnes	US EPA Reg 5	312-886-0743
	Greg Orr	Ohio EPA NE District	330-963-1200
Facility Representative:	Mark Patterson	RVAAP	216-358-7311

Generator Classification	Waste Management Activity
____ Conditionally Exempt SQG (CESQG)	____ Containers
____ Small Quantity Generator (SQG)	____ Tank(s)
X Large Quantity Generator (LQG)	____ Other (specify)
____ 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 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 or in the remarks section.

1. Has the company undertaken any P2 activities to reduce the amount of hazardous waste generated? Yes ___ 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): _____

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): Undergoing closure

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 the 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

LARGE QUANTITY GENERATOR REQUIREMENTS

GENERAL REQUIREMENTS

1. Have all wastes generated at the facility been adequately evaluated? [3745-52-11] — Yes ✓ No ❑ N/A ___ RMK#___

2. Has the generator obtained an identification number? [3745-52-12] — Yes ✓ No ❑ N/A ___ RMK#___

3. Were annual reports filed with Ohio EPA on or before March 1st? [3745-52-41] — Yes ___ No ❑ N/A ✓ RMK#___

WASTE IMPORT/EXPORT REQUIREMENTS

4. Does the generator import or export hazardous waste? If so: — Yes___ No___ N/A ✓ RMK#___

   a. Has the generator notified U.S. EPA of export/import activity? [3745-52-53] — Yes ___ No ❑ N/A ✓ RMK#___

   b. Has the generator complied with special manifest requirements? [3745-52-54] — Yes ___ No ❑ N/A ✓ RMK#___

   c. For manifests that have not been returned to the generator: has an exception report been filed? [3745-52-55] — Yes ___ No ❑ N/A ✓ RMK#___

   d. Has an annual report been submitted to U.S. EPA? [3745-52-56] — Yes ___ No ❑ N/A ✓ RMK#___

   e. Are export related documents being maintained on-site? [3745-52-57] — Yes ___ No ❑ N/A ✓ RMK#___

GENERATOR CLOSURE REQUIREMENTS

5. Has the generator closed any <90-day accumulation unit(s) since the date of the last inspection? If so: — Yes___ No ✓ N/A ___ RMK#___

   a. Describe the unit(s) which the generator has closed.

   b. Does closure appear to have met the closure performance standard of 3745-66-11? [3745-52-34(A)(1)] — Yes ___ No ❑ N/A ✓ RMK#___

c. Please provide a description of the documentation provided by the generator to demonstrate that closure was completed in accordance with the closure performance standards.

NOTE: ***If the generator has closed a <90-day tank, closure must also be completed in accordance with OAC 3745-66-97 (except for paragraph C of this rule). [3745-52-34]***

REMARKS

MANIFEST REQUIREMENTS

You must start this part of the inspection by telling the company representative about the certification statement on the hazardous waste manifest using the following question and statement:

Are you aware of what the statement that you sign on the manifest says? Yes___ No___

If the answer is no, show them what the statement says using a signed manifest.

NOTE: ***While the statement is a certification that a P2 strategy is in place, signing the statement does not establish any legal obligations with which the company must comply. In other words, there is no violation of the hazardous waste rules if they sign the manifest and they don't have a program in place.***

1. 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#___

2. Have item I and items (1) through (20) of each manifest been completed? [3745-52-20(B)] — 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)]***

3. Does each manifest designate at least one permitted disposal facility? [3745-52-20(C)] — Yes ___ No ❑ N/A ___RMK#___

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)].***

4. 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#___

5. Have the manifests been signed by the generator and initial transporter? [3745-52-23(A)(1)(2)] — Yes ___ No ❑ N/A ___RMK#___

6. Has the generator received a return copy of each completed manifest within 35 days of being accepted by the transporter? If not: — Yes___ No___ N/A ___RMK#___

   a. Did the generator contact the transporter and/or TSD facility to check on the status of the waste? [3745-52-42(A)] — Yes ___ No ❑ N/A ___RMK#___

b. If the manifest was not received within 45 days, did the generator file an exception report with Ohio EPA? [3745-52-42(A)(2)]

Yes ___ No ❑ N/A ___RMK#___

7. Are signed copies of all manifests and any exception reports 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)] If so: Yes ✓ No ☐ N/A ___ RMK#___

   a. **For determinations based solely on knowledge of the waste:** Is supporting data retained on-site? [3745-59-07(A)(5)] Yes ___ No ☐ N/A ✓ RMK#___

   b. **For determinations based upon analytical testing:** Is waste analysis data retained on-site? [3745-59-07(A)(5)] 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 also identified the appropriate treatment standard(s) for the constituent(s) which cause the waste to exhibit a characteristic? [3745-59-09(A)] Yes ✓ No ☐ N/A ___ RMK#___

NOTE: ***The generator is not required to identify the treatment standard for the characteristic if the listing covers the associated characteristic (e.g., a F019/D007 hazardous waste - F019 being listed due to chromium content and D007 being the characteristic waste code for chromium). [See OAC 3745-59-09(B)]***

7. 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#___

8. Does each notification/certification form completed 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#___

9. Does the generator produce a waste that is hazardous at the point of generation, but subsequently excluded from regulation under OAC 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's 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 a surface water under a NPDES permit, and any characteristic hazardous waste that is rendered nonhazardous via mixing or treatment.***

10. Does the generator retain on-site a copy of all notices, certifications, demonstrations and waste analysis data for at least five years? [3745-59-07(A)(7)] Yes ___ No ❑ N/A ___RMK#___

11. Does the generator treat characteristic hazardous waste(s) in a RCRA-exempt unit to render such wastes nonhazardous? If so: Yes___ No___ N/A ___RMK#___

a. Are treated waste(s) sent to a licensed solid waste disposal facility? If so: Yes ___ No ❑ N/A ___RMK#___

i. Does the generator submit a notification and certification to the Director which contains the following:

1. Name and address of the facility receiving the waste? [3745-59-09(D)(1)(a)] Yes ___ No ❑ N/A ___RMK#___

2. A description of the waste, including EPA hazardous waste numbers and treatability group? [3745-59-09(D)(1)(b)] Yes ___ No ❑ N/A ___RMK#___

3. 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 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 3745-50-10.***

REMARKS

PERSONNEL TRAINING

1. Does the generator keep records required by 3745-65-16(D) including:

   a. Job titles, as they relate to hazardous waste management, and the name of each employee filling each job? — Yes ___ No ☑ N/A ___ RMK#___

   b. Job descriptions, including requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position? — Yes ___ No ☑ N/A ___ RMK#___

   c. Type and amount of both introductory and continuing training to be given to each person filling a position? — Yes ___ No ☑ N/A ___ RMK#___

   d. Documentation that personnel have completed the training or job experience required under 3745-65-16(A)(B) & (C)? — Yes ___ No ☑ N/A ___ RMK#___

NOTE: ***If the facility's business practices precludes written job titles/descriptions, they should be able to identify, by name, all personnel who are involved with hazardous waste management, and the training/experience that they receive initially and annually. Item 9 on the next page can be used to document that all necessary employees have been trained.***

2. Does the generator have a training program which teaches facility personnel hazardous waste management procedures (including, but not limited to, contingency plan implementation) relevant to their positions? [3745-65-16(A)(2) — Yes ___ No ☑ N/A ___ RMK#___

3. Does the personnel training program include instruction in the following areas to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with: [3745-65-16(A)(3)]

   a. Emergency procedures? — Yes ___ No ☑ N/A ___ RMK#___

   b. Emergency equipment? — Yes ___ No ☑ N/A ___ RMK#___

   c. Emergency systems? — Yes ___ No ☑ N/A ___ RMK#___

4. Does emergency training described in 3(a), (b) and (c) above include, *where applicable*: [3745-65-16(A)(3)(a-f)

   a. Procedures for using, inspecting, repairing and replacing emergency and monitoring equipment? — Yes ___ No ☑ N/A ___ RMK#___

   b. Key parameters for automatic waste feed cut-off systems? — Yes ___ No ☑ N/A ___ RMK#___

c. Communication or alarm system? Yes ___ No ☑ N/A ___ RMK#___

d. Response procedures for fire/explosions? Yes ___ No ☑ N/A ___ RMK#___

e. Response to groundwater contamination incidents? Yes ___ No ☑ N/A ___ RMK#___

f. Shutdown procedures? Yes ___ No ☑ N/A ___ RMK#___

5. Is the personnel training program directed by a person trained in hazardous waste management procedures? [3745-65-16(A)(2)] Yes ___ No ☑ N/A ___ RMK#___

6. Do new employees receive training within six months after the date of hire (or assignment to a new position)? [3745-65-16(B)] Yes ___ No ☑ N/A ___ RMK#___

7. ✱ Does the generator provide annual refresher training to employees? [3745-65-16(C)] Yes ___ No ☑ N/A ___ RMK#___

8. ✱ Are training records for current personnel kept until closure of the facility? [3745-65-16(E)] Yes ___ No ☑ N/A ___ RMK#___

9. Are training records for former employees kept for at least three years from the date the employee last worked at the facility? [3745-65-16(E)] Yes ___ No ☑ N/A ___ RMK#___

10. ***Optional***: The following section can be used by the inspector to document that all personnel who are involved with hazardous waste management have been trained. The employees who need training (written and/or on-the-job) may include the following: environmental coordinators, drum handlers, emergency coordinators, personnel who conduct hazardous waste inspections, emergency response teams, personnel who prepare manifests, etc.

Job Performed	**Name of Employee**	**Date(s)Trained**

REMARKS

CONTINGENCY PLAN

1. Does the generator have a contingency plan which describes the following: [3745-65-52(A) through (F)]

   a. Actions to be taken in response to fires, explosions or any unplanned release of hazardous waste? — Yes ___ No ☐ N/A ___ RMK#___

   b. Arrangements/agreements with emergency authorities? [3745-65-37] — Yes ___ No ☐ N/A ___ RMK#___

   c. A current list of names, addresses and telephone numbers (office and home) of all persons qualified to act as emergency coordinator? — Yes ___ No ☐ N/A ___ RMK#___

   d. A list of all emergency equipment, including: location, physical description and brief outline of capabilities? — Yes ___ No ☐ N/A ___ RMK#___

   e. An evacuation plan for facility personnel where there is a possibility that evacuation may be necessary? — Yes ___ No ☐ N/A ___ RMK#___

NOTE: ***If the facility already has a "Spill Prevention, Control and Countermeasures Plan" under 40 CFR Part 112 or 40 CFR Part 1510, or some other emergency plan, the facility can amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with OAC requirements. [3745-65-52(B)]***

2. Is the plan designed to minimize hazards to human health or the environment from fires, explosions or any unplanned release of hazardous waste? [3745-65-52(A)] — Yes ___ No ☐ N/A ___ RMK#___

3. Is a copy of the plan (plus revisions) kept on-site and been given to all emergency authorities that may be requested to provide emergency services? [3745-65-53(A)(B)] — Yes ___ No ☐ N/A ___ RMK#___

4. Has the generator revised the plan in response to rule changes, facility, equipment and personnel changes, failure to the plan or as required by the Director? [3745-65-54] — Yes ___ No ☐ N/A ___ RMK#___

EMERGENCY COORDINATOR

5. Is an emergency coordinator available at all times (on-site or on-call)? [3745-65-55] — Yes ___ No ☐ N/A ___ RMK#___

*NOTE: ***The emergency coordinator shall be thoroughly familiar with: (a) all aspects of the facility's contingency plan; (b) all operations and activities at the facility; (c) the location and characteristics of waste handled; (d) the location of all records within the facility; (e) facility layout; and (f) shall have the authority to commit the resources needed to implement provisions of the contingency plan***

6. Has there been a fire, explosion or release of hazardous waste or hazardous waste constituents since the last inspection? If so: Yes___ No___ N/A ___RMK#___

   a. Was the contingency plan implemented? [3745-65-51(B)] Yes ___ No ❑ N/A ___RMK#___

   b. Did the facility follow the emergency procedures in 3745-65-56(A) through (H)? Yes ___ No ❑ N/A ___RMK#___

   c. Did the facility submit a report to the Director within 15 days of the incident as required by 3745-65-56(J)? Yes ___ No ❑ N/A ___RMK#___

NOTE: OAC 3745-65-51(B) requires that the contingency plan be implemented immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents, which could threaten human health and the environment.

REMARKS

PREPAREDNESS AND PREVENTION [3745-52-34(A)(4)]

1. Is the facility operated to minimize the possibility of fire, explosion, or any unplanned release of hazardous waste? [3745-65-31] — Yes ✓ No ☐ N/A ___ RMK#___

2. Does the generator have the following equipment at the facility, if it is required due to 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#___

3. Is emergency equipment tested (inspected) on a weekly basis and maintained as necessary? [3745-65-33] — Yes ___ No ☐ N/A ___ RMK#___

4. 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#___

5. Do personnel have immediate access to a communication device when handling hazardous waste (*unless the device is not required under 3745-65-32)*? [3745-65-34] — Yes ___ No ☐ N/A ___ RMK#___

6. Is adequate aisle space provided for unobstructed movement of emergency or spill control equipment? [3745-65-35] — Yes ___ No ☐ N/A ___ RMK#___

7. Has the generator attempted to familiarize emergency authorities with possible hazards and facility layout? [3745-65-37(A)] — Yes ___ No ☐ N/A ___ RMK#___

   a. 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

GENERATOR ACCUMULATION

1. Has the generator accumulated hazardous wastes on-site in excess of 90 days without a permit or an extension from the director? [3745-52-34; ORC §3734.02(E)(F)] — Yes ☐ No ___ N/A ___RMK#___

SATELLITE ACCUMULATION AREA REQUIREMENTS [3745-52-34(C)(1)]

2. 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.***

3. Is the generator accumulating hazardous waste(s) in excess of the amounts listed in either 2(c) or 2(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 excess with the accumulation date when the 55 gallon (one quart) limit was exceeded? — Yes ___ No ☐ N/A ___RMK#___

USE AND MANAGEMENT OF CONTAINERS

4. Has the generator marked containers with the words "Hazardous Waste?" [3745-52-34(A)(3)] — Yes ___ No ☐ N/A ___RMK#___

5. Is the accumulation date on each container? [3745-52-34(A)(2)] — Yes ___ No ☐ N/A ___RMK#___

12. 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

7001 0320 0005 9027 9267
7001 0320 0005 9027 9267

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only: No Insurance Coverage Provided)

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

Sent To: John CICERO, JR Comm Reprep
Street, Apt. No., or PO Box No.: 8451 State Route 5
City, State, ZIP+4: RAVENNA, OH 44266-9297

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

John CICERO, JR
Commander's Repres
RAVENNA ARMY PLANT
8451 State Route 5
RAVENNA, Ohio 44266-9297

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)* | B. Date of Delivery

C. Signature
X ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)*
7001 0320 0005 9027 9267 / C DAGNER-ECAB DE-9J

PS Form 3811, July 1999 Domestic Return Receipt 102595-99-M-1789

ATTACHMENT #2

FINDLAY

THE UNIVERSITY OF FINDLAY

Certificate of Achievement

awarded by

THE NATIONAL CENTER OF EXCELLENCE FOR ENVIRONMENTAL MANAGEMENT

ENVIRONMENTAL RESOURCE TRAINING CENTER

to

MARK C. PATTERSON

for Successful Completion of

OSHA 40-HOUR SAFETY TRAINING WORKSHOP
(FULFILLS THE REQUIREMENTS OF 29 CFR 1910.120 COVERING HAZARDOUS WASTE OPERATIONS)
4.0 CEU'S
SEPTEMBER 18, 1998

J. Rollo Van Dyne
EXECUTIVE DIRECTOR

INSTRUCTOR

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

11/5/01

REPLY TO THE ATTENTION OF

DE-9J

OCT 30 2001

5: 12/05/01

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 August 22, 2001, representatives of the United States Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (OEPA) inspected Ravenna Army Ammunition Plant (RVAAP) 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 August 22, 2001 inspection, we have determined that Ravenna Army Ammunition Plant was subject to the requirements of a large quantity generator in the month of April 2001. Due to RVAAP's change in generator status, RVAAP violated the following requirements under RCRA and the authorized Ohio Administrative Code (OAC):

OAC Rule 3745-65-16 (C)[40 CFR 265.16(c)], which requires that personnel take part in an annual review of initial training. At the time of the inspection, no documentation of conducted annual training was available for review. Please document compliance by submitting documentation of a 2001 annual review of the initial

training for personnel serving in positions related to hazardous waste management. The positions may include the following: environmental coordinators, drum handlers, emergency coordinators, personnel who conduct hazardous waste inspections, emergency response teams, personnel who prepare manifests, etc.

OAC Rule 3745-65-16(D)(1-4) [40 CFR 265.16(D)(1-4), which requires that the owner or operator shall maintain the following documents and records at the facility: (1) job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job; (2) a written job description for each position listed under paragraph (D)(1) of OAC Rule 3745-65-16; (3) a written description of the type and amount of both introductory and continued training that will be given to each person filling a position listed in paragraph (D)(1) of OAC Rule 3745-65-16; and (4) records that document that training or job description required under paragraphs (A), (B) and (C) of OAC Rule 3745-65-16 has been given to, and completed by, facility personnel. Please document compliance by submitting documentation of the requirements mentioned in this paragraph.

Additionally, RVAAP must notify the OEPA of the change in generator status. This information can be submitted to the OEPA through the revised Hazardous Waste Notification form or it can be documented in a letter to OEPA. Revisions to generator status are handled by OEPA's Data Management Section at the Central Office.

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,

Paul Little

Paul Little, Chief
Compliance Section 2
Enforcement and Compliance Assurance Branch

Enclosures

cc: Gregory Orr, OEPA, NEDO (w/enclosures)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: August 27, 2001

SUBJECT: CEI Inspection Report
Ravenna Army Ammunition Plant
Ravenna, Ohio

FROM: Cindy Dabner
Environmental Scientist

TO: File

Inspection Date: August 22, 2001

Facility: Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 4266-9297

Facility EPA ID #: OH5 210 020 736

SIC Code:

EPA Representatives: Cindy Dabner, ECAB/CS2
Environmental Scientist
(312) 886-0743

State Representative: Greg Orr
OEPA
NE District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
(330) 963-1200

Facility Representative(s): Mark Patterson
Environmental Coordinator
Telephone: 216-358-7311
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

Report Prepared By: Cindy Dabner

Purpose of Inspection:
This was a Federal lead inspection of the Ravenna Army Ammunition Plant (RVAAP).

Facility Background:
From April 1, 1950 to September 30, 1993, RVAAP operated a storage and treatment facility for munition and munition derivatives. RVAAP also operated an open burning area; an open detonation area; a deactivation furnace; pinkwater treatment plants; and a hazardous storage area. Currently, RVAAP is undergoing closure and has ceased hazardous waste treatment operations (open burning/open detonation). The facility does not intend to engage in any hazardous waste treatment operations in the future.

Waste Generated:
The hazardous waste generated at RVAAP include: lead based paint chips; lead anchors; mercury switches; acetone; and explosive materials.

Entry Procedures:
On August 22, 2001, the United States Environmental Protection Agency (U.S. EPA), Region 5, Enforcement, Compliance and Assurance Branch representative, Cindy Dabner, and the Ohio Environmental Protection Agency (OEPA) representative, Gregg Orr, conducted a Compliance Evaluation Inspection (CEI) at the Ravenna Army Ammunition Plant (RVAAP). Upon arriving at the installation, Gregg Orr and I identified ourselves and explained the purpose of the inspection to Mark Patterson, the RVAAP Environmental Coordinator.

At the time of the inspection, Mr. Patterson informed U.S. EPA and the OEPA that no hazardous waste was stored at Loadline #1. Therefore, the inspection only included a visual inspection of Field Lab Building 1036 and the Field Lab Building 1038.

Wall Through Inspection:
We began the visual walk-through inspection at the SAIC Field Lab in Building 1036. At this location, SAIC, RVAAP's contracted environmental consultants, conducts TCLP testing and sampling operations. We did not observe any hazardous waste stored at the satellite accumulation area located in Building 1036 at the time of the inspection.

The inspection proceeded to Building 1038 where MKM, RVAAP's contracted environmental consultants, manages hazardous waste. At this location, soil is tested for trinitrotoluene(TNT)using a

Jenkins TNT Kit and a Jenkins RDX Kit. MKM informed us that acetone waste is generated in very small amounts from TNT and RDX testing. The MKM representative stated that less than a gallon of waste per month is generated from TNT and RDX testing.

Record Review:
The inspection then proceeded to a review of RVAAP's RCRA records.

Manifests
I reviewed manifests for calender years 2000 and 2001. I observed from the manifests reviewed that the RVAAP fell into the small quantity generator status during most of the year. However, during the month of April 2001, RVAAP generated over 7,200 pounds of hazardous waste. (See Attachment #1 Manifest# RAAPO4192001.) Therefore, for the month of April 2001, RVAAP's status was that of a Large Quantity Generator (LQG) and was subject to the requirements of a LQG. RVAAP must comply with all the requirements of a LQG and notify the OEPA of the change in generator status. Revisions to the generator status are handled by the OEPA's Data Management Section at the Central Office.

Land Disposal Restriction (LDR) Requirements
I reviewed LDR records for calender years 2000 and 2001. The LDR records appeared to be properly completed.

Personnel Training
I observed during the record review that annual refresher training was not conducted and documented for every person filling a job position related to hazardous waste as required by the Ohio Administrative Code Rule (OAC) 3745-65-16 (C)[40 CFR 265.16(c)] which requires that personnel take part in an annual review of initial training. Also, (OAC) Rule 3745-65-16(D)[40 CFR 265.16(d)] requires RVAAP to maintain: (1) the job title for each position at the facility related to hazardous waste, and the name of the employee filling each job; (2) a written job description for each position listed related to hazardous waste management; (3) a written description of the type and amount of both introductory and continuing training that will be given to each person filling a position related to hazardous waste; and (4) records that document that the training has been given to and completed by personnel. None of the documents mentioned in this paragraph was available at the time of the inspection. I noted that the most recent documented training for the RVAAP Environmental Coordinator was conducted in September 18, 1998, and I also noted that RVAAP did not have training records available for emergency coordinators at the time of the inspection. (See Attachment#2 OSHA 40 hours Hazardous Waste

Operations Certificate - Mark Patterson.)

Contingency Plan

I reviewed RVAAP's Installation Spill Contingency Plan, dated August 2000. The plan appeared to meet the requirements of (OAC)3745 Contingency Plan and Emergency Procedures [40 CFR Part 265 Subpart D].

Generator Closure Requirements

RVAAP is currently undergoing closure and is required to comply with closure requirements.

Preparedness and Prevention

RVAAP appeared to meet the requirements of OAC 3745 Preparedness and Prevention [40 CFR Part 265 Subpart C].

ATTACHMENTS:

1. Manifest# RAAPO4192001
2. OSHA 40 hours Hazardous Waste Operations Certification 1998 - Mark Patterson

Patterson, Mark

To: John Cicero; RAVENNA-AAP; McGee, Jim
Subject: FW: Ravenna Schedule

FYI. Tentative schedule to remediate remaining monazite at the Route 80 Tank Farm.

Mark
-----Original Message-----
From: Radconpro@aol.com [mailto:Radconpro@aol.com]
Sent: Tuesday, August 28, 2001 10:31 AM
To: StyvaertM@osc.army.mil; pattersonm@osc.army.mil; eileen.mohr@epa.state.oh.us; JCROMBIE@gw.odh.state.oh.us
Cc: bhaney@earthlink.net; Willie@newworld.org; Tom@newworld.org
Subject: Ravenna Schedule

Below is an outline of the schedule for the Ravenna Project:

Week of 9 September 2001

Mon: Equipment Mobilization, Site Specific Training
Tue: Begin Transfer of Stockpiled Soils
Wed: Continue Transfer of Stockpiled Soils
Thurs: Continue Transfer of Stockpiled Soils
Fri: Continue Transfer of Stockpiled Soils

Week of 16 September 2001

Mon: Finish Transfer of Stockpiled Soils
Tue: Begin Final Release Surveys
Wed: Continue Final Release Surveys
Thurs: Continue Final Release Surveys
Fri: Continue Final Release Surveys, Begin Final Release Soil Sampling

Week of 23 September 2001

Mon: Finish Final Release Surveys, Continue Final Release Soil Sampling
Tue: Continue Final Release Soil Sampling
Wed: Continue Final Release Soil Sampling
Thurs: Finish Final Release Soil Sampling, Grade Site
Fri: Ship Remaining Contaminated Soils, Equipment Demobilization

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Radiological Hazards	Potential Hazards	Control Measures
Equipment to be Used: - Portable Detectors - Radiation Dosimeter Inspection Requirements: - General work areas. Training Requirements: - HazComm: Radiation - NWT Radiation Protection Program	- Radiation exposure. - Accidental release of radiation source.	- The Radiation Safety Officer must authorize Operators of monitoring equipment. - Operators will wear their assigned radiation dosimeter while working with, carrying, and/or transporting any radioactive materials. - ALARA (as low as reasonably achievable) principle to govern all work with radioactive materials. - Operators are to maintain maximum allowable distance at all times. - Unauthorized personnel will not be allowed within the exclusion zone. - Maintain visual contact with all monitoring equipment while in the field to prevent equipment from running over it. - Sources and instruments are to be secured and locked at all times while not in the field.

Adverse Weather	Potential Hazards	Control Measures
Equipment to be Used: - Radios - Shelter Inspection Requirements: - Throughout work activities Training Requirements: - General awareness - FA/CPR (American Red Cross)	- Lightening Strikes	- Whenever possible, halt activities and take cover. - If outdoors, stay low to the ground, but limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). - Seek shelter in a building if possible. - Stay away from windows - If available, crouch under a group of trees instead of one single tree. - Keep 6 feet away from tree trunk if seeking shelter beneath tree(s). - If in a group, keep 6 feet of distance between people. - Suspend drill rig/crane operations if thunderstorm/lightning is in immediate vicinity.
	- Thunderstorms - Tornadoes	- Listen to the radio or TV announcements for pending weather information. - Cease field activities during thunderstorm or tornado warnings, as directed by the Project Manager. - Seek shelter. Do not try to outrun a tornado. - Do not stand near windows or door glass.
	- Earthquakes	- Seek immediate shelter (eg., door jambs, desks, etc). - Do not stand near windows or door glass.

Sanitation and Housekeeping	Potential Hazards	Control Measures
Equipment to be Used: - Trash containers - Hand tools Inspection Requirements: - Daily Training Requirements: - General awareness	- Slip, trip, fall	- Personnel will clean-up the work site daily and dispose of trash. - Refuse containers or bins will be readily available on site. - Provide adequate storage for tools and equipment. - Provide adequate lighting in all work areas. - Provide adequate ventilation in all work areas. - Work areas and floors shall be kept clear of debris. - Materials shall not be stacked higher than 6 feet. - Provide stools, ladder where workers need to access elevated storage areas. - Protruding nails in scrap boards, planks, and lumber shall be removed, hammered in, or bent over flush with the wood. - Weeds and grass shall be kept down. - Flammable materials shall be placed in approved flammable storage containers.

Patterson, Mark

From: Radconpro@aol.com
Sent: Wednesday, August 22, 2001 2:08 PM
To: kari@newworld.org; StyvaertM@osc.army.mil; eileen.mohr@epa.state.oh.us; JCROMBIE@gw.odh.state.oh.us; victoria@newworld.org
Cc: bhaney@earthlink.net; Willie@newworld.org; Tom@newworld.org; pattersonm@osc.army.mil
Subject: Ravenna Revised Work Plan

RavennaWPPhase3Rev4August2001....

Attached to this email is the latest revision of the Ravenna Work Plan.

Kari,
We need to make hard copies of this plan and send to Mike Styvaert of OSC, Eileen Mohr of the Ohio EPA, and Joseph Crombie of the Ohio Dept. of Health ASAP.

I will be sending you a cover letter also. It will be following shortly.

Thanks,

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Patterson, Mark

From: Radconpro@aol.com
Sent: Wednesday, August 22, 2001 2:19 PM
To: bhaney@earthlink.net; kari@newworld.org; eileen.mohr@epa.state.oh.us; JCROMBIE@gw.odh.state.oh.us; victoria@newworld.org; StyvaertM@osc.army.mil
Cc: Willie@newworld.org; Tom@newworld.org; pattersonm@osc.army.mil
Subject: Ravenna Work Plan Revision Cover Letter

RavennaPhase3OEPA Comments#3.do...

Attached to this email is the cover letter addressing comments by the Ohio EPA. This letter is to be included with the LATEST revision of the Work Plan.

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Tuesday, August 21, 2001 8:50 AM
To: Radconpro@aol.com; JCROMBIE@gw.odh.state.oh.us; pattersonm@osc.army.mil; StyvaertM@osc.army.mil
Cc: bhaney@earthlink.net; boyd@newworld.org; dianaL@newworld.org; timh@newworld.org; Tom@newworld.org; Willie@newworld.org
Subject: Re: Ravenna Schedule

Please advise as to when the revised workplan will be received by both ODH and Ohio EPA (hard copy, not email) and allow sufficient time for review.

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

>>> <Radconpro@aol.com> 08/20/01 02:29PM >>>
Hello Everyone,
It is currently planned that NWT mobilize on site for the Ravenna Project
on 9/10/2001. If that is a problem please let me know.

Thank you,

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Patterson, Mark

From: Radconpro@aol.com
Sent: Monday, August 20, 2001 2:29 PM
To: StyvaertM@osc.army.mil; pattersonm@osc.army.mil; eileen.mohr@epa.state.oh.us; JCROMBIE@gw.odh.state.oh.us
Cc: bhaney@earthlink.net; Willie@newworld.org; boyd@newworld.org; Tom@newworld.org; dianaL@newworld.org; timh@newworld.org
Subject: Ravenna Schedule

Hello Everyone,
It is currently planned that NWT mobilize on site for the Ravenna Project
on 9/10/2001. If that is a problem please let me know.

Thank you,

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Patterson, Mark

From: Radconpro@aol.com
Sent: Wednesday, August 08, 2001 3:14 PM
To: pattersonm@osc.army.mil
Subject: Ravenna

RavennaHASPPhase3 Rev2Feb2000.p...

Mark,
Attached is the previously approved HASP for Ravenna.

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Patterson, Mark

From: Styvaert, Mike
Sent: Tuesday, August 07, 2001 3:30 PM
To: Patterson, Mark
Cc: Crooks, Kelly; Moore, Connie; 'Bill Haney (E-mail)'; 'Dan Spicuzza (E-mail)'; Styvaert, Mike
Subject: RE: Monazite Sand Issues

Mark - I just found out Jeff Robb is no longer at Ravenna. Can you please respond to the note (see below I sent him 11 days ago? Please call 309-782-0880 when you get a minute.

THX,

Mike S. Styvaert
Health Physicist
US Army - Operations Support Command
Attention: AMSOS-SF
Rock Island, IL 61299
Office: (309) 782-0880
Facsimile: (309) 782-2998
Pager: 1-877-442-5019

-----Original Message-----
From: Styvaert, Mike
Sent: Friday, July 27, 2001 9:50 AM
To: Robb, Jeffrey A
Cc: Crooks, Kelly; Moore, Connie; 'Bill Haney (E-mail)'; 'Dan Spicuzza (E-mail)'; Styvaert, Mike
Subject: RE: Monazite Sand Issues

Jeff -

NWT's planning to mobilize 20 Aug 2001. I don't think we've satisfied all of Eileen Muhr's comments, but the open ones had more to do with how we left the site that what we're doing to finish it. I'm supporting a 20 Aug start based on the premise that we don't need permission from the State of Ohio to remove the monazite sand. If there's some regulatory relationship between Ravenna and the State that I don't understand, please let me know.

THX,

Mike S. Styvaert
Health Physicist

US Army - Operations Support Command
Attention: AMSOS-SF
Rock Island, IL 61299
Office: (309) 782-0880
Facsimile: (309) 782-2988

-----Original Message-----
From: Styvaert, Mike
Sent: Friday, July 06, 2001 6:52 AM
To: Robb, Jeffrey A
Cc: Crooks, Kelly; Moore, Connie; Bill Haney (E-mail); Dan Spitzzza (E-mail)
Subject: RE: Monazite Sand Issues

Jeff -

Sorry for the delay in responding, I've been TDY and putting out fires on another effort for the past several weeks. We've found $'s for the additional NWT effort, all I need now is another $60k (or so) to cover the additional waste disposal at WCS.., I'll know where we stand in a few weeks.

In re-looking Eileen Mohr's comments below, I guess I'm sort of confused by the regulatory oversight for this effort? Are you turning federal land over to the State of Ohio? What gives with the "requirement" for erosion and sedimentary controls and inspections? I suppose we ought to maybe try and keep them in the loop a little better.., and I'm not trying to be facetious, but why do we need their permission to excavate and ship monazite sand?

THX,

Mike S. Styvaert
Health Physicist
US Army - Operations Support Command
Attention: AMSOS-SF
Rock Island, IL 61299
Office: (309) 782-0880
Facsimile: (309) 782-2988

-----Original Message-----
From: Robb, Jeffrey A
Sent: Tuesday, June 05, 2001 6:18 AM
To: Styvaert, Mike
Subject: FW: Monazite Sand Issues

Mike:

The following message is from the Ohio EPA, how soon will we know about additional funding?

Jeff

-----Original Message-----
From: Eileen Mohr [mailto:eileen.mohr@epa.state.oh.us]
Sent: Friday, June 01, 2001 1:30 PM
To: PattersonM@ioc.army.mil; Robbj@ioc.army.mil
Cc: Radconpro@aol.com; Ronnie Buthker; Todd Fisher; JCROMBIE@gw.odh.state.oh.us; StyvaertM@ssc.army.mil
Subject: Monazite Sand Issues

Jeff and Mark:

I have looked over my previous two emails dated May 10, 2001and the response to those emails from New World Technology dated May 15, 2001. I apologize for the delay in this response, however, I was out of the office until May 31, 2001 (as was previously transmitted to the members of the RVAAP team).

Several points need to be re-iterated:

1. The response from NWT does not indicate when the excavated soils will be removed from the AOC. The removal dates need to be transmitted to the Agency as soon as possible, and the soil removal needs to be conducted in an expedited manner.

2. Additional discussion is warranted as to why no confirmation samples were obtained at the bottom of the excavation, i.e. at the 2 - 3 foot depth. A sufficient number of confirmation samples must necessarily be obtained (as per MARSSIM). These samples should be collected and analyzed immediately, and prior to the removal of the excavated soils. This would allow for one mobilization and transport of contaminated soils to a proper disposal facility (assuming additional excavation would need to take place), thus saving OSC funds. However, this does not mean that the excavated soils can continue to stay on site for an undetermined period of time...it means that sampling, analysis and subsequent disposal of excavated soils (in accordance with all applicable state and federal rules, laws, and regulations) must be expedited.

3.The Ohio EPA is extremely concerned about how the project has been conducted in bits and pieces, how schedules have been completely missed and/or modified without Ohio EPA input, the lack of up to date information being provided (i.e. we did not know that an additional 800 yards of soil were excavated until after the fact). This needs to change.

4. A weekly inspection of the erosion and sedimentation controls needs to be conducted in order to ensure that the integrity of the controls remains intact.

5. The question as to whether or not the bottom of the excavation was tarped was not answered. This is a critical piece of information, and must be done given that no confirmation samples were taken at the bottom of the excavation.

6. Please provide additional information regarding the "cardboard drums" that are speculated to have been in this area. For example, what would have been contained in these drums? How was it determined that these were "drums"?

7. One of the main issues that must be faced, is that between the issues detailed in #3 above, the lack of confirmation sampling, the lack of split sampling by the Ohio EPA etc., is that it will be extremely difficult to present and defend to both Ohio EPA and ODH that the site has been remediated to the agreed-upon 4 pCi/gr level. It will be incumbent upon OSC and the contractor to clearly, concisely and scientifically defend that the clean-up level has been met. And then based upon the presented information... the Agencies will or will not concur.

My recommendation is that there be a conference call between all parties to address and resolve the problems and issues that have occurred at this AOC. Jeff - can you set this up?

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

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Monday, August 06, 2001 12:47 PM
To: DocDennie@aol.com; Radconpro@aol.com; JCROMBIE@gw.odh.state.oh.us; Doc@newworld.org; Tom@newworld.org
Cc: govrad@att.net; bhaney@earthlink.net; Bonnie Buthker; Mike Eberle; PattersonM@ioc.army.mil; reid_muchler@mhfls.com; Willie@newworld.org; MooreC@osc.army.mil; robbj@osc.army.mil; StyvaertM@osc.army.mil
Subject: Re: Ravenna AAP Monazite Sand Cleanup

Please be advised that as of this date the Ohio EPA has not received a hard copy of the draft workplan for phase III of the monazite sand removal project which was to be sent to the Agency in mid July. The hard copy of the workplan is what will be reviewed by both Ohio EPA and ODH personnel. Under the DSMOA, the Agencies have (at a minimum), 30 days to review any submitted documents. As such, the schedule presented in the original email will probably not be achievable. Please be advised that if work commences without agency approval of the workplan and without the agencies collecting split samples that both (or either) ODH and Ohio EPA may not concur with any conclusions drawn from the phase III effort and could require that additional work be conducted.

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

>>> <Radconpro@aol.com> 08/02/01 03:11PM >>>
This email is to inform you that NWT plans on mobilizing on 8/20/2001 to

complete the monazite sand cleanup project at the Ravenna AAP. Final surveys
and soil sampling will begin on approximately 8/31/2001. I will keep everyone posted daily as the project progresses.

Daniel M. Spisuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Monday, August 06, 2001 12:47 PM
To: DocDennie@aol.com; Radconpro@aol.com; JCROMBIE@gw.odh.state.oh.us; Doc@newworld.org; Tom@newworld.org
Cc: govrad@att.net; bhaney@earthlink.net; Bonnie Buthker; Mike Eberle; PattersonM@ioc.army.mil; reid_muchler@mhfls.com; Willie@newworld.org; MooreC@osc.army.mil; robbj@osc.army.mil; StyvaertM@osc.army.mil
Subject: Re: Ravenna AAP Monazite Sand Cleanup

Please be advised that as of this date the Ohio EPA has not received a hard copy of the draft workplan for phase III of the monazite sand removal project which was to be sent to the Agency in mid July. The hard copy of the workplan is what will be reviewed by both Ohio EPA and ODH personnel. Under the DSMOA, the Agencies have (at a minimum), 30 days to review any submitted documents. As such, the schedule presented in the original email will probably not be achievable. Please be advised that if work commences without agency approval of the workplan and without the agencies collecting split samples that both (or either) ODH and Ohio EPA may not concur with any conclusions drawn from the phase III effort and could require that additional work be conducted.

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

>>> <Radconpro@aol.com> 08/02/01 03:11PM >>>
This email is to inform you that NWT plans on mobilizing on 8/20/2001 to

complete the monazite sand cleanup project at the Ravenna AAP. Final surveys
and soil sampling will begin on approximately 8/30/2001. I will keep everyone posted daily as the project progresses.

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Tuesday, August 21, 2001 8:41 AM
To: PattersonM@osc.army.mil
Subject: RE: Monazite Sand

When do you want to? I'll be at RVAAP most of the rest of the week. Today is definitely out.

>>> "Patterson, Mark" <PattersonM@osc.army.mil> 08/20/01 09:35AM >>>
When can you have a conference call on this?

Mark

-----Original Message-----
From: Eileen Mohr [mailto:eileen.mohr@epa.state.oh.us]
Sent: Tuesday, August 14, 2001 3:52 PM
To: PattersonM@ioc.army.mil
Subject: Monazite Sand

Hi Mark... the monazite sand letter will be going out today and I had agreement
from ODH that what I wrote was gonna be okay with him.n Eileen

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Tuesday, August 14, 2001 3:52 PM
To: PattersonM@ioc.army.mil
Subject: Monazite Sand

Hi Mark... the monazite sand letter will be going out today and I had agreement from ODH that what I wrote was gonna be okay with him.n
Eileen

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Friday, August 10, 2001 3:13 PM
To: JCROMBIE@gw.odh.state.oh.us; john.p.jent@lrl02.usace.army.mil
Cc: Bonnie Buthker; Mike Eberle
Subject: Rad Issues at RVAAP

Hi Joe!

I have two questions for you. I would appreciate it if you could get back to me as soon as possible on these issues:

1. USACE Survey at Load Lines 2,3,4 - The USACE will be sending us a workplan next week regarding proposed rad surveys of areas in the referenced load lines where they used to x-ray the shells. This plan is to be written consistently with other survey plans that were okayed by ODH before you came on board. In addition, these surveys are repeats of ones that have already been conducted and which have already shown no problems (as all of the sources were removed subsequent to the closure of the load lines). Do you need or want to have formal review of this document? The USACE is proposing to conduct the work in September, 2001.

2. Monazite Sand - You should have received a hard copy of the Phase III workplan for the monazite sand removal project. The project will not start on 08/20/01 as they had previously wanted. (This was told to NWT and IOC during a conference call on 08/08/01). Also during this conference call, I made it clear that I wanted sufficient lead time in order to set up for and collect up to 8 confirmation samples that Ohio EPA will send to our rad lab for gamma spec analyses. In addition, I wanted to make sure that you had enough lead time in order to be able to provide oversight if you wanted.

My main question is: are you planning on conducting a formal review of the document? (My understanding is that it is very similar to past workplan phases) Or, as long as they adhere to the agreed-upon 4 pCi/gram above background cleanup level for Th-232 and 30 pCi/gram for U-238, are you okay with Ohio EPA doing the major review (see correspondence dated 11/16/00 partially based upon several phone calls/emails between you and me).

The best way to get a hold of me is via email, as I will be in and out of the office a lot the next few weeks.

Thanks Joe.

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: Styvaert, Mike
Sent: Tuesday, August 07, 2001 3:30 PM
To: Patterson, Mark
Cc: Crooks, Kelly; Moore, Connie; 'Bill Haney (E-mail)'; 'Dan Spicuzza (E-mail)'; Styvaert, Mike
Subject: RE: Monazite Sand Issues

Mark - I just found out Jeff Robb is no longer at Ravenna. Can you please respond to the note (see below) I sent him 11 days ago? Please call 309-792-0880 when you get a minute.

THX,

Mike S. Styvaert
Health Physicist
US Army - Operations Support Command
Attention: AMSOS-SF
Rock Island, IL 61299
Office: (309) 782-0880
Facsimile: (309) 782-2948
Pager: 1-877-442-5013

-----Original Message-----
From: Styvaert, Mike
Sent: Friday, July 27, 2001 8:50 AM
To: Robb, Jeffrey A
Cc: Crooks, Kelly; Moore, Connie; 'Bill Haney (E-mail)'; 'Dan Spicuzza (E-mail)'; Styvaert, Mike
Subject: RE: Monazite Sand Issues

Jeff -

NWT's planning to mobilize 20 Aug 2001. I don't think we've satisfied all of Eileen Mohr's comments, but the open ones had more to do with how we left the site that what we're doing to finish it. I'm supporting a 20 Aug start based on the premise that we don't need permission from the State of Ohio to remove the monazite sand. If there's some regulatory relationship between Ravenna and the State that I don't understand, please let me know.

THX,

Mike S. Styvaert
Health Physicist
US Army - Operations Support Command
Attention: AMSOS-SF
Rock Island, IL 61299
Office: (309) 782-0880
Facsimile: (309) 782-2988

-----Original Message-----
From: Styvaert, Mike
Sent: Friday, July 06, 2001 6:52 AM
To: Robb, Jeffrey A
Cc: Crooks, Kelly; Moore, Connie; Bill Haney (E-mail); Dan Spicuzza (E-mail)
Subject: RE: Monazite Sand Issues

Jeff -

Sorry for the delay in responding, I've been TDY and putting out fires on another effort for the past several weeks. We've found $'s for the additional NWT effort, all I need now is another $60k (or so) to cover the additional waste disposal at WCS.., I'll know where we stand in a few weeks.

In re-looking Eileen Mohr's comments below, I guess I'm sort of confused by the regulatory oversight for this effort? Are you turning federal land over to the State of Ohio? What gives with the "requirement" for erosion and sedimentary controls and inspections? I suppose we ought to maybe try and keep them in the loop a little better.., and I'm not trying to be facetious, but why do we need their permission to excavate and ship monazite sand?

THX,

Mike S. Styvaert
Health Physicist
US Army - Operations Support Command
Attention: AMSOS-SF
Rock Island, IL 61299
Office: (309) 782-0880
Facsimile: (309) 782-2988

-----Original Message-----
From: Robb, Jeffrey A
Sent: Tuesday, June 05, 2001 6:18 AM
To: Styvaert, Mike
Subject: FW: Monazite Sand Issues

Mike:

The following message is from the Ohio EPA, how soon will we know about

additional funding?

Jeff

-----Original Message-----
From: Eileen Mohr [mailto:eileen.mohr@epa.state.oh.us]
Sent: Friday, June 01, 2001 1:30 PM
To: PattersonM@ioc.army.mil; Robbj@ioc.army.mil
Cc: Radconpro@aol.com; Bonnie Buthker; Todd Fisher;
JCROMBIE@gw.odh.state.oh.us; StyvaertM@osc.army.mil
Subject: Monazite Sand Issues

Jeff and Mark:

I have looked over my previous two emails dated May 10, 2001and the response to those emails from New World Technology dated May 15, 2001. I apologize for the delay in this response, however, I was out of the office until May 31, 2001 (as was previously transmitted to the members of the RVAAP team).

Several points need to be re-iterated:

1. The response from NWT does not indicate when the excavated soils will be removed from the AOC. The removal dates need to be transmitted to the Agency as soon as possible, and the soil removal needs to be conducted in an expedited manner.

2. Additional discussion is warranted as to why no confirmation samples were obtained at the bottom of the excavation, i.e. at the 2 - 3 foot depth. A sufficient number of confirmation samples must necessarily be obtained (as per MARSSIM). These samples should be collected and analyzed immediately, and prior to the removal of the excavated soils. This would allow for one mobilization and transport of contaminated soils to a proper disposal facility (assuming additional excavation would need to take place), thus saving OSC funds. However, this does not mean that the excavated soils can continue to stay on site for an undetermined period of time...it means that sampling, analysis and subsequent disposal of excavated soils (in accordance with all applicable state and federal rules, laws, and regulations) must be expedited.

3.The Ohio EPA is extremely concerned about how the project has been conducted in bits and pieces, how schedules have been completely missed and/or modified without Ohio EPA input, the lack of up to date information being provided (i.e. we did not know that an additional 800 yards of soil were excavated until after the fact). This needs to change.

4. A weekly inspection of the erosion and sedimentation controls needs to be conducted in order to ensure that the integrity of the controls remains intact.

5. The question as to whether or not the bottom of the excavation was tarped was not answered. This is a critical piece of information, and must be done given that no confirmation samples were taken at the bottom of the excavation.

6. Please provide additional information regarding the "cardboard drums" that are speculated to have been in this area. For example, what would have been contained in these drums? How was it determined that these were "drums"?

7. One of the main issues that must be faced, is that between the issues detailed in #3 above, the lack of confirmation sampling, the lack of split sampling by the Ohio EPA etc., is that it will be extremely

difficult to present and defend to both Ohio EPA and ODH that the site has been remediated to the agreed-upon 4 pCi/gr level. It will be incumbent upon OSC and the contractor to clearly, concisely and scientifically defend that the clean-up level has been met. And then based upon the presented information... the Agencies will or will not concur.

My recommendation is that there be a conference call between all parties to address and resolve the problems and issues that have occurred at this AOC. Jeff - can you set this up?

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

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Monday, August 06, 2001 12:47 PM
To: DocDennie@aol.com; Radconpro@aol.com; JCROMBIE@gw.odh.state.oh.us; Doc@newworld.org; Tom@newworld.org
Cc: govrad@att.net; bhaney@earthlink.net; Bonnie Buthker; Mike Eberle; PattersonM@ioc.army.mil; reid_muchler@mhfls.com; Willie@newworld.org; MooreC@osc.army.mil; robbj@osc.army.mil; StyvaertM@osc.army.mil
Subject: Re: Ravenna AAP Monazite Sand Cleanup

Please be advised that as of this date the Ohio EPA has not received a hard copy of the draft workplan for phase III of the monazite sand removal project which was to be sent to the Agency in mid July. The hard copy of the workplan is what will be reviewed by both Ohio EPA and ODH personnel. Under the DSMOA, the Agencies have (at a minimum), 30 days to review any submitted documents. As such, the schedule presented in the original email will probably not be achievable. Please be advised that if work commences without agency approval of the workplan and without the agencies collecting split samples that both (or either) ODH and Ohio EPA may not concur with any conclusions drawn from the phase III effort and could require that additional work be conducted.

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

>>> <Radconpro@aol.com> 08/02/01 03:11PM >>>
This email is to inform you that NWT plans on mobilizing on 8/20/2001 to

complete the monazite sand cleanup project at the Ravenna AAP. Final surveys
and soil sampling will begin on approximately 8/30/2001. I will keep everyone posted daily as the project progresses.

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Monday, August 06, 2001 12:47 PM
To: DocDennie@aol.com; Radconpro@aol.com; JCROMBIE@gw.odh.state.oh.us; Doc@newworld.org; Tom@newworld.org
Cc: govrad@att.net; bhaney@earthlink.net; Bonnie Buthker; Mike Eberle; PattersonM@ioc.army.mil; reid_muchler@mhfls.com; Willie@newworld.org; MooreC@osc.army.mil; robbj@osc.army.mil; StyvaertM@osc.army.mil
Subject: Re: Ravenna AAP Monazite Sand Cleanup

Please be advised that as of this date the Ohio EPA has not received a hard copy of the draft workplan for phase III of the monazite sand removal project which was to be sent to the Agency in mid July. The hard copy of the workplan is what will be reviewed by both Ohio EPA and ODH personnel. Under the DSMOA, the Agencies have (at a minimum), 30 days to review any submitted documents. As such, the schedule presented in the original email will probably not be achievable. Please be advised that if work commences without agency approval of the workplan and without the agencies collecting split samples that both (or either) ODH and Ohio EPA may not concur with any conclusions drawn from the phase III effort and could require that additional work be conducted.

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

>>> <Radconpro@aol.com> 08/02/01 03:11PM >>>
This email is to inform you that NWT plans on mobilizing on 8/20/2001 to

complete the monazite sand cleanup project at the Ravenna AAP. Final surveys
and soil sampling will begin on approximately 8/30/2001. I will keep everyone posted daily as the project progresses.

Daniel M. Spicuzza
NWT Project Manager
P (412) 824-2333
F (412) 824-8256

New World Environmental, Inc., d.b.a.
New World Technology *Bringing you the Technology of the New World*
Phone: 925- 443-7967 **Fax**: 925-443-0119

May 15, 2001

Connie Moore
Operations Support Command

Subj: ADDITIONAL SOILS RAVENNA AAP, PHASE III
PROJECT NUMBER: USA 00-005
CHANGE NOTICE #1

REQUESTED TIMELINE

Dear Ms.Moore:

This letter is response to the email sent to Mr. Bill Haney on May 10th regarding work performed at the Ravenna Army Ammunition Plant. To answer the question "Why was the estimate originally based on a 1 foot depth and not a 1.5 foot depth?". The answer is that only the 3 small areas that showed contamination at a depth of 1.5 feet were in fact included in the original estimate at a depth of 1.5 feet. All other areas were not estimated at a depth of 1.5 feet based on the results of the NWT characterization and that of the U.S. Army Corps of Engineers.

The following is a timeline summary of work performed at the Ravenna AAP:

- 28 Sep 1999: Initial contract awarded to NWT for $184,659.00 for the remediation of monazite-contaminated soil at the Ravenna AAP West Tank Farm Area. The amount of soil to be remediated was approximately 245 cubic yards, which was based upon a Scoping Survey and Final Report performed by the US Army Corps of Engineers (No. CESWT-SO-R2-05-98) in May of 1998. The Derived Concentration Guideline Limit (DCGL) of 9 pCi/g was the unrestricted release limit established at that time.

- 6 December 1999: NWT mobilized on site. 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.

  Following completion of the initial soil and vegetation 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 south (site) AOC boundary was found contaminated to levels exceeding 1 x 10^6 ccpm (corrected counts per minute).

For purposes of efficiency, soils known to be contaminated by survey results, but determined to be beyond the then current scope of work, were removed and stockpiled in the original Area of Concern (AOC).

Due to the extent of contamination detected and the additional areas of contamination detected, a final status survey was not performed at that 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 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.

- 22 December 99: NWT demobilizes from the site. 21 twenty cubic yard inter-modal containers remained sealed and stored on site until approval for shipment to Waste Control Specialists (WCS) of Texas is obtained.

- 2 February 2000: A meeting is held at RVAAP to discuss work performed and future actions at the site with OSC, Ohio EPA, and Ohio Department of Health (ODH) personnel. A DCGL of 4pCi/g is established for the site. This DCGL was developed by the ODH.

- ~ 7 February 2000: NWT submits an Interim Report to OSC summarizing on site activities of work performed during December of 1999.

New World Environmental, Inc., d.b.a.
New World Technology *Bringing you the Technology of the New World*
Phone: 925- 443-7967 **Fax**: 925-443-0119

- 17 February 2000: A Scope of Work is received by NWT from OSC to perform a Characterization Survey and Sampling effort at the West Tank Farm.
- 22 February 2000: Began shipment of inter-modal containers to WCS.
- 23 February 2000: Finished shipment of inter-modal containers to WCS. A total volume of ~ 217.5 cubic yards was shipped to WCS for disposal.
- 6 March 2000: Draft work plans for the Characterization Survey and Sampling effort are submitted to the OSC for review.
- 7 April 2000: Revised work plans for the Characterization Survey and Sampling effort are submitted to the OSC for review.
- 17 April 2000: NWT mobilizes on site for Characterization Survey and Sampling effort. Contract value is $60,043.00
- 5 May 2000: NWT demobilizes from the site. Characterization Survey and Sampling effort is completed. An estimated 1,150 cubic yards of contaminated soil is determined to be on site. 10 background, 103 surface, and 27 depth (at 1.5' bgs) soil samples are obtained during the characterization effort.
- 24 May 2000: A Scope of Work is received by NWT from OSC to perform a remediation and Final Status Survey and Sampling effort at the West Tank Farm (Phase III). The remediation was to be based on the volumes of contaminated soil determined during the Characterization Survey and Sampling effort.
- 30 May 2000: Draft Characterization Survey and Sampling Final Report is submitted to the OSC, Ohio EPA, and Ohio Department of Health (ODH) for review.
- 19 June 2000: Draft work plans for Phase III are submitted to OSC, the Ohio EPA and ODH for review.
- 3 August 2000: Revised Characterization Survey and Sampling Final Report is submitted to the OSC for review.

New World Environmental, Inc., d.b.a.
New World Technology *Bringing you the Technology of the New World*
Phone: 925- 443-7967 **Fax**: 925-443-0119

Revised work plans (addressing Ohio EPA comments) for Phase III are submitted to OSC, the Ohio EPA and ODH for review.

- ~ October 2000: Received word that due to transportation and funding issues, the Phase III portion of the project won't begin until some time in the spring of 2001.
- 6 February 2001: Revised work plans (addressing Ohio EPA and OSC comments) for Phase III are submitted to OSC, the Ohio EPA and ODH for review.
- 9 March 2001: A meeting is held at RVAAP to discuss work plans and future actions at the site with OSC, RVAAP, Ohio EPA and Ohio Department of Health personnel. Final comments on the work plans are addressed. Preliminary scheduling with Ohio EPA and Ohio ODH is performed to coordinate verification surveys and sampling with the Ohio EPA and ODH.
- 15 March 2001: Written approval of the Phase III work plans are received from the Ohio EPA.
- 24 April 2001: NWT mobilizes on site for Phase III. Contract value is $656,635.00.
- 26 April 2001: NWT begins loading, packaging, and transportation of contaminated soils to be transported by railroad gondola cars to WCS.
- 28 April 2001: NWT begins remediation of areas not in stockpiles at the site.
- 4 May 2001: NWT discovers that contamination is present in depths beyond 1 foot below grade (up to ~ 3' below grade) in various areas of the site not previously identified as having depth contamination. The majority of the drainage trench along the east side of the site previously identified as having surface contamination is excavated to a depth of ~ 3' below grade. Some of the areas (excluding the drainage trench) excavated to that depth had the remains of the roots of vegetation (most likely trees ~ 6" or more in diameter) previously growing on the site.

  NWT performs a calculation of the contaminated soil stockpile and discovers that the total volume of contaminated soil will exceed the 1,150 cubic yards estimated during the characterization survey.

New World Environmental, Inc., d.b.a.
New World Technology *Bringing you the Technology of the New World*
Phone: 925- 443-7967 **Fax**: 925-443-0119

Mr. Bill Haney of NWT notifies Mr. Mike Styvaert of the OSC by telephone of the excess contaminated soil excavated from the site during remediation efforts.

- 7 May 2001: NWT notifies OSC in writing of the excess contaminated soil excavated from the site and provides a cost proposal for the loading and transportation of the contaminated soils.

  NWT discovers areas of the site having depth contamination to ~ 3' below grade in about 10 areas. 1- foot diameter dark (grayish, black) circles are discovered in the clay layer of the soil. The circles appear to be (based upon surveys) the source of contamination. All the areas discovered are remediated and the soil is placed into the contaminated soil stockpile.

- 8 May 2001: An email is sent to Ohio EPA, ODH, and RVAAP personnel informing them of the excess contaminated soil and the plans for placing the site in a safe condition. NWT also informed them that Final Status Surveys and Sampling would not be performed until the contaminated soil stockpile was removed.

- 9 May 2001: NWT finished the loading of gondola cars to be transported to WCS for disposal. 15 total gondola cars were loaded with contaminated soil. ~ 1157 cubic yards of contaminated soil was loaded for transportation. It is estimated that there is an additional ~ 790 cubic yards of contaminated soil.

  NWT covered the contaminated soil stockpile with tarps and placed erosion and sediment control around the stockpile.

- 10 May 2001: NWT completes remediation control surveys at the site. All surveys indicate that all areas have been remediated to below the DCGL of 4 pCi/g. Radiation levels of the scan surveys performed with a 2" by 2" NaI detector were between 8,000 CPM and 14,500 CPM (Background: ~ 12,000 CPM).

  In addition, soil samples were obtained from areas remediated and screened (qualitative) on site with a 3" by 3" NaI detector coupled to a data logger. The results of the screenings indicate that the areas were below the DCGL.

  NWT completed a survey of the contaminated soil stockpile. Radiation levels were found to be between 2 times and 10 times background levels.

New World Environmental, Inc., d.b.a.
New World Technology *Bringing you the Technology of the New World*
Phone: 925- 443-7967 **Fax**: 925-443-0119

- 11 May 2001: NWT demobilizes from the site. Final Status Surveys and Sampling are not performed due to the presence of the contaminated soil stockpile.

If you have any questions please don't hesitate to contact me at (412) 824-2333.

Sincerely,

//Signed//

Daniel M. Spicuzza
NWT Project Manager

Cc: NWT (Attn: Mr. Bill Haney)
OSC (Attn: Mr. Mike Styvaert)
NWT (Attn: Mr. Boyd Sweger)

Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266-9297
Mcgeej@apk.net / eslerc@apk.net
Phone: (330) 358-3005
FAX: (330) 358-2021

TolTest, Inc.

330-358-3005

Fax

To: Cindy Dabner From: Christy Esler

Fax: 312-353-4342 Pages: 1 of

Phone: 312-886-0743 Date: Aug. 30, 2001

Re: Project No:

☐ Urgent ☑ For Review ☐ Please Comment ☐ Hard copy to be mailed

Mark Patterson asked me to send you manifest # RAAP05192001, however we do not have that manifest. We were thinking maybe this particular number was written down wrong. So I have attached all three ~~invoices~~ (manifests) for Hazardous that we do have. Hope this helps and sorry for the confusion. Please let me know if I can get you anyother manifests.

Christy

Aug-30-01 08:24A TolTest, Inc. RVAAP P.02

HW 001-2001

State of New Jersey
Department of Environmental Protection
Hazardous Waste Regulation Program
Manifest Section
P.O. Box 421, Trenton, NJ 08625-0421

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: OH5210020736 | Manifest Document No. 01107 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: RAVENNA ARMY AMMO PLANT 8454 ST RT 5 RAVENNA OH 44266-9297

A. State Manifest Document Number **NJA 3179842**

B. State Generators ID (Gen. Site Address) SAME

4. Generator's Phone ( )

5. Transporter 1 Company Name: ONYX ENVIRONMENTAL SVCS L.L.C. | 6. US EPA ID Number: NJD080631369

C. State Trans. ID-NJDEP NJDEP50160 | Decal No.

7. Transporter 2 Company Name: DART TRUCKING COMPANY, INC. | 8. US EPA ID Number: OHD000936585825

D. Transporter's Phone (973) 347-7111

E. State Trans. ID-NJDEP 16853 | Decal No. 083715

9. Designated Facility Name and Site Address: ONYX ENVIRONMENTAL SERVICES L.L.C. 1 EDEN LANE FLANDERS, NJ 07836 | 10. US EPA ID Number: NJD080631369

F. Transporter's Phone 330 533-9841

G. State Facility's ID N/A

H. Facility's Phone 973 347-1909

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

	HM		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	HAZARDOUS WASTE, LIQUID, n.o.s. (HEPTACHLOROEPOXIDE) 9,NA3082,III	001	DM	00400	P	D031
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
L/E TWILIQ003: WBG IDWWØ1
a. INCINERATE
WBG DECON WATER

K. Handling Codes for Wastes Listed Above
a. 501 MO41

15. Special Handling Instructions and Additional Information
PACKING SLIPS ATTACHED FOR CLARIFICATION EMERGENCY PHONE 800 535-5053

Accepted at Onyx Philadelphia PA transfer facility on 3/21/01

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Mark Patterson | Signature: Mark Patt | Month Day Year 03 19 01

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: John [illegible] | Signature | Month Day Year 03 19 01

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: GLEN R. DUNCAN | Signature: Glen R. Duncan | Month Day Year 03 20 01

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: [illegible] | Signature | Month Day Year 03 30 01

NJA 3179842

SIGNATURE AND INFORMATION MUST BE LEGIBLE ON ALL COPIES

2. TSD MAIL TO GENERATOR

113000

RVAAP Tracking # = HW-003-2001

05-31-01 CCWM

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved OMB No. 2050-0039 Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. OH5210020736 Manifest Document No. 01030

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
RAVENNA ARMY AMMO PLANT
8454 ST RT 5
RAVENNA OH 44266-9297

4. Generator's Phone ( )

A. State Manifest Document Number RAAP051001

B. State Generator's ID

5. Transporter 1 Company Name: ONYX ENVIRONMENTAL SVCS L.L.C.

6. US EPA ID Number: WID988631368

C. State Transporter's ID

D. Transporter's Phone (973)347-7111

7. Transporter 2 Company Name: McCutcheon Enterprises Inc.

8. US EPA ID Number: PAD013826847

E. State Transporter's ID

F. Transporter's Phone 724-568-3623

9. Designated Facility Name and Site Address
ONYX ENVIRONMENTAL SVCS,L
4301 INFIRMARY ROAD
WEST CARROLLTON OH 45449

10. US EPA ID Number: OHD093945293

G. State Facility's ID

H. Facility's Phone (937)859-6101

HM	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. WASTE HAZARDOUS WASTE, SOLID, n.o.s. (CHROME) (LEAD) 9, NA3077, III	001	DM	00400	P	D004
	b.					
	c.					
	d.					

J. Additional Descriptions for Materials Listed Above
A) S/E TWISOL003

K. Handling Codes for Wastes Listed Above
A) M043

15. Special Handling Instructions and Additional Information
PACKING SLIPS ATTACHED FOR CLARIFICATION
INVOICE TO ONYX NORTH JACKSON, OH
EMERGENCY PHONE 800-535-5053

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Mark Patterson | Signature: Mark Patterson | Month Day Year: 05 10 01

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Rockhold Jerry A | Signature | Month Day Year: 05 10 01

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Leland Marshall | Signature: Leland Marshall | Month Day Year: 05 14 01

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Linda L. Jarvis | Signature: Linda Jarvis | Month Day Year: 05 14 01

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

Please Print or type. (Form designed for use on elite (12-pitch) typewriter.) HW-002-2001 04.27.01

Form Approved. OMB No. 2050-0039 Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
RAVENNA ARMY AMMO PLANT
RAVENNA OH 44266-9297

4. Generator's Phone ( )

A. State Manifest Document Number RMP04/19/2001

B. State Generator's ID SAME

5. Transporter 1 Company Name | 6. US EPA ID Number | C. State Transporter's ID NJDEP501

7. Transporter 2 Company Name | 8. US EPA ID Number | D. Transporter's Phone 973 347-7111

E. State Transporter's ID

9. Designated Facility Name and Site Address | 10. US EPA ID Number | F. Transporter's Phone 724 568-3629

G. State Facility's ID N/A

H. Facility's Phone 937 859-6101

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE, SOLID, N.O.S. (BARIUM)		4	DM	01800 lbs		D005
b. HAZARDOUS WASTE, SOLID, N.O.S. (BARIUM)		6	DM	02700 lbs		D005
c. HAZARDOUS WASTE, SOLID, N.O.S. (BARIUM)		2	DM	0900 lbs		D005
d. HAZARDOUS WASTE, SOLID, N.O.S. (MERCURY)		4	DM	1800 lbs		D009

J. Additional Descriptions for Materials Listed Above
A) S/E MICAA7475: LLL EH II RI D/S/E MICAA7475: WBG/FS
B) S/E MICAA7475: LLL EH II RI D/S/E MICAA7475: LLL EH II RI
SQ00323/AW

K. Handling Codes for Wastes Listed Above
A) M111 C) M111
B) M111 D) M043

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Mark Patterson | Signature | Month Day Year: 08/19/01

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: John W Hannah | Signature | Month Day Year: 08/19/01

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Kenneth C. McMaddess | Signature | Month Day Year: 08/23/01

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Linda L. Jarvis | Signature | Month Day Year: 08/23/01

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

ATTACHMENT #4

Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266-9297
Mcgeei@apk.net / eslerc2@apk.net
Phone: (330) 358-3005
FAX: (330) 358-2021

TolTest, Inc.

Fax

To: Cindy Dabrek From: Christy Esler

Fax: Pages: 1 of 2

Phone: Date: Sept. 10, 2001

Re: Project No:

☐ Urgent ☐ For Review ☐ Please Comment ☐ Hard copy to be mailed

RAAP04192001

Hopefully this is clearer! Just give me a call if you need me to try again.

Thanks.

Christy

(Type or print form designed for use on elite (12-pitch) typewriter.)

HW-002-2001

04-27-01

Form Approved. OMB No. 2050-0039. Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. OH5210020736	Manifest Document No. 01029	2. Page 1 of 2
Information in the shaded areas is not required by Federal law.		

3. Generator's Name and Mailing Address
RAVENNA ARMY AMMO PLANT
8454 ST RT 5
RAVENNA OH 44266-9297

4. Generator's Phone ( )

A. State Manifest Document Number [redacted]

B. State Generator's ID [redacted]

5. Transporter 1 Company Name: ONYX ENVIRONMENTAL SVCS L.L.C.
6. US EPA ID Number: NJD080631369

C. State Transporter's ID [redacted]

7. Transporter 2 Company Name: MCCUTCHEON ENTERPRISES INC
8. US EPA ID Number: PAD138268477

D. Transporter's Phone [redacted]

E. State Transporter's ID

9. Designated Facility Name and Site Address
ONYX ENVIRONMENTAL SERVICES. L.L.C.
4301 INFIRMARY ROAD
WEST CARROLLTON. OH 45449
10. US EPA ID Number: OHD039452933

F. Transporter's Phone [redacted]

G. State Facility's ID [redacted]

H. Facility's Phone 937 859-8161

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE. SOLID. n.o.s. (BARIUM. LEAD) 9.NA3077.III	X	004	DM	01800	P	D005
b. HAZARDOUS WASTE. SOLID. n.o.s. (BARIUM. LEAD) 9.NA3077.III	X	006	DM	02700	P	D005
c. HAZARDOUS WASTE. SOLID. n.o.s. (BARIUM. LEAD) 9.NA3077.III	X	002	DM	00900	P	D005
d. HAZARDOUS WASTE. SOLID. n.o.s. (HEPACHLORO EPOXIDE. LEAD) 9.NA3077.III	X	004	DM	01800	P	D004

J. Additional Descriptions for Materials Listed Above
A)S/E MDCAA7475: LL1 /PH II RI C)S/E MDCAA7475: WBG/FS
B)S/E MDCAA7475: LL12/PH II RI D)S/E ~~TWIS01001~~: LL1/PH II RI
SD003 LS/AW

K. Handling Codes for Wastes Listed Above
A) M111 C) M111
B) M111 D) M043

15. Special Handling Instructions and Additional Information
PACKING SLIPS ATTACHED FOR CLARIFICATION EMERGENCY PHONE 800 535-5053
INVOICE TO ONYX NORTH JACKSON.OH

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Mark Patterson
Signature: Mark Patterson
Month Day Year: 06/19/01

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: John W Hannah
Signature: John W Hannah
Month Day Year: 06/19/01

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Kenneth C. McCutcheon
Signature: Kenneth C. McCutcheon
Month Day Year: 06/22/01

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Linda L. Jarvis
Signature: Linda L. Jarvis
Month Day Year: 06/23/01

EPA Form [illegible]

OhioEPA
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 7, 2001

RE: PORTAGE COUNTY
RAVENNA ARMY AMMUNITION PLANT
NTNC WATER SYSTEM
PWS ID NO. 6784812
STU ID NO. 6761284

Mr. John Cicero, COR
Ravenna Army Ammunition Plant
8451 SR 5
Ravenna, Ohio 44266

Dear Mr. Cicero:

On February 4, 2001 I met with Mr. Jim McGee of TolTest, Inc. to conduct an evaluation of the Ravenna Army Ammunition Plant (RVAAP) public water supply system.

The purpose of this evaluation was to determine the ability of the facility to provide adequate, safe and potable water meeting the Ohio EPA primary and secondary drinking water rules. General supervision of the operation and maintenance of public water supply systems is a function of this agency as set forth in section 6109.04 of the Ohio Revised Code.

The evaluation revealed the following about which we have comment and/or recommendation:

1. **SYSTEM SUMMARY**

With the recent increase in National Guard personnel, the water system serving Building 1037 and Building 1038, both administration buildings, and Building F-6, called Post 1 guarding the Main Gate, now serves over 25 people and qualifies as a public water system. The water system is defined as a non-transient non-community (NTNC) public water system. Over a twenty-four hour period, five people, 3 for the US Army and 2 with TolTest, Inc, the operating contractor, work in Building 1037, a total of thirty-seven people, 25 with the National Guard, 10 with MKM Engineering and 2 with SpecPro, both doing contract work, work in Building 1038 and a total of four guards work in Building F-6. This totals approximately 46 people per day served by the water system. The existing system consists of one well followed by a pressure tank and three ion exchange softeners (one is not in use). The well is located behind the fence west of Building 1039 and the pressure tank and softeners are located in Building 1037. The Public Water System Identification Number (PWS ID NO) is 6784812 and the Standard Treatment Unit Identification Number (STU ID NO) used to identify water samples is 6761284.

2. **SYSTEM OPERATIONS**

A. To begin operating as a public water system background information must be gathered on the system. The well water is to be tested for the same chemical parameters as a newly drilled well to determine compliance with established standards. At the time of the evaluation a list of these parameters was given to Mr. McGee. Please make arrangements to have these tests completed as soon as possible. In addition, detailed plans of the system including the well, pressure tank, softeners and water lines must be submitted to this office for review. I also left with Mr. McGee information necessary for the submittal of detailed plans. These plans should be completed and submitted with the well chemical results. We understand that approximately 30 additional National Guard will soon be stationed at RVAAP and will be working out of building 1038, therefore, the plans will be reviewed for capacity to serve approximately 80 people.

B. The ground around the well slopes towards the well casing and at the time of this evaluation there was standing water at the base of the casing. The area around the well must be landscaped so that all water is directed away from the well. Standing water could potentially seep down the casing or erode grouting and cause contamination of the ground water. The top of the well casing must remain at least 12 inches above grade.

C. During the inspection of the water system the well pump was turning on and off very quickly. The pressure tank did not appear to be effectively controlling the operation of the well pump. It appears that the pressure tank is too small and/or the bladder inside the tank may be split. The current situation will result in shortening the life of the pump. Please inspect the pressure tank and determine what corrections must be made. These corrections can be proposed on the detailed plans.

D. We recommend that the brine tanks be periodically cleaned and disinfected. Brine tanks can harbor bacteria. This bacteria can then enter the drinking water system during regeneration. An air gap should also be provided between the waste lines and the top of the drain.

E. We also recommend installing both a raw sample tap and a sample tap after the softener. A sample tap should be smooth nosed and have a controlled flow. A new raw sample tap will be better designed for collecting samples than the hose connection by the pressure tank and the sample tap after the softener can be used for testing the softeners as well as being used for collecting chemical samples from the entry point to the system as discussed in Comment #5.

3. **BACTERIA SAMPLING REQUIREMENTS**

In accordance with Ohio Administrative Code (OAC) Rule 3745-81-21, all NTNC water systems are required to submit water samples for analysis to an approved laboratory and to receive results indicating one "TOTAL COLIFORM NEGATIVE" sample per quarter. Any other result requires additional samples to be collected in accordance with the regulations. If you receive any result other than a total coliform negative, please contact me for direction. You may wish to use a portable dishwasher connector to control the water stream after you remove the screen. Be sure to disinfect the faucet, and connector if used, prior to collecting the sample. All sample results must be forwarded to this office. The quarters have been established as follows:

January 1 - March 31
April 1 - June 30
July 1 - September 30
October 1 - December 31

Mr. McGee has been taking water samples to Adams Water Laboratory for bacterial analyses. The last sample was collected on January 2, 2002. The result was negative. This sample result will satisfy the January-March 2002 monitoring quarter. The next sample will be due between April1 and June 30, 2002.

4. **BACTERIA SAMPLE SITING PLAN**

Bacteria sampling is to be conducted in accordance with a formal bacteria sample siting plan. This plan is to locate and document each routine sample site as well as the upstream, downstream sites as required in the event a total coliform positive result is received. Sampling procedures should also be included. A sample outline has been developed to provide guidance. This outline was given to Mr. McGee for his reference. Your plan should include a routine sample site in each building. Sampling throughout the year should rotate among these sites and the sampling schedule should be documented. Complete your plan using the provided outline and forward a copy to me for our files.

5. **CHEMICAL MONITORING CALENDAR**

You will be receiving a chemical monitoring calendar from our central office in Columbus. In accordance with OAC Rule 3745-81-23/24, NTNC systems are required to monitor for inorganic chemicals, volatile organic chemicals and synthetic organic chemicals. These samples are to be collected from the entry point to the distribution system, the first faucet after the softeners. The chemical monitoring calendar for each year will list the exact chemicals to be collected and the exact time frame in which they are to be collected. When you receive this calendar please review it carefully and follow it accordingly.

6. **LEAD AND COPPER MONITORING**

In accordance with OAC Rule 3745-81-86, lead and copper monitoring is required to determine the corrosiveness of the water. Five first draw samples are to be collected from either restroom or kitchen taps. The five samples, two from each of the administrative buildings and one from Post 1, are to be collected in the first six-month monitoring period between January and June 2002 and the same five sites are again to be sampled in the second six-month monitoring period between July and December. All results must be forwarded to this office on the proper forms. If results from both periods are satisfactory then monitoring can be reduced to once per year.

7. **SAMPLE COLLECTION INFORMATION**

Please be reminded that when submitting water samples for analyses, the forms accompanying the samples must be correctly filled out including various identification (ID) numbers. This includes your PWS ID Number-6784812 and your STU ID Number-6761284. When collecting bacteria or lead and copper samples the Distribution Sampling Monitoring Point ID is DS000. When collecting chemical samples from the entry point to the system, the Entry Point Monitoring Point ID is EP001. Please make sure that these identification numbers are correctly filled out on your sample forms.

8. **CERTIFIED OPERATOR REQUIREMENTS**

This water system will be classified as a Class A water supply system. The operation of the system must be placed under the responsible charge of a properly certified operator. Together with your classification letter you will be given instructions on obtaining Limited Class A and Unrestricted Class A licenses. Upon receipt of this information, please respond immediately.

9. **LICENSE TO OPERATE**

All water systems must obtain a license to operate. The license fee for NTNC is calculated based on population served. For systems serving a population of less than 150 people, the fee is $56.00. You will be receiving your license and fee bill from our central office in Columbus.

10. **SOURCE WATER ASSESSMENT PROGRAM (SWAP)**

The 1996 Amendments to the Safe Drinking Water Act require Ohio EPA to conduct source water assessments for all public water systems. The assessment of your water system will assist you in identifying the potential threats to your water supply, and help you develop protective strategies for your water supply. For more information about Ohio's Source Water Assessment and Protection Program see the enclosed brochure.

11. **SYSTEM CHANGE /DETAILED PLAN APPROVAL**
In general, most changes to your water system require approval by this office. In the future, please contact me regarding any potential changes or additions to your system prior to any installation or construction.

I would like to thank Mr. McGee for his assistance with this evaluation. If additional information or assistance is desired, please contact me at the Northeast District Office, Twinsburg, (330) 963-1235.

Respectfully,

Leslie Otten
Environmental Specialist
Division of Drinking and Ground Waters

LAO:ca

pc: TolTest, Inc, Mr. Jim McGee
Portage County Health Department
Dave Evans, DDAGW, CO

d You Know...

ess than one gallon of gasoline can pollute one illion gallons of ground water.

)ne person uses 29,200 gallons of water a year.

)nly 3 percent of the water on earth is drinkable.

Ground water contamination is both difficult and ostly to clean up.

e following chemicals are potential rces of ground water contamination:

aning products, Automotive products, Fuel oil, niture strippers, Lawn & garden products tilizers & pesticides), & Oil-based paints.

What YOU can do to HELP

♦ PROTECT ♦

Your Water Supply

lave your septic system inspected and pumped at t every three years. Do not use septic tank tives or pour left-over chemicals down a sink or et.

Apply fertilizers and pesticides at (or below) the ommended rates. Overapplication of these prod- can contaminate your water supply. If possible, ot use these chemicals near your well.

Recycle or properly dispose of unneeded chemi- . Do not pour wastes down storm drains.

f you spill a chemical outside, absorb it with old or paper towels. Do not wash chemicals into the nd.

Place Address Label Here

For More Information...

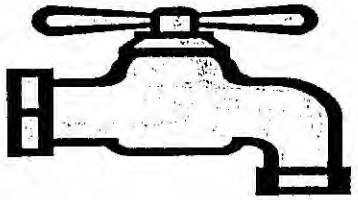
OhioEPA

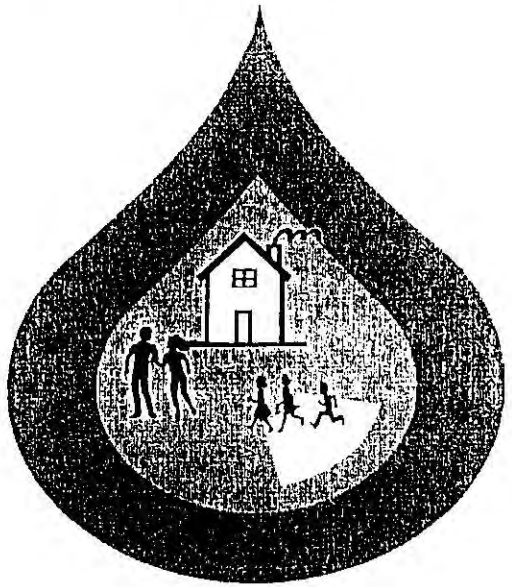
Northeast District Office
2110 E. Aurora Road
Twinsburg, OH 44087
(330) 425-9171 or (800) 686-6330

Ohio EPA is an Equal Opportunity Employer

Web Page Address:
www.epa.state.oh.us/ddagw/pdu/swap.html
E-mail: whp@epa.state.oh.us

Ohio's Source Water Assessment and Protection Program





Information for Noncommunity Public Water Systems Using Ground Water

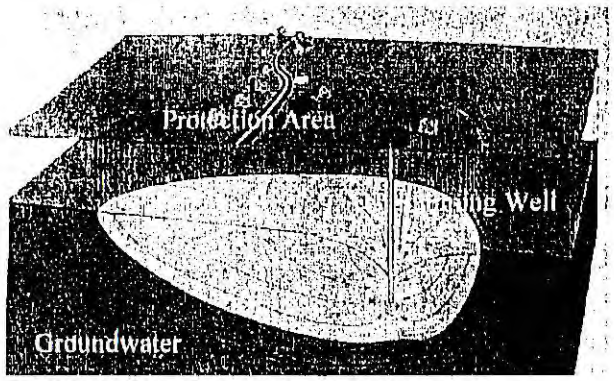
Ohio's Source Water Assessment & Protection Program

The 1996 amendments to the Safe Drinking Water Act require Ohio EPA to conduct source water assessments for all public water systems. Ohio EPA staff are now working on completing assessments in your county. The assessment of your water system will assist you in identifying the potential threats to your water supply and help you develop protective strategies for your water supply.

The Source Water Assessment & Protection process consists of four steps:

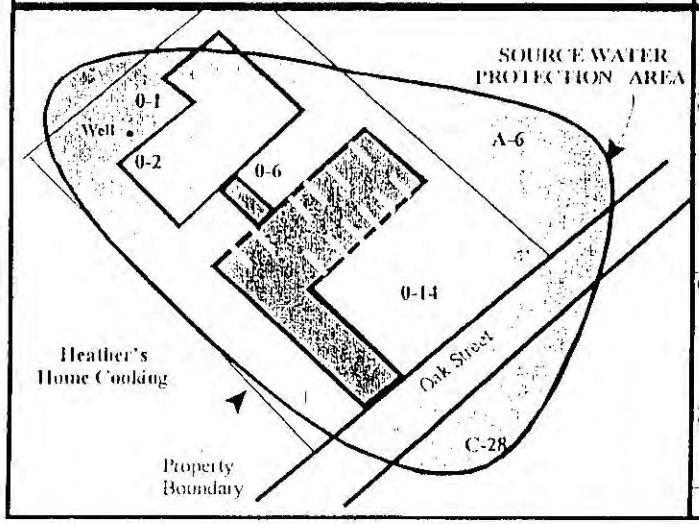
1) Delineate the Protection Area.

Ohio EPA will identify the area that contributes water to your well(s). The protection area will be based on the area from which ground water will flow to a well in five years. The size of this area will vary based on how much water your well pumps.



3-D view of pumping well and protection area.

Map of protection area and potential contaminant sources.



Example of a completed inventory form.

Potential Contaminant Sources
Heather's Home Cooking

Sources Within Property Boundary

Code	Source	Comments
0-1	Above ground tank	200 gallons home fuel oil, 10 years
0-2	Chemical storage	Small quantity cleaning products
0-6	Fertilizer application	Apply to landscaped areas
0-14	Septic System*	Over 50 years old

Sources Outside Property Boundary

Code	Source	Name/ Address	Source of Information
A-6	Crops: Corn, Soybean	Knox Farm 176 Oak St Somewhere, OH 99999	Field Survey
C-28	Landscape firms	Green Me 351 Oak St Somewhere, OH 99999	Field Survey

* Potential Pathogen Source

2) Inventory Potential Contaminant Sources.

After the source water protection area has b determined, Ohio EPA will send you a map showing the boundaries of the protection area, the location potential contaminant sources that were identified through state and federal databases (landf hazardous waste sites, etc.), and forms and instructions on completing the Potential Significant Conta nant Source Inventory. Ohio EPA will ask you to verify the locations of the identified facilities and loc any additional potential contaminant sources. An Ohio EPA staff person will then visit your site to ans your questions and assist you in completing the inventory.

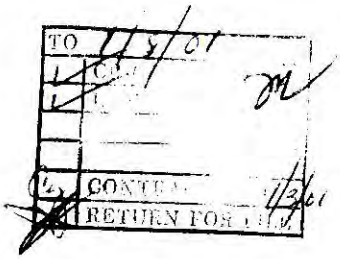
3) Complete a Susceptibility Analysis.

Ohio EPA will determine the likelihood that your drink water could become contaminated. This susceptibility analysis will be based on the geologic sensitivity your ground water resource, the potential contaminant sources within the protection area, well integr and information on water quality. The analysis will conclude with recommendations on the types protective strategies that may be most useful and effective in protecting your ground water resour from contamination.

4) Develop & Implement Protection Strategies.

Protective strategies for non-community wa systems will consist primarily of education and the implementation of best management practices (potential contaminant sources located on the water system's property). For example, the public wa system should make sure that any chemicals used on site are properly stored, handled, and disposed of, septic systems are properly maintained. The water system also should develop an emergency preparedn plan to ensure that the owner and any employees know how to minimize or avoid contamination in the ev of an emergency. Ohio EPA will assist you in developing protective strategies for your water supply and provide you with information on what you can do to make sure your drinking water is protected.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590



JAN 04 2001

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

OhioEPA
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

11/21/01

November 16, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
OH5-210-020-736
PORTAGE COUNTY

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

Dear Mr. Cicero:

On August 22, 2001, Cindy Dabner, representing the U.S. EPA, and I, representing the Ohio Environmental Protection Agency (Ohio EPA), 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 include: lead-based paint chips, mercury switches, lead anchors, acetone, and explosive material.

At the time of the inspection RVAAP was evaluated as a conditionally exempt small quantity generator (CESQG) of hazardous waste. RVAAP is in compliance with all applicable regulations pertaining to CESQG's, however, it was determined that RVAAP was subject to the large quantity generator (LQG) requirements in the month of April 2001.

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. OAC Rule 3745-65-16 (C)[40 CFR 265.16(c)], which requires that personnel take part in an annual review of initial training. At the time of the inspection, no documentation of conducted annual training was available for review. RVAAP shall document compliance

by submitting documentation of a 2001 annual review of the initial training for personnel serving in positions related to hazardous waste management. The positions may include the following: environmental coordinators, drum handlers, emergency coordinators, personnel who conduct hazardous waste inspections, emergency response teams, personnel who prepare manifests, etc. The documentation shall be submitted to the Ohio EPA's Northeast District Office (NEDO).

2. OAC Rule 3745-65-16(D)(1-4) [40 CFR 265.16(D)(1-4), which requires that the owner or operator shall maintain the following documents and records at the facility: (1) job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job; (2) a written job description for each position listed under paragraph (D)(1) of OAC Rule 3745-65-16; (3) a written description of the type and amount of both introductory and continued training that will be given to each person filling a position listed in paragraph (D)(1) of OAC Rule 3745-65-16; and (4) records that document that training or job descriptions required under paragraphs (A), (B) and (C) of OAC Rule 3745-65-16 has been given to, and completed by, facility personnel. RVAAP shall document compliance by submitting documentation of the requirements mentioned in this paragraph, to the Ohio EPA's NEDO.

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,

Gregory Orr
Environmental Specialist
Division of Hazardous Waste Management

GO:cl

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, USEPA, Region V

RCRA HAZARDOUS WASTE GENERATOR INSPECTION CHECKLIST

Company: _____ EPA ID#: _____

Street: _____ City: _____

County: _____ State: Ohio Zip: _____

Mailing Address: _____
(If different from above)

Telephone: _____ Fax #: _____

Owner/ Operator: _____
(If different from above)

Street: _____

City: _____ State: Ohio Zip: _____

Inspection Date(s): _____ Time(s): _____

Inspection Announced? _____Yes _____NO If so, how much advance notice given? _____

	Name	Affiliation	Telephone
Inspectors:			
Facility Representative:			

Generator Classification	Waste Management Activity
___ Conditionally Exempt SQG (CESQG)	___ Containers
___ Small Quantity Generator (SQG)	___ Tank(s)
___ Large Quantity Generator (LQG)	___ Other (specify)
___ 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__ 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 <u>Pollution Prevention Assessments for Hazardous Waste Generators</u> document and discuss it with them.

6. If the company does not want a P2 assessment, why not?

REMARKS

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR REQUIREMENTS

WASTE EVALUATION

1. Have all wastes generated at the facility been evaluated? [3745-52-11] Yes ☒ No ❑ N/A ___RMK#___

GENERATOR CLASSIFICATION

2. Does the generator produce <100 kg. Of hazardous waste per month? [conditionally exempt small quantity generator ("CESQG")] Yes ☒ No___ N/A ___RMK#___

NOTE: *If quantities of hazardous waste accumulated on-site at any one time exceed 1,000 Kg. - or the generator produces between 100 and 1,000 Kg of hazardous waste per month, it is operating as a Small Quantity Generator ("SQG").* ***If so,*** *complete the Small Quantity Generator Requirements checklist.*

NOTE: *To convert from gallons to pounds:*

Amount in gallons x Specific Gravity x 8.345 = Amount in pounds

OFF-SITE SHIPMENT OF HAZARDOUS WASTE

3. Does the CESQG ensure delivery of hazardous waste(s) to an off-site permitted TSD? [3745-51-05(G)(3)] Yes ☒ No ❑ N/A ___RMK#___

REMARKS

OhioEPA
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

11/27/01

November 19, 2001

RE: RAVENNA ARMY AMMUNITION PLANT
OH5-210-020-736
PORTAGE COUNTY

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

Dear Mr. Cicero:

On August 22, 2001, Cindy Dabner, representing the U.S. EPA, and I, representing the Ohio Environmental Protection Agency (Ohio EPA), 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 include: lead-based paint chips, mercury switches, lead anchors, acetone, and explosive material.

At the time of the inspection RVAAP was evaluated as a conditionally exempt small quantity generator (CESQG) of hazardous waste. RVAAP is in compliance with all applicable regulations pertaining to CESQG's, however, it was determined that RVAAP was subject to the large quantity generator (LQG) requirements in the month of April 2001.

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. OAC Rule 3745-65-16 (C)[40 CFR 265.16(c)], which requires that personnel take part in an annual review of initial training. At the time of the inspection, no documentation of conducted annual training was available for review. RVAAP shall document compliance by submitting documentation of a 2001 annual review of the initial training for personnel

serving in positions related to hazardous waste management. The positions may include the following: environmental coordinators, drum handlers, emergency coordinators, personnel who conduct hazardous waste inspections, emergency response teams, personnel who prepare manifests, etc. The documentation shall be submitted to the Ohio EPA's Northeast District Office (NEDO).

2. OAC Rule 3745-65-16(D)(1-4) [40 CFR 265.16(D)(1-4), which requires that the owner or operator shall maintain the following documents and records at the facility: (1) job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job; (2) a written job description for each position listed under paragraph (D)(1) of OAC Rule 3745-65-16; (3) a written description of the type and amount of both introductory and continued training that will be given to each person filling a position listed in paragraph (D)(1) of OAC Rule 3745-65-16; and (4) records that document that training or job description required under paragraphs (A), (B) and (C) of OAC Rule 3745-65-16 has been given to, and completed by, facility personnel. RVAAP shall document compliance by submitting documentation of the requirements mentioned in this paragraph, to the Ohio EPA's NEDO.

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,

Gregory Orr
Environmental Specialist
Division of Hazardous Waste Management

GO:ddw

Enclosure

cc: Natalie Oryshkewych, DHWM, NEDO
Jarnal Singh, DSIWM, NEDO
Eileen Mohr, DERR, NEDO
Diane Kurlich, DDAGW, NEDO
Tammy McConnell, DHWM, CO
Mark Patterson, RVAAP
Cindy Dabner, USEPA, Region V

RCRA HAZARDOUS WASTE GENERATOR INSPECTION CHECKLIST

Company: _____ EPA ID#: _____

Street: _____ City: _____

County: _____ State: Ohio Zip: _____

Mailing Address: _____
(If different from above)

Telephone: _____ Fax #: _____

Owner/ Operator: _____
(If different from above)

Street: _____

City: _____ State: Ohio Zip: _____

Inspection Date(s): _____ Time(s): _____

Inspection Announced? _____Yes ____X__NO If so, how much advance notice given? _____

	Name	Affiliation	Telephone
Inspectors:			
Facility Representative:			

Generator Classification	Waste Management Activity
____X__ Conditionally Exempt SQG (CESQG)	____X__ Containers
_____ Small Quantity Generator (SQG)	_____ Tank(s)
_____ Large Quantity Generator (LQG)	_____ Other (specify)
_____ 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__ 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):_____

_____

_____

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 <u>Pollution Prevention Assessments for Hazardous Waste Generators</u> document and discuss it with them.

6. If the company does not want a P2 assessment, why not?

REMARKS

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR REQUIREMENTS

WASTE EVALUATION

1. Have all wastes generated at the facility been evaluated? [3745-52-11] Yes ☒ No ❑ N/A ___RMK#___

GENERATOR CLASSIFICATION

2. Does the generator produce <100 kg. Of hazardous waste per month? [conditionally exempt small quantity generator ("CESQG")] Yes___ No___ N/A ___RMK#___

NOTE: *If quantities of hazardous waste accumulated on-site at any one time exceed 1,000 Kg. - or the generator produces between 100 and 1,000 Kg of hazardous waste per month, it is operating as a Small Quantity Generator ("SQG").* ***If so,*** *complete the Small Quantity Generator Requirements checklist.*

NOTE: *To convert from gallons to pounds:*

Amount in gallons x Specific Gravity x 8.345 = Amount in pounds

OFF-SITE SHIPMENT OF HAZARDOUS WASTE

3. Does the CESQG ensure delivery of hazardous waste(s) to an off-site permitted TSD? [3745-51-05(G)(3)] Yes ☒ No ❑ N/A ___RMK#___

REMARKS

OhioEPA
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 14, 2001

RE: 2001 INSTALLATION SPILL CONTINGENCY PLAN
RAVENNA ARMY AMMUNITION PLANT (RVAAP)
PORTAGE/TRUMBULL COUNTIES

Mr. Jim McGee / TolTest, Inc.
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

Dear Mr. McGee:

Ohio EPA Northeast District (NEDO) office has been notified by your company that a 2001 Installation Spill Contingency Plan (revised) is being developed for the Ravenna Army Ammunition Plant (RVAAP). Any technical questions regarding Spill Contingency plan content should be directed to our SPCC coordinator Bruce Miller at (330) 963-1211. In the event of a release, Ohio EPA Emergency Response (ER) Personnel will respond as necessary, based on the circumstances of the release. The Ohio EPA Spill and Release Hotline number is 1-800-282-9378.

If you have any additional questions, please do not hesitate to contact me at (330) 963-1148 or Eileen Mohr at (330) 963-1221.

Sincerely,

Todd R. Fisher
Project Coordinator
Division of Emergency and Remedial Response

Todd.Fisher@epa.state.oh.us

tf/pb

cc: Bruce Miller, NEDO, DERR
Mike Eberle, NEDO, DERR
Mark Patterson, RVAAP
John Cicero, RVAAP
Bonnie Buthker, OFFO, SWDO
Eileen Mohr, NEDO, DERR

Mark copy

DEPARTMENT OF THE ARMY
RAVENNA ARMY AMMUNITION PLANT
9451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

REPLY TO
ATTENTION OF

December 28, 2001

Mr. Gregory Orr
Environmental Specialist
Division of Hazardous Waste Management
Ohio Environmental Protection Agency
2110 E. Aurora Road
Twinsburg, Ohio 44087-1969

Re: Notice of Violation
Ravenna Army Ammunition Plant
Compliance Evaluation Inspection
EPA I.D. No.: OH5 210 020 736

Dear Mr. Orr:

This letter is in response to Ohio E.P.A., Northeast District Office Notice of Violation (NOV), dated November 16, 2001, issued to Ravenna Army Ammunition Plant (RVAAP) alleging noncompliance with certain provisions of 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).

The NOV stated that RVAAP became subject to the requirements of a large quantity generator (LQG) in April 2001. The NOV further stated that, due to RVAAP's change in generator status, it violated two separate administrative requirements applicable to LQGs.

The first of the two violations alleged was failure to comply with OAC Rule 3745-65-16(c), 40 C.F.R. 265.16(c), which require that personnel serving in positions related to waste management take part in annual refresher training. Enclosed is a copy of a training certificate documenting calendar year 2001 refresher training for Mr. Mark Patterson, RVAAP's environmental coordinator. Mr. Patterson is the only one of RVAAP's three employees that is actively involved in the management of hazardous waste. At the time of the compliance evaluation inspection (CEI) in August, I was erroneously listed as an emergency coordinator in the installation contingency spill plan (ICSP) prepared by RVAAP's modified caretaker contractor, Toltest, Inc. I was never actually involved in the management of hazardous waste and we have amended the ICSP by removing my name from that function. Thus, the training requirements in OAC Rule 3745-65-16(c) and 40 C.F.R. 265.16(c) do not apply to me, because of my lack of involvement in the hazardous waste program.

The NOV also alleged a violation of OAC Rule 3745-65-16(d)(1)-(4), 40 C.F.R. 265.169(c), which pertain to job titles, position descriptions, and documentation of training for employees serving in positions related to hazardous waste management. Enclosed is a copy of the requested documentation for RVAAP's environmental coordinator position. The other individuals serving in positions related to hazardous waste at RVAAP are contractor environmental consultants. Provisions in the contracts require that contractor employees

mailed 12/28/01

comply with applicable state and federal environmental laws and regulations. RVAAP is currently writing its LQG Emergency Response Contingency Plan (ERCP). The ERCP will clearly detail the job titles, responsibilities and training requirements for contractor employees as well. A copy of the plan will be forwarded to you upon completion.

Please be advised that RVAAP's generator status has not changed since the CEI on August 22, 2001. However, RVAAP will notify the OEPA if its status changes as required.

I understand that Ohio E.P.A. has the authority to issue an order assessing a civil penalty for past or current violations of Ohio's hazardous waste laws and rules. However, issuance of a penalty is not appropriate in this case. RVAAP is a government-owned, contractor-operated U.S. Army Operations Support Command (OSC) facility. In 1993, RVAAP's active munitions mission was discontinued and it was placed in modified caretaker status. In 1998, OSC transferred over 16,000 acres of RVAAP to the Ohio Army National Guard. RVAAP is currently investigating and remediating, where necessary, areas contaminated by past industrial activities on the remaining approximately 5,300 acres. These activities, as well as other liquidation and building demolition activities, periodically generate hazardous waste. Once the environmental issues are resolved, the operation and control of the property will be transferred to the National Guard Bureau. The waste generated during April 2001 that placed RVAAP in a LQG status was a result of CERCLA cleanup activity. RVAAP has taken steps to address the deficiencies cited in the NOV and will comply with the administrative requirements applicable to LQGs necessitated by the change in generator status. Given these circumstances, and the fact that RVAAP has taken corrective action to resolve the deficiencies identified during the CEI, assessment of a penalty is not appropriate.

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 Cicero, Jr.
Commander's Representative

Enclosure

Copies Furnished:
USEPA Reg 5 (Ms. Dabner)
Ohio EPA, (Ms. Eileen Mohr)
Cdr, OSC, ATTN: AMSOS-ISD (Mr. Dreyfus/Mr. Ingold)
Cdr, OSC, ATTN: AMSOS-ISE-R (Mr. Whelove)
Cdr, OSC, ATTN: AMSOS-ISO (Mr. Woodhouse/Ms. Vermost)
Cdr, OSC, ATTN: AMSOS-GC (Cpt Emanuel)
BC TOLTEST, INC

Compliance Solutions

"Today's Training... Tomorrow's Solution"

10515 E 40th Ave, Suite 116, Denver Colorado 80239 800-711-2706

Student Affiliation:
US Army
99071821

Certificate of Completion

This is to certify that

Mark Patterson

has successfully completed the classroom requirements for

8 Hour HAZWOPER Refresher

29 CFR 1910.120(e)

Presented

Friday, November 30, 2001

Compliance Solutions Occupational Trainers, Inc.

Certificate Number: 38434

Neval Gupta
Vice President

Roland Hamilton
Instructor